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THE BANKSLANDERS:

ECONOMY AND ECOLOGY OF A

FRONTIER TRAPPING COMMUNITY

by

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ABSTRACT

Fur trapping, for generations the chief source of income for native people in northern Canada, has seriously declined in recent years. An outstanding exception is the community of Sachs Harbour, Banks Island, N. W. T., where several thousand white fox pelts are harvested annually by 15 to 20 trappers.

The thesis analyzes two topics: the cultural ecology of the colonization of Banks Island as a trapping frontier, and the economic geography of trapping and hunting there. Its purposes are to investigate the ecological, economic and social basis of trapping, to understand trapping as an adaptive strategy in particular historical circumstances, and to analyze it as a viable resource system.

The study is based on 14 months of field research in the Western Arctic, chiefly at Sachs Harbour, N. W. T. The primary research method was participant observation, although most quantitative data were obtained through semi-formal interviews. Archival research provided additional historical information and statistics.

The relative success of the various groups of settlers was strongly related to their previous orientation to white fox trapping, and hence to their place of origin within the Western Arctic. The development of inland trapping was critical to the successful exploitation of the Island, and despite subsequent centralization of settlement, the trappers have expanded their resource hinterland. This is in contrast to developments in other parts of the north.

The ecology of the Arctic fox on Banks Island is discussed, and a means of measuring areal exploitation in trapping is devised. The relationship between effort inputs and trapping success are examined. The number of trap checks is the input factor most strongly correlated with the number of foxes caught, with the number of traps set showing the second best correlation. Tentative predictor equations for trapping success are derived for various levels of fox abundance within the population cycle, and for the cycle as a whole.

Quantitative analyses of seal, caribou, polar bear and other types of hunting show how these activities are integrated with the total resource system, and provide data for comparison with other Arctic regions.

Methods are developed for the calculation of production costs of fur pelts and animal foods (and hence the profitability of trapping and hunting), as well as for the calculation of

income in kind. The discussion includes the role of marketing, credit and savings.

In conclusion, the resource system on Banks Island is discussed in terms of its ecologic, economic, and social viability - both in relation to the future of trapping on Banks Island itself and to the possibility of this system as a generic type being instituted elsewhere. There is no evidence of overharvesting of any major biological resources on Banks Island, and the number of trappers and the spatial arrangement of their activities appear to be optimal. Trapping provides a good standard of living on Banks Island, and reasonable stability of income seems assured. The Banks Island resource system would thus be ecologically stable and economically viable in other parts of the Arctic with similar resources. Social forces however make such a development unlikely. Social values and occupational aspirations are rapidly changing, especially among young people, and trapping is increasingly devalued as a life style despite its economic potential. The difficulties of recruiting young trappers at Sachs Harbour are noted, and the trapping system is seen as one of decreasing social acceptability all across the north.

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Independent field research in the Arctic, especially for a long period, is a costly undertaking. I am grateful to the Arctic and Alpine Committee of the University of British Columbia, and to the Quebec Department of Education for the necessary financial support. Such research, however, requires not only financial assistance, but the willing co-operation and assistance of many individuals and organizations. I am deeply grateful to many people both in the north and outside who have helped me in this work.

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INTRODUCTION

For most northerners in Canada, fur trapping has for generations been the main source of cash and trade goods. Recently this traditional occupation has declined in its ability to support the people engaged in it. Few other economic opportunities have arisen to take the place of trapping, unfortunately, and seldom have trapping communities been afforded an easy transition into a new life. More often, poverty, degradation and bewilderment are evident in the village of the northern bush and tundra. The decline of the fur trade and of fur trapping seems to have been pervasive. No single cause presents itself, nor does a single remedy. Biological, economic and social factors have all played a role; some have been more important in one place, others in the next, but everywhere the reasons are many and complex. Some factors are essentially local or regional, others involve the very structure of Canadian society or the world economy.

Yet there are exceptions to this rather dismal picture of trapping and of modern life in northern native communities. The most remarkable of these is the case of Banks Island, Northwest Territories, where a small group of trappers continue to lead a productive, satisfying and self-sufficient life. There the Eskimos colonized new trapping grounds, and developed trapping practices to an unprecedented degree of modernity and productivity. Since 1929 the Island has become the most productive white fox trapping area in the New World.

Sachs Harbour is now the outstanding example of a successful trapping community in northern North America, and perhaps the world; hence its choice as location of this study. Trapping is still the full-time occupation of virtually every active male, and per capita income from trapping is higher than in any other settlement in the Arctic or Subarctic. Eighty-seven per cent of cash income at Sachs Harbour was derived from trapping during the years 1963-67, and the average income of full-time trappers from furs was \$6296. The opportunity therefore exists to study a trapping economy in almost ideal form, since alternative economic opportunities are virtually absent.

This thesis seeks to analyze two topics: the cultural ecology of the colonization of Banks Island as a trapping frontier, and the economic geography of trapping and hunting there. Its purpose is to investigate the ecological, economic and social basis of trapping and to comprehend it as an adaptive strategy in particular historical circumstances, as well as to analyze it as a viable, coherent resource system.[1] In view of the paucity of literature on either the history of the region or on white fox trapping itself, it is necessary to include an historical account of the development of trapping in the Western Arctic and particularly on Banks Island, and to provide a description of the trappers' way of life, both past and present.

The thesis will investigate the cultural and socio-economic background of the trappers, the history of settlement on the Island, the ecological foundation for the prosecution of trapping there, and the technology and economic system through which the production and marketing of fur is effected. The changing nature and areal extent of the occupation and exploitation of the Island will be examined, and in particular, operational models of trapping and hunting will be constructed which should have broad applicability in the north. We seek to discover if this successful adaptation to trapping was merely an historical accident or whether the Bankslanders' experience offers hope to other people in other places. A thorough knowledge of the Eskimo trapper at Sachs Harbour, despite his uniqueness, must surely extend our

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[1] The concept of resource systems was developed by Walter Firey and is explained in the following section.

understanding of the Eskimo trapper at Povungnituk or Baker Lake, the Indian trapper at Mistassini Post or Fort Yukon, and the Metis trapper at Buffalo Narrows or Lac la Biche. Through the example of a successful trapping community, we may learn how northern proples can derive maximum benefit from their resource base.

Theoretical approaches and previous research

The ecological approach and cultural ecology

Ecology is both a theoretical or methodological approach, and a distinct field of study. The concepts of ecology and ecosystem as integrating approaches to geography have now been widely accepted. Morgan and Moss (1965) and Stoddart (1965) have argued specifically for an ecological approach, and the concepts of systems analysis (viz. Ackerman, 1963) and modelling (Chorley and Haggett, 1967) in geography are clearly analogous. The ecological approach is indeed well suited to geographical endeavour, since it avoids several of the dualistic tensions which have plagued the discipline. It encompasses man and his environment, rather than distinguishing between them. The concept of ecosystem implies both environment and spatial arrangement, and also avoids the functional-historical dichotomy since both are inherent in ecological analysis.

As a field of substantive inquiry ecology is more restricted, and in geography refers to the study of the interaction of man and his natural environment. More specifically, this thesis is a study in cultural ecology. The concept of cultural ecology was originally employed by the anthropologist Julian Steward (1955: 30-42), and has since been elaborated in cultural geography by such writers as Wagner, Mikesell and Brookfield.[1]

Wagner and Mikesell understood cultural ecology to be concerned chiefly with processes, although its scope was limited because they believed that:

> "... the cultural geographer is not concerned with explaining the inner workings of culture or with describing fully patterns of human behavior, even when they affect the land, but rather with assessing the technical potential of human communities for using and modifying their habitats." (1962: 5).

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[1]H. H. Barrows was probably the first to suggest the importance of what he called "human ecology" to geography, in 1923, although few followed his lead and fewer expressed any debt to his insight. Much of Carl Sauer's work has been ecological in scope and method, although he never explicitly elaborated on the concept. He did, however, emphasize the importance of livelihood and the economic and technical skills related to it (1941). This is similar to Steward's concept of cultural core: "... the constellation of features which are most closely related to subsistence activities and economic arrangements" (1955: 37). Max Sorre's concept of genre de vie (1962) is also implicitly ecological.

Brookfield on the other hand argued vigourously against this circumscription, and emphasized the need for direct concern with the social and cultural basis of land and resource exploitation patterns (1964:286-87). By 1967 Mikesell considered cultural ecology more truly as a common borderland between geography and anthropology, and he attributed geographers' hesitant entry to a lingering fear of its determinist implications (1967:633-34).

Yet the concept of cultural ecology is not entirely satisfactory for our purpose, and it is necessary to reorient it to include a more theoretical concept of resource use, and a more adequate recognition of sociological as opposed to cultural variables.

Walter Firey has developed an integrated approach to resource use similar to the theory of cultural ecology in his book Man, Mind and Land (1960). He speaks of resource systems which are "man-mind-land structures", and which include the nature of resources themselves, the resource-converting and space-adjusting techniques involved in their utilization, as well as the economic and social structures and cultural needs which are at once both cause and result of these resource practices. The analogy between this concept of resource systems, Sorre's genre de vie and Steward's cultural core is evident.

The ingredients of the resource system lie within three distinct fields of knowledge: biological ecology, economics, and sociology-anthropology. Firey suggests that the nature of resource systems involves not only a tripartite division of knowledge, but also three distinct approaches to resource use which are not necessarily consistent. These he terms the ecological, ethnological, and economic. There are, in other words, sets of resource complexes which may or may not be physically and biologically possible, socially and culturally adoptable (i.e. congruent with social goals and values), and economically gainful, in any particular environment, society and economy. But

> "...no one of these approaches can, by itself, provide an adequate rational for what resource planners are doing or are able to do. There is some thing heroic but futile in the ecological criterion of permanence; there is something aesthetic but anachronistic in the ethnological criterion of adoptability; and there is something rational but precarious in the economic criterion of efficiency." (1960:251).

Only a theory which integrates all three aspects of resource systems can provide understanding and action which is not only "rational" but workable and acceptable:

"...the three corresponding optima which are defined by these theories [ecology, ethnology and economics], though they can never be simultaneously achieved in real life, nevertheless serve as ideal standards from which a resource system departs at the cost of predictable consequences." (1960:252).

This type of analysis is exemplified in Cooley's study of the Alaska salmon industry (1963), where conflict and misunderstanding between ecological, economic, social and political considerations have produced such an unhappy history of resource use.

The concept of culture has been of profound importance to geographers, since their studies must consider culturally conditioned perception of space, time and environment. Yet this concept must be employed with caution. Some geographers are prone to using the word culture as a catchall for all human behaviour which is not biologically prescribed. There is a tendency to speak of culture and environment as two interacting entities, and to think of cultures as things which exist in more or less uniform fashion over measurable areas. On the one hand is a region (or environment, or territory) and on the other is man, acting in culturally prescribed ways, doing something to or in these regions. Aside from the rather quaint dualism which this mode of thought suggests, one must ask what exactly is meant by culturally prescribed behaviour. Does the behaviour we observe in fact have a cultural basis, or should we seek alternative and perhaps more refined explanations of it?

Today the neatly closed systems of the traditional ethnographies with their clearly bounded societies whose cultures prescribed the behaviour of their members in a few standardized modes, no longer exist, if indeed they ever did. In situations of culture contact and rapid change, we see the bearers of different cultures interacting with one another, presenting and observing a host of differing and often incompatible behavioural models, and operating within social and economic structures which are bound to create conflict. In fact what is termed culturally prescribed behaviour may be explained in any or all of three ways, which are distinct and yet certainly interrelated. Cultural explanation is one of these, in which we appeal to the traditions, values and goals of a particular group of people who are the common bearers of a distinct culture. But one may also invoke a more specific historical explanation, which suggests some of the constraints and opportunities which a series of events over particular periods of time and in a particular place have prescribed. Equally sign ificant may be a situational or circumstantial explanation, in which we appeal not to past events or to supposed cultural traits, but to the specific social and economic circumstances in which groups of people find themselves, and to which their behaviour is an adaptation. This may be termed a sociological as opposed to cultural explanation. All of these modes of explanation mediate the interrelations of man and environment.

Failure to recognize the importance of these distinctions has not been the sole prerogative of geographers. Anthropologists have also tended to rely exclusively on cultural explanations, although it should hardly be surprising that those who invented the concept should display an inordinate attachment to it. Indeed, the idea of culture has passed into popular use and misuse. We are treated to discussions of the culture of poverty, hippie culture, drug culture, and the culture of suburbia, whereas in fact the explanation of such behaviour is frequently sociological rather than cultural. C.A. Valentine has recently provoked a controversy among American anthropologists, with his forthright and vigorous attack on these misconceptions and their underlying social implications(1968, 1969). Sociologists, however, and especially Marxist sociologists, will hardly be surprised, if indeed they have paid any attention to the issue at all.

The significance of this is that cultural geographers and cultural ecologists can not be, despite their labels, concerned exclusively with culture in the classical sense when treating human behaviour. Reliance on one particular concept must not be allowed to obscure more proximal causes and more powerful explanations of the phenomena under study.

Ecology in Arctic studies

The frontier of social scientific knowledge crossed the Arctic Circle early in the postwar era. Into lands charted by such early explorers as Boas, Rasmussen and Jenness, came a host of ethnographic and geographic frontiersmen. During the last 15 years, these scientists have produced a wealth of information on northern peoples and their ways of life. Most of this work was done at the community level, and much of it consists of documentation and description. Now, as social scientific investigation in the north becomes more specific in its focus and more analytic in its method, there is a solid foundation on which to build.

Much of this pioneer work has been explicitly or implicitly ecological in its approach. Numerous writers have called attention to the remarkable manner in which the Eskimos have adapted to their environment, and the degree to which their culture area reflects a natural area. That the Eskimos were a classic example of a hunting people living as prime predators at the top of the biotic pyramid has no doubt contributed to the wide spread use of the ecological approach in Arctic studies.[1] In the early 1950s Margaret Lantis examined the status of human ecological research in the Arctic (1953, 1954). Of particular interest to geographers were her calls for work in the field of demographic adjustment to resources and of adaptation to natural environment. Lantis drew attention to the need for such studies as village ecologies, annual hunting and trapping cycle case histories, the use of dogs, the question of unused resources, historical demography, the effects of technological change, and problems of resettlement.

Our understanding of many of these problems has since been enlarged by the great corpus of recent research results from northern communities. In addition, the impact of military construction, economic expansion, and the growing public concern for the welfare of native peoples have created new dimensions and problems in northern life, perhaps more

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[1]The ecological approach has also been of great significance in anthropological studies of northern Indians, in view of the theoretical importance of the origin, formation and function of hunting bands and territories.

important and more urgent than some of the issues which Lantis raised at the close of the traditional fur trade era. Nonetheless many of her suggestions are still relevant today, and the research possibilities for the topics mentioned above are by no means exhausted.

Of enduring interest has been the analysis of village ecologies and economies; the processes and mechanics of small groups of people making a living from the scattered resources of large areas. Frequently such studies have been prompted by the onset of economic distress, and thus involve programmes and recommendations for improvement, as well as description and analysis of the existing situation. The classic studies by Mikkelsen and Sveistrup of East Greenland (1944), Shimkin of Fort Yukon (1955), and Findlay of Ungava Bay (1955) are early examples of this approach.

More recently, ecologic-economic investigations have been conducted as integral parts of regional development programmes or planned ecological change. Examples are the work of the human geography team, and others, on the Project Chariot investigations in northwest Alaska (Foote and Williamson, 1966; Saario and Kessel, 1966), and particularly the Area Economic Survey Program of the Department of Indian Affairs and Northern Development. In the latter case almost twenty reports were produced for the various regions of the N.W.T. and northern

Quebec over a ten year period.[1] Similar work is now being done in Newfoundland and Labrador under the impetus of the outport resettlement program.[2]

Geographers have been deeply involved in such studies, which are characterized by meticulous observation and collection of data with scrupulous attention to detail, over a sustained period. They hav e sought to establish the resource potential and natural constraints of the area, the distribution and demographic structure of the population and social a nd cultural setting, inputs and outputs in the harvesting and converting of local resources, and the economic and financial structures through which it is effected.

The strength of these works has been in the provision of accurate description and a wealth of reference data for a large number of communities. Moreover the data have been presented in reasonably uniform fashion, allowing comparison from one area to another. Their weakness, (due mainly to their <u>ad hoc</u> and practical nature), lies in the absence of a clear and thoughtful methodological framework, and a paucity of analysis and theoretical principles derived from the research. They have nonetheless developed significant advances in the methodology of community ecological studies, which will be referred to periodically in the

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[1]Foote (1967a) provides a review and bibliography of these reports to the end of 1966.

[2]See for example the series "Newfoundland Social and Economic Studies" of the Institute of Social and Economic Research, Memorial University of Newfoundland.

following chapters. One of the purposes of this thesis is to suggest, by example, an appropriate structure and methodology for such studies, as well as to derive some general principles which might be utilized or tested in future work. In particular accurate measurement of economic and biological phenomena will be stressed, in addition to the descriptive accounts of the local ecology and economy, although the latter are certainly important. Only through such mensuration and through the examination of interrelations between various phenomena, can we proceed from description to explanation, simulation and prediction.

Studies of trapping and hunting

Although numerous studies have been made of trapping and hunting societies, very few have focussed primarily on the ecology and economy of trapping and hunting, especially under modern conditions.

Fuchs (1957) has made the most comprehensive analysis of the fur industry as a whole, although his chapter on raw fur production is written from a very broad perspective, and serves chiefly to outline its position in the industry as a whole. Loughrey (1961) has made a briefer analysis, similar to Fuchs', of the Canadian fur industry.

Within Canada, there have been a few more detailed studies of trapping and fur production on a regional basis. Quick's work on the Fort Nelson area of B.C. (1950) is largely descriptive although some data are given on the size and productivity of the traplines. A study by Kaminsky of Manitoba's fur resources (1947), contains some useful economic analysis of the factors affecting fur prices and the supply of trappers, but does not discuss the problems of trapline efficiency. Buckley (1962) has provided an excellent analysis of fur production, trapper income, and problems of marketing and credit in Northern Saskatchewan. Dunning, in his study of the Pekangikum Indians in Northwestern Ontario (1959a), has probably given more complete information on the trapping economy than any other anthropologist, including a fairly detailed accounting of the trappers' maintenance and depreciation costs of their outfits.

A biological study of experimental traplines in northeastern Ontario by de Vos et al (1959) provides some data on productivity per unit of effort and per unit of area, and Tanner's geography of Labrador (1944) contains some interesting descriptive material on white trappers, with some data on individual traplines and incomes.

Of trapping in the N.W.T., the best overall summary was done by the Robinsons in 1946. A more specific analysis of the problems of the industry in one area was conducted by Black (1961). The Area Economic Sruveys tended to concentrate on alternative resources to supplant the faltering fur economy, and thus rarely emphasized trapping. Exceptions are those reports by Brack (1962, 1963) and Usher (1966).

In other northern regions, Chesmore (1964?) has examined some aspects of trapline operations around Point Barrow, Alaska. There are also a few Soviet articles which provide accounts of trapping methods and productivity in the Russian north. Of some interest is a methodology developed by Daniloff (1958) for evaluating the productivity of trapping areas, although this work is of limited relevance to white fox trapping, which is conducted on a line rather than a network basis.

Yet virtually all of this literature is descriptive. In some cases quantitive data are given, which are useful for comparison. In none of these works is there a comprehensive attempt to analyze trapline efficiency and productivity. Nowhere has there been a systematic assessment of inputs and outputs in trapping, nor have any of these authors tried to determine the full cost in time or money to the trapper of harvesting furs on a per pelt and per species basis. Nor has the relationship between trapping and certain ancillary activities such as hunting been clearly specified. The analyses presented in Chapters Five and Seven are therefore entirely new.

Ecological studies of hunting are in a more advanced state. D.C. Foote was a leader in this field and his attempts to quantify hunting inputs and outputs in terms of energy (1965), and his studies of efficiency and productivity in seal hunting (1967b), are outstanding examples of his work. The Area Economic Survey program also contributed to this field.[1] Yet several of the economic aspects of hunting have not been analysed, particularly the input costs per unit of production. Chapter Six and parts of Chapter Seven are devoted to a rigorous analysis of the hunting system at Sachs Harbour, and should extend significantly the understanding of hunting activity beyond the scope of the existing literature.[2]

Research methods and sources

This study is based on fourteen months of field research

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[1] See especially Brack 1963; Abrahamson et al, 1964; Usher 1965, 1966; Haller, 1967 and Anders, 1967.

[2] Attempts by anthropologists to obtain quantitative data on hunting activities include those of Knight in the Rupert House area of Quebec (1968), and Lee for the Bushmen in Africa (1968).

in the Western Arctic, covering the periods May-June 1965, July 1966-May 1967, and July 1967. About twelve months of this time were spent in the village of Sachs Harbour on Banks Island. In 1965 I conducted an economic survey of Banks Island under contract with the Industrial Division of the Department of Indian Affairs and Northern Development (then the Department of Northern Affairs and National Resources). A report on this work was published the following spring (Usher, 1966). The remainder of the field work was conducted independently. The fact that field investigations extended over a period of twenty-seven months made possible the collection of detailed information, and particularly quantitative data relating to the annual economic cycle and trapping and hunting inputs and outputs, for three successive years (1 July, 1964-30 June 1967). The analysis thus depends not on a single year's observations, but three years', the range of whose characteristics is considered more representative of the total spectrum of possibilities.

The main research method was participant observation, although most quantitative data were obtained through semi-formal interviews. Two months were spent in the Mackenzie Delta and Tuktoyaktuk where I examined Federal Government documents concerning Banks Island, and interviewed many former Banks Island residents. Information was also gained through interviews or correspondence with many other people such as former traders and government officials, both in northern and southern Canada, familiar with Banks Island or the history of the Western Arctic.

Library and archival research were necessary in addition to the field research. Most of this was done in Ottawa: in various government libraries in that city, in the Public Archives of Canada, and in the file registry of the Northern Administration Branch of the Department of Indian Affairs and Northern Development. The records of the Game Management Service in Fort Smith, N.W.T., were also an important source of fur and game statistics.

The secondary sources on Banks Island, and on the modern trapping economy, are limited both in number and scope. The history of the Western Arctic, and of Banksland in particular, recounted in Chapters Two and Three, is based largely on documentary sources and personal interviews. The chief documentary sources, and their abbreviations for reference, are as follows. Files presently held by the Northern Administration Branch of the Department of Indian Affairs and Northern Development are cited as IA&ND/NAB, followed by the file number and if necessary, the volume number. Files formerly held by that branch (or its predecessors), now in the Public Archives of Canada, are cited as PAC,NA&NR/NAB, also followed by the file number and volume. Correspondence in the Stefansson Collection at Dartmouth College, New Hampshire, is cited as NhDStef, Correspondence, with the appropriate details. Information obtained by personal correspondence is cited as such, but interview information is normally not cited. Chapters Five, Six and Seven are based chiefly on data obtained through participant observation and interviews.

Location of the study area

Banks Island, or "Banksland", as it is locally referred to, is the most westerly of the Canadian Arctic Islands, situated between latitude 71° and 74° north, and longitude 115° and 125° west. It lies athwart the western entrance to the Northwest Passage, for each of the three routes is within sight of the Island. With an area of 27,383 square miles, it is the fourth largest of the Arctic Islands, after Baffin, Ellesmere and Victoria. From this Island, which has about the same area as New Brunswick and twice that of Vancouver Island, is harvested $100,000 to $200,000 worth of fur and game resources annually. These resources (no others have been exploited on the Island) are the basis of livelihood for

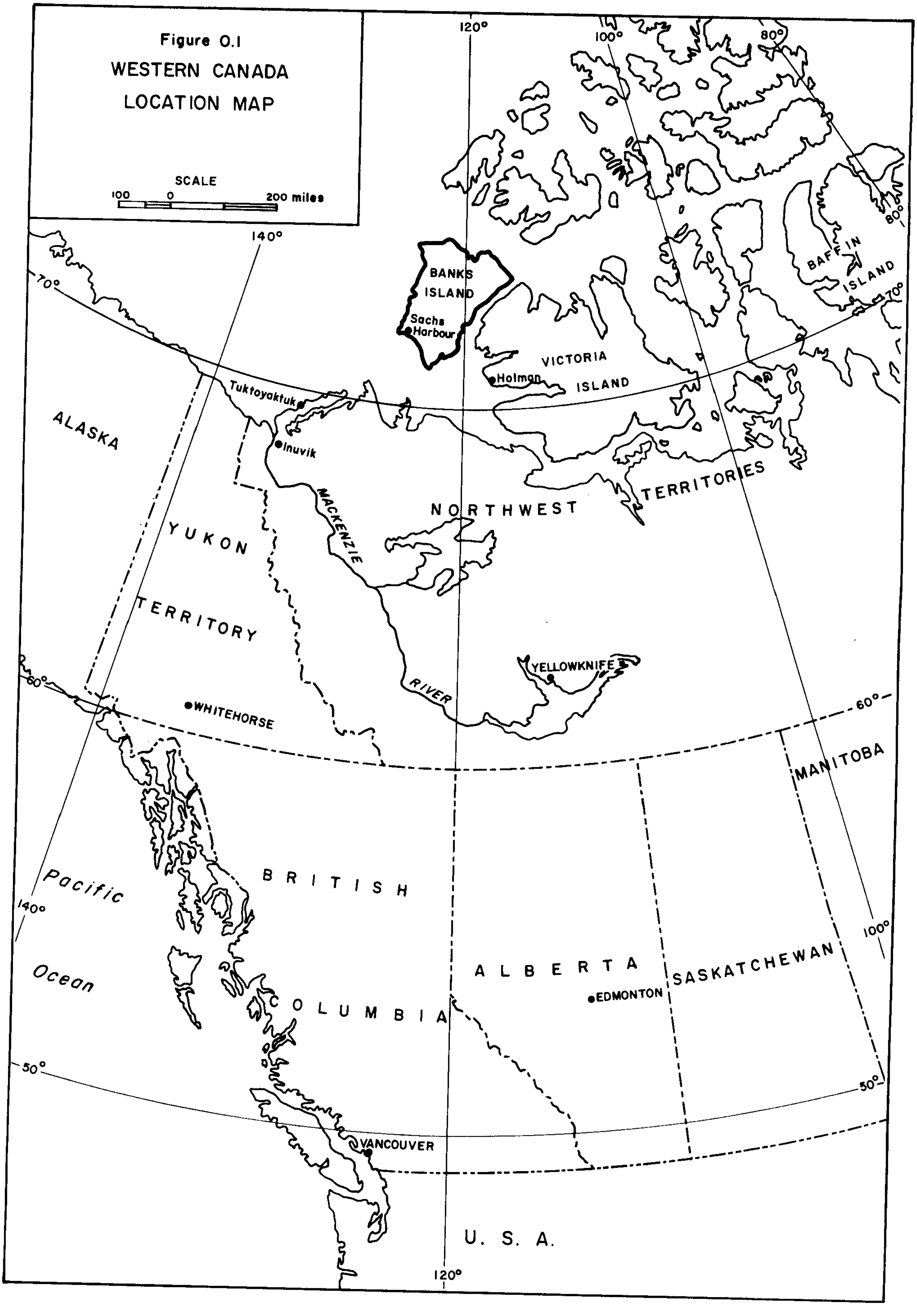

Figure 0.1
WESTERN CANADA
LOCATION MAP

for about 100 Eskimo people. All are resident in one settlement at the southwest corner of the Island: Sachs Harbour ($71^{\circ}59'$ north, $125^{\circ}15'$ west), almost 1,600 miles north of Vancouver, B.C., and about 1,250 miles from the North Pole. Such paucity of settlement is typical of this part of the world. On neighbouring Victoria Island there are but two communities, one of which, Holman Island, 190 airmiles distant, is the closest inhabited point to Sachs Harbour. Two other villages, both on the mainland, are of significance in their relation to Sachs Harbour. One is Tuktoyaktuk, 255 air miles away, whence many of the Bankslanders originated, and the other is Inuvik, 320 miles distant. The latter, located in the Mackenzie Delta, or simply "The Delta" as it is locally known, is the administrative and service centre for the entire Western Arctic.

CHAPTER ONE

AN ECONOMIC AND SOCIAL APPRAISAL OF MODERN FUR TRAPPING

The Banks Island community, though geographically isolated and relatively inaccessible, cannot be understood without reference to the social and economic realities of the nation, and indeed the world. No community is a closed system, even in the Arctic; least of all Sachs Harbour which is totally dependent on outside markets for its produce and on outside sources for the means of production and of life. It is therefore necessary to survey the status of the fur industry and trade in general, and the place of white fox, and particularly Banks Island white fox, in it. It will also be useful to identify some of the social and economic problems of trapping and trappers in Canada today, in order to place the Banksland experience in context.

Canadian fur production -- national and international perspectives

Furs are the oldest and historically the most important of Canada's resources. Until little more than a century ago, they were the foundation of the colonial economy, and until very recently were the economic mainstay of the vast regions of bush and tundra north of our agricultural fringes. With the transformation of Canada's economic life in the last century -- the world wide demand for our minerals, wood and wheat, and our coming of age as an urban industrial nation -- the fur industry has been left far behind. Yet despite the relative decline of fur as a national resource, the value of wild fur production in recent decades has been greater than it ever was in the days of James McGill and Alexander Mackenzie, and Canada continues to rank among the leading fur producing nations of the world.

World fur production is not easily ascertained, since many countries do not keep complete and accurate statistics. The following discussion is thus necessarily somewhat general, and cannot always be supported with specific data.[1]

Canadian production of raw furs has amounted to $35-40 million annually in recent years. This is exceeded only by the U.S.A. (over $100 million) and the U.S.S.R. (probably about $100 million). Ranch furs (primarily mink) however, are accounting for an increasing proportion of production in all countries. In Canada they have risen from about five per cent of the total in the early 1920s to almost two-thirds in recent years.

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[1] I am indebted to Mr. A. Stewart, Chief, Fur Section, Department of Agriculture, for some of the information presented in this and the following sections. Canadian production figures are derived from D.B.S. Annual Reports on fur production.

Of wild fur production, it can only be said that Canada, the U.S.A. and the U.S.S.R. are the three leading producers. It seems likely that the Soviets produce the greatest amount of wild fur by value, but this cannot be substantiated. American production is generally higher than Canada's but consists largely of the cheaper furs such as muskrat and raccoon.[1] Canadian wild fur production has averaged almost $13 million in value over the last decade, although it has reached $30 million in earlier years. Both the Canadian and Russian harvests include the most desirable species, and are renown for their high quality.

The broad trend in world fur prices during the twentieth century has been a rapid rise during the first three decades, a decline during the Depression, a resurgence during World War Two, another subsequent decline, and a moderate recovery and levelling off since then. Prices for most species are now at about the 1920s level, although some are lower. Thus in terms of real dollars, the fur industry has everywhere suffered a general decline in prices over the last forty years.

The trend in fur production have been somewhat different from those of prices. Pelt production of most species probably reached unprecedented levels in the 1920s. The harvests of most

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[1]Estimates of U.S. annual production range from $11.3 million by Williams (1966, for the years 1960-62, not including Alaska fur seal) to a maximum of $100 million by Fuchs (1957).

furs declined during the Depression, although for such species as white fox, lynx and squirrel they did not. Again, while production generally increased during the war, there was a contrary trend in white fox, lynx and marten. Since then, there has been considerable variation. Beaver, otter and marten are now being harvested in record numbers. Mink and lynx have remained relatively static, while white fox, muskrat and squirrel have declined, the last two rather sharply.

The production for individual years is affected by natural population cycles among fur bearers, although since the timing of these cycles is seldom simultaneous over the entire country, their effect is somewhat damped in the national production figures. The general trends over the last 50 years are not due to normal population cycles, but rather to changing environmental conditions, especially in the more southerly regions; overharvesting, among certain species at least and in recent decades, to social and economic changes affecting the trappers.

The composition of the Canadian wild fur harvest is shown in Table 1.1. During the last decade beaver has been the most important fur, amounting to almost 40 per cent of the total by value. Mink and muskrat have accounted for almost 15 per cent each, and squirrel ranks fourth at about five per cent. Lynx, white fox and otter account for between three and four per cent each of Canada's wild fur production. Other species are of less

TABLE 1.1

Average annual value of the Canadian wild fur harvest, (approximate), 1958-68

Species	Value ($)	Proportion of total harvest (per cent)
Beaver	5,043,300	39.5
Mink	1,861,700	14.6
Muskrat	1,787,300	14.0
Squirrel	661,600	5.2
Lynx	479,700	3.8
White fox	460,900	3.6
Otter	411,200	3.2
Marten	320,200	2.5
Ermine	175,800	1.4
Rabbit	121,500	1.0
Fox (other)	122,700	1.0
Other furs[a]	1,325,700	10.2
Total[a]	12,771,600	100.0

[a] Includes seals since 1964-65.

Source: Canada, D.B.S., Fur Production, 1958-59 – 1967-68

TABLE 1.2

White fox production, Canada, 1919-68

Decade	Mean annual number pelts	Mean annual value ($)	Proportion of Canadian wild fur production by value (per cent)
1919-29	37,506	1,474,000	10.2[a]
1929-39	52,030	948,700	11.0
1939-49	44,992	896,200	4.6
1949-59	40,332	488,100	3.7
1959-68	30,044	453,200	3.5
1919-68	41,205	863,300	6.2[b]

[a] 1920-29 only [b] 1920-68 only

Source: Canada, D.B.S., Fur Production, 1919-20 – 1967-68.

significance, although for a few years in the mid 1960s seals added over $1 million annually to the fur harvest (split about evenly between ringed and harp seals).

Most wild furs are obtained north of the settled agricultural area of the country. Ontario is the leading producer at almost $3 million annually, followed by Quebec, Alberta, and in close order, Manitoba, Saskatchewan, and the N.W.T.. Territorial production is normally about $1 million annually, or slightly less than one-tenth the national total. Ranch raised fur, on the other hand, is associated with the agricultural areas of Canada. There are no fur farms in the N.W.T. or Yukon, and few if any in the northern parts of the provinces.

The status of white fox

White fox was particularly fashionable before World War Two, and was one of the leading Canadian wild furs by value, ranking second in some years. Production rose sharply in the early 1920s, and indeed the 1922-23 harvest of 77,135 pelts has only once been surpassed.[1] Numerous consistently good crops during the 1930s however, caused mean annual production during that decade to reach 52,000 pelts (Table 1.2), an increase of about one third over the 1920s. Since then production has exhibited a long term decline, although fluctuations from one year to another

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[1]In 1954-55, when a record 81,783 pelts were collected.

are very marked. During the 1960s the average crop has amounted to 30,000 pelts, but in some years it has been as low as 10,000-12,000. Until 1939 white fox usually represented over ten per cent of Canadian wild fur production. In recent years it has averaged 3.5 per cent of the wild crop by value, and in terms of total Canadian production, including ranch furs, it has seldom exceeded two per cent.

Despite this decline Canada remains, along with the U.S.S.R., the world's major producer of white fox pelts. The Soviet North has steadily yielded approximately 75,000-100,000 pelts per annum (Geller and Skrobov, 1967). This suggests a longterm average production of about double that of Canada's. Other northern lands are insignificant producers. Alaskan production has only twice ever exceeded 10,000 pelts (in the 1920s) and in recent years has been about 2,000-3,000 pelts or less (Buckley, 1954:351 and Alaska Review, 1966:4). In Greenland, where production has probably never exceeded 10,000 pelts (Braestrup, 1941:86-91) the fox take ranged from 2,284 to 5,430 between 1954 and 1965[1] (personal correspondence, G. Martens, Ministeriet for Grønland, Copenhagen, 4 January 1968). In Scandinavia proper, white foxes have been completely protected for a number of years (personal correspondence, P. Raudas, Embassy of Finland, Ottawa, 24

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[1] Unlike most parts of the Arctic, where the blue phase occurs in about one per cent of Arctic foxes, the majority of the harvest in Greenland consists of blues. Both phases are included in the figures given here.

January 1968; B. Thelander, Svenska Jagareforbundet, Stockholm, 9 January 1968; Y. Hagen, Statens Viltundersøkelser, As, Norway, 3 January, 1968). In the Norwegian possessions (Jan Mayen and Svalbard), data available for the years 1906-27 and 1945-62 indicates that rarely were more than 500 blue and white foxes taken in any year (Norges Svalbard Og Ishaus-Undersøkelser, 1929[1] and personal correspondence, M. Norderhaug, Norsk Polarinstitutt, Oslo, 12 January, 1968). Jan Mayen has been recently closed to trapping. In sum it appears that in recent years, world white fox production has averaged about 120,000 pelts annually, of which about two-thirds come from the U.S.S.R., one-quarter from Canada, and a small proportion from Alaska, Greenland and Svalbard. Both the total production and the relative national shares of it fluctuate considerably from year to year.

The major consumers of white fox (as of most furs), are the United States and Western Europe. Until 1952 London was the leading distribution centre for raw white fox pelts. The Hudson's Bay Company[2] was the chief purchaser of Canadian foxes, and almost all of these were auctioned in London. Much of the Soviet production was auctioned there as well, since the Bay also acted as sales agent for Soviet furs in the West. In 1952 however, the

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[1]I am indebted to Miss Sheila MacBain for translating relevant sections of this work.

[2]Also known as "The Bay" and sometimes referred to as such in this study.

United States placed an embargo on the entry of Soviet white fox furs. The Hudson's Bay Company then ceased sending Canadian foxes to London, and auctioned them in Montreal instead. Currently, Canada is almost the exclusive supplier of white fox to the United States. Trade statistics for the years 1964-68 indicate that virtually all Canadian production is exported, and of this almost 98 per cent has gone to the U.S. (Canada, D.B.S., Trade of Canada, 1964-68). The European market is supplied almost entirely by the U.S.S.R. As a result, two separate and virtually independent markets exist for white fox, of which the American tends to bring the best prices, since the supply is considerably smaller. Since the entire Canadian white fox production is assured a market in the U.S., the needs of Canadian fur garment manufacturers are sometimes met by the importation of Soviet foxes, as there is no embargo in Canada.

Canadian white fox trappers thus do not compete with their Soviet counterparts, and so long as the American embargo continues, and the American market can absorb the Canadian harvest, they will not do so in future.[1] Figure 1.1 indicates that prices paid to producers for white foxes in Canada are quite strongly related to total annual production. The response is fairly direct; in years of scarcity the price increases, often quite

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[1]Nor do they compete directly with fur farmers, since white foxes have never been successfully ranched.

Figure 1.1

THE PRICE VERSUS THE SUPPLY OF WHITE FOX, CANADA, 1952-68

sharply, whereas good yields, especially for two or three years in succession, drive prices downwards. In the long run, fox prices are probably tied to the general trends in all fur prices, but much of the short term variation appears to be explained by the laws of supply and demand.[1] However, since foxes are used largely for trim in low and medium priced garments, the trappers may ultimately have more to fear from undersupplying than over-supplying the market, because a chronic shortage might cause manufacturers to turn to another fur altogether. While there are no rigorous means of forecasting demand and prices for furs, it would appear that the current nature of the demand for white fox assures a relatively stable price for it over the next few years, other things being equal.

The bulk of Canadian white fox production comes from the N.W.T. (83 per cent in the last 20 years), with most of the remainder coming from Arctic Quebec. There are probably not more than 1000 individuals in the N.W.T. who derive income from the trapping of white fox, and virtually all of these are Eskimos.[2]

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[1]The tariff has always varied widely across the Arctic. In the competitive situation among buyers in and around the Mackenzie Delta, trappers have generally received good prices. In isolated and inaccessible areas such as the Central Arctic, where the Hudson's Bay Company was in complete control, prices paid have been considerably below the D.B.S. average figures.

[2]Prior to World War Two, fox trapping was the full-time winter occupation of virtually all adult male Eskimos, who in those years numbered somewhat over 1,000. A few white trappers were also involved, chiefly in the southern Keewatin, the barren grounds east of Fort Reliance, and along the Arctic Coast west of Bathurst Inlet.

The most productive areas have traditionally included Banks, Victoria and King William Islands, the northeastern Mackenzie District, and most of the Keewatin District east through Southampton Island. Particularly large collections have been obtained from such places as Sachs Harbour, Read Island, Cambridge Bay, King William Island, Eskimo Point and Coral Harbour. Sachs Harbour trappers, despite their small number, have consistently made an important contribution to the Canadian harvest, and their share appears to be increasing. From the late 1930s to the early 1960s they provided roughly five per cent of the Canadian total, and in some years over ten per cent. In three of the last six years, over one-quarter of the entire Canadian white fox harvest has come from Banks Island. Table A.1 gives the Canadian harvest on a cumulative basis by regions since 1928. The eminence of Banks Island within the Western Arctic region is evident, especially after 1936.

The fur industry

The growth of the fur industry in the last 20 years has been slow, and it has not shared in the general postwar economic expansion (Fuchs, 1957:7 and Loughrey, 1961:848). There has been a clear, longterm relative decline in the demand for fur products, which has in turn led to a stagnation in the value of raw furs.

The fur industry has been suffering from increased competition from several sources. As a luxury and status item, fur must now compete for the consumer's disposable income with a multitude of other luxury items whose availability and quality have increased stupendously since the war. As a functional item of clothing, furs suffer increased competition from synthetic pile and cloth coats (see Fuchs 1957, especially Chapter 3). Within the fur industry, the wild fur producer no longer has the field to himself. Ranch furs have steadily increased their share of the market and although only a few species have been successfully farmed, ranch furs have probably tended to replace wild furs of all species due to stability of supply and uniformity of quality.

Most of Canada's furs are exported, either by trading companies themselves, or by foreign buyers purchasing at periodic raw fur auctions held in Montreal, Winnipeg, Edmonton, Vancouver and other cities. Thus even the most isolated trapper finds his income dependent to some degree on the decisions of the fashion makers in Paris, London and New York; the dyers and designers who will create demand for one or another type of fur. This combination of increased competition in the luxury market and the manipulative nature of the fur industry itself led Fuchs to characterize the industry as suffering from both long term decline and short term instability (1957:7).

Another important characteristic of the fur industry is its atomistic nature, and the intense competition involved in most sectors of it. As in the garment industry, the multitude of manufacturing establishments are typically small and involve little capital investment. Because of this, there has been an almost complete indifference to the raw fur supply (Fuchs, 1957:16). No sector of the industry feels responsible for ensuring a continued supply--there is no organized concern for either the conservation of fur bearers or the welfare of the trappers (a notable exception being the Hudson's Bay Company). Most such action has come only in recent years, from government wildlife and welfare agencies.

The fur trade

Two rather different fur trades have existed in Canada. The earliest was the Indian trade of the Subarctic forest, based on beaver, mink, marten, muskrat and lynx. The second was the Eskimo trade of the Arctic tundra, based almost entirely on the white fox. The Indian trade dates from the seventeenth century, and reached its full geographic extent by the mid nineteenth century (Stager, 1962). Although the introduction of the fur trade among the Indians resulted in profound changes throughout their ecology, economy and society, its persistence over many decades and even centuries, resulted in a new mode of life that was relatively stable. During the first two centuries, the trade was controlled almost entirely by monopolistic enterprises, chiefly the Hudson's Bay Company. Only after 1870, when the Bay monopoly in Rupert's Land was broken, did the influx of independent white trappers and traders result in another major disruption of Indian economy and society, and in some cases severe despoliation of the fur resources.

The Eskimo experience with the fur trade was by comparison compressed, and in some ways reversed. The history of the trade in the Western Arctic is described in more detail in the following chapter, so only a broad outline for the Arctic as a whole need be given here.

The white fox trade had its beginnings in the last days of the whale fishery, in both the Eastern and Western Arctic. The establishment of the Cape Wolstenholme (Quebec) post in 1909 marked the real beginning of the Hudson's Bay Company's Arctic trade, for although they had regularly sailed through Hudson Strait for 240 years they had never exploited its shores.[1] The expansion of the trade was extremely rapid; the network of posts

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[1]In fact the first post for the Eskimo trade was the short lived Fort Anderson in the Western Arctic, established in 1861 (see Stager, 1967). Although such long established Northern posts as Fort Chimo and Fort McPherson engaged in some Eskimo trade, they lay within Indian territory and traded chiefly for the pelts of forest fur bearers.

and the induction of the Eskimos into the trapping and trading system being virtually completed within 15 years. Although the Bay spearheaded this thrust, it was everywhere faced with competition both from large trading concerns and individual entrepreneurs. The Eskimo experience was thus quite different from that of the Indian, due to its much later and much more rapid development and, particularly in the Western Arctic, because the fur trade was fiercely competitive from the very beginning.

Two immediate results of this flurry of activity were the decimation of native populations through disease, and the destruction of their major food resources, especially the caribou. Unlike the Indian experience, where severe depredation of the fur bearers themselves occurred, there has probably not been any widespread overharvesting of the white fox.

The Depression ruined most of the free traders and even the larger trading concerns, and by World War Two, the Hudson's Bay Company had overcome most of its competition. The total number of posts in operation in the north had declined greatly, and the future pattern of settlement, based on the established fur trade centres,was well established. The monopolistic position of the Hudson's Bay Company was thus, in the Arctic, a later development dating only from the late 1930s.

The end of the traditional fur trade era came with the declining fox prices and the resulting Arctic-wide depression of the late 1940s. This was a time of severe hardship, and by comparison the Eskimos had come through the Great Depression of the previous decade unscathed. Although fox prices improved subsequently, increased opportunities for wage employment after 1955 proved both the immediate salvation and the subsequent (although still inadequate) basis of the Arctic economy. As the fur trade waned, and alternative sources of income became available to the Eskimos, in 1959 the Fur Trade Department of the Hudson's Bay Company changes its name, significantly, to the Northern Stores Department. The small unheated stores in which ammunition, calico, flour, sugar, tea and lard were the main items of trade have been replaced all across the Arctic by larger structures, with counters displaying stuffed olives, perfumes and bargain-basement dresses; whose managers are more merchandise conscious than fur conscious. The source of power, money and authority in the North today lies not with the fur trade but with government services and administration.

Similar post-war developments have occurred in the Subarctic forest regions. As a result, the objective socio-economic positions of the Indian and Eskimo with regard to the fur trade have become very close during the last two decades, despite their profound historical differences.

The northern trapper today

The Northern trapper lives typically in a small isolated rural community, and is almost invariably non-white. Most trappers are members of what it is now fashionable to call the subculture of poverty. Characteristically, the trapper must supplement or even obtain the bulk of his income from alternative economic pursuits.[1] The main causes of poverty in trapping communities are a declining or static resource base, declining prices paid to producers, an increase in the number of producers, and the high cost of trapping.[2] The centralization of people into a few large communities has often led to the local overexploitation of the fur

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[1]Although perhaps 54,000 people engage in trapping in Canada, the 1961 census listed only 3718 people in the occupational category of trappers and hunters, and of these, very few are primarily trappers. For example, most people engaged in trapping in northern Saskatchewan earn less than $500 per year, while less than ten per cent earn over $1000 (Buckley, 1962:31). In the N.W.T., numerous community studies have invariably shown low trapping incomes. In the Keewatin District, during 1967-68, of a total male Eskimo labour force of 460, 251 had some income from trapping. Their median income from this source was just over $200. Only fourteen of their number trapped over $1000 worth of fur, and none earned more than $4000 (from unpublished data from the Keewatin Manpower Survey, conducted by the Economic Staff Group, Dept. of Indian Affairs and Northern Development, January 1969).

[2]Most trappers employ dogteams as their means of transport. The cost of feeding a team can amount to several hundred dollars annually, especially if commercial feed is necessary. In addition, firearms and ammunition, boats and gasoline, traps and other gear all contribute to the high cost of trapping. A complete outfit, whether for the bush or the tundra, today costs thousands of dollars. At Sachs Harbour, the annual operating and depreciation costs per trapper are presently calculated to be nearly $1300.

resource, but also to its underutilization in the distant hinterlands. Often the trapper is undercapitalized. His income is intermittent, due to the biology of the resource, and unpredictable due both to the seasonality of trapping and to uncertainties of price. Since expenditures are both fixed and continuous, the trapping economy operates necessarily on a system of personal credit. Although the basic function of this credit is to increase the efficiency of the trapper, its availability can become restricted under certain conditions, thus reducing efficiency and productivity. Due to the necessity of maintaining a high credit rating, the trapper is unable to act as a free agent in an open market, and is forced to accept less than optimum payment for his produce. The need to realize income from fur as soon as possible also prevents many trappers from maximizing their selling prices.

Sociologically, the trapper appears to have extremely low status in the national context.[1] This appears to be due in part to his low income and educational achievements, but is no doubt compounded by the fact that he is usually a non-white. The community he comes from is very often characterized by what some have likened to a colonial caste system (Dunning, 1959b and Kew, 1962), yet economic and social opportunity is equally

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[1]Two Canadian studies by Blishen (1958 and 1967), based on a combined measure of income and education, place trappers at the very bottom of a list of over 300 occupations. These rankings correlate very highly with others based on subjective assessments of occupational prestige.

for he is unequipped for other than unskilled labour.

This social immobility is matched by spatial immobility. The trapper is tied by his considerable capital investment in trapping gear, by his rent free house and tax free land (usually he is a squatter on Crown, mission or Hudson's Bay Company land), by his deep ties to kin and community, and probably by indebtedness to the trader.

Numerous difficulties threaten the basis of the trapping economy, most of which are beyond the trapper's control, individually or collectively. They have no access to the national levers of power since they are few in numbers, scattered and isolated, and low in prestige, education and income. They have no economic power, and due to their individualistic way of life they have no tradition of collective political action.

There is no doubt that many native trappers will ultimately have to give up trapping and indeed some may have to quit their northern home altogether. How they may do so with a minimum of hardship and dislocation is a question worthy of much more consideration than it is presently receiving. And unquestionably, northern youths will increasingly seek other occupations than trapping. Yet all this lies in an indefinite future. A year, a decade, or even a generation from now, there will still be trappers in the north, and trapping will still be an important sector of the northern economy.

Credit, marketing, organization and government policy

Credit, as we have noted, is an essential feature of the fur trade, both for short term financing within the annual economic cycle and for long term financing where the population dynamics of the resource itself are cyclical. Ideally its function is to enable the producer to become as efficient as possible. To do so it must provide the producer with unrestricted purchasing power for his essential and expensive capital equipment, but frequently this condition is not met. For example at Cumberland House, Saskatchewan, meagre credit availability prompted Kew to observe that "rather than a means of encouraging trapping, credit has become a means of permitting trapping".(1962:84). Credit available to individual northern trappers, whether from traders or government agencies, normally is in the hundreds of dollars (or even less), where very often the need is in the thousands of dollars. Insufficient grubstakes not only hinder successful trapping, but also prejudice the likelihood of their repayment. Yet most creditors either have not the resources to provide advances on this scale, or given uncertain conditions cannot be expected to do so. Thus self-improvement through trapping becomes beyond the power of the trapper himself.

Two main factors appear to restrict credit availability. One is economic slack or decline, either locally or in the fur market as a whole. The other is competition among traders or auction houses. When competition is keen the trader keeps a tight rein on debts, for by bringing his furs to a rival trader in the spring, the trapper can satisfy his needs without first having to clear his previous obligations. On the other hand, the trader must extend sufficient credit, and even be willing to write off certain debts in order to keep the trapper from completely defecting to a rival.

A high credit rating requires the trapper to be a regular client of a particular trader or auction house, which can amount to a bondage. The trapper can "play the market" only at the cost of losing his credit rating. But his credit rating is fundamental to his operation, and so he almost invariably sacrifices his freedom in the market place. Whether the trapper deals with a local trader or sends his furs to auction, the economic structure of fur marketing is such that maximization of sale price and high credit ratings are simply incompatible. In Saskatchewan, where a government fur marketing service was introduced, the immediate effect was to reduce the credit extended by private traders, with the result that many trappers found no advantage in the higher prices paid by the government service (Buckley, 1962).

The bond between the trader and the trapper is in any case a very complex one, involving the brokerage of favour and influence, loyalty and longterm wellbeing in addition to the perfunctory buying and selling of furs and commodities. It is much more than a "cash and carry" transaction, and decision making, especially on the part of the trapper, is seldom based on short term maximization of economic gain (an excellent discussion of this relationship may be found in Kew, 1962, Chapter 10).

Trappers have even less control and influence over the marketing of their furs subsequent to the transaction at the local trading post, due to their ignorance of the nature of the fur market and their inability to act collectively in their own economic interests.[1] Partly because trappers have been

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[1]For example the trappers have no trade organization comparable to the Canada Mink Breeders Association. They must rely (although they are generally unaware of this) on the efforts of the Department of Industry, Trade and Commerce, which, with the assistance of the Department of Agriculture officials, exhibits representative selections of Canadian furs at European fur fairs. The Department of Indian Affairs however, has not recently made any effort to promote white fox or any other wild fur produced by N.W.T. trappers, with the exception of trying to counter the recent sealskin boycotting campaigns in Western Europe.

so isolated and powerless, they have failed to obtain certain economic advantages like price supports and marketing boards, which many of their colleagues in fishing and agriculture enjoy. Trappers in such provinces as Ontario and Saskatchewan have made some gains in this direction, but in the Northwest Territories, the trappers are not effectively organized. Individual trappers have publicly called for price supports, and almost every community has a trappers' council, but these tend to have little authority or power. There does not yet appear to be much solidarity among Territorial trappers as a whole, and regional meetings are often given over to inter-community rivalries and disputes.

The Northwest Territories Government has recently instituted a system of advance payment to trappers to encourage the sale of furs at auction to obtain higher prices. It is too early to assess the benefits of this programme, and particularly its effect on credit availability.

Those charged with game management in the Territories hav e certainly attempted to encourage trapping, within their l imited means, but unquestionably the main thrust of government economic policy in the North is no longer predicated on the renewable resource base. The development of minerals, gas and oil, and the continued ex pansion of government payrolls in construction and services are presently seen by both Federal and Territorial officials as the most suitable and effective means of economic growth. The fur resource appears to be viewed as an anachronistic leftover, barely capable of supporting some of the older people, but from which the younger generation should certainly be weaned, despite the fact that it is the second most valuable natural resource in the north, and the one most accessible to the largest number of native people.

The undeniable result of this approach has been the neglect of the fur resource, and the almost complete lack of encouragement of the trapper. The consistently negative response by government authorities to demands for floor prices, increased credits and loans, and marketing agencies, reflects not only the important political and economic difficulties inherent in these remedies but the underlying belief that there is no real hope for the fur market or the trapper, and that furs cannot continue to be an appropriate basis for the economic life of even a part of the northern community.

CHAPTER TWO

THE DEVELOPMENT OF THE FUR TRADE IN THE WESTERN ARCTIC: HISTORICAL ANTECEDENTS TO THE COLONIZATION OF BANKS ISLAND

From time to time during the past 80 years, the resources and strategic position of the Western Arctic have attracted the attention of the outside world: whalebone in the 1890s, fur in the 1920s, the DEWline in the 1950s, and now petroleum. Each has brought dramatic changes to the economic and social life of the native inhabitants, and to the character of the region itself. The colonization of Banks Island must be viewed in the context of these events.

The aboriginal people of the region, numbering about 2,500, were known as the Mackenzie Eskimos. They inhabited the coast between Herschel Island and Baillie Island. They maintained friendly intercourse with their Alaskan Eskimo neighbours to the west, but had no contact with the Copper Eskimos to the east. To the south were hostile Indian tribes. Banks Island, of which the Mackenzie Eskimos were unaware, lay uninhabited. The appearance of the American whaling fleet at Herschel Island in the 1890s was of profound consequence to the Mackenzie people, who until then had been largely unaffected by the white man. Ultimately the peculiar nature of their contact with whalers and traders forged a way of life unknown in other parts of the Arctic.

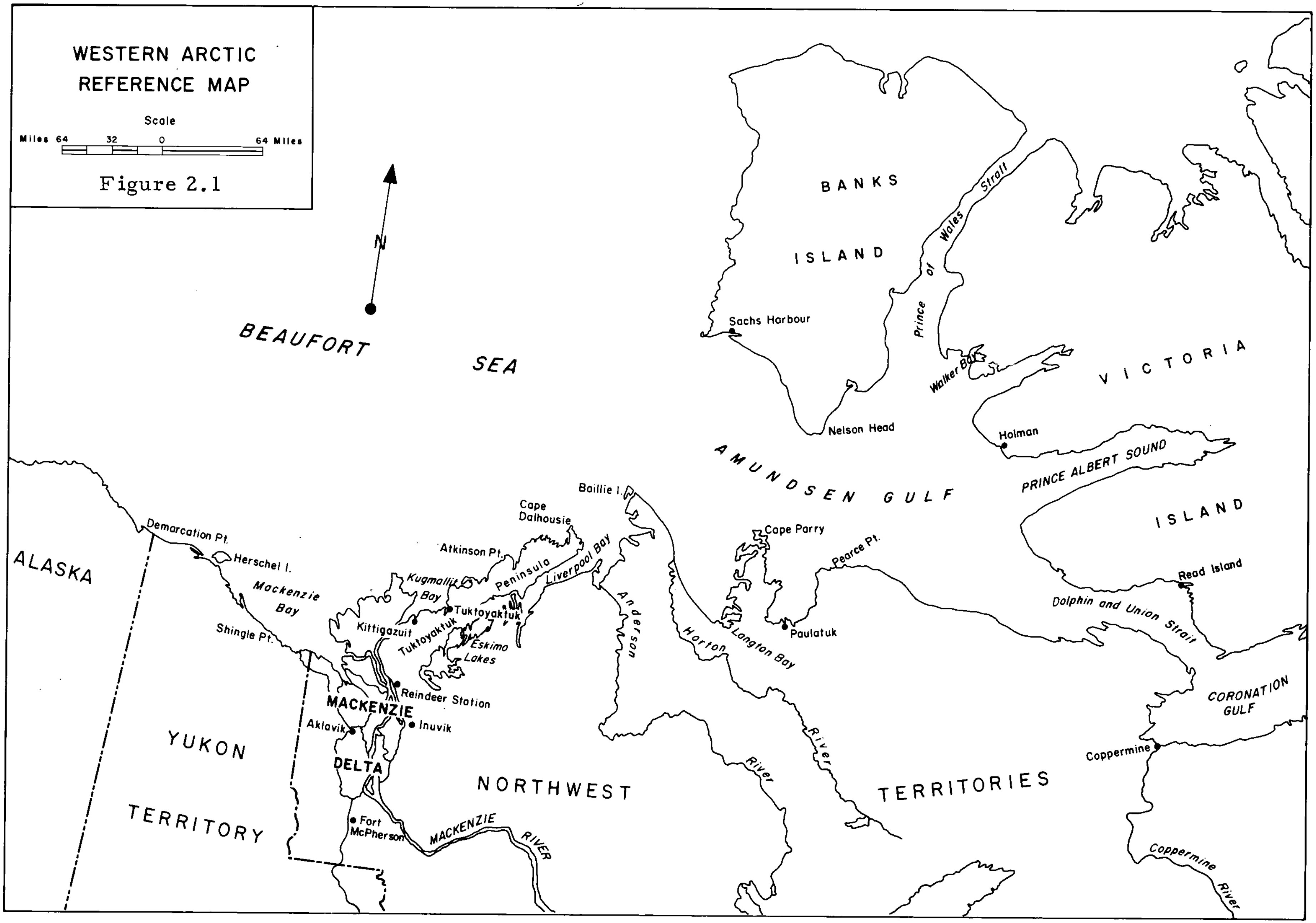
WESTERN ARCTIC
REFERENCE MAP
Scale
Miles 64
32
0
64 Miles
N
BEAUFORT
SEA
BANKS
ISLAND
Sachs Harbour
Nelson Head
Prince of Wales Strait
Walker Bay
VICTORIA
ISLAND
Holman
PRINCE ALBERT SOUND
AMUNDSEN GULF
Baillie I.
Cape Dalhousie
Cape Parry
Pearce Pt.
Read Island
Dolphin and Union Strait
Atkinson Pt.
Peninsula
Liverpool Bay
Demarcation Pt.
Herschel I.
ALASKA
Mackenzie Bay
Kugmallit Bay
Tuktoyaktuk
Kittigazuit
Tuktoyaktuk
Eskimo Lakes
Anderson
Horton
Langton Bay
Paulatuk
Shingle Pt.
Reindeer Station
MACKENZIE
Aklavik
Inuvik
DELTA
YUKON
TERRITORY
Fort McPherson
MACKENZIE
RIVER
NORTHWEST
TERRITORIES
River
River
CORONATION GULF
Coppermine
Coppermine River

Figure 2.1

The impact of the whalers

The Alaskan coastal Eskimos had been in contact with the whalers since the 1850s, and by the time whaling commenced in Canadian waters, many of the changes in demography and ecology which were to occur on the Canadian side had already been experienced by the Alaskans. Disease, for example, took a heavy toll among them, especially the coastal people. As the coastal Eskimos died off, the inlanders moved into their villages to take their place, so that while the coastal village populations remained more or less constant, the hinterlands were almost completely depopulated (Stefansson, 1913a:451). The new coastal residents, having retained their caribou hunting skills, were particularly valuable to the whalers as meat hunters.

According to Stefansson (1919:194-95), a few Alaskan Eskimos had already moved into the Mackenzie Delta country before the whalers began wintering in 1890. They may possibly have come in search of better hunting grounds, due to the already dwindling country food supply in their own territory. However, after the whalers came, there arose a modest but steady immigration of Alaskans. Not all stayed, but most of those who did must have been inlanders, for the immigrants shared a predilection for caribou hunting and were indiscriminately called Nunatamiut by the Mackenzie Eskimos.

The whalers were a totally new phenomenon to the Mackenzie people. They came in great numbers, in overwhelmingly large boats, with a variety of goods and tools. The year round presence of these people and their material culture made Herschel Island an important place to the entire Mackenzie group: a place which would be visited at least once a year by practically everyone. The nature of contact was therefore very different. Formerly, parties of adult men had gone on trading expeditions to Fort McPherson perhaps once a year, and were in contact with a small number of white men for a few days at the most. Now, men, women and children alike were in close contact with American whalers (as well as acculturated Alaskan Eskimos) for extended periods. They worked with them, traded with them, socialized with them, even inter-married with them; they learned their language, their customs, their technology, their value systems and economic goals. They did not adopt all of these, to be sure, but they did become aware of them as alternatives.

At first the traffic between the native peoples and the whalers was mainly in meat. With as many as 600 extra men in the region to feed each winter, the demand was tremendous. This hunting was done chiefly by the Nunatamiut from Alaska, as they were by training and inclination much more suited to that life than were the Mackenzie people. Native meat hunters were outfitted by the whalers on a credit basis; a system which carried over quite readily to the fur trade.

Population decline and regrouping

Just as the Alaskan inlanders took the place of their coastal brethren felled by disease, so the Nunatamiut eventually became the majority of the Canadian Western Arctic population. The Mackenzie people were subjected to catastrophic epidemics and by the end of the whaling era, they were at a fraction of their former numbers.

In 1905, the total native population between Demarcation Point and Baillie Island was somewhat over 350. Of these, 250 were "Kogmollicks" (the local name for the Mackenzie Eskimo at that time), 100 were Alaskan immigrants, and there were a few "Masinkers", as the Bering Strait Eskimos brought in by the whalers as meat hunters were called (R.N.W.M.P. 1905, Pt. 1:129). The Mackenzie people retained their coastal orientation, the three largest groups being at Herschel, the eastern mouth of the Mackenzie, and at Baillie, ranking in size in that order. The Alaskans and "Masinkers" hunted in the Delta and Richardson Mountains most of the year.

On the Alaskan coast, as the fur trade replaced whaling, Barrow Eskimos began moving east to formerly uninhabited areas.

Trapping camps of two or three families each dotted the coast from Barrow to Demarcation Point. This new orientation gave renewed impetus to Alaskan immigration to the rich trapping areas of the Mackenzie Delta, especially as fur prices began to rise. This second wave of Alaskan migrants arrived mainly in the decade 1913-23. The regional population decline was reversed, although by 1924 fully 75 per cent were considered to be of Alaskan origin (PAC, NA&NR/NAB 6217).

The transition from whaling to the white fox trade

Both the whalers and the Alaskan immigrants trapped around Herschel Island from the beginning of whaling, and it seems likely that steel traps were introduced to the country at that time. In addition to trapping themselves, the whalers traded with the local Eskimos and even outfitted some to trade on their behalf. Speaking of the turn of the century, Captain Bodfish observed that:

> "Arctic whalers were trading ships as well as whalers, and it was quite on the cards that a good profit might be made in trade even if very few whales were taken. There had always been some trading, but I think the trading had developed to a new high level at about this time, owing to increased knowledge among the whalers, and likewise among the natives." (1936:191).

Such furs as marten, mink and coloured fox probably accounted for the bulk of the trade, since the Alaskans, who were considered the superior trappers both in ability and inclination, spent much of the winter hunting inland. Polar bear hides were also in demand and brought a good price. Those whalers who engaged in trapping took white fox almost exclusively, as they ran short lines along the coast. Between them and the coastal Eskimos, probably several hundred pelts were taken annually; perhaps several thousand in good years.

Thus did the Eskimos of the Western Arctic become early and thoroughly acquainted with trapping and the white fox trade. It is significant that this involvement was by an early date no longer with a monopolistic company offering only a limited range of goods, but with a highly competitive situation in which a great variety of goods could be obtained in trade. Many of these articles were new to the Eskimos, and as Stefansson pointed out, were ones "... which even the Hudson's Bay factor at MacPherson(sic) had been compelled to do without." (1913b: 39). They were also cheaper than Bay trade goods. By 1900, Bodfish was taking orders from Eskimos at Baillie Island for goods from San Francisco, to be brought up the next year (1936:191). Such orders were not for flour and tea but for whaleboats and the finest American rifles. In Alaska, some Eskimos were sending their furs directly to the Seattle auctions as early as 1911. (Sonnenfeld, 1957:290).

The character of the fur trade was unsettled at this time, and would alter considerably in the next few years. The decade following the collapse of the whaling was a hiatus in the fur trade as well. Only two or three ships wintered in the Arctic any longer, and sometimes none at all. Often a few more came in summer only. Of the hundreds of men who came north on the whalers in the 1890s only a handful chose to remain and to take up trapping and trading for a living. In 1910 there were probably less than a dozen white men living independently on the Arctic Coast.

Theirs was not an easy life. They were not skilled trappers, and fur prices were still relatively low. They did not do as well as the natives in trapping, and sometimes required social assistance (R.N.W.M.P., 1919:154-55). The Eskimos themselves, now so used to the presence of ships and a handy supply of trade goods, also faced hard times when the ships failed to arrive, although they were still capable of reverting to a greater dependence on hunting and its produce.

As World War One commenced in Europe, an age had ended in the Western Arctic. The whale fishery had collapsed, and the musk-oxen and caribou had been exterminated or driven out. Most of the original Eskimo population had died, although they had been replaced in part by Alaskan Eskimos. Regardless of origin the resident population would have been unrecognizable to their aboriginal forefathers, in their social characteristics at least. They had become oriented to a market economy, and dependent on the white man for many foodstuffs and hunting and household implements. New models of economic, social and religious behaviour were available for imitation and adaptation. A different people with a different culture and different roles, were adapting to a changed habitat and new opportunities.

Despite the relative quietude and leanness of the years before the war, the Western Arctic was on the verge of an explosion in commercial enterprise and prosperity, and of a vastly expanded frontier. The preceding years had introduced the native population to the nature and mechanics of North American trade and commerce sufficiently that they could take advantage of the opportunities to come. In subsequent years they would help to create and take an active part in a new way of life; one which would provide the region with a regular livelihood and occasional wealth for three decades. It was to develop furthest and last the longest on Banks Island.

The fur trade boom of the 1920s

The possibility of new and changing trapping hinterlands was seen shortly after the turn of the century. The Hudson's Bay Company and other newly active business interests in Western Canada competed for control of the Mackenzie Valley and Delta trade, and both were aware that a rich fur harvest from the coast was being denied them by the American presence at Herschel Island. Fur prices were beginning to rise, especially white fox, and the American traders sought new trapping grounds as well. In 1905-06 Captain Klengenberg wintered on Victoria Island amongst the Copper Eskimos, as did Captain Mogg in 1907-08. Once the Coronation Gulf Area and its people were made known, it became a target of traders, missionaries and the Government alike. Between 1910 and 1916, effective contact was made with the Eskimos of that area, and they were soon oriented to the trapping economy and the rifle (Usher, 1965:48-50). By 1923, the fur trade had reached King William Island, an advance of fully 600 miles in little more than a decade.

Two centres arose to serve the Western Arctic fur trade region: Herschel Island and Aklavik. Herschel was the western terminus and chief trading centre of the elongated hinterland of the coastal white fox trade, over which San Francisco interests and the Hudson's Bay Company now struggled for ascendency. The extensive and scattered nature of the resource and its harvesters led both sides to push rapidly eastward, as has been described.

In the Delta, a different situation prevailed. The region was smaller and more clearly defined, and its resources were of much greater density. The population, which consisted largely of Alaskan immigrants, was confined to a relatively small area, and did not have to range as widely to exploit the resource. The native Mackenzie Eskimos had never lived permanently in the wooded country of the Delta, and remained largely on the coast. The Delta people were therefore the ablest and most energetic trappers, and indeed the most recent immigrants had come mainly for that purpose. They found an abundance of mink and muskrat, and also of coloured fox, marten, beaver and other fur-bearers of the northern woods. Aklavik had been established as the trading centre for the small but rich hinterland of the Delta in 1912, and represented the first downstream extension of the Hudson's Bay Company's trade in 72 years. Itinerant white trappers and traders began descending the Mackenzie as far as the Delta after 1918.

By the early 1920s the value of both muskrat and white fox had increased twentyfold since the turn of the century, and the price of other furs had risen in similar fashion. Muskrats were taken by the hundred thousands, and mink was also a big crop in the Delta. Traders realized excellent profits, and the Delta trappers attained unprecedented prosperity; indeed many had far greater incomes than the average Canadian at the time. Although much of their money was dissipated on ephemeral luxuries, the Eskimos began to invest considerable sums in capital equipment. Gas powered whaleboats and schooners were the most popular items. In 1924 the Eskimo fleet at Aklavik consisted of 39 schooners (19 of which had auxilliary power), 28 whale boats and two other vessels. This was estimated to have represented an investment of $128,000, which had all been made in the previous five years (Toronto Star Weekly, 19 February, 1927).

The Herschel Island trade was in the early days conducted entirely from shipboard, via the Bering Sea route. The Hudson's Bay Company established the first permanent post at Herschel Island in 1915 and in subsequent years, many others eastwards along the coast. Captain Pedersen, who traded for their American rivals, H. Liebes & Co., only briefly experimented with permanent posts. Coming into the country every summer via the Bering Sea route, which allowed him to trade along the Alaskan coast as well, Pedersen was able to offer a wide range of high quality merchandise at lower prices. After breaking with Liebes in 1922, Pedersen sailed north on his own. No master had a greater knowledge of the waters of the Western Arctic than he, or as great a fund of goodwill amongst Eskimo and white trappers alike. Within three years his Northern Whaling and Trading Company had driven his former employers from the Canadian trade (PAC, NA&NR/NAB 4244), and was providing stiff competition to the Bay as well.

Regulation of the fur trade

The Dominion Government was not unaware of this sudden burst of activity on its northern frontier. The N.W.T. and Yukon Branch was under considerable pressure from the Hudson's Bay Company and other Canadian trading interests to enact measures which would offset the advantages the Americans enjoyed. Missionaries, scientists and police officers who saw the dangers of unrestricted trading, hunting and trapping also acted as a pressure group for wildlife conservation and the protection of the Eskimos from commercial exploitation. Very often both of these goals could be accomplished by the same means, and the Northwest Game Act, enacted in 1917, and the numerous amendments to it, especially during the 1920s and 1930s, reflected this. It was widely held that the Eskimos should be left to their own ways as much as possible, and the Government was reluctant to extend the trapping frontier.

From the outset, a licencing and recording system was applied to all trading, trapping and hunting activities by other than the indigenous peoples. Victoria Island was set aside as a game preserve for the exclusive use of native Eskimos in 1918. Within a decade this preserve was expanded to include all of the

Arctic Islands and the mainland north and east of Bathurst Inlet. No whites were allowed to trap or hunt in the preserve, and very strategic limits were placed on the establishment of new trading posts on the Arctic Islands. These regulations by implication ensured that any subsequent opening of new trapping grounds would have to be effected by Eskimos themselves.

In 1924, a longstanding regulation prohibiting coastal trade by foreign ships was invoked by the Customs and Excise Branch with regard to the Western Arctic (PAC, NA&NR/NAB 4130). This was partly in response to lobbying by the Hudson's Bay Company and others, but it also reflected fears of increasing U.S. interest in the Canadian trade (which did not in fact materialize) following the Soviet exclusion of American traders from the Kamchatka - Anadyr coast in 1923.

Formerly, Pedersen had made several stops along the coast as far east as Baillie Island. He was now forced to declare and pay duty on all his goods immediately upon landing at Herschel, whether they were sold or not, and moreover was not allowed to proceed beyond Herschel. To comply with this ruling, Pedersen built a bonded customs warehouse at Herschel and a trading post there the following summer (PAC, NA&NR/NAB 4244). A Canadian subsidiary, the Canalaska Trading Company was also formed with Vancouver business interests, which would take delivery of goods at Herschel and conduct the coastal trade from a smaller over-wintering schooner under Canadian registry.

P.C. 1146, 19 July 1926, required traders to obtain a licence for each post operated, specifying the location. An amendment in 1929 stipulated that all trade be conducted in permanent buildings, open for business at least eight months of the year. This regulation, enacted under pressure from trading concerns with a large fixed investment in posts and outfits, was designed to eliminate the schooner trade and the practice known as "tripping". In the latter, itinerant traders sledged out to the trapping camps and traded with the Eskimos in mid-season, obtaining furs for lower prices, and as a result increasing the defaults on debts to the established posts. The Canalaska Company and the smaller free traders along the coast were required to establish permanent posts in order to continue their activities.

Despite these various strictures and regulations, the fur trade continued to thrive and grow, due to a more or less steady increase in prices. White fox had risen sharply toward the end of the war and after, due to a fad for summer furs in the U.S., and improved dyeing methods, to which this fur was well suited. Its value continued to rise during the decade, and by 1929 stood at $54.15 in the N.W.T.. Blue fox was at $78.60, red at $37.42, cross at $80.81 and silver at $104.65. However, muskrat prices had declined slightly during the late 1920s.

Overharvesting and its consequences

The Delta, until the 20th century, had never been occupied on a year round basis. Although the Alaskan immigrants found abundant resources, these were soon overharvested. The mink catch declined from 21,205 in 1923-24 to 3,630 in 1927-28 (PAC, NA&NR/NAB 6026). The muskrat harvest declined in the mid 1920s, and then rose again, however due to unsteady prices the total harvest did not increase in value during the decade, and more trappers were sharing it. In 1921-22 there were 140 licenced white trappers in the N.W.T., while five years later the number had risen to 500 (Zaslow, 1957:55). Most of these men came to the Mackenzie River district, and while many remained around Great Slave Lake and the upper part of the river, increasing numbers came to the Delta, and later, the coast. Some of the Delta Eskimos moved their camps northward within the Delta, to keep ahead of the white trappers (R.C.M.P., 1929:99), others moved east to Baillie Island, Parry Peninsula and Pearce Point (Metayer, 1966: 159-60).

Relations between the remaining Mackenzie Eskimos and the Alaskan immigrants were cool and aloof. Corporal Wall of the Pearce Point Detachment observed that:

> "The natives in the western half of the Baillie Island district, especially, those at Tuktukaktok (sic), are not so prosperous as the natives in the eastern half of the district. This may be due to the fact that they are all Canadian-born Eskimos and have not had the advantages of the schools that the Alaskan natives had, who form the majority of the native population in the Cape Parry district. The Tuktukkaktok (sic) natives follow more the old mode of living, and do not care to associate with the Alaskan natives and blame them for the shortage of game." (R.C.M.P., 1930:88).

Many whites had commented on the differences between the Mackenzie and Alaskan Eskimos, from the earliest days, and in general favoured the latter on the grounds of their greater familiarity with white culture and language, and their greater "ambition" and sophistication in trapping and hunting. The Mackenzie Eskimos from the start considered the Alaskans as interlopers, and blamed them for despoiling the country. Friction had occurred in the 1890s over the alleged use of poison for hunting and trapping by the Alaskans (Stefansson, 1919:155), and in later years they were blamed for the destruction of fur and game in the Delta (Metayer, 1966:93).

The Alaskan Eskimos were interested in producing a cash crop in order to amass wealth beyond the daily needs of shelter and food, and were willing and able to employ superior technology, greater commercial sophistication and increased geographical mobility to do so. The Mackenzie people resented these attitudes, and the distinction between the two groups on this basis persisted for at least fifty years after the initial immigration. Indeed it continues today in modified form.

In the mid 1920s there was also an influx of white trappers to the coast, where for two decades there had been very few. Twelve came to the Baillie Island district in 1926 alone: some from the Delta, others from as far as Hay River, and of these, ten went to the Parry Peninsula. At the same time, more natives were coming in from the Delta (PAC, NA&NR/NAB 6217).

The winter of 1926 proved to be a poor one for foxes. By mid March, the highest individual catch was only 62, and there were 25 white and native trappers in the district. Many of the natives were talking of attempting the crossing to Banks Island, and the local police officer felt that if one schooner tried, others would follow (PAC, NA&NR/NAB 5762). In the summer of 1927, many of the white trappers, who had hoped for a quick fortune, retired to the more sheltered bush country, where food and fuel were easier to obtain, and the travelling conditions less harsh. Some Eskimos returned westward as well (Metayer, 1966:161).

The next two winters also produced small fox harvests. Of the poor returns of the 1928-29 season, the police officer at Baillie remarked:

> "This will work a hardship on the natives who were not fortunate enough to get in on the first run as all now depend on the fox catch for a livelihood." (R.C.M.P. 1929:75).

There was certainly a decline in the abundance of white foxes on the mainland coast, although its timing and extent are difficult to document due to the lack of production data before 1930. Numerous complaints were made by the Tuktoyaktuk Eskimos in the early 1930s that trapping should be prohibited on Banks Island as it was preventing the foxes from crossing to the mainland. The Tuk people claimed that trapping in their district had been poor ever since people started trapping on Banks Island, in 1928-29 (PAC, NA&NR/NAB 7161). These complaints seem to have been inspired more by traditional animosity than by empirical observation, as the decline on the mainland coast had almost certainly set in before then. In any case the catch on Banksland in 1928-29 was far too small to hav e affected the run. Indeed, no conclusive proof has ever been offered that Banks Island was the breeding ground and source of supply of the mainland fox population, or that foxes crossed Amundsen Gulf in great numbers other than in exceptional circumstances. Far more likely, the decline was due to overtrapping and the cessation of whaling. The temporary prevalence of beached whale carcases provided an unparalleled food supply for foxes which may have allowed them to reach consistently high population levels with a minimum of fluctuation. Moreover, numerous accounts indicate that with so large a bait as a whale carcase, great numbers of foxes could be taken with a minimum effort, simply by surrounding it with traps and clearing them often. It is also true that white foxes and coloured foxes are competitive, and given sufficient numbers, the latter can drive out the former. Several of the older trappers in the region suggest that the intensive white fox trapping of the 1920s reduced the population to the point where coloured foxes could take over. With the white fox population driven so low, coloured foxes took over the dens, and even in later years, when trapping pressure eased, the white foxes could not recover their territory. Northward extensions of the range of coloured foxes have been observed in the Eastern Arctic (Macpherson, 1964) and in the Soviet North (Skrobov, 1960). Although coloured fox pelts were, in the late 1920s, worth as much as whites or even more, the animals themselves were less numerous and harder to catch, and so could not replace the white fox as an economic base.

By the end of the decade, the Baillie Island district was losing its position as the leading fox producer of the Arctic Coast. Both there and in the Mackenzie Delta competition for static or declining resources increased. The wealthier schooner owners contemplated journeys to Banks Island in search of new trapping grounds. Under the circumstances some traders, at least, were willing to provide these Eskimos with the enormous outfits required for such an undertaking.

One result of the fur trade boom and the subsequent over-harvesting was thus an expansion of the Eskimo trapping frontier. This had begun with the move to the district east of Baillie Island, and culminated with the colonization of Banks Island, and occasional voyages to northern Victoria Island and Coronation Gulf. This expansion reached its peak in the 1930s; however, it was by then a hollow frontier, for at the points of origin, Aklavik and Baillie Island, stagnation and decay had already set in. For most of the people of the Western Arctic, the crisis of the late 1920s was but the first of many which would, within 30 years, bring an end to their way of life.

The new people of the Baillie Island district

As we have noted, the Mackenzie people remained between Herschel and Baillie, hunting and trapping on the coast, whereas the Alaskans were more land oriented and occupied the Delta. As the Delta became more crowded, some of the Alaskans moved to the coast, mainly between Baillie Island and Pearce Point. At the same time, a small but important group of individuals had reached adulthood and were playing an increasing role in the economy. These were the so-called "half-breeds", whose mothers were Mackenzie Eskimos (mainly) and whose fathers were whalers. Especially in those cases where the fathers had remained in the country to trap and trade, the boys grew up as trappers, and their generation was much more akin to the Alaskans in its economic motivation and resource practices. In their residence they were also more associated with the Alaskan than the Mackenzie Group.[1]

This nascent third group, composed of Eskimos of Alaskan origin (mainly from the second wave of immigration), more recently from the Delta, and half-breed Mackenzie Eskimos, became a more distinct entity in the 1930s. Their Alaskan origins became of less importance as time passed (especially in the face of a third wave of Alaskan immigration to the Delta in the 1940s). The decline of Herschel Island and the growth of Tuktoyaktuk made more clear the realignment of residence and ethnicity that had taken place. In the 1930s there were three Eskimo groups: the Delta people, mainly of Alaskan stock, the Tuk-Herschel people, mainly of the old stock, and the people to the east, around Baillie Island and Cape Parry,

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[1] Such camps as Booth Islands and Pearce Point were also favourites of the white trappers, and had been for a decade or so. Doubtless the presence of these men further aided the flowering of a corps of competent and ambitious white fox trappers in the district.

as described. The latter group, which emerged in the 1920s (although it was not recognized as a distinct group at the time), provided the most flexible in mobility of residence, and the most versatile in resource exploitation. Whereas the Delta people more specifically adapted their resource practices to the Delta ecology, and the old Mackenzie stock remained oriented to the ecology of the shallow, muddy waters and reef-bound coast off the Delta, the eastern group was versed in the skills of both land and sea hunting. Experienced in trapping mink, muskrat and marten, they learned to trap white fox on the coast and inland. Many had travelled widely along the Canadian and Alaskan coasts, and had been associated with whalers, traders and explorers. They had learned or retained skills in both inland caribou hunting and sea mammal hunting.

From this group ultimately came the majority and the most successful of the Eskimos who extended the trapping frontier in the late 1920s. These easterners were already the best white fox trappers - in a good winter, some got 200 or 300 foxes, perhaps more. Trapping was no longer a sideline; it was their way of life, to which all other activities were adjusted. They were keen traders, and many had obtained large schooners with auxiliary power. Travel to Herschel Island or Aklavik was common in summer, and many of these Eskimos acquired considerable skill in coastal navigation and engine maintenance. In winter they travelled with equal facility over land or sea.

The events of forty years - changing demography and ecology, new market situations and resource needs, the introduction of new technologies, equipment and cultural values, had combined to give this particular group the advantages and abilities required to successfully reach Banks Island, maintain themselves there and exploit its resources, in terms of the then current opportunities and constraints within the fur economy.

The development of a trapping elite

The idea that the best Eskimo trappers were either the children or the apprentices of white trappers has gained some currency. Although this is no doubt partly true, the actual connection is more subtle. Most whites, upon their arrival in the Arctic, knew no more about trapping white foxes than did the Eskimos. Although they introduced the basic technology, in particular the steel trap, the knowledge of white fox distribution, abundance and habits were equally necessary, and in this regard the Eskimos certainly had the advantage. What the white man did bring with him was the motivation to trap, and this he passed on to the Eskimos in varying degree, through having already enlisted them in the market economy in the whaling days, or through his presence as trapper in certain areas.

In the early days, Eskimo and white trappers learned simultaneously: sometimes independently, sometimes together, certainly with some cross-fertilization of knowledge through discussion and observation. The learning process in trapping continues throughout one's career. Today, even the best Eskimo trappers are still learning, but from experience only; they certainly have nothing to learn from whites. A better case could be made for white trappers introducing the skills for muskrat, mink and marten trapping, as many came to the Delta with previous trapping experience in the boreal forest areas. However, motivation was again at least as important as the skills.

Actual resource harvesting practices are a function of manual skills and basic intelligence, and can be learned or not depending on necessity and motivation. Resources themselves, however, are culturally perceived, and resource complexes come into being through a congruity of ecologically, economically and socially viable alternatives. In most parts of the Arctic, fox trapping is both ecologically and economically viable. Only in restricted areas, however, did trapping become a feasible and even desirable method of achieving certain sociological goals. This was the impetus which not only white trappers, but white traders and whalers provided, and which historically must be considered more significant than the diffusion of technology and skills. Where trapping is not itself a valued pursuit, it becomes merely a secondary adjunct to subsistence hunting, or more recently, to casual labour. Where it is valued, both excellence and perseverence in trapping results, and hunting is a secondary, though integral activity.

The decline of the fur trade

The crisis of supply became one of demand at the close of the 1929-30 trapping season. As the great depression began, muskrat prices fell by 75 per cent, and although fox prices did not drop as sharply, the catch around Baillie Island fell off so badly during the 1930s that hardship was no less severe for the coast trappers than for the Delta people. In both areas, individual trapping income probably fell below the national average wage level in 1930, and with the possible exception of the war years has continued to lag further and further behind.

Despite these conditions, trapping and trading activities intensified in the Western Arctic during the early 1930s. East of Amundsen Gulf, fox production increased significantly. For the Copper and Netsilik Eskimos, the 1920s had not been a decade of opulence, as they were relative newcomers to the world of commerce. There was no Depression for these people. The influx of white trappers and traders to the coast, particularly to

Coronation Gulf, continued well into the 1930s, despite and even because of the Depression. At a time when industrial jobs were not available, and agricultural income was negligible, trapping and trading provided a reasonable alternative even with the prevailing low fur prices. There was in fact a profusion of trading establishments in the first half of the decade, and greatly increased competition at selected locations.

Many of the leading trappers, especially those who went to Banks Island or the east, continued to do well, largely by increasing their production. This colonization period coincided with the apex of the schooner days in the Western Arctic, as after 1935 virtually no more boats were brought into the country. The whale boat, which had replaced the traditional umiaks by World War One, was itself supplanted by the so called "schooners" (in fact most were single masted vessels of 35 to 40 feet in length). In the early 1930s there were over 50 native owned schooners in operation (PAC, NA&NR/NAB 5472), almost all with auxiliary power. In general, these schooners were owned by a single family head, although a few were owned jointly by two men. Nearly half of all the families in the region owned schooners at any one time (there was some transfer of ownership). These boats were divided about evenly between the Delta community and the coast people.

Although the early 1930s constituted a minor boom for some of the trappers, and for the traders to the east, it was short lived. As prices continued to decline, and competition for limited resources intensified, the effects of the Depression became evident. After 1935, more posts were closing than opening. Traders' profit margins declined, and even the best trappers found themselves increasingly in debt.

In 1938, Captain Pedersen sold his interests to the Hudson's Bay Company. Although he had maintained a good share of the trade to the end, it no longer yielded much profit. The Bay moved their coastal headquarters to Tuktoyaktuk, and as people abandoned the Baillie Island district, both the trading post and the police detachment there closed down. Thus Herschel and Baillie, for almost a half century the two chief central places of the Arctic coastal economy, during both the whale fishery and the fur trade, had by 1940 entirely lost their importance. Ten years later a mere 81 people remained along the once teeming and prosperous 500 miles of shoreline between Atkinson and Pearce Points. There was a gravitation towards Tuktoyaktuk and the Delta, which has continued to the present day.

Although the war years brought higher prices and breathed new life into the trapping economy, its days were now numbered. White fox prices in the N.W.T. fell from a high of $36.00 in 1945 to $6.50 in 1950. Coupled with the sharp post-war increase in the cost of living, this caused severe hardship all across the Arctic;

much more so than had the general economic decline of the 1930s. In the Delta, however, the brief upturn in the price and availability of muskrats around 1950 allowed the ratting trade a final flourish. There was a revived immigration into the Delta, not only from the coastal areas but from Alaska as well. In 1948-49, a system of registered traplines was established in the Delta, in order to protect the livelihood of the established residents.

By 1948, the three groups of the 1920s and 30s had become two: the Delta people and the Tuk people. The former centred on Aklavik and was composed largely of the old Delta group, the former residents of Herschel Island, and the third wave of Alaskan immigrants who had come between 1946 and 1948. The Tuktoyaktuk people consisted of the remnants of the Kittigazuit group plus the majority of the former Baillie-Pearce group; a demoralized community whose once proud way of life had been destroyed by the near disappearance of their basic resource and of the market for it.

It was largely this economic crisis which was by no means restricted to the Western Arctic, that awakened the federal government to the fact that its responsibilities in the north were greater than the simple assertion of sovereignty. A new department was established (Northern Affairs and National Resources), education and health facilities were extended and improved, and attempts were made to establish an economic basis for the Eskimos' existence.[1] It was not until the mid 1950s however, when the construction of the DEWline and Inuvik brought jobs and a major shift to wage labour, that economic salvation really occurred. The jobs were often temporary but the change irrevocable. The assumption of a wage position was frequently a more binding commitment than the Eskimos had first perceived; both their capital equipment and their inclination to trap were dissipated, so that a return to that activity became difficult or impossible. A very significant decline has occurred since 1955 in hunting and trapping activities as well as in camp life, as more and more individuals have moved into the major settlements. The great majority of the population is now urbanized. In the post-construction years, local resources have declined in importance as services and administration have become the chief income providing sectors of the economy, and those who for centuries produced those resources have accordingly found their life style and skills superfluous to the modern economy.

Banks Island - prelude to colonization: 1900-1928

In the latter days of the whaling era, the intensive hunting grounds shifted from off the mouth of the Mackenzie towards

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[1]An excellent account of these events is given by Jenness (1964)

Banks Island. Many whales were taken off the southwest coast of the Island between Cape Kellett and Nelson Head. The ships also cruised the west coast when ice conditions permitted, and some captains reached at least as far north as Cape Prince Alfred. Only two or three actual landings on the Island are recorded (Stefansson, 1921:240, 258), and these were apparently between 1900 and 1905. Eskimo hunting parties from these vessels apparently did not go more than four or five miles inland, and although they did not see any other Eskimos, they did find recent camps and muskoxen remains.[1]

The Northern Party of the Canadian Arctic Expedition occupied Banks Island continuously between 1914 and 1917. The Mary Sachs was taken ashore at a site now known locally by that name, between Cape Kellett and Sachs Harbour. Here was established the Expedition's base camp for explorations in the western Queen Elizabeth Islands.

The presence of the Canadian Arctic Expedition in the Cape Kellett area renewed the attraction of Banks Island for the northern Copper Eskimos, and several families began passing much if not all, of the year on the southwest part of the Island. Commercial

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[1] Copper Eskimos had temporarily occupied Banks Island between about 1860 and 1910, chiefly to obtain the wood and iron of McClure's abandoned Investigator at Mercy Bay.

trapping on Banks Island began in 1914-15, as during that winter, some members of the Expedition trapped white fox as a sideline (Stefansson, 1921:286-87). Using steel traps set around the camp, or on one occasion, a nearby whale carcase, quite a number of foxes were taken with a minimum of effort, as the animals were apparently abundant that winter. The next winter, there were parties at Mary Sachs on the northwest coast, and both probably engaged in a little trapping.

Purely commercial trapping ventures were first made to the Island in 1916. J.R. Crawford, an American on the Challenge, landed two white trappers, Masik and Binder, at De Salis Bay to spend the winter, and then proceeded to Walker Bay on Victoria Island. Captain Pedersen, the last of the whaling captains in the north, who was now master of the Liebes and Company trading vessel Herman, landed two Eskimo families from Point Hope, Alaska at the mouth of the Masik River to trap. In addition, expedition members were also on the Island and engaged in trapping. Masik and Binder moved to the Kellett base later in the winter, and were hired by the Canadian Arctic Expedition. They left with the Expedition party on the Challenge, purchased from Crawford, who remained on the Island with an Eskimo family. Natkusiak, Stefansson's Alaskan Eskimo guide bought the North Star from the Expedition in 1917. It was at that time frozen on the northwest coast of Banks Island. He and some other Eskimos remained on the Island for four winters.[1] In 1919, after two consecutive summers of severe ice conditions, the Herman was finally able to reach Banks Island and pick up the trapping party at Masik River. At the same time, Crawford was taken back to the mainland. During their stay, the trappers had obtained several hundred foxes between them (C. T. Pedersen, personal communication, 3 June 1967). Natkusiak and two other Eskimos remained on the Island, and Pedersen left supplies for them at Cape Kellett (NhDstef, Correspondence, Pedersen to Stefansson, San Francisco, 4 November, 1919). Natkusiak left Banks Island in 1921, on the North Star. Pedersen, on the Herman, having gone to Banks Island to leave supplies for Natkusiak, met him off the mouth of the Masik River and towed him back to

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[1]According to Fred Carpenter, of Sachs Harbour, Natkusiak spent two years on the north coast of the Island, by which time he had run out of shells and was making his own. In the winter of 1918-1919 or 1919-20, he crossed the ice by dogteam from Nelson Head to Patsy Wyant's post at Horton River for supplies, and returned to Banks Island the same way (Personal communication 22 July, 1966, see also Manning, 1956b: 36). There is only one other recorded instance of such a crossing, and it has always been considered extremely hazardous due to the possibility of moving ice and open leads in Amundsen Gulf at any time during the winter.

Baillie Island. Fred Carpenter recalls that Natkusiak and his party obtained approximately 1000 foxes during their four year stay (Personal communication, 22 July, 1966).

This marked the end of the colonization of Banksland by imported Alaskan trappers. Pedersen had hoped to take Crawford north again in 1920, in charge of ten or twelve families (presumably Alaskans), with a three year outfit to trap on Banks Island (NhDstef, Correspondence, Pedersen to Stefansson, San Francisco, 26 December, 1919). In February 1920, H. Liebes and Company requested the N.W.T. and Yukon Branch of the Department of the Interior for information on regulations affecting colonization on Banks Island, and were told that there were no regulations restricting such activity (PAC, NA&NR/NAB 32). Restrictions were, however, clearly under contemplation at the time.

In March 1920, Banks Island was made a game preserve for native Eskimos (as Victoria Island had been two years previously). The preamble of the Order in Council gives the reasons for the revisions:

> WHEREAS the Commissioner of Dominion Parks, who is administering the North West Game Act, has reported that a number of foreign trappers propose going into Banks Island, Northwest Territories, this year, for a period of three years, for the purpose of trapping in that Territory;
> AND WHEREAS the difficulties of police control of this Territory prohibit proper supervision to prevent the illegal slaughter of game there;
> AND WHEREAS this is confirmed by the Commissioner of the Royal Canadian Mounted Police who also advises that

> the hunting ground in the Arctic should be preserved for the native Eskimos:" (P.C. 533, 12 March 1920).

This put an end to the plan of Liebes and Company, for at this time Eskimos brought in from Alaska especially for trapping were treated as non-indigenous people under the act. However, the interpretation of this regulation also prevented the Hudson's Bay Company from establishing on either Banks or Victoria Island, initially at least. The R.C.M.P. at Herschel Island were of the view that as traders invariably trapped and hunted also, and as it was then impossible to patrol the Islands adequately, that the establishment of posts there, although legally permissible, would *ipso facto* entail the contravention of the Game Act. This matter was resolved in 1921, and the Company opened up their trade on Victoria Island that year (PAC, NA&NR/NAB 3915).

During the early 1920s, it was generally thought at Herschel Island that the Copper Eskimos had ceased going to Banks Island since the departure of the Canadian Arctic Expedition. Natkusiak and his party had probably not seen any Copper Eskimos during their last years on the Island. Corporal Belcher, who accompanied Klengenberg to Victoria Island in 1925, reported that a number of the natives were planning to move to Banks, where they understood caribou were plentiful (PAC, NA&NR/NAB 4572). In 1926-27, the Hudson's Bay Company trading vessel *Aklavik* wintered either at Ramsay Island or Banks Island (possibly Cape Kellett). A few

Copper Eskimo families were on the Island that winter, and one boy was taken across to Pearce Point on the Aklavik the following summer (PAC, NA&NR/NAB 18(3), 5762). The Hudson's Bay Company was granted a post licence for Cape Kellett for 1927-28, and the Aklavik probably wintered again at that point. Possibly as many as 28 families from the Prince Albert Sound area spent that winter on Banks Island (PAC, NA&NR/NAB 5764).

A change in policy, made effective in 1927, stipulated that post licences would be issued only for three locations on the Western Arctic Islands: Walker Bay, Cambridge Bay, and King William Island. Accordingly the Bay was asked to give up its trading activities at Prince Albert Sound and Cape Kellett, and place a post at Walker Bay to serve the entire region. This was done in 1928, the Company having been given an extension of one year so that the Eskimos would not be cut off unexpectedly (IA&ND/NAB 405-5, 405-1). The Company's Banks Island trade thus seems to have been restricted to the years 1926-28, and in any case no permanent buildings were erected; the trade apparently being conducted from the Aklavik. The Eskimos in question were not keen trappers, and the returns were small. Only 127 pelts were brought back from the 1926-27 voyage (data supplied by Mrs. S. Smith, Librarian, Hudson's Bay Company, Winnipeg, 21 October, 1968), and the following season was probably poorer for trapping.

Until 1928, then, the extension of the trapping frontier was transitory and ephemeral. Two attempts had been made, first by American traders, and then by the Hudson's Bay Company. The American technique was to land imported Alaskan Eskimo trappers with outfits, while the Hudson's Bay Company attempted to establish a trading post dependent on local Copper Eskimo trappers. There were no inherent logistic, economic or sociological impediments to either scheme. Both were cut off from fruition by Federal Government policy decisions based on the welfare of the native peoples, wildlife and the fur trade in the north.

Banks Island was in a unique position. In terms of the new fur trade economy, it had become a resource-rich area, but due to government policy its lack of a permanent resident population precluded the trading companies from being the agents of its exploitation, as under normal circumstances they would have been. Only the trappers themselves could exploit the new frontier. However, in view of the prevailing conditions in the Western Arctic at the beginning of the 1920s, the trappers perceived neither the need nor the possibility of exercising this option.

We have already described how the events of 40 years - changing demography and ecology, new market situations and resource needs, the introduction of new technologies, equipment and cultural values - had combined to give the Eskimos of the Western Arctic, and particularly those of the Baillie Island district, the advantages and abilities required to successfully reach Banks Island, maintain themselves there and exploit its resources, in terms of the then current opportunities and constraints within the fur economy.

These were necessary but not sufficient conditions for the settlement of the Island. The actual impetus to go seems to have come from the shortage of white foxes on the mainland, and the increased competition from white trappers which developed during the 1920s.

The trappers received encouragement to go to Banks Island from several quarters. Many of those who lived on the coast heard about the Island and its abundance of foxes from Natkusiak and from members of the crew of the Aklavik. Ole Andreason, a trader at Atkinson Point who had once travelled on Banks Island with Stefansson, also encouraged them to go. In addition, he, along with Captain Pedersen, was willing to provide the outfits required.

Lennie Inglangasak, David Pektukana and Adam Inoalayak and his son Paul, all from the Baillie district, were the first Eskimos to go to Banks Island on their own, in the autumn of 1928. They went with their families in three schooners, and wintered at the old base camp of the Canadian Arctic Expedition at Mary Sachs, six miles west of the present village at Sachs Harbour. In what was a poor winter on the mainland, they did moderately well, with over 100 foxes each.

The next year, the same men returned to trap. Inoalayak brought his son-in-law, Jim Wolki; Inglangasak brought Alex Stefansson and Pannigabluk (Stefansson's mother), while Pektukana brought a Copper Eskimo by the name of Nakitok, who had been his trapping partner for some years at Pearce Point. In addition, Alan Okpik, from the Delta, had purchased a schooner and outfit from Ole Andreason at Atkinson Point, and he brought his family, including three grown sons, Owen, Colin and Hebert, to Banks Island. The Baillie Islanders got 200 to 500 foxes each, and the Okpik family got over 1,100 between them. Even though the price of white fox had tumbled by 40 per cent that spring, they had gained a fortune. The reputation of the Island was established. The news prompted the equivalent of a gold rush amongst the elite, schooner-owning trappers who could obtain the necessary outfits.

CHAPTER THREE

THE COLONIZATION OF BANKS ISLAND, 1928-1967

Almost 40 years have passed since the first Eskimos came to try their luck and skill on the new Island trapping grounds. A few stayed, through prosperous days and lean, raised families, and called the Island their home. More came for a few years only, but for various reasons would not or could not stay. Some are still living, and reside in the Delta, Tuktoyaktuk or Holman. Banksland is an important part of their past: Whether a good memory or a bad one, it is significant of a way of life which for them has now ended. There were also those who died on Banksland, whose forlorn graves on the barren hilltops recall the hardships and privation of earlier days. The present settlement of Sachs Harbour, prosperous, contented and independent, stands today as a monument to all of the pioneer trappers and to their families.

This chapter investigates the changing genre de vie on Banks Island over these 40 years. It discusses the abilities of the different groups of settlers to adapt to this new habitat, the manner in which they distributed themselves within it, their technological capacities to exploit their environment, and the economic basis of their existence.

Reviewing the history of the Island's colonization, certain phases of development become evident. Often significant changes coincide - perhaps a sudden influx or emigration of trappers, an important technological change, a downturn in fox prices and the emergence of alternative opportunities. In combination such events initiated new and different regimes of settlement and resource exploitation. There have been two major phases in the colonization of Banks Island: 1928-48 and 1951 to the present. Each of these in turn may be divided into three periods. The analysis of demographic and economic data for these periods tends to confirm the distinctiveness of each.

The first task in this chapter will be to assess the problems of adaptation to the physical environment of Banks Island, which is in many respects harsher than that of the mainland. Next it will be necessary to describe the way of life of the early settlers, and to give an account of the major events of the course of settlement since 1928. These sections will provide a baseline from which change can be measured, as well as a milieu in which they can be understood. The remainder of the chapter can then be devoted to an analysis of the changing patterns of life on Banks Island.

TABLE 3.1

Degree days below 65°F. at selected locations
(approximate figures)

Montreal	9,000
Winnipeg	11,000
Aklavik	18,000
Coppermine	19,500
Holman	20,000
Sachs Harbour	21,500

The Banks Island Environment[1]

The climate of the Western Arctic is characterized by long, cold winters, brief, cool summers, and minimal precipitation. Banks Island exhibits these tendencies to the greatest degree, the Mackenzie Delta to the least, with the mainland coast and Victoria Island in between. Table 3.1 shows the comparative severity of the climate in terms of heating requirements (degree days below 65°F.).

These figures take no account of wind, which is at least as severe as on the mainland coast, and considerably more so than in the Mackenzie Delta where protection is afforded by the forest. In addition, Sachs Harbour is probably the

[1]The chief sources for detailed descriptions of the physical environment of Banks Island and the surrounding areas are Dunbar & Greenaway, 1956; Jenness, 1953; Manning, 1956; and Thorsteinsson and Tozer, 1964. A more general review may be found in Usher, 1966.

TABLE 3.2

Climate data, Sachs Harbour, N.W.T.
(71° 59′N, 125° 15′ W – 277′ a.s.l.)

Month	Temperatures (F.)[a]					Precipitation[b] (inches)			Winds[c]				
	daily mean	mean daily maximum	mean daily minimum	extreme maximum	extreme minimum	rain	snow	total water	prevailing direction	per cent of time	average speed (m.p.h.)	days with fog, vis. <1 km.[d]	mean cloud amount (tenths covered)[c]
Jan.	–23.3	–16.1	–30.4	23	–52	0.00	0.8	0.08	N	19	13.2	0.0	4.3
Feb.	–24.2	–18.4	–29.8	21	–54	0.00	0.7	0.07	E	22	11.6	0.4	3.4
Mar.	–19.3	–12.7	–25.7	19	–47	0.00	0.8	0.08	SE	30	10.7	0.8	3.5
Apr.	– 4.8	2.0	–11.7	36	–40	0.00	1.3	0.13	E,SE	24	13.2	3.1	4.4
May	17.2	22.7	11.7	49	–16	T	1.8	0.18	E	25	12.8	6.0	6.6
June	35.8	40.7	30.8	66	7	0.33	0.3	0.36	N,E	20	12.8	10.2	6.3
July	42.3	48.0	36.7	68	25	0.76	0.5	0.81	NW	19	13.1	16.3	7.3
Aug.	39.8	44.8	34.8	66	21	0.74	1.0	0.84	SE	23	13.6	14.1	7.5
Sep.	28.4	32.3	24.5	60	– 4	0.24	3.0	0.54	E	21	14.7	8.8	8.0
Oct.	9.5	15.3	3.7	33	–29	0.01	4.7	0.48	E	32	15.2	4.6	7.1
Nov.	– 9.3	– 3.0	–15.6	22	–36	0.00	1.9	0.19	E	25	13.0	1.6	5.2
Dec.	–17.2	–11.1	–23.2	15	–50	0.00	1.7	0.17	E	23	12.0	3.0	3.7
mean	6.2	12.0	0.4								13.0		5.6
extreme or total				68	–54	2.08	18.5	3.93				68.9	

[a]1955-66 [b]1955-64 [c]1955-60 [d]1956-60

Source: Department of Transport, Meteorological Branch, Toronto.

mildest point on the Island with an extreme lowest temperature officially recorded at -54°F., several trappers have given reliable indications that inland temperatures have dropped to at least -60° F, and persisted there for days. Strong winds have been known to accompany these low temperatures.

For the Western Eskimos, wood was an important commodity for both fuel and buildings. Yet Banks Island has no wood, either in timber as in the Mackenzie Delta, or in driftwood as on the beaches of the mainland coast. In one area between Jesse and De Salis Bays there are open seams of low grade coal, but this can not be used feasibly by people camping any distance away from it. Seals and caribou are the chief sources of animal fats on the Island, and hence of fuel, but these fats were required for dogfeed. Thus, although a greater quantity of fuel was required than on the mainland, very little was locally available.

Due to the higher latitude, winter darkness is also more intense and prolonged on the Island than on the mainland. The sun is below the horizon for about 28 days in the Delta, but for about 70 at Sachs Harbour and even more inland and north along the coast. Sachs Harbour, on the south face of a bluff overlooking the sea, receives about five hours of dim twilight on December 21st. Inland, however, even at the same latitude, the length and intensity of the twilight are reputedly much less, (since, in the valleys, the southern horizon is blocked from view), and they continue to diminish northwards. Thus the trappers were forced to work under conditions of darkness unknown on the mainland. On the other hand, the period of continuous daylight on Banks Island is much longer, and midnight twilight may be observed within ten days of the equinoxes.

The rain and snowfall regime of Banks Island[1] is similar to that of the mainland. The hard-packed, drifted snow typical of midwinter travelling conditions was familiar to the coastal people, but not to those from the Delta where, in the forest, the snow remains deep and soft.

Ice conditions along the south and west coasts of Banks Island are similar to those encountered on the mainland shore. In both cases, ice develops from shoreward in the fall, and throughout winter cracks running parallel to the coast open periodically,or there may exist a true floe edge five to twenty miles from shore, beyond which there is open water or moving ice. Off the southeast coast, the waters freeze over completely, and there is no barrier to travel between Banks and Victoria Islands. The duration of the winter travel season, both on land and sea is longer on Banks Island than on either western Victoria

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[1]About four inches of water annually, divided equally between rain and snow.

Island or the mainland.[1]

In occasional summers, much pack ice remains in Amundsen Gulf, making it difficult or impossible to cross. On the mainland, one can always travel along the coast between Baillie and Herschel for at least short periods during the summer. Thus a new hazard faced the settlers, as they normally had outfits sufficient for one year only. The long voyage over the open sea was for most a new experience. Whaleboats and schooners had been in common use for over a decade, but generally along the coast and well within sight of land.

Except for its extreme northern and southern ends, the Island consists of low, flat or rolling country. It is not at all rugged, and in this sense provides no obstacles to overland travel. In parts however, especially towards the western shore, it is almost featureless. To the casual traveller, there are few welldefined landmarks. Because of the similarity to the mainland, the settlers had to familiarize themselves only with a new configuration of recognizable features rather than a completely different landscape.

The faunal resources of the Island also differ from those of the mainland in degree rather than kind. Their harvesting

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[1]Around Sachs Harbour, overland travel by sled is usually possible from late September to early June, and on the sea from late October to early July.

did not require the adoption of a new and different set of resource practices.

Such, then, were the main elements of the environment which were new to the settlers, and called for new adaptation and skills. Amongst the mainlanders, those from the Baillie Island district had the fewest and least difficult adjustment to make, since in terms of climate, terrain and resources their territory was the most similar to that of Banks Island. The Delta people, from a much different environment, were required to make mor e significant adaptations,[1] while those from the Herschel and Tuk areas were between the other two groups in this respect. The Baillie Island group, as coastal people, were the best prepared for life on Banks Island and indeed were the original pioneers. It will become evident in subsequent pages that this group also provided the most successful and the most permanent settlers.

The adaptations required of the Victoria Island people cannot easily be measured on a comparative scale because of

[1] Many Delta people spent the occasional winter on the Coast, and most made trips to Herschel and other coastal points when necessary. It is not meant to imply that the Delta people were entirely lacking in experience of the Barrens, and the requisite skills to live in that environment, but rather that they were the least familiar with it by comparison with other groups. Such experience and skills were only marginally necessary to successful hunting and trapping in the Delta, whereas they were essential on the coast and particularly on Banksland.

significant cultural and economic differences between them and the mainlanders, and because they came to Banks Island at a much later date under different circumstances.

Early life on Banks Island

Schooner travel

Three to seven schooners made the crossing each year, travelling in a convoy. Setting out from Herschel or the Delta, they gathered behind the sandspit at Baillie Island, awaiting fair weather to set out. In later years Cape Dalhousie was sometimes used as the departure point, and voyages were even made directly from Tuktoyaktuk. The convoy headed for Sachs Harbour, either directly or via Nelson Head, since these were the closest landfalls, and Sachs Harbour was the nearest safe haven for ships. Individual boats then proceeded up the west coast or over to the east side as desired or as ice permitted. Similarly, in the spring, it was customary to rendevous at Sachs Harbour and then return to the mainland together, striking out for Baillie Island. The journey between these two points, 115 miles in a direct line, could be made in about 20 hours under ideal conditions.

The voyage to Banks Island in a small boat requires navigational skill and good seamanship. On a clear day Nelson Head is visible from the mainland, yet one dare not attempt the crossing without knowledge of compass travel and dead reckoning. Fog and storms can strike suddenly, and ice frequently presents an additional hazard. These dangers were traditionally faced with no other navigational aids than a compass, a watch, and a leaded line. Auxiliary power was generally used on the crossing, particularly as calm conditions were preferred, so the schooner owners also required knowledge of their engines and ingenuity to repair them if necessary.

By the 1930s, schooners were in such widespread use that most men had become familiar with the operation of such vessels. Yet only a few had learned the rudiments of navigation, usually through summer employment on Hudson's Bay or Canalaska vessels. Such men were essential for the crossing to Banksland, and this was an important reason for travelling in convoy.

The summer voyage back to the mainland was not ordinarily a difficult one, since daylight is continuous at that time. Ice is then only a barrier and a cause of delay, but not a hazard, and indeed its presence can serve to reduce wave size in stormy weather. The outward voyage in September, however, could be dangerous since one might have to contend with both darkness and ice, and strong northwest gales appear with suddenness and severity at this season. Waves can be so high that boats are lost from sight when in their troughs. Most Bankslanders have strong memories of the tension and anxiety of waiting out the darkness while pounding and tossing in a heavy sea, with their families and possessions below, hoping that dawn would bring the sight of a safe harbour. There were many rough crossings, and some near disasters, but it is a tribute to the resourcefulness and skill of the Bankslanders that in 30 years and well over 100 return voyages, never was a person or boat lost at sea.

The schooner owners normally took another family or two with them, or perhaps a young single trapper. Almost anyone who showed interest could arrange to go. If one did not own a schooner, one's father-in-law or brother might, for the schooner owners generally chose close kin to accompany them. The transport of another family assured the owner of sufficient labour to man the vessel, to load and unload, to beach it in the fall, and paint, repair and launch it the next summer. Such labour, in exchange for passage, was generally considered a fair bargain.

Winter camp location

As mentioned, the first group of trappers, coming in 1928, utilized the Canadian Arctic Expedition sod huts and the remnants of the Mary Sachs for their winter dwellings. The site was never again used as a winter encampment, presumably because it was discovered that Sachs Harbour, a few miles to the east, provided a much b etter site.[1]

In subsequent years, more and more sites were investigated and used as winter camps. (A list of the camps used and the number of families involved each year is given in Table A.4, while Figures 3.2 to 3.9 show the extent and progress of settlement and trapping between 1928 and 1967). In 1929-30, there were camps at the mouth of the Masik River and at Lennie Harbour in addition to Sachs Harbour. The next year, families were camped as far east as De Salis Bay and as far north as Sea Otter Harbour. "Satsik" ("furthest north") camp was established in 1931, and Jesse Bay in 1935; these representing the extreme limits of settlement on the Island in the modern period . By the close of first phase in 1936, the pattern of settlement had been well established. All but two of the 13 sites ever used for winter camps had been

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[1] "Mary Sachs" has remained a favourite spring camp for Sachs Harbour people.

occupied by 1936[1]. Sachs Harbour and Sea Otter were already the dominant sites, as was De Salis Bay to a lesser extent (see Tables 3.8 and 3.9).

The dispersal of camps seems to have been based on the recognition by the trappers that any one site could support only limited numbers in terms of food and fur resources. The maximum number of trappers at a single camp during this phase was seven, whilst the mean figure was 3.8 (see Table 3.10). No comprehensive data are available for the contemporary mainland coast trapping camps, but indications are that a similar situation prevailed.

The actual sites were chosen on the basis of providing a safe anchorage, and suitability for hauling up the boats. Of the total of 13 camps, 10 are associated with protective sandspits. This consideration took precedence over others such as the availability of water, general exposure to wind and weather, and suitability for digging ice pits. Over a period of years, other considerations based on experience, were used to assess suitable campsites, such as prevailing ice conditions and the proximity of good hunting and trapping grounds, and this led to the dominance of certain sites. This pattern of site selection was not dissimilar to that on the mainland. Indeed

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[1]This applies to the general locations. At some points on the west coast, especially at complex harbours with numerous spits and points, campsites were sometimes shifted a mile or so down the beach or to another embayment.

most of the camps in the Baillie Island district had not been traditional ones, but were chosen under the exigencies of the fur trade and the schooner. Thus the settlement pattern of Banks Island, in terms of distribution, density and site choice, replicated that of the mainland, both in motivation and result.

The choice of camp by the individual family head was quite flexible in early years. Those who spent several winters on Banks Island between 1928 and 1936 tried at least two or three different locations, and no family was associated exclusively with one camp. Many place names, such as Blue Fox Harbour, Lennie Harbour, and Sea Otter Harbour commemorate the initial arrival of particular families or schooners, but the parties involved frequently camped elsewhere the next year. The factors governing who went where are not easy to ascertain at this distance from the event, but no doubt included autumn weather and ice conditions, who was first to arrive, kinship, personal friendships or enmities, and knowledge or experience of the attributes of the various sites and the productivity of their hinterlands.

Preparing the camp

Upon arrival in early September, the schooners, containing the complete winter's outfits, were unloaded, and winched up on the beach. For their winter dwelling, each family erected a frame tent of lumber and canvas which they had brought with them. These were small, usually 10' x 12' or 12' x 14', and were insulated by a complete covering of moss, then surrounded by ice blocks. Small coal ranges served both heating and cooking requirements. Such a dwelling required about five tons of coal or perhaps three if used in conjunction with seal blubber. As a ton of coal cost up to $200 at the time, families naturally tried to conserve their supply as much as possible.

Autumn was a time of preparation for the trapline and winter life, as it still is. Freezeup and snow soon followed the arrival at the camps. Small tents were used until the main dwellings were erected. Subsequently, several loads of moss had to be collected and hauled by dogteam. Sleds, toboggans and harnesses all had to be mended or made anew. Chopping and hauling fresh ice followed, both for water and as blocks to surround the tents. Such work was seldom completed until the end of October. All members of the family were engaged: the men went seal hunting and did heavy work, the women sewed and cooked and the youths were employed hunting ptarmigan and rabbits nearby.

Seal hunting began immediately upon arrival, close to shore and with the aid of a small dinghy carried on the schooner. Sealing continued during and after freeze-up at the floe edge, where a small, open, skin covered boat in the shape of a umiak, large enough for one person, was used for retrieving. Each man attempted to get about 20 or 30 seals, sufficient to last into February, before the trapping season opened, as seal hunting during dark days is difficult and brings small yields. With the coming of cold weather in October or November, the dogs were fed on cooked feed, a mixture of cornmeal or oatmeal with seal meat. This practice had been adopted by trappers on the mainland some time after the turn of the century, and greatly reduced both the amount of meat required for winter feed, and the total weight of feed for long sled trips inland.

One had also to obtain a good supply of caribou for human consumption. Accordingly, in late September or October when the snow lay sufficiently deep for overland travel, hunting forays were made by dogteams. Sometimes the hunters also fished through the ice on the lakes during these trips.

Trapping

Most trappers set out with six or seven dogs, a toboggan or basket sled and about 100 traps, although a few had 200 or 300. Many, coming to the Island for the first time, bought only

50 or 75 traps. The trappers initially ran their lines along the coast, as it was the easiest route to follow. By 1936, the major river valleys had been discovered and utilized, (particularly the Masik, the Kellett, the Big and the Storkerson), and a few trappers had experimented with overland routes and "portages" between the major valleys (See Figure 3.3). Trap lines were seldom more than 50 or 60 miles long, and some trappers maintained two or even three lines at once. Trapping trips were about a week in length, although some men with longer lines went out for 10 or 12 days. Those who maintained short lines, especially in the first two or three winters, required only three or four nights to visit each line. Apparently the time spent in camp between trips was roughly equivalent to the length of the trips themselves, so that the average trapper spent about half of the season actually on the trail. Thus in a 20 week season, most trappers made seven to ten trips. Most of the line was set on the first trip, and extended on subsequent trips. On occasion it was shifted in mid season to a new location. It was the practice to pull the line completely on the last trip and bring the traps back to be put on the boat, since the trappers frequently did not or could not return to the same camps each year.

The men normally trapped in pairs or threes, although some went alone. Right from the beginning of settlement (with one or two exceptions), only the men went on the trap line; the women and children stayed at home. This practice had already been in force on the mainland coast.

Snow houses were invariably used on the trail, for overnight camping. The snow house was, even in aboriginal times, rarely used by the Eskimos of the Western Arctic, and the art of its construction and use was never as highly developed as it was in more easterly regions.[1] On Banks Island they sufficed as overnight shelters for two men, who could erect one together in an hour or so. These snow houses were frequently reused on sub sequent trips throughout the winter.

The trapping season for white fox on the Arctic Coast and Islands extended from the 16th of November to the 30th of March throughout most of the first phase of settlement on Banks Island (See Table A.2). There was little variation in

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[1]As a result the snowhouses they did build were crude and uncomfortable. They had no sleeping platforms, even though it was recognized that the floor was the coldest part of the structure. The Bankslanders always used primus stoves inside their snow houses for heat and cooking, although when weather permitted they cooked their dog pots outdoors in order not to heat up the house too much. Still, there is little wonder that the interior soon became rather damp, and that after one or two nights the interior walls were completely iced over and impervious to air. Some trappers put up canvas next to the ceiling of the snow house to reduce the dripping.

the routine of life during these months, and trapping was by far the most important activity throughout. Before Christmas there was a secondary emphasis on caribou hunting. By the end of January the sun had returned, and as dogfeed would be running short, the trappers took the opportunity to hunt seals when ice conditions were suitable. Day or overnight trips were made to open water when home from the trapline, in hopes of obtaining two or three seals to tide them through the next trapping expedition. During March trapping was the sole preoccupation.

Spring life

Trapping ended on March 30th by regulation, but at least four months remained until the boats could cross to the mainland. These were pleasant months; the hard work of trapping was over and the men could relax for a while at home, and with the milder weather and long days, the women and children could spend more time outdoors. Hunting could be indulged in for pleasure as much as necessity, and the mild weather and long days allowed the whole family to travel without discomfort.

Easter came soon after trapping, and the families from different camps congregated at Sachs Harbour or Sea Otter for a few days to celebrate this occasion, which for them was perhaps more social than religious. Upon returning to the separate camps, the men went seal and caribou hunting, while the women prepared the fox pelts for market. The chore of cooking dogfeed cased in April, and the dogs reverted to a straight seal diet. After the geese arrived in the third or fourth week of May, many families went for a few days to the nesting grounds (discovered in 1932), to obtain both geese and eggs. Some families also went to various inland lakes in May to fish through the ice for char and trout. By the end of June inland travel becomes impossible, so sufficient stocks of caribou, goose and fish must have been put up to dry to see the people through until they could reach the mainland, usually in early August. On the departure of the snow, families moved out of their winter houses into lighter tents.

July was devoted chiefly to working on the schooners. They were caulked and perhaps painted, then winched off the beach into the shore lead. After the engines were put into working order, the boats were loaded. Everything was put on board: dogs, travelling and camping equipment, traps, meat, the winter's fox catch, even the canvas and lumber from the tents, because there was no guarantee that the party would return to the same spot the next year. Now they had only to wait for the ice to disperse and allow them unhindered passage to the mainland shore.

Nothing remained but a pile of cans and other refuse, perhaps an odd item whose useful life had ended, such as a wooden washing machine, a cast iron stove or a sewing machine; a few broken boards and a rectangle of sod marking the site of the winter dwellings. Such foresaken remnants of human habitation are still found at Blue Fox, Sea Otter, Satsik and the other camps.

Trading and outfitting

Herschel Island was the chief centre of supply and exchange for the Western Arctic white fox trade in the early 1930s. At Herschel there was intense competition between the Hudson's Bay Company and Pedersen's Canalaska Company.

Most of the Bankslanders favoured Pedersen, who had encouraged and outfitted many of them to go in the first place. Pedersen was personally held in high regard in the region, and his merchandise was renowned both for its variety and quality. Yet the Bay also took its share of the Bankslanders' furs. When large quantities of furs were offered by an individual, it was common for both the Bay and Pedersen to submit sealed bids for them, after inspection. The opening of these bids by a neutral third party was the occasion of considerable excitement, especially when amounts of 30 or 40 thousand dollars were involved. The two companies competed keenly for white fox, but Pedersen took most of the trade in polar bear skins, as the market for them was then much stronger in the United States than in Canada.

The Bankslanders' trade at Baillie Island was usually confined to immediate needs on the south bound boyage, or to last minute requirements before returning to Banksland. The only post at Baillie was operated by the Hudson's Bay Company. E.W. Wyant, who ran a post at Horton River until 1931, also competed for the regional fur catch, and some of the first Bankslanders (who were related to him through marriage) traded with him. As a rule however, the Bankslanders did not find it to their advantage to trade at Baillie, since fur prices were lower and commodity costs higher there than at Herschel. Aklavik was at first not important to most Bankslanders as a trading place, although by the end of the 1930s it had replaced Herschel in this function.

The Bankslanders always prepared their furs with considerable care, and accordingly tended to receive prices well above the average tariff. Their yearly outfits were also more costly than the average, amounting to a minimum of

$3,000 to $5,000 per family. Coal and gasoline were a major expense, as were capital goods such as rifles, traps, canvas, ammunition and dog feed. The annual purchase of groceries included not only such staples as flour, lard, sugar and tea, but tinned fruits and vegetables as well. Moreover, the Bankslanders in most years could afford additional durable goods such as washing machines, sewing machines, phonographs, radios, watches, binoculars and cameras. A few of the best trappers were also able to afford new schooners, costing $10,000 to $15,000. Usually the trappers required credit for part of their outfits, but in good years they could purchase their entire outfit on the basis of the previous year's catch and still have money left over. Some trappers kept such surplus monies in bank accounts in Edmonton or Vancouver through the Bay or Captain Pedersen. Very little cash circulated locally; most transactions being on paper or in kind.

Summer on the mainland

The brief visit to the mainland was hectic and exciting, for summer was far more than a time for trade and resupply. It was also the occasion for reunion with families, relatives and friends; for the exchange of news, stories and experiences, and for enjoying the summer flowering of activity that characterized Herschel Island and Aklavik in those days. Boats were everywhere. Schooners came in from all parts of the Arctic Coast, sternwheelers came down the Mackenzie and steamers came round from the Pacific. On these boats were people of all races, nationalities and occupations, bringing the latest inventions and merchandise from San Francisco, Vancouver and Edmonton, as well as news and mail from around the world. There were new things to see, like cows and airplanes, and other places such as Shingle Point and Tuktoyaktuk to visit. Little work was necessary, as the Bankslanders lived on their boats and the dogs were put ashore and fed on fish and scraps. There was plenty of time for such popular pastimes as dances and games of chance. The Bankslanders soon earned a reputation as top trappers, shrewd traders and big spenders. This richness of life contrasted strongly with the long winter's isolation and hardship on Banks Island, where feelings of loneliness and monotony sometimes descended on the camps and hung there for days or weeks.

As September approached, the Bankslanders regrouped for the outward voyage. Some were absent, either because they did not wish to return or because they had done poorly and could not get outfitted. But there were usually some new faces; people who felt they could make a better living on the Island, or who simply wished to join their relatives. And as always, there were the real Bankslanders, that core of perhaps a dozen families who returned year after year. Together they gathered behind the sandspit at Baillie Island, sometimes stopping at the post to pick up a last sack of flour or box of ammunition, or some other article remembered at the last, and waited for fair weather so they might set out for the great headland which beckoned them from across the gulf.

Such was the pattern and cycle of the Bankslander's life in the early days, with some variations from year to year and from place to place on the Island. In the main, the Island provided an abundance of fur and food to the settlers, although at times the people suffered from prolonged hunger and cold.

The general sequence of settlement, 1928-67

The first 20 years of settlement constituted a major historical phase, and may be divided into three periods: 1928-36, 1937-41, and 1942-48, each separated from the other, as it happens, by years in which no one reached Banks Island due to severe summer ice conditions. During the initial period of colonization, Banks Island was the frontier of Western Arctic Eskimo settlement. Everyone was new and the success of each man was a test of his suitability and adaptability to the new conditions. Within these seven years, the basic pattern of development was set. In the years 1937-41, the more established trappers experienced great success and prosperity. These trappers had consolidated both territory and property for their operations, and this period was one of florescence in both the material wellbeing and social distinctiveness of the Bankslanders. During the third period, a decline in prosperity occurred due both to internal and external forces, and the Island was ultimately abandoned.

The second major phase of settlement (1951-67) occurred in a rather different economic and social context from the first. The white fox trade was in decline all across the Arctic, and regional economic conditions were depressed. The Federal Government was beginning to take a much more active interest in Eskimo affairs, and the fur trade was no longer the major determinant of population distribution and economic activity. Three different periods may be identified during this second phase: 1951-55, 1955-61, and 1961 to the present. The first was in many respects similar to the pre-1948 pattern, both in the families involved and the way of life. The second occurred during the construction of the DEWline on the mainland and the establishment of a Federal Government presence at Sachs Harbour. With construction providing an important alternative to trapping, major changes in the composition of the population occurred, with some longstanding residents departing, and several new young trappers arriving. The final period is marked by the abandonment of camp life on the Island and the establishment of a permanent Eskimo settlement at Sachs Harbour, while the population itself stabilized to an unprecedented degree. The following two sections provide a more detailed account of these events.

The first phase, 1928-48: Banksland as the culmination of the regional way of life

1928-36

During the first seven winters there was a great influx of trappers, almost all from the mainland. Of a total of 95 adult male trappers who went to Banks Island after 1928, 41 did so before 1936. Thus almost 40 per cent of the Western Arctic trappers went to Banks Island for at least one season during this period. Of the 50 or so native owned schooners operating in the Western Arctic at this time, about 20 eventually made the crossing: five from the Delta and 15 from the coast. Probably 13 of the 20 came during the first seven years of settlement.

There were two peak years of fox abundance during the first seven years of settlement, and those men who had trapped on the Island for both of them[1] made large amounts of money.

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[1] In 1933-34 some Bankslanders were forced to winter on northwestern Victoria Island due to heavy ice which prevented their return to Banks Island. The peak abundance of foxes was widespread that year, and the trappers fared as well as they would have on Banksland itself.

For example, two of the best trappers obtained, in partnership, a 57 foot schooner which they named the North Star. She was one of the largest schooners ever brought into the country, and certainly the finest, and was for 26 years the "flagship" of the Banksland fleet. Another trapper took his family to spend the winter of 1935-36 in San Francisco and Vancouver. That he was able to live an entire year outside without overdrawing his credit is indicative of the wealth that some of the Banksland trappers were accumulating at this time.

There was much experimentation with different campsites on the Island during this period, and people seldom wintered in the same place twice. Yet at Sachs Harbour, work on an ice cellar to the east of the main lagoon was begun in 1936, signifying recognition of at least a degree of permanence by its residents. Also, by the end of the first period, a few men had gained sufficient knowledge and confidence to run overland traplines.

Much had been accomplished during the first phase of settlement. The incorporation of Banks Island into the Western Arctic fur trade territory was no longer in doubt. This had been accomplished entirely by Eskimo trappers, although they had certainly had the encouragement and backing of the traders. These Eskimos had familiarized themselves with the topography and resources of the southern and western portions of an island almost the size of New Brunswick. They had established a self-supporting enterprise which in seven years produced over $300,000 worth of fur.

The colonization of Banks Island was the last significant extension of the fur trade in the Western Arctic. Its significance to the regional economy lay in the accumulation of considerable wealth by a few men through large individual catches, rather than in its total contribution, since the number of trappers on Banksland in any one year was small. The mainland coast, although declining in productivity, was still an important area, and the Banksland catches ordinarily amounted to less than 20 per cent of the catch between Herschel Island and Pearce Point.

1937-41

Heavy ice in Amundsen Gulf forced the Bankslanders to winter near Cape Parry, on the mainland, in 1936-37. Few furs were obtained, and many Bankslanders found themselves heavily in debt for the first time. This was especially true of the less able trappers and those who had only been on the Island during poor seasons. With the continuing decline in fur prices, the traders were not prepared to extend large debts to the poorer risks. Pederson, who already had over $20,000 owing to him from the Bankslanders, advanced them an additional

$20,000 or $25,000 for the 1937-38 season. His partners in New York had recommended against this, but Pederson expected a peak fur year and a return of 3000-4000 pelts from the Island (PAC, NA&NR/NAB 5765(2)). Unfortunately, it proved a mediocre season and less than 1700 foxes were taken, leaving the Bankslanders even further in debt.

Their financial difficulties were compounded by the fact that Pederson sold out to the Hudson's Bay Company in 1938. The Bay refused to outfit them in view of the general economic situation. Although a few of the trappers were not badly off, most simply did not have the resources to return.

Those trappers who ;did return were indeed fortunate, for the long awaited peak in the cycle produced a harvest of about 6500 foxes. The leading trapper and his wife together obtained 1300, a record number which has never been equalled in Canada, and probably not in the world. This bumper harvest, however, coincided with a nadir in the market price. For example the 1300 foxes, which brought about $15,000 in 1939, would have fetched $100,000 ten years previously. Still, earnings were sufficient for most families to clear long standing debts and even have some credit left.

The Bankslanders enjoyed a second peak harvest of almost 5500 foxes in 1940-41, and furthermore enjoyed the advantages of a rising market. Good pelts were again bringing well over $20.00.

The two big seasons coming close together had brought considerable wealth to most of the Bankslanders. During the 1937-41 period, several young men began trapping on the Island who later became part of the core of Banksland families. Embarking on their trapping careers in these good years, they were able to acquire rapidly a large stock of essential capital goods, even including schooners. This wealth was an important factor in their subsequent success, and their ability to return to the Island year after year.

Less beneficially, the recent successes led to overconfidence in the future, and to a propensity for free spending. The winter of 1941-42 is an example. An unusually early freeze up that fall caught the Bankslanders still in Aklavik, to where they had brought their trade since Pedersen's departure. They were unconcerned since they had more than enough credit for their immediate needs. The year in the Delta was regarded as an unexpected but welcome extension of the too brief summer holiday, although in spring they joined the Delta people in ratting. Even with the recent increase in pelt prices the most experienced Delta trappers made less than $5,000 on rats and the Bankslanders did not do as well. Accounts of Delta life that winter indicate the Bankslanders were spending money rather faster than they were making it. Gambling increased in the Delta during the early 1940s (R.C.M.P., 1943;51, IA&ND/NAB 1000/119 (1A)). Surplus money was available for the first time in over a decade, because fur income had risen considerably faster than the cost of living. Some of the Bankslanders had credit in the tens of thousands of dollars, and they were not only in a position to gamble for high stakes, but also to purchase large outfits, luxury items and gifts, to stay in the Aklavik Hotel, and generally to flourish their wealth.

1942-48

The period 1942-48 began auspiciously, with moderate harvests and high prices beinging good income. These high prices encouraged white fox trapping, and attracted many newcomers from Tuktoyaktuk and the Delta to Banks Island. In addition, some of the oldtimers who had not been to the Island since the early thirties returned for a year or two. There were usually 20 or 25 trappers on the Island, many more than at any time before or since. Moreover, fewer sites were used for winter camps, and these became more crowded.

Wartime prosperity was accompanied by greatly enlarged credit extensions and heavy spending. $20,000 outfits were purchased, and some men contracted debts of over $10,000.

Such well being proved short lived. In 1944, freeze-up occurred while the Bankslanders were en route home, and they had to winter at the Booth Islands. Most men got 10 or 20 foxes, with even the high man taking only about 30. They were thus unable to take advantage of the high fox prices in 1945.

During the next few years, prices fell by 75 per cent, and the trappers went further and further in debt. Severe ice conditions continued to plague the Bankslanders in most years throughout the 1940s. In the summer of 1946 three of the boats at Sea Otter failed to reach the mainland.

The winter of 1946-47 produced the only outstanding fox harvest of the 1942-48 period, but prices were already down to about $13.00. In 1947 the boats had only just returned to Sachs Harbour when freeze-up occurred, and 25 trappers were forced to winter at that site.

The postwar depression in the Arctic, which was probably at its worst between 1948 and 1951, has already been described. By 1948 the Bankslanders were collectively in debt to one trader alone for over $50,000, with individuals owing up to $6,000 and $8,000. These debts ultimately had to be written off. The previous winter's harvest had been poor, and fur prices continued to drop. Commodity prices, and particularly food prices, were soaring, and the traders were not prepared to advance new outfits of the size required for a Banksland winter. On the mainland, conditions were even worse. The Delta was in the grip of a flu epidemic, to which several Bankslanders also fell victim, and which in many cases was followed by complications such as pneumonia and tuberculosis. These circumstances, to say nothing of the very early freeze-up in 1948, made it impossible for the Bankslanders to return to the Island.

For three years the Bankslanders stayed on the mainland, some living at Tuk and some at Aklavik. A few found wage employment, but the majority trapped marten and muskrat. These fared adequately by mainland standards, but earned only a fraction of their former incomes on Banks Island. The mainlanders, particularly the Delta people, resented the presence of the Bankslanders. A longstanding envy of the affluent Bankslanders was now compounded by resentment of their encroachment on mainland territory and resources which were already overtaxed. When registered traplines were introduced to the Delta in 1948, many of the Bankslanders did not qualify. Tuktoyaktuk trappers were also contemplating a group trapping area, mainly in response to the Delta restrictions but which would also exclude the Bankslanders. Meanwhile many of the schooners were falling into disrepair, and by 1950 probably only four or five were fit to make the crossing to Banksland.

The second phase, 1951-67: Banksland as the antithesis of the regional way of life

1951-55

Unwelcome on the mainland, the Bankslanders were yet unable to return to their home. The Northern Administration and Lands Branch became anxious to see the Bankslanders return to the Island, and indeed would have preferred a trading post established there to encourage more permanent settlement and less dependence on the mainland.[1] The Cold War also made strategic considerations important. Canada had both to ensure the loyalty of its northern peoples in the event of outright warfare in the Polar Basin, and to assert its sovereignty over the Arctic Islands in the face of increased American strategic interest in them. The resettlement of Banksland on a more permanent basis could usefully serve both ends.

The Hudson's Bay Company could not be persuaded to establish a post on Banks Island, because they believed the Bankslanders would continue to visit the mainland in summer in any event. The Company did undertake to outfit some Bankslanders in view of the recovery in the fox market in 1951.

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[1]This desire was not unanimous. At least one official felt Banks Island should be a game preserve closed even to Eskimos (IA&ND/NAB 1000/176(2)).

Nine trappers, most of whom had resources enough to cover most of their outfits, were prepared to try again. The Bay at Tuktoyaktuk and a free trader in the Delta extended over $6,000 in credit, about $1,000 of which was guaranteed by the Government. The Sub-district Administrator at Aklavik undertook to visit the Island in the spring to ensure that the families were healthy and adequately supplied. In September 1951, two schooners eased out of the harbour at Tuktoyaktuk amid farewells from shore, heading back to the camps that for three unhappy years had lain still and empty.

Foxes were abundant on Banks Island in the winter of 1951-52, and the expedition was a success. All advances were repaid, and little or no credit was required for the next season. The government had established the Eskimo Loan Fund that year, and the "Banksland Project", as the administration termed it, benefited greatly from this source of capital. Fur prices showed a slight improvement, but the traders were still cautious with credit extensions. The loan fund supplied the extra margin necessary for success. It was especially important to those who, on the basis of the initial success of the first two years, were encouraged to return themselves. Table 3.3 indicates the critical role of the Eskimo Loan Fund in re-establishing the Banksland group during the first four years.

TABLE 3.3

Financing of the "Banksland Project", 1951-1955

Year	Number of trappers requiring assistance	Eskimo Loan Fund ($)	Credit from traders ($)	Total ($)
1951-52	9	310.00[a]	6,625.00	6,935.00
1952-53	5	1,035.00	no data	?
1953-54	6	1,650.00	3,800.00	5,450.00
1954-55	13	4,384.09	8,000.00	12,384.09

[a]Funds from Northern Administration and Lands Branch. In addition, $700 of the credit from traders was guaranteed by the Branch.

Source: IA&ND/NAB 251-2; 251-2-8, 1000/176.

Not only was the load programme a success in terms of the resettlement, but every loan was repaid in full, all but one within a year.

1954-55 was again a peak fox year, in which fully 20 trappers shared. Yet throughout the period 1951-55, wolves were present on the Island in unusual abundance, and regularly destroyed about 25 per cent of trapped foxes before retrieval (McEwen, 1956). This led to a government sponsored wolf poisoning programme which soon brought this situation under control.

1955 to the present

The summer of 1955 brought important changes to Banks Island and to the nearby mainland. The Department of Transport established a Meteorological Station at Sachs Harbour, and the R.C.M.P., who had established a detachment two years before, expanded their facilities and hired an Eskimo special constable from the Delta. On the mainland, construction of the Distant Early Warning line got under way. For the still depressed communities on the mainland, jobs were suddenly available in abundance. Some Bankslanders, knowing that the past winter's abundant fox crop would be followed by two or three lean years, chose wage employment on the DEWline. For others, the rough crossing in the summer of 1955 was the last their battered schooners and worn out engines could take. Unable to replace their boats, these people had no choice but to remain on the mainland. A greatly reduced band of trappers went to Banksland in the fall of 1955, and still fewer returned the next year.

DEWline construction ended in 1957, and this reduced the number of jobs locally available to Eskimos. Some younger men who had been first class trappers in their own right on the mainland coast, came to the Island in hopes of making a better living. In addition several Copper Eskimo families from Minto Inlet moved first to De Salis Bay and later to Sachs Harbour to trap. Many of these people have remained, and today form an important and productive part of the community.

Until the 1950s, Banks Island had been remarkable for its isolation. No commercial venture had been made by white trappers since 1917[1] or by white traders since 1927. No

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[1]Two white trappers from the mainland made an illegal and abortive attempt to trap on Banks Island in the winter of 1931-32 (see R.C.M.P., 1932 and PAC, NA&NR/NAB/7210).

scientific expeditions, government or private, visited the Island after Stefansson's departure in 1917 until 1938, and none made contact with the Eskimos until Manning's expedition of 1952 (Manning, 1953)[1]. Other than an R.C.M.P. patrol from the St. Roch at Walker Bay in 1941, the visit by the Sub-district Administrator and his party in 1952 was the first official attempt by the government to investigate conditions among the Eskimos of Banks Island. The otherwise intrepid missionaries of both Roman Catholic and Anglican faiths made no attempt to establish missions on the Island until 1962. Although airplanes had been flying to the Arctic Coast since the late 1920s, the first commercial flight to Banks Island, so far as is known, was in the spring of 1948 on a charter arranged by the Eskimos themselves through the radio facilities at Holman Island.[2] The first radio link between the Island and the mainland came with the establishment of the R.C.M.P. detachment at Sachs Harbour in 1953. Commercial shipping and air services have since been established.

All these events have had a profound effect on the distribution of settlement on Banks Island. Until 1953 there were only three or four permanent buildings on the Island, the oldest being the cabin erected by Fred Carpenter at Sachs Harbour in the late

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[1]See Manning, 1956, for a list of previous expeditions.

[2]The first aircraft landing on Banks Island was made by Donnelly, at De Salis Bay in 1943 to establish an astronomic control position (Donnelly, 1943).

1930s. Most people lived in tents which were taken down each summer. The only other permanent facilities were the ice cellars at Sachs (started in 1936) and Sea Otter (dug in 1946).

Camp life declined rapidly in the late 1950s, and in the fall of 1960 almost all the families who had traditionally camped at Sea Otter, Lennie Harbour and De Salis Bay moved into Sachs Harbour. No one has wintered elsewhere since 1961. The Bankslanders also ceased their summer schooner journeys to the mainland. The Fox made her last voyage in 1960, the North Star in 1961. People began erecting permanent wooden dwellings, and the pattern of traplines also became more established, as there was no longer a question of where one might be camped next year. Sachs Harbour was no longer a winter camp but a permanent village.

Summary and analysis of change

Relative success of the immigrants

Between 1928 and 1967, 95 adult men have trapped full-time for at least one season on Banks Island.[1] In the following discussion, we will examine the success and failure of these immigrants over the six historical periods, particularly with regard to such characteristics as ethnicity and previous experience.

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[1] In the following discussion, including the accompanying tables and figures, numbers refer to full-time trappers only, and do not include their dependents unless otherwise specified.

The ethnic origin[1], birthplace and place of residence prior to emigration is given in Table 3.4.

Almost half of the 95 were of Alaskan lineage, with the rest being of Mackenzie Eskimo, mixed blood and Copper Eskimo stock in approximately equal proportions. Very few of the immigrants were Alaskan by birth, however. Over half were born in the Mackenzie Delta or in the Baillie Island district.

The most important criterion for assessing relative success in adjustment to Banks Island, however, is the trapper's place of residence during most of his life prior to emigration (hereafter referred to as place of origin). We have already noted that trapping ability and motivation was not equally distributed amongst the various Eskimo groups. The orientation of any individual toward trapping is most likely to be explained by that of the group in which he was raised and began his livelihood. In the 1920s there were three distinct Eskimo groups on the mainland, all of which were territorially distinct, so that the area in which a trapper was raised prior to emigrating to Banks Island is indicative of his orientation to trapping.

Most immigrants to Banks Island were from the Baillie

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[1]The concept of ethnicity is used here to distinguish between the various Eskimo groups. Ethnic breakdown is approximate, and is based on the chief lineage of each person, as of course intermarriage occurred between all groups.

TABLE 3.4

Ethnic origin, birthplace and place of origin of all trappers wintering on Banks Island, 1928-67.

a. Ethnic origin (approximate breakdown)

Alaskan Eskimo	45
Mackenzie Eskimo	20
Mixed blood[a]	15
Copper Eskimo	14
Indian	1
Total	95

[a]Chiefly those descended from a union of an American whaler with a Mackenzie or immigrant Alaskan Eskimo woman.

b. Region of birth

Alaska	11
Mackenzie Delta	26
Herschel – Tuktoyaktuk	10
Baillie Island district	25
Victoria Island	14
Banks Island	5
Unknown	4
Total	95

c. Area of residence prior to emigration to Banks Island.

Area	Number of emigrants	Total years resided on Banks Island	Mean number of years resided on Banks Island
Mackenzie Delta	28	109	3.9
Herschel-Tuktoyaktuk	9	42	4.7
Baillie Island district	36	220	6.1
Victoria Island	11	47	4.3
Banks Island[b]	8	63	7.9
Unknown	3	3	1.0
Total	95	484	5.1

[b]Refers to individuals raised on Banks Island before becoming independent adult trappers.

d. Present residence (1 January, 1967)

Banks Island	17
Inuvik	17
Other Mackenzie Delta locations	4
Tuktoyaktuk	16
Victoria Island and east	9
DEWline and other	4
Deceased	27
Total	95

Source: Field investigations, Table A.3.

Island district and the Delta. Both were strongly oriented to commercial trapping, the former for white fox and the latter for muskrat and mink. The small number of immigrants from the Herschel-Tuktoyaktuk area reflects the relatively weak orientation of this group to trapping, as well as their lack of schooners. Most of the immigrants from that area came aboard Delta or Coast schooners. The immigration of Copper Eskimos, and the coming of age of trappers raised on Banks Island, is associated chiefly with the second phase of settlement, so initially we may contrast the fates of the Delta and Coast (Baillie Island district) settlers.

More than half of the Baillie trappers who came to Banksland between 1928 and 1948 remained through the entire phase, while fully 13 of the 15 Delta trappers left the Island before 1948 (See Table 3.5). Moreover, individual Coast trappers tended to remain on the Island longer. For the years 1928-67, the mean length of residence for the Coast trappers was 6.1 years as opposed to 3.9 for those from the Delta. Over half of the Delta trappers remained on Banks for one year only, while the corresponding rate for the Coast group was less than 15 per cent. The greater proportion of the Coast group remained from three to five years, and almost 40 per cent resided on the Island for six or more years (see Table 3.6).

TABLE 3.5

In-migration/out-migration, Banks Island, by place of origin

a. by historical period

Years	Place of Origin: Mackenzie Delta	Herschel-Tuktoyaktuk	Baillie I. district	Victoria I.	Banks I.	Unknown	Total
1928-36	11/6	5/3	20/9	2/2	0/0	3/3	41/23
1937-41	1/0	2/0	4/2	0/0	1/0	0/0	8/2
1942-48	5/7	1/4	11/15	3/1	0/0	0/0	20/27
1951-55	2/3	0/0	0/7	3/1	4/1	0/0	9/12
1955-61	5/3	1/1	1/0	3/3	0/0	0/0	10/7
1961-67	4/3	0/0	0/1	0/1	3/4	0/0	7/9
Totals	28/22	9/8	36/34	11/8	8/5	3/3	95/80
Remaining on Banks Island, Jan. 1, 1967	6	1	2	3	3	0	15

b. by historical phase

1928-48	17/13	8/4	35/16	5/2	1/0	3/3	69/38
1951-67	11/7	1/0	1/0	6/5	7/5	0/0	26/17

Source: field investigations.

TABLE 3.6

Length of residence on Banks Island by place of origin

Place of Origin	total years resided on Banks Island: 1–2	3–5	6–10	11 and over
Mackenzie Delta	16	5	4	3
Herschel-Tuktoyaktuk	4	2	2	1
Baillie I. district	9	13	8	6
Victoria Island	6	2	1	2
Banks Island	3	0	1	4
Unknown	3	0	0	0
Total	41	22	16	16

Source: Table A.3.

Undoubtedly then, the Delta people were not as successful as the Coast people in colonizing the Island during the early years.

There are several explanations for this. The coast people were more familiar with the physical environment of Banks Island, and they were more experienced in trapping white fox. The choice of camp location was an additional factor in explaining the differential success of the two groups.

Most of the camps were composed either of Delta or of Coast people, and were seldom mixed. The initial settlement pattern was in some measure a chance occurrence. In 1928-29 the trappers at Mary Sachs were from the coast, but in the following year the closest location, Sachs Harbour, was occupied by a Delta group. In 1930-31 the Coast people camped at various points on the west side of the Island, while a Delta fleet went to De Salis Bay. During the next three winters only Coast trappers went to the Island, and occupied west coast camps only. In 1934-35 there was an almost complete change of personnel, when people from the Delta camped on both the east and west coasts. After 1935 however, when the Coast trappers again predominated on the Island and began to return with greater frequency to the same sites, they monopolized the west coast camps through de facto continuous occupation. Delta groups on the other hand tended to visit the Island less regularly, and soon found that the only "open" sites were on the east coast. No overt conflict played a role in this pattern; the restriction was self imposed. Once it was known that one group camped at a particular location, it was unthinkable for another group to encroach on their camp or its hinterland.

The east side is a poorer environment for trapping than is the west, due to a shortage of both fur and game. Most instances of real hardship have been associated with the east side camps. The Coast people gained their locational advantage between 1930 and 1934, when only one Delta group came to the Island. Despite the temporary return of the Delta people in 1934-35, they had lost access to the most productive hinterlands on the Island. Thereafter until the demise of camp life, not only incongruity of experience but also the necessity of inferior location militated against successful colonization by Delta trappers.

During the second phase of settlement, after 1951, a different pattern emerged, which must be viewed in the context of the changing conditions in the Western Arctic. Also important is the fact that the Bankslanders were a distinct group both in their own eyes and those of others, rather than being members of other mainland groups.

The people who returned to Banks Island in the early 1950s were all previous residents. Almost all were of coastal origin or had been raised on Banks Island.

Many more families of coastal origin, including some of the original settlers, had been unable or unwilling to return to their former home, and several other old timers quit between 1952 and 1955. Many had simply grown old, and even in the early 1950s, Banks Island was no place for the old, the sick or the feeble. Even in the best of years the physical conditions of life on the Island were harsh. The strict isolation meant that to contract a serious illness or accident was to suffer and waste away, helpless in the face of death. With the small nuclear family as the ideal unit of production, old people were simply a burden on the trapping camps. When a man came to the end of his trapping career, or his wife or family became too sickly, he stayed behind on the mainland where life was easier and more secure.

The level of immigration was considerably lower during the second phase than in the first, and its sources were also different. The old Coast community was gone, and so could no longer provide a steady stream of able men. In addition, very few of the sons of these families, now living in Tuktoyaktuk, became keen or able trappers. With father and son both working on the DEWline there was neither the time nor the inclination to learn. Although most of the present Bankslanders have their kin folk in Tuktoyaktuk, only one new immigrant has come from that community since 1951.

Only eight of those raised on Banksland have so far attempted to trap there, and of these only three remain as full time trappers.

According to the 1967 Eskimo Disc List for the W3 (Western Arctic) District, there were 18 males and 15 females still alive who were born on Banks Island between 1928 and 1948. In addition there were perhaps as many children of Banksland families who were born on the mainland, either in summer or during the occasional winter when the family was not on the Island. The actual number is difficult to estimate, due partly to the frequency of movement back and forth, and to adoptions. Moreover during the 1930s and 1940s, many and probably most children attended the mission schools for at least a few years. Later on the children spent the greater portion of their youth in school, especially at Aklavik.

Children attending the residential schools were away from home ten months of the year, and if they lived any distance away, did not go home at all. Many of the Banksland children born in the early 1940s never saw their homes for years at a time, and saw their parents only briefly in the summers when they came to Aklavik. There was little opportunity, therefore, for these children to learn the way of life of a trapper, and in any case, having grown up in a completely different physical and social environment, Banks Island was not really their home and it offered little if any attraction to them when they left school. Those born in the 1940s and leaving school in the late fifties or early sixties quite naturally looked to wage employment for their livelihood rather than trapping.

The chief sources of recent immigration to Banks Island have been the Mackenzie Delta and Victoria Island. Many of the Delta immigrants had spent several years in wage employment during the construction of Inuvik or the DEWline, and were attempting a return to the trapping life. These were poorly equipped and often unskilled, and seven of the eleven left after their first season. Most of the Copper Eskimos came to Banks Island in the late 1950s after a series of bad winters in Minto Inlet. This renewed immigration gave rise to concern among the older residents that the Island might become overcrowded and overexploited, and it ultimately led to the establishment of Banks Island as a registered trapping area.

Both gross and net movement of peoples were considerably less after 1951 (Figure 3.1). The period 1951-55 was one of net out-migration, for reasons already discussed. 1955-61 was a period of net in-migration, but more important, six of the ten who came have remained, and include among their number some of the most energetic and committed trappers in the community today. Since then the population has stabilized, and there has been very little in or out-migration.[1]

Demography

Rates of birth, mortality and infant mortality on Banks Island have not differed significantly from those of the region

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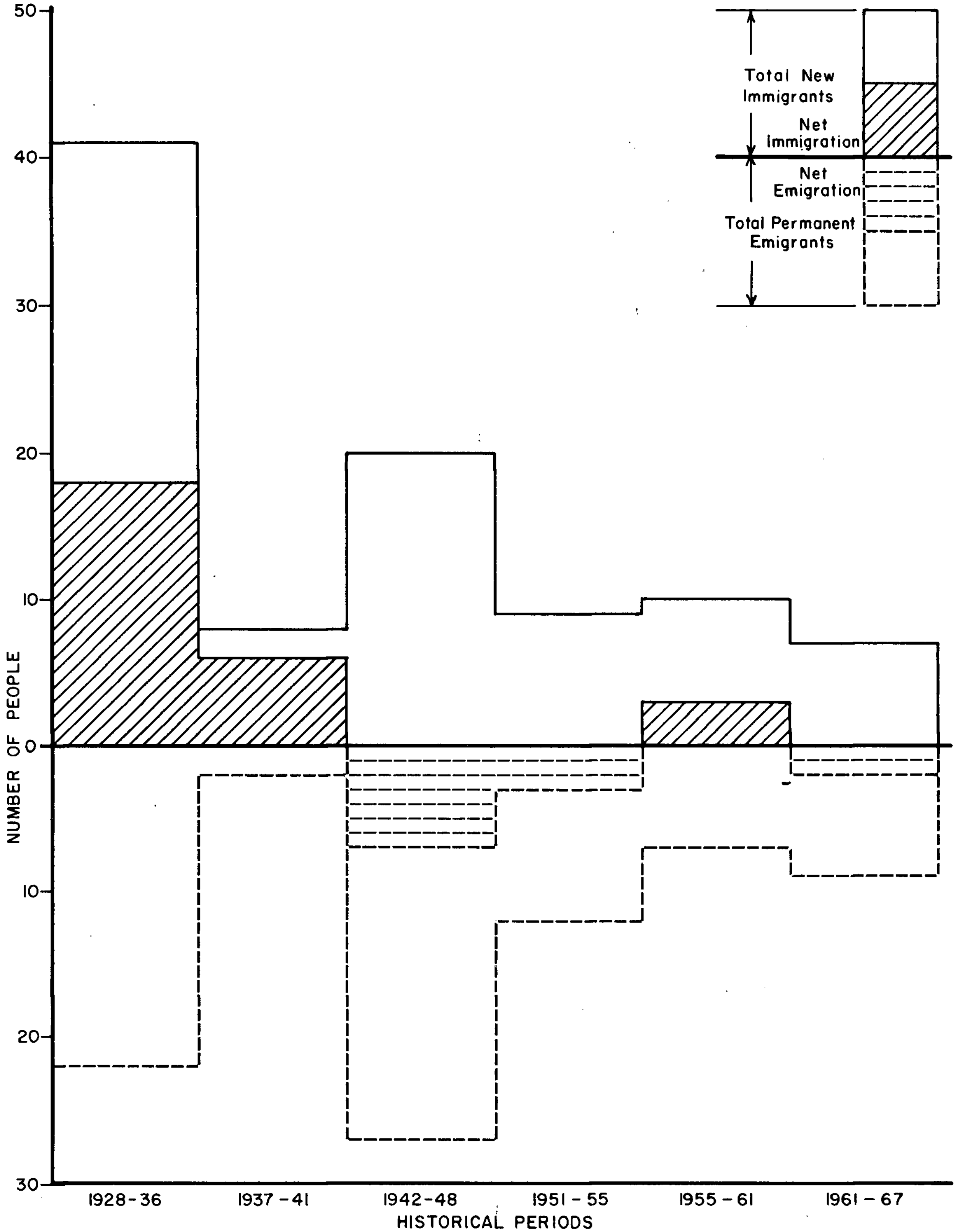
[1]This stability has been greater than Figure 3.1 would indicate, since the data refer to the season in which an individual commenced or ceased full time trapping on the Island. Until recently, this was coincident with actual immigration or emigration. However, during the period 1961-67, of the seven people shown as "immigrants", three were the sons of Bankslanders and were trapping in their own right for the first time, and another had come to the Island several years before but had not previously trapped full time. In fact only three people actually came to the Island for the first time during this period, and all of them did so in 1961. With regard to "outmigration" only seven of the nine actually left the Island, and that number includes the three immigrants in 1961 who only stayed for that season. Two men have taken wage positions at Sachs Harbour and although they still reside there, do not trap full time.

IMMIGRATION AND EMIGRATION
BANKS ISLAND, 1928-67



as a whole. Health has been consistently better on the Island than on the mainland, and there have been no epidemics on the Island resulting in death. Where the Bankslanders fell victim to fatal diseases or even mild illnesses, these were invariably contracted during the summer visits to the mainland. Despite the relatively hazardous life, only two of the 95 men who trapped on the Island in the last 40 years died accidental deaths (one from exposure and the other from drowning).

The production-consumption unit in the Banks Island fur economy has always been the nuclear family. This has been true to an even greater degree than on the mainland where there were more old and sick people, and a tighter network of sharing obligations existed amongst kin. Trappers normally began their careers on the Island as young men, either still single, or a year or so after marriage. They rarely brought their parents or other elderly relatives. Thus, families were small, although a few trappers who stayed a long time boasted families of 10 or 12. One man has 15 children still living. Table 3.7 indicates the family structure on Banks Island during the second phase of colonization. Data are available only for one year of the previous phase, but if typical, they demonstrate the moderate family size of the time and the relatively small

TABLE 3.7

Family size and proportion of full-time trappers to population, Banks Island[a] (years for which data available).

Year	Trappers	Single men	Families	People	Mean family size	Number of people per trapper
1940-41	14	2	11	44	3.8	3.1
1951-52	9	4	5	27	4.6	3.0
1952-53	9	4	5	31	5.2	3.4
1953-54	10	5	5	27	4.4	2.7
1954-55	20	11	9	54	4.8	2.7
1955-56	8	1	8	25	3.0	3.1
1956-57	4	1	4	16	3.8	4.0
1957-58	9	0	11	44	4.0	4.9
1958-59	15	2	15	64	4.1	4.3
1959-60	15	4	13	61	4.4	4.1
1960-61	17	6	15	65	3.9	3.8
1961-62	20	4	18	71	3.7	3.6
1962-63	17	3	16	65	3.9	3.8
1963-64	18	2	18	75	4.1	4.2
1964-65	17	3	16	77	4.6	4.5
1965-66	16	6	16	77	4.4	4.8
1966-67	15	5	16	73	4.3	4.9

[a]Does not include children attending residential school on the mainland.

Source: IA&ND/NAB 1000/176; R.C.M.P. Annual Reports, Sachs Harbour Detachment; field investigations.

number of dependents per trapper. As may be seen, the population of Banks Island has grown steadily since the mid 1950s. The erratic fluctuation in the number wintering on the Island, so characteristic of the first four periods of settlement, is absent in the last two. Mean family size has remained fairly constantly in the neighbourhood of 4.0. This is small in comparison to the Western Arctic region, where the 1967 Disc List shows 1786 people in 263 families, for an average of 6.8. The Sachs Harbour average, however, refers only to the size of family actually being maintained year around in the settlement, and if the children attending residential school at Inuvik were included, mean family size would be very similar to that on the mainland.

The number of people per trapper has risen considerably since 1955. During the previous four periods, it was probably in the order of 3.0. Since then, this figure has steadily risen to almost 5.0.[1] This is a direct result of the Federal Government presence at Sachs Harbour, which has created wage labour opportunities for some men, and made it possible for widowed family heads to obtain welfare payments in the settlement.

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[1]The high dependency ratios for 1957-59 are partly explained by the presence of several older people at the De Salis Bay Camp.

Population distribution and the centralization of settlement

The spatial distribution of the population, when analyzed historically, shows a trend toward centralization, which accelerated rapidly in the late 1950s. Of the 13 sites used for wintering on the Island, 11 were established during the first phase of settlement, and no new sites were established after 1945. The number of sites used declined steadily with each period (Table 3.9).

The rationale and process of site selection has already been described. Over a period of years it was only natural that some sites would come to be considered more desirable than others. The chief criterion has been accessibility by schooner. It was soon realized that to winter a schooner along the west coast, particularly north of Sea Otter, was to risk being unable to clear the Island in the event of heavy ice conditions the following summer. After the late 1930s, it became customary for the schooner owners to transport some families to northerly points in the autumn and then beach the schooner at Sachs Harbour, Sea Otter or Blue Fox. After trapping, these families would gradually sledge their belongings back south to the schooners to await the dispersal of the sea ice. This involved several trips, and finally the establishment of a temporary camp at the departure point. Sachs Harbour was the most advantageous point in terms of ice conditions, since boats were very seldom unable to cross to the mainland from there. Sea Otter Harbour itself is rarely ice bound all summer but difficulties may be encountered proceeding south past Big Bluff, for there the water is deep and heavy ice may drift directly into shore.

Both Sea Otter and Sachs Harbour have good resource hinterlands. Seals and caribou are readily obtained in the vicinity, and both are well located for geese and bears. Of particular importance, both provide easy access to the broad, east-west river valleys in which foxes are plentiful. De Salis Bay has been the most important of the east coast sites, but as mentioned, its hinterland is relatively poor.

The three sites, Sachs, Sea Otter and De Salis, stand out in that order both on the basis of the number of winters they were occupied and the total number of people using them (Tables 3.8 and 3.9). The mean size of each camp from 1928 to 1961, when camp life ceased, shows Sachs Harbour as the largest (6.6 trappers), although this is weighted by instances when early freeze-up left no option but to stay at Sachs. These figures do not necessarily indicate the potential number of

TABLE 3.8

Camp size by number of trappers wintering at each site

Historical Period	Masik River	Sachs Harbour	Mary Sachs	Blue Fox Harbour	Lennie Harbour-Big Bluff	Siksik Point	Sea Otter Harbour	North Star Harbour	Storker-son Bay	Satsik River	De Salis Bay	Nokaluk-Coal Mine	Jesse Bay	All camps
1928-36	9	17	4	11	7	6	16			6	10	4	4	94
1937-41	4	15		2	2		14	4		6	8		2	57
1942-48		56		9	5	3	19		3	4	8		7	114
1951-55		21			6		10				4	3	4	48
1955-61		50			1		5		3		9			68
1961-67		103												103
Total	13	262	4	22	21	9	64	4	6	16	39	7	17	484
Minimum	4	1	4	1	1	2	1	2	3	2	1	3	2	1
Maximum	5	24	4	9	5	4	11	2	3	6	6	4	4	24
Mean (1928-61	4.3	6.6	4.0	3.7	2.6	3.0	4.0	2.0	3.0	4.0	3.5	3.5	3.4	4.4

Source: Table A.4.

TABLE 3.9

Camp use by number of winters each site occupied

	Masik River	Sachs Harbour	Mary Sachs	Blue Fox Harbour	Lennie Harbour-Big Bluff	Siksik Point	Sea Otter Harbour	North Star Harbour	Storkerson Bay	Satsik River	De Salis Bay	Nokaluk-Coal Mine	Jesse Bay
1928-36	2	5	1	3	2	2	4			1	3	1	1
1937-41	1	4		2	1		4	2		2	2		1
1942-48		5		1	2	1	3		1	1	2		2
1951-55		4			2		3				1	1	1
1955-61		6			1		2		1		3		
1961-67		6											
Total	3	30	1	6	8	3	16	2	2	4	11	2	5

Source: Table A.4.

TABLE 3.10

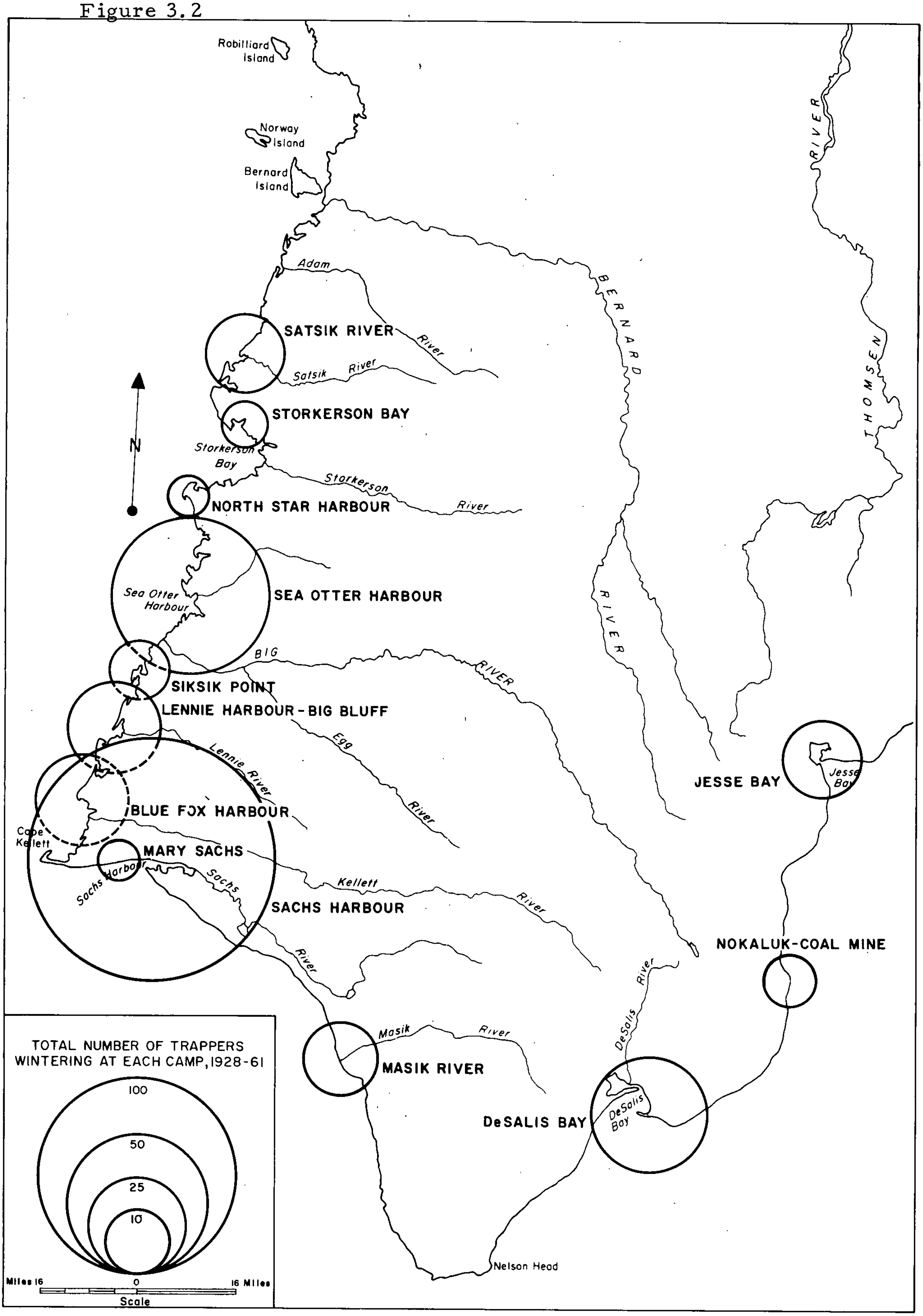
Number and size of trapping camps, by historical period

Years	Number of trappers wintering	Number of sites used	Cumulative site winters[a]	Mean number of sites used per winter	Mean number of trappers per site per winter	Maximum number of trappers at any site in any year
1928-36	94	11	25	3.1	3.8	7
1937-41	57	9	19	4.8	3.0	7
1942-48	114	9	18	3.6	6.3	24
1951-55	48	6	12	3.0	4.0	7
1955-61	68	5	13	2.2	5.2	16
1961-67	103	1	6	1.0	17.2	20
Total	484	13	93	3.9	5.2	24

[a]Cumulative total of the number of sites used each winter for each historical period.

Source: Table A.4.

Figure 3.2



Robilliard Island
Norway Island
Bernard Island
Adam
SATSIK RIVER
River
Satsik River
STORKERSON BAY
Storkerson Bay
Storkerson
River
NORTH STAR HARBOUR
N
Sea Otter Harbour
SEA OTTER HARBOUR
BIG
RIVER
SIKSIK POINT
LENNIE HARBOUR - BIG BLUFF
Egg
River
Lennie River
BLUE FOX HARBOUR
Cape Kellett
MARY SACHS
Sachs Harbour
Sachs
River
SACHS HARBOUR
Kellett
River
BERNARD
RIVER
RIVER
THOMSEN
JESSE BAY
Jesse Bay
NOKALUK-COAL MINE
DeSalis River
MASIK RIVER
Masik
River
DeSALIS BAY
DeSalis Bay
Nelson Head
TOTAL NUMBER OF TRAPPERS WINTERING AT EACH CAMP, 1928-61
100
50
25
10
Miles 16
0
16 Miles
Scale

trappers each location could support. The comparative sizes of the three chief camps do reflect in some measure their relative advantages.

The mean camp size on Banks Island fluctuated inconsistently. In the 1930s, it was less than four, but rose to almost seven between 1942 and 1948. In the 1950s it was between four and five. The difference between 1937-41, which was characterized by high harvests and low camp density and 1942-48, when lower harvests accompanied much higher camp densities, is particularly interesting. There is some evidence that foxes were not as abundant in the latter period, and there were a greater proportion of less skilled trappers on the Island (although the established trappers had presumably become more skilled and better equipped which would counterbalance this). The decline in both mean and high catches may have been the result of overcrowding, or at least of an inadequate individual response to the increased number of people in terms of trapline location. The adjustments in land use patterns which accompanied the changing settlement distribution will be further discussed below.

The abandonment of the camps has already been described. The presence of federal government personnel and the communication and supply links had many implications for life on the Island. The threat of sickness, hunger and cold were profoundly diminished. The presence of white policemen and meteorologists did restrict some hunting and social activities, but it also brought new social and economic opportunities. Frequent movies, organized Christmas and New Year's parties, and regular contact and conversation with "outsiders" became part of a new way of life. Radio and airplane communication also enhanced the development of a new pattern of trade, featuring the export of furs to auction houses in southern Canada and the purchase of outfits through agents of these auction houses.

For many families, the anxiety resulting from sudden illness in an outlying camp and the race to the settlement for help was the deciding factor in moving into Sachs Harbour, but unquestionably the increased scope offered in economic and social activity was also important. The move to the settlement brought greater diversity and opportunities for enjoyment to one's life, as well as a greater security of health and livelihood.

Living conditions have improved markedly at Sachs Harbour during the last decade. After 1955 many families abandoned their double tents for more substantial dwellings incorporating progressively more wood and less canvas. By 1965 these had been replaced by fully insulated frame buildings of standard construction. Coal, the common fuel in the first phase of settlement, has been replaced by heating oil. Where formerly each family brought its own fuel supply by schooner, now there is a large stock maintained and distributed by the Department of Indian Affairs, and real shortages can no longer occur.

The demise of schooner travel

Once everyone was living at Sachs Harbour, the schooners were rendered obsolete by the improved transport facilities. Resupply was effected by commercial shipping and both the export of furs and visits to the mainland could be made quickly and easily by airplane. As a result everyone spent the summer on the Island, and a new pattern of seal hunting arose which altered the rest of the seasonal cycle and affecting trapping intensity.

The schooner had been symbolic of the special identity of the Bankslanders, especially in the 1940s and 1950s. The arrival of the Banksland fleet at Aklavik was an exciting and awesome event to both natives and whites alike.

The schooner had also become an instrument of immigration control. The informal passage arrangements of the early years gave way in the 1940s when more and more people sought to go to Banks Island, while the number of available schooners declined. The schooner owners were in a strong position to dictate not only who would make the crossing but at what price they would do so. In some cases, passengers were required to purchase shares in the voyage, in others to pay a designated fare in cash or fox pelts. Passage charges were designed to cover gas, oil and paint, and return a goodly profit to the owner; in fact the usual sum was about $500. Some men who were passengers in the 1940s gave the high cost of passage as an important reason for quitting the Island. With the renewal of settlement in the early 1950s, passage arrangements became more relaxed, probably because the groups travelling on each schooner were of closer kin relationship than had been the case in the previous decade, and because the numbers coming to the Island were fewer. However, some of those emigrating to Banksland in the late fifties were charged for their passage.

With the decline of the schooner, alternate means of immigration control were needed. A restrictive trappers' association was formed, and given exclusive control of the Island (described in the next chapter).

Resource use and the annual economic cycle

Changes in the community have been accompanied by modifications in the technology and techniques of resource harvesting plus growing knowledge of the Island and its resources. Recalling the description of the technology and annual cycle of economic activity early in this chapter, we may trace certain changes in its various aspects (leaving the discussion of trapping for the last).

The autumn preparations changed very little until the 1960s. So long as the schooner and camp life persisted, the two months preceding trapping were practically all spent in setting up camp, and obtaining sufficient caribou and seal meat to last through the dark days. After 1960 when people began spending their summers on Banks Island, sealing for winter needs could be completed before freeze-up. Summer sealing, however, has required the purchase of canoes and outboards. Moreover, permanent housing and the abandonment of the schooners has freed a large block of time, although this has been partly offset by the advancement of the trapping season from the 16th to the 1st of November (see Table A.2). The middle two weeks of September, when sealing is over but the snow is not yet sufficient for inland travel, is now a much more relaxed time than in former days. Although many of the autumn chores remain, such as hauling ice and mending travelling equipment, much of the five or six weeks preceding the trapping season can be devoted to visiting the mainland, hunting caribou, or preparing the trapline. This latter opportunity has raised the potential productivity of the season's trapping activity, as will be described in Chapter Five.

An additional consequence of having put up a good supply of seals in late summer is that little or no time is required during the trapping season to obtain dog feed. The number of seals taken per trapper has probably not increased greatly over the years (with the exception of 1963-65 when seal skins became an important source of income), but the minimum requirement is now met at different times and with more concentrated effort. During the schooner days seal hunting occurred throughout the year, although the major effort came in fall and spring. The desirability of a surplus in autumn was recognized, but this could be achieved only to a limited extent in the short time available. The construction of ice cellars at Sachs and Sea Otter eased the situation somewhat by allowing seals to be taken in spring before departure to be stored until the following winter.[1] Now almost all seals are taken between May and October, with intensive hunting in July and August resulting in a large surplus before freeze up. Rarely is it necessary to travel on new ice to the floe edge in October and November to augment the supply.

The introduction of the freight canoe and the outboard motor have not been the only technological changes in seal hunting. The old sealskin retrieving canoes for floe edge hunting were, by the late 1930s, commonly covered with canvas, and in recent years have been replaced altogether by scow-shaped craft of plywood construction. High powered rifles with telescopic sights have also eased the task of hunting. In the early days, the standard firearm for most purposes was a 30.30 rifle with open sights, although a .22 was sometimes used for sealing and of course shotguns were employed in fowling. Presently the .222 is the most popular rifle for sealing, and the 30.06 for big game.

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[1]Some people filled fuel drums with blubber, and buried them in pits over the summer. Seal meat, placed between layers of blubber, could also be kept this way for dogfeed.

Modifications have also occurred in the caribou hunting pattern, due both to improved storage facilities (ice-cellars) and to the increased availability of imported food stuffs. Formerly hunting effort was concentrated in autumn and spring. The October hunt continues to be important, although now many caribou are also taken on the first trapping trip in November. The spring hunt has declined; many men do not go inland at all at this time of year. The number of caribou taken per hunter has remained fairly constant over the years. The meat has always been primarily for human consumption, and is rarely fed to dogs. Although imported foods seem to have increased gradually as a proportion of the diet, today's families are larger, and their total meat requirements have not changed. The abandonment of spring hunting seems to be related to a decline in demand for caribou meat at that season particularly, rather than a total demand reduction. In former years, dependence on country food was greatest in the spring months prior to departure for the mainland, when the outfits ran low. Now, if sufficient caribou are killed in autumn and winter, they are kept in the ice-cellars and last all year. The practice of drying large quantities of meat in spring has thus also declined, lightening the women's work.

Dry meat has become more of a travelling snack or even a delicacy than a seasonal staple.

Although fish has been of minor significance as a food source on the Island, fishing was attempted in many areas, especially in the early days. River and coast fishing is poor except for a small char run in Sachs River. Many of the inland lakes are well stocked, chiefly with lake trout. Formerly, people fished through the ice in spring and fall, using both lines and nets, but now only lines are used. Mid winter jigging on the trapline was rare, if indeed it occurred at all. A few families, especially those from the Tuk-Herschel area where fishing was common, made an effort to fish in the early days, but none were really dependent on it as a source of food. Raddi Lake near Masik River, and Siksik Lake south of Sea Otter Harbour were the chief lakes used in the first decade or so, but they are no longer fished. The Fish Lakes southeast of Sachs Harbour were discovered in the 1940s, and these are still used because of their proximity to the settlement. The lakes at the head of the Big River are good for fishing, and were used by those camped at De Salis. More recently, several lakes in the upper Kellett valley have come into use by Copper Eskimos who hunt and trap in this area.[1]

[1] In the 1930s, the Copper Eskimos who spent summers on the Island reputedly ponded streams with stone weirs, and speared fish.

Most families camping on the west side of the Island visited the snowgoose nesting grounds at Egg River every spring. Since the arrival of R.C.M.P., the Migratory Bird Convention has been strictly enforced. Each family is limited to 30 geese and egging is forbidden. Formerly geese and eggs formed a significant proportion of the spring diet. Families took as many as 100 birds, and some hauled 200 or 300 eggs back to the camps in wash tubs. Efforts were sometimes made to remove only a few eggs from each clutch rather than cleaning out nests entirely, and the average egg take per family was probably less than 100.

Finally, mention should be made of polar bears, which were hunted any time of the year, especially by trappers whole lines followed the coast. During the years 1928-48, the take was less than today's because bears were used primarily for meat and clothing. Low pelt prices were the rule, and not until the 1950s, with the influx of transient whites with high wages and a desire for souvenirs, did there develop a good market for bear skins in the Western Arctic.

Trapping

Several modifications have occurred in travelling equipment and techniques. The number of dogs per team has gradually increased to about nine[1], and basket sleds have been replaced by toboggans. Mechanized transport was first introduced in 1961 but did not come into general use until 1967, after the present study was completed. Before 1948 snow houses were always used for overnight shelter on the trail. Double walled canvas tents were introduced with the renewal of settlement in 1951, and within a few years they had completely replaced the snowhouses. Shortly after, caribou skins gave way to duffle and down in the manufacture of outer clothing.

The technology of trapping itself has not changed, although the pool of both equipment and experience has increased greatly over the years. The men run longer lines, make longer trips, and set more traps than formerly, and despite congregating at a single point, have maintained and even extended the total area exploited. Particularly important has been the development of inland trapping, which is far more

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[1] This increase has not been steady, since, as is common in the north, peak fox years have been associated with epizootics which have decimated the dog population periodically. Another important development in dog team driving, although one which occurred before the colonization of Banksland, was the training of a lead dog which would obey commands. In aboriginal times, the dogs followed the man, who set both direction and pace. The lead dog, introduced by the early white trappers, allowed the driver to stand on the sled or toboggan, or run beside the team, and thus increased both the speed of travel and the daily distance covered.

extensive than ever it was on the mainland or Alaskan coasts, and has been a significant factor in the continued viability of trapping on Banks Island.

Some of the greatest changes in the early trapping pattern described previously came in the 1940s. During the years 1945-48, several trappers were running lines of 100 to 200 miles in length, with 600 or even 800 traps, and making trips of 10 to 14 days or more, much as is done today. A few of the best trappers were spending up to 75 per cent of their time on the trail, making trips of 17 or 18 days.

This fairly rapid growth in the number of traps and the length of lines was probably a response to the declining economic conditions; a recognition that in order to make a given amount of money one had to get more foxes than before, and that this could only be done by setting more traps over a greater distance. This had not happened at the end of the 1930s, when prices were low, because there had been both a greater abundance of foxes and less surplus capital to reinvest in traps.

Figures 3.3 to 3.9 and Tables 3.11 and 3.12 illustrate the expansion of the trapping grounds since 1928. Of the 484 individual winterings on the Island, the traplines for 303 have

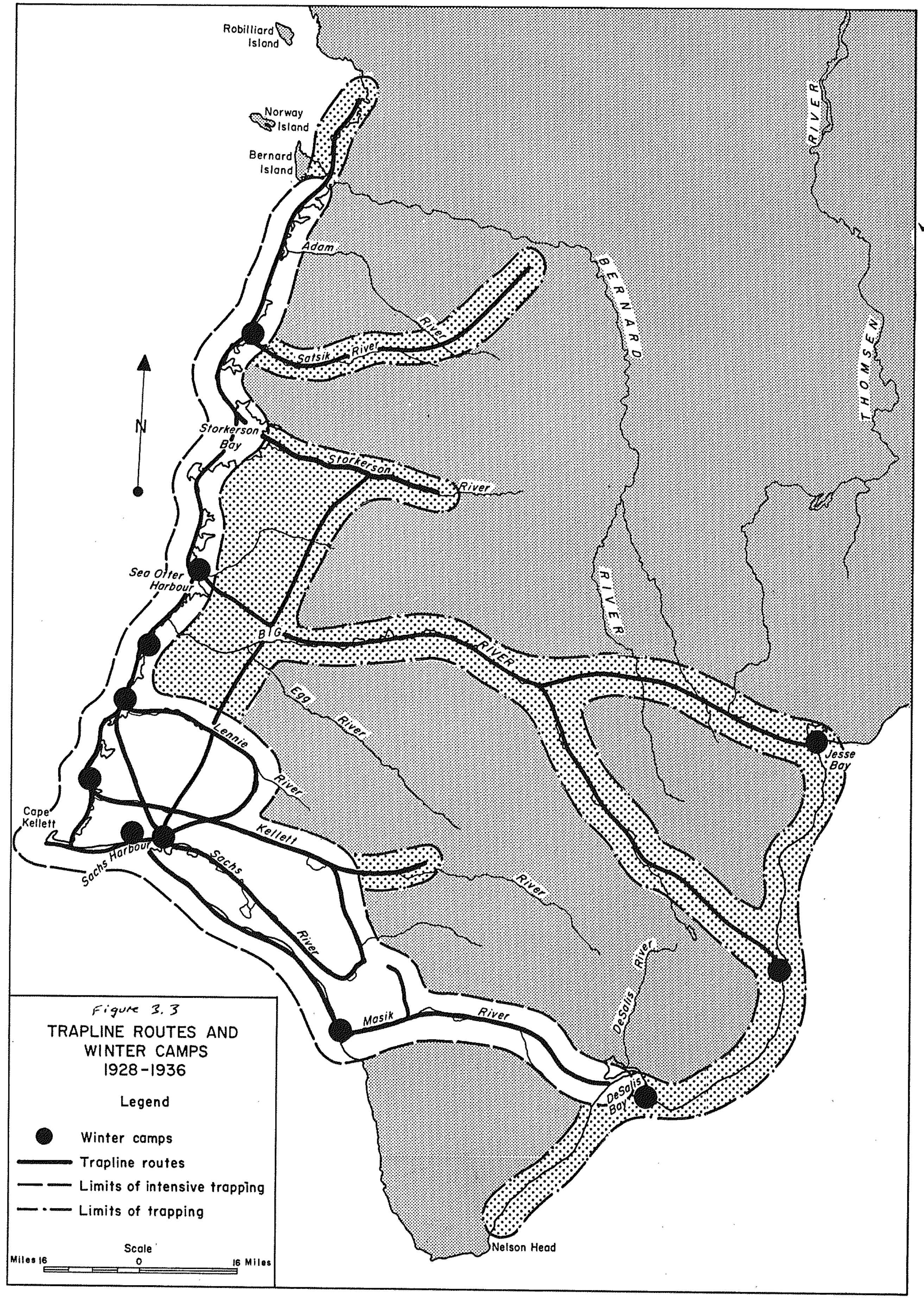

Figure 3.3
TRAPLINE ROUTES AND WINTER CAMPS 1928-1936

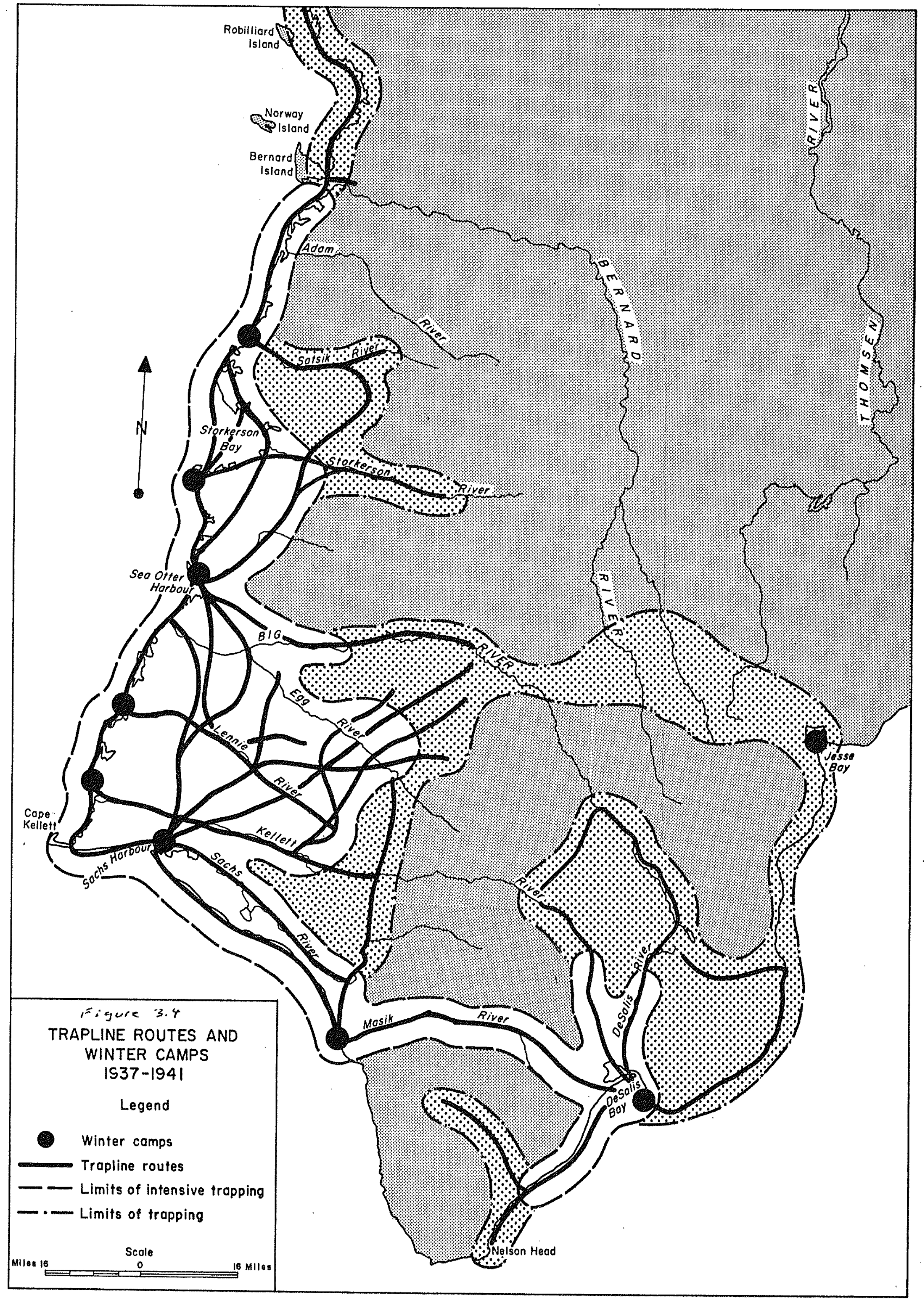

Figure 3.4
TRAPLINE ROUTES AND WINTER CAMPS 1937-1941

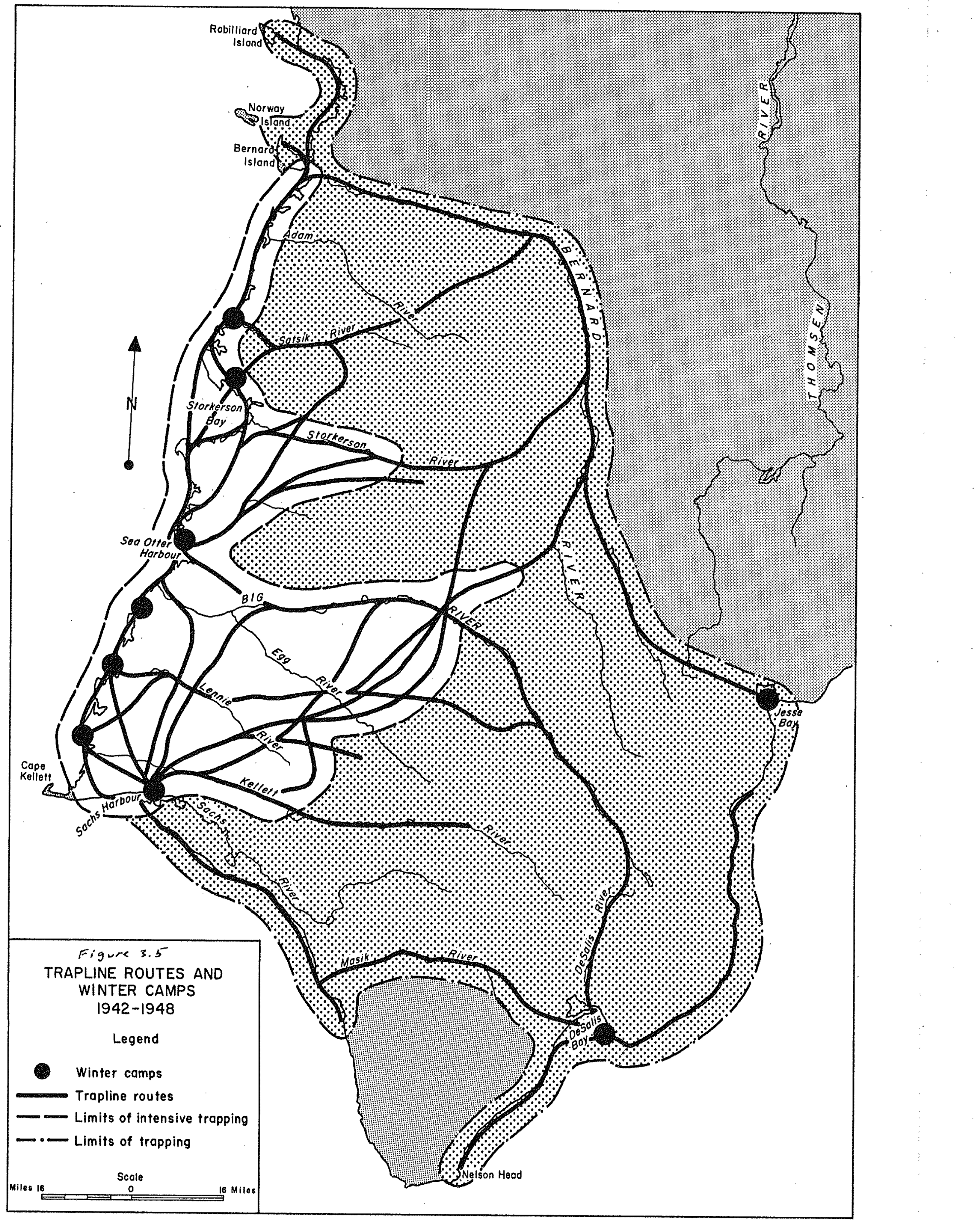

Figure 3.5
TRAPLINE ROUTES AND WINTER CAMPS 1942-1948

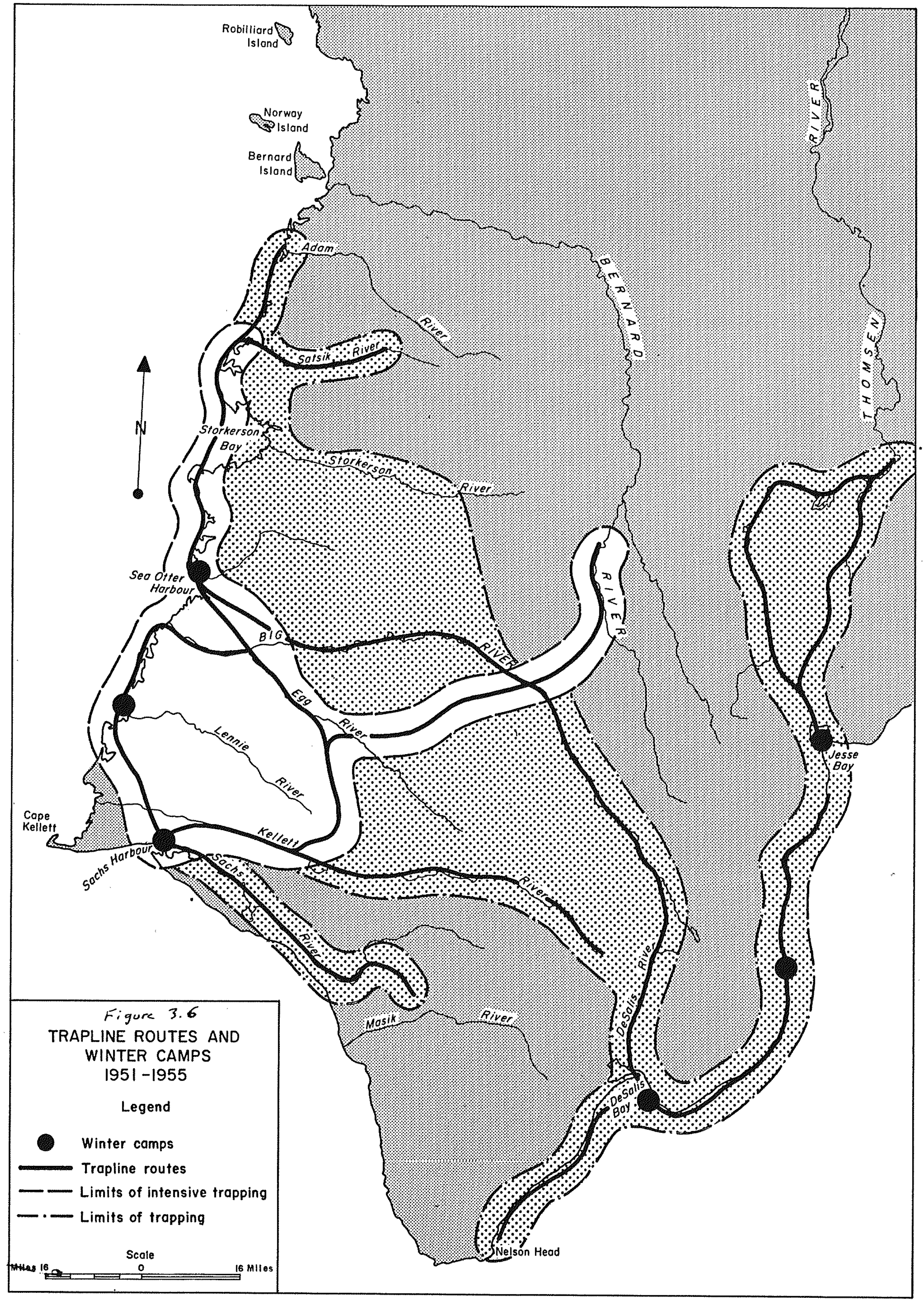

Figure 3.6
TRAPLINE ROUTES AND WINTER CAMPS 1951-1955

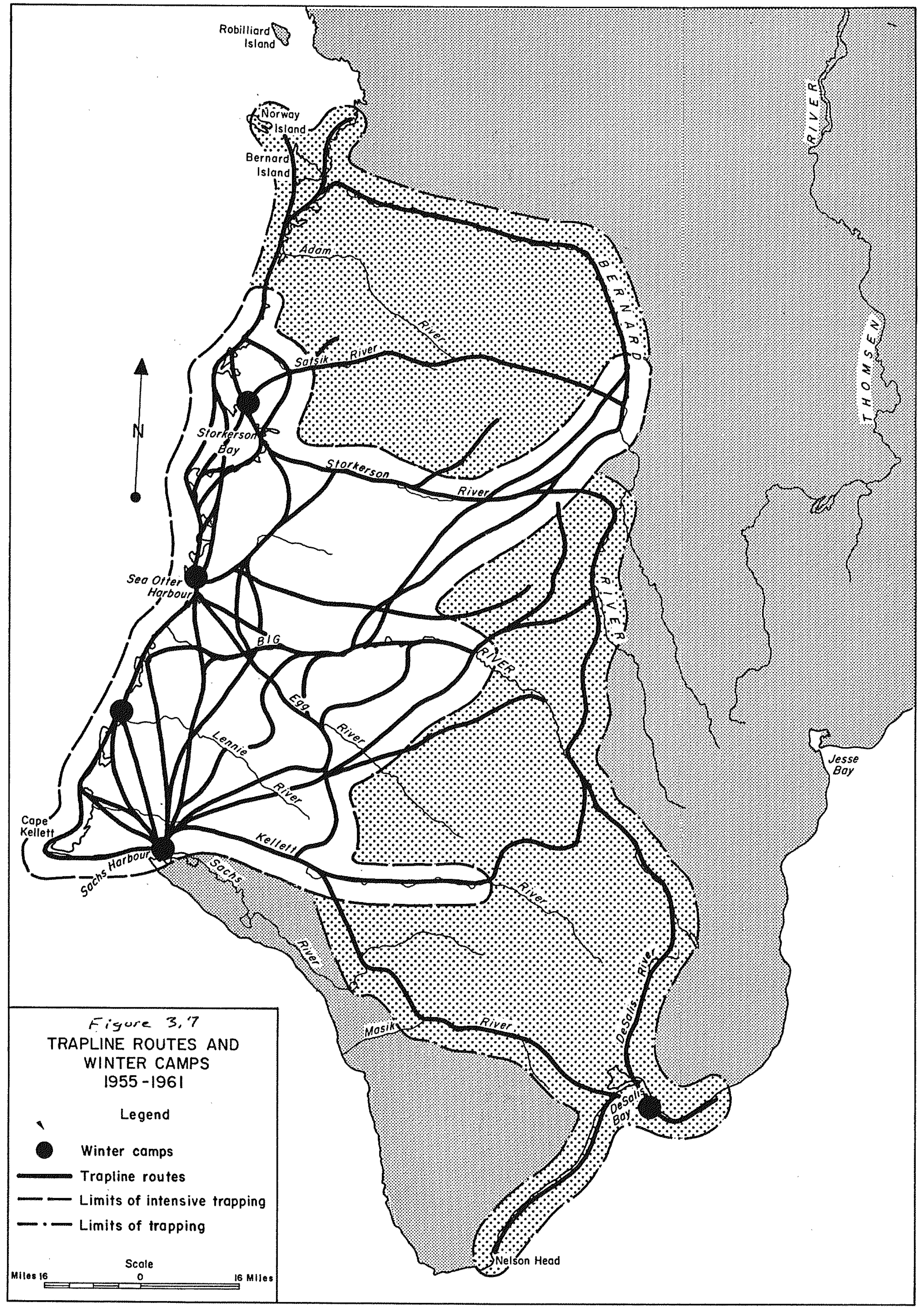

Figure 3.7
TRAPLINE ROUTES AND WINTER CAMPS 1955-1961

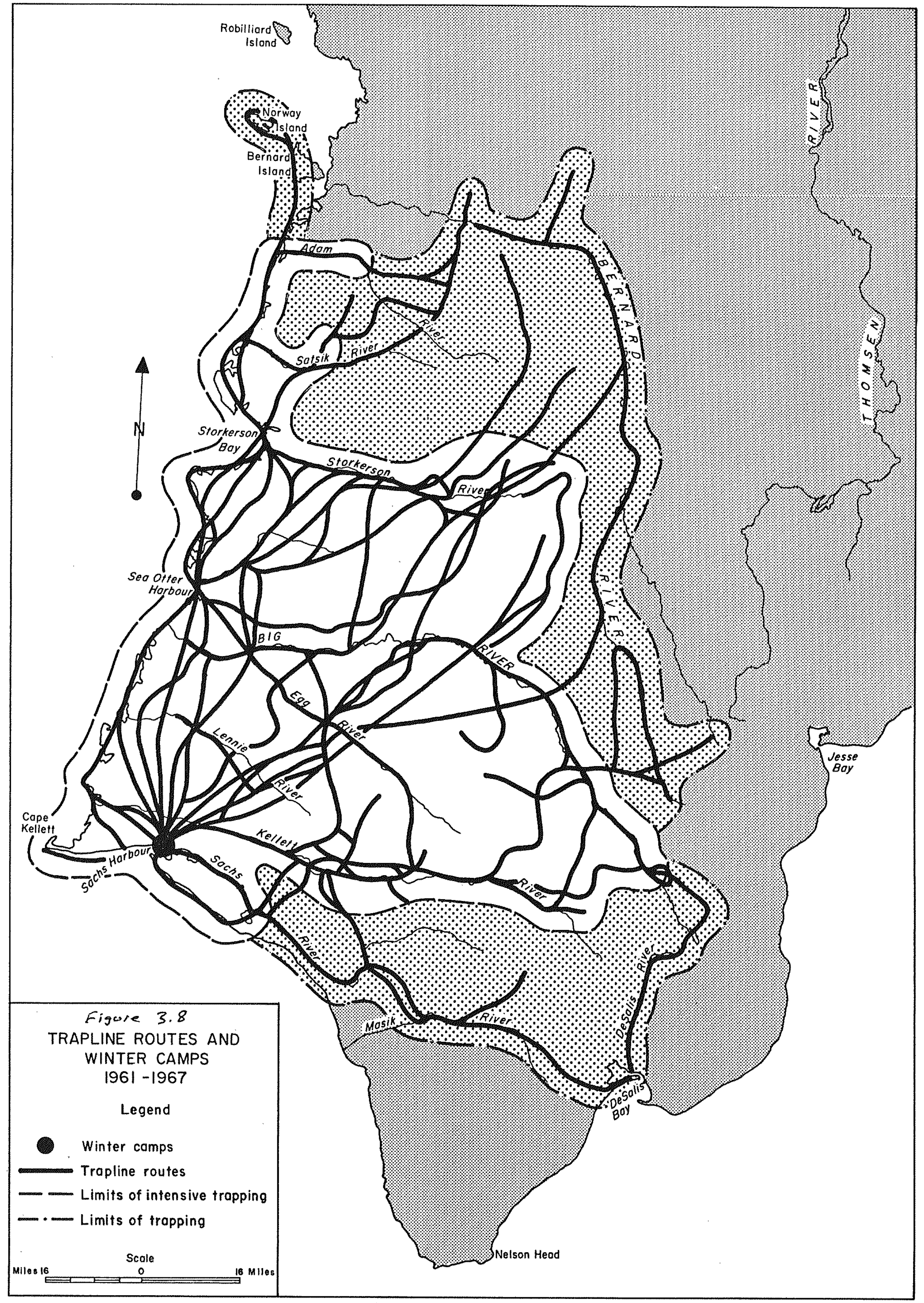

Figure 3.8
TRAPLINE ROUTES AND WINTER CAMPS 1961-1967

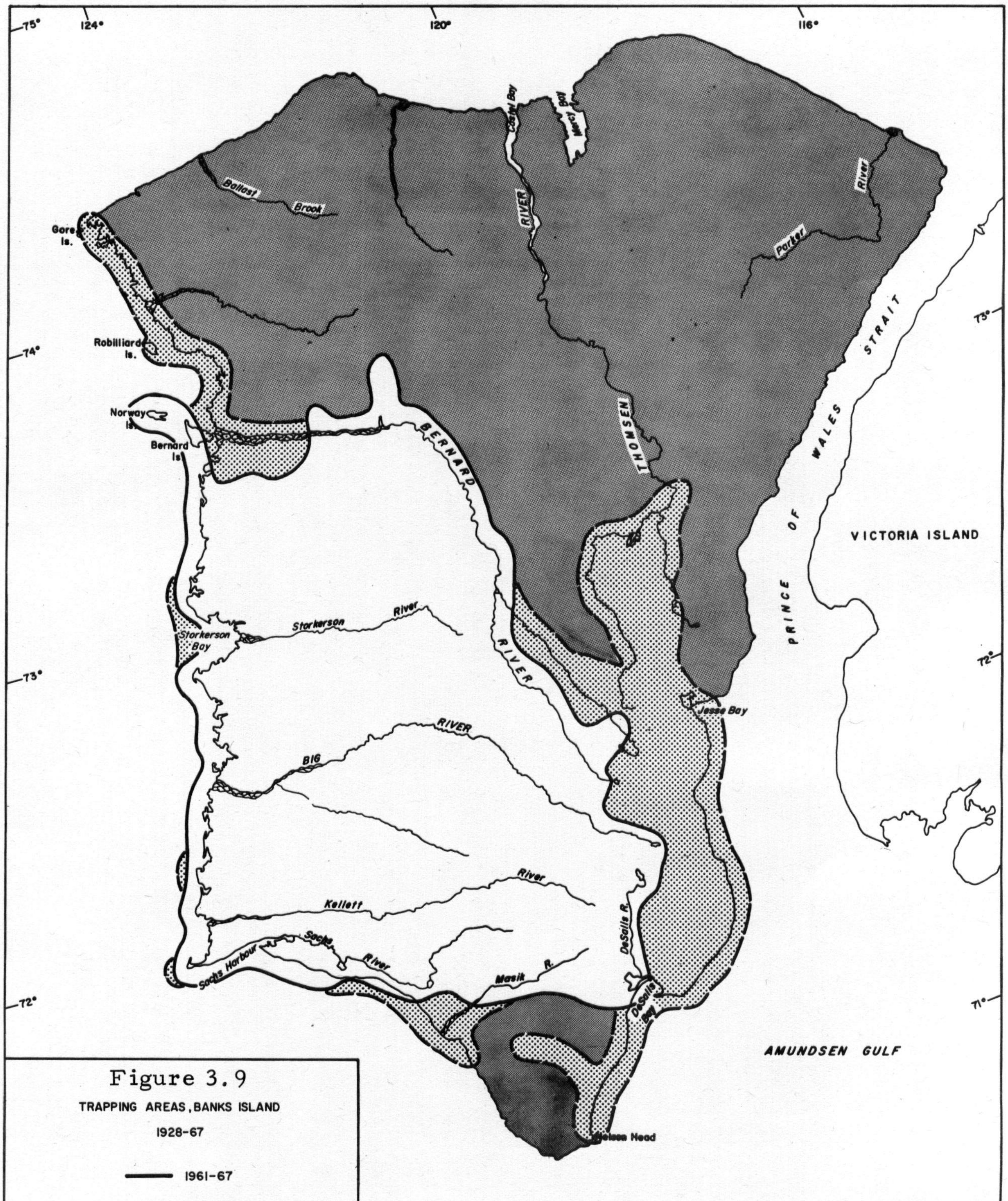

Figure 3.9

TRAPPING AREAS, BANKS ISLAND

1928-67

TABLE 3.11

Extent of trapping grounds, Banks Island, 1928-67

Years	Total extent (square miles)	Proportion of whole Island[a] (per cent)	Area of intensive use (square miles)	Proportion of whole Island[a] (per cent)
1928-36	5,830[b]	19	2,690	9
1937-41	7,850[b]	25	4,000	13
1942-48	13,120	42	3,470	11
1951-55	7,770[b]	25	2,460	8
1955-61	10,540	34	4,480	14
1961-67	10,770	35	6,290	20

[a]Total area of Banks Island plus approximate three mile limit offshore equals 30,930 square miles.
[b]Estimated.

Source: Figures 3.3 – 3.8.

TABLE 3.12

Development of inland trapping, Banks Island, 1928-67

Years	Inland part of utilized area[a] (square miles)	Inland proportion of utilized area (per cent)	Inland part of intensive area[a] (square miles)	Inland proportion of intensive area (per cent)
1928-36	3,360[b]	58	1,190	44
1937-41	4,970[b]	63	2,130	53
1942-48	10,240	78	2,290	66
1951-55	5,840[b]	75	1,570	64
1955-61	8,560	81	3,320	74
1961-67	9,120	85	5,020	80

[a]Areas three or more miles from coast.
[b]Estimated.

Source: Figures 3.3 – 3.8.

TABLE 3.13

Relationship of trapper population to size of trapping grounds, Banks Island, 1928-67.

Years	Mean number of trappers per year	Maximum area trapped (square miles)	Territory used per trapper (square miles)[a]
1928-36	11.8	5,830	494
1937-41	14.3	7,850	549
1942-48	22.8	13,120	575
1951-55	12.0	7,770	648
1955-61	11.3	10,540	933
1961-67	17.2	10,770	626

[a]This statistic is presented only for comparative purposes. Only in the grossest sense does it represent an absolute value, partly because it is an average based on other averages, and because it is a function not only of trapline length (with the reservations noted in the text) but also of the total configuration of traplines.

Source: Tables 3.8, and 3.11.

been recorded through interviews. An even higher proportion of the traplines of the best and most energetic trappers (i.e. the longest traplines and those covering new ground) have been recorded. As some if not most of the unrecorded lines followed the routes of those already recorded, the routes and areas depicted on the maps are nearly comprehensive. For those periods for which information is somewhat deficient (1928-41, 1951-55), the boundaries of maximum extent of use have been adjusted to take in those areas which would most likely have been trapped from certain camps. The delimitation of the areas of intensive use has been made to distinguish between those routes which may have been used only once or twice, and those which were used repeatedly and by several trappers. It should be noted that only the routes are depicted, not each individual trapline.

In order to measure and relate the spatial aspects of trapping intensity since 1928, it is necessary to delimit areas of exploitation or land use in relation to the line trapping of arctic foxes. The development and applications of this method of delimitation are discussed in Chapter Five. It is postulated that under average conditions a trap "exploits" an area of three miles radius around it. Therefore land three miles on either side of a trapline, plus somewhat more distant areas completely enclosed by traplines, are considered to be used for trapping. The total areas so delimited are somewhat arbitrary parameters of the changing level of exploitation, which may be compared from one time period to another. They are not strict delineations of exploited versus unexploited areas, for there is no way of verifying that a given trap will attract foxes from one point and not another, nor can it be said where a fox in any given trap might have come from. The areas of use as determined here are more useful as comparative than as absolute measures.

From Table 3.11, we see that in general both the maximum extent of use and the area of intensive use have increased over the years. Changes in the area trapped are functions of the changes in the number, length, configuration and spread of the traplines. These in turn reflect the number and distribution of trappers, their knowledge, skill and equipment, the level of co-operation or competition amongst kin/residence groupings of the population, and general economic conditions. Not all of these factors can be quantified, so only tentatively may we suggest the relative weighting of these factors in explaining the various aspects of land use.

The size of the trapping area shows a marked association with the number of trappers, particularly when the mean number of trappers per year and the maximum extent of trapping area are compared for each historical period. It therefore seems appropriate to begin with the relationship between population and utilized area, and to interpret the variation from it in terms of other known influences. Variation in the area of intensive use must also be considered. This exhibits no direct correlation to population, but may also be explained in terms of the other factors mentioned.

The first period of settlement was experimental, and as knowledge of the Island increased, there was a dramatic shift to inland trapping. For example, duri ng the 1950s, the approximate mean of 12 trappers per year used much more territory than did the same number between 1928 and 1936. The territory used per trapper has almost steadily increased over the years[1] (accepting the limitations of this concept noted in Table 3. 13), and follows naturally from the increase in the number of traps and the length of lines.

It has been suggested that the remarkably large

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[1]The unusually high figure for 1955-61 probably reflects the drawing off of all but the most energetic and committed trappers by wage employment opportunities elsewhere.

territory used between 1942 and 1948 was a result of the large trapper population plus the general increase in trapline length. Another factor may have been the disparate nature of the camp groups on the Island. During that period the crews of virtually every schooner were distinguished from one another by kin and residence ties, and some of these groups were under pressure to find new trapline routes since much territory had already been preempted by the more established trappers. The ephemeral nature of this expansion is demonstrated by the fact that the area of intensive use actually declined during this period. In the 1951-55 period, not only were there fewer trappers, but these were represented chiefly by three family groups, all from the Tuk-coastal area, each monopolizing a fairly restricted number of routes.

The total area utilized for trapping on Banks Island has continued to increase, despite the abandonment of the camps. This is in sharp contrast to the experience of the older and larger fur trade centres, both in the northern forests and on the tundra. There centralization has been accompanied by the abandonment of the outlying resource harvesting areas, in favour of the immediate hinterlands, which then become overexploited. Although the number of points of origin for traplines has steadily declined since the 1930s, adjustments in the length and arrangement of traplines have more than compensated for this, even since the final abandonment of the camps. During the most recent period, the consequence of the increased trapper population has been a spectacular expansion of the area of intensive use, rather than of the maximal extent. Whether some sort of equilibrium is now being approached will be discussed in Chapter Five.

Theoretically, given a rectangle of uniform surface characteristics and a single point of origin at one corner, the ideal arrangement of traplines would be a set of equally spaced lines radiating from this point, forming a quadrant of utilized land. A quadrant of shorter radius would represent the area of intensive exploitation. The region north and east of Sachs Harbour is in fact broadly uniform trapping country, and Figure 3.8 shows that this theoretically optimum pattern of use is now being approximated. The continued growth of inland trapping (Table 3. 12), has been a necessary adjustment to the centralization at Sachs Harbour since with everyone living at one point on the coast, only a few trappers can feasibly trap the shore line, and the rest must go inland.

The use of other land areas for supporting activities such as caribou and seal hunting, has readily been adjusted to existing trapping and camping arrangements; the critical spatial requirement has always been for trapping. A complete discussion of all aspects of current land use will be given in Chapter Six.

Fur marketing

The special circumstances of the settlement of Banksland gave rise to a pattern of trade quite unlike that of most other fur trade communities; one which despite many changes has continued to be both unique and efficient. The absence of a local trading concern, and the summer trade with Pedersen and the Hudson's Bay Company, has already been described. After Pedersen's withdrawal the Bankslanders traded with a number of Aklavik concerns, chiefly S.M. Peffer Ltd. During the prosperous second phase of settlement, and once again in 1948, two or three individuals consigned some of their furs directly to auction houses in Edmonton, Winnipeg and Seattle (Table 3.14). This practice appears to have been encouraged by agents of these auction houses who came north looking for business in these years, and who were attracted by the reputation of individual Banksland trappers. A number of

TABLE 3.14

Foxes exported directly to auction houses, 1939-67

Year	Edmonton	Montreal	Vancouver	Winnipeg	Seattle	Total	Proportion of total catch (per cent)
			Destination				
1938-39					400	400	6.2
1939-40	100					100	6.8
1940-41				200		200	3.7
1947-48	593					593	26.5
1952-53		100				100	8.3
1953-54	520	100				620	35.8
1954-55	2229		300			2529	42.2
1955-56	934					934	90.6
1956-57	369					369	94.4
1957-58	2567					2567	93.7
1958-59	700	45				745	38.4
1959-60	672					672	66.0
1960-61	2384	1245		73		3702	67.7
1961-62	1006	258				1264	63.8
1962-63	1734	329				2063	60.2
1963-64	939	294	32			1265	63.8
1964-65	576	152	43	8		779	50.5
1965-66	1509	277	43			1829	61.4
1966-67	4369	855	130	10		5264	60.9

In addition, the following quantities of foxes were exported by part time trappers:

1955-56	7	1960-61	14
1956-57	17	1962-63	23
1957-58	50	1965-66	76
1958-59	20	1966-67	414

Source: Fur Export Tax Returns, Fort Smith, N.W.T.

muskrat trappers in the Delta were also sending their furs out, and the local broadcasting of fur auction reports no doubt aroused the interest of the Bankslanders as well.

The renewal of settlement in 1951 was backed heavily by local trading concerns, chiefly the Hudson's Bay Company in Tuktoyaktuk and L.F. Semmler in the Delta. Not until the trappers had fulfilled their obligations to these concerns were they able to send furs out again. By the mid 1950s however, with improved communications with the outside on one hand, and low prices and restricted credit prevailing locally on the other, the advantages of exporting were clear. In addition, Fred Carpenter, the leader of the Banksland group, was personally acquainted with an official of Edmonton Fur Auction Sales Limited, who through Carpenter encouraged the Bankslanders to export, offering higher prices and more credit. After 1955, the few relatively well-to-do families remaining on Banksland conducted virtually all their trade directly with Edmonton, and gained the additional service and benefit of bulk purchasing at southern costs.

There was simultaneously, however, an increasing demand for a small store in the village which could stock a few essentials in case families ran out before summer. The Hudson's

Bay Company declined to meet this need, and the Department of Northern Affairs, after toying with the idea of a Government operated or supervised store, encouraged Fred Carpenter to take on this operation (IA&ND/NAB 1000/176(3)). Carpenter had for years had both the means and initiative to bring a large outfit and could usually spare a little in trade to those in need. He obtained a trading post permit in 1958, and with the financial assistance of Edmonton Fur Auction Sales began importing considerable stock. Since that time the high proportion of direct exports of furs has declined, as families grew used to trading some their furs locally for immediate needs and for certain specialized goods. More recently the Bankslanders have also sold some of their furs to Semmler in Inuvik, to cover specific stock requirements and to obtain cash against their accounts when in Inuvik. The majority of furs however are still exported. Edmonton has been the chief destination, but a few trappers also send furs to Montreal and Vancouver.

An important consequence of exporting furs to auction has been payments well above the local average price. An examination of Figure 3.10 shows that the Bankslanders have almost always obtained better than the N.W.T. average price, and this

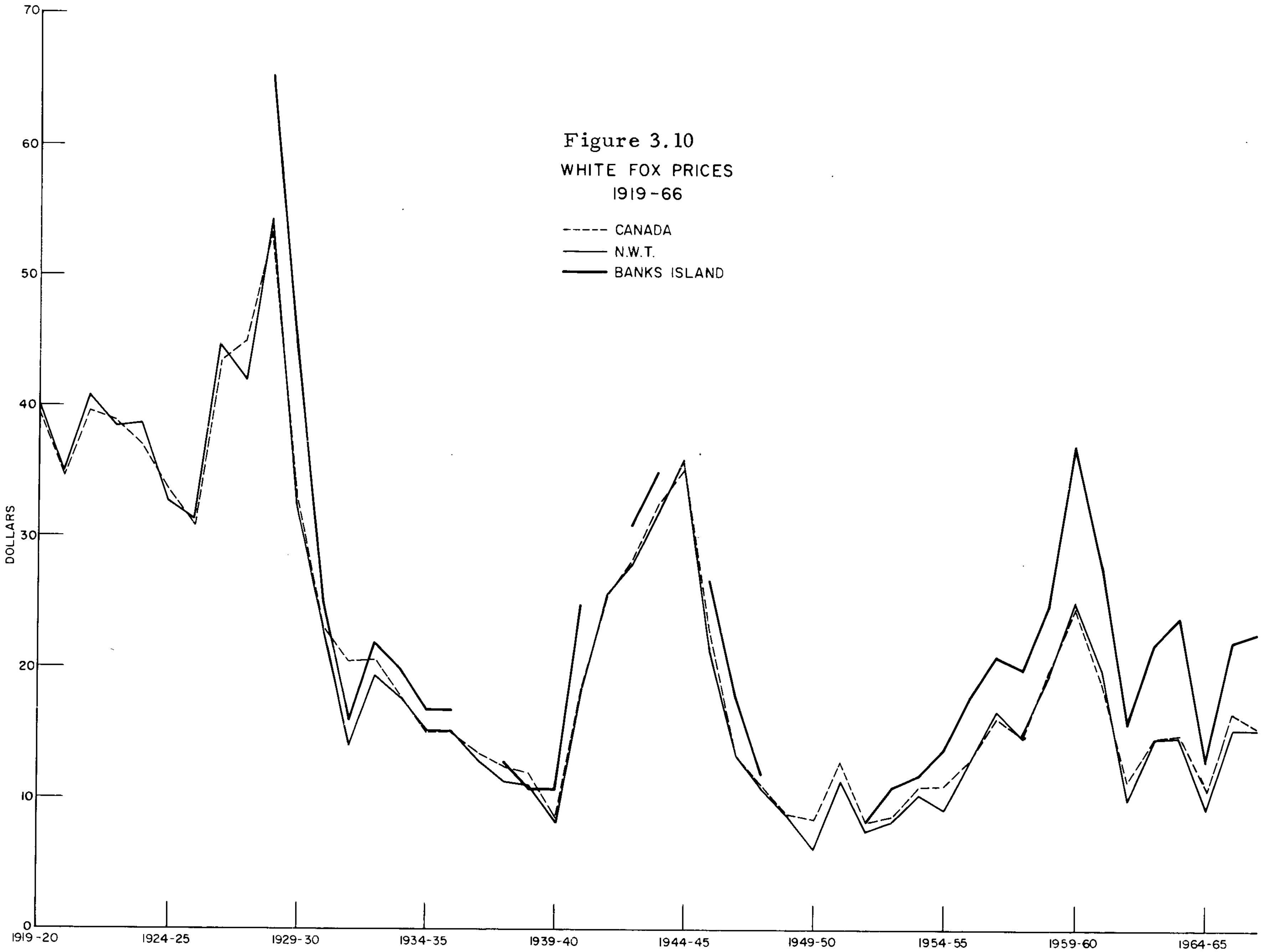


Figure 3.10
WHITE FOX PRICES
1919-66

margin has greatly increased in the last decade. Their gross income has been consistently 25 per cent above local trade, and the benefit of bulk purchasing in Edmonton has reduced their costs. In an age when the fur trade has declined despite general economic growth, and trapping at best brings a good living rather than the opulence of former days, such an increment has been an important factor in maintaining the health of the Sachs Harbour economy.

Income and expenditure

Almost $2,000,000 worth of white fox has been harvested from Banks Island since 1928. The Island has provided a better living for trappers than any other region in northern North America, although annual income has been erratic due to fluctuating prices and production. During the early years the Island provided particularly remarkable wealth. The mean annual per trapper income between 1928 and 1936 was about $3,500, with the mean maximum income being about $7,900. This annual mean of $3,500 was almost double the average earnings of skilled workers, and over five times the earnings of unskilled workers in Canada as a whole for the year 1931 (Urquhart and Buckley, 1965;96). Even during the depths of the Depression the Banksland trappers earned more than double the average wage in the manufacturing sector of the economy. Income levels of the 1930s were down drastically from the previous decade, but the trappers remained well-to-do by national standards, and it is not surprising that some were still in a position to buy expensive schooners and take winter holidays in southern Canada. At least two Bankslanders who died before 1941 left estates with net values of tens of thousands of dollars.

Figure 3.12 shows the relationship between trapper income on Banks Island and the mean annual level of wages and salaries in the manufacturing industries of Canada (figures unadjusted for inflation). It must be stated at the outset that such a comparison is complicated by the fact that on the one hand, the trapper earns a significant non-dollar income through country resources used for food and clothing, while on the other he is required to reinvest a portion of his cash income in capital stock. For the present these are assumed to be approximately self-cancelling; i.e. that net cash and kind income is about equal to gross cash income, and therefore comparable to wage data which are neither augmented by non-dollar income nor diminished by reinvestment requirements. Differing expenditure requirements and

TABLE 3.15

White fox production, Banks Island, by historical period

Years	Trapping man-years (full-time trappers only)	Total fox catch	Mean catch per man-year	Trapping man-years and catch for part-time trappers
1928-36	94	11,771	125	
1937-41	57	15,094	265	
1942-48	114	17,012	149	4/15
1951-55	48	11,580	241	
1955-61	68	12,590	185	14/359
1961-67	103	20,374	198	24/1098
Total	484	88,421	183	42/1472

Source: Table A.5.

TABLE 3.16

Earnings from white fox, Banks Island, by historical period and phase

	Total value of Banks Island Catch	Mean annual value of Banks Island catch	Mean annual income per trapper	Mean annual highest individual income
a. by period				
1928-36	$ 317,713	$39,714	$3,380	$17,562
1937-41	246,066	61,517	4,317	8,920
1942-48	406,516	81,303	3,566	10,241
1951-55	140,493	35,123	2,927	4,599
1955-61	328,457	54,743	4,977	7,669
1961-67	421,950	70,325	4,097	8,585
b. by phase, and total				
1928-48	$ 970,295	$57,076	$3,661	$ 8,669
1951-67	890,900	55,681	4,068	7,245
1928-67	$1,861,195	56,400	3,845	7,979

Source: Table A.6.

Figure 3.11

WHITE FOX PRODUCTION, BANKS ISLAND

1928-67

(average catch per trapper)

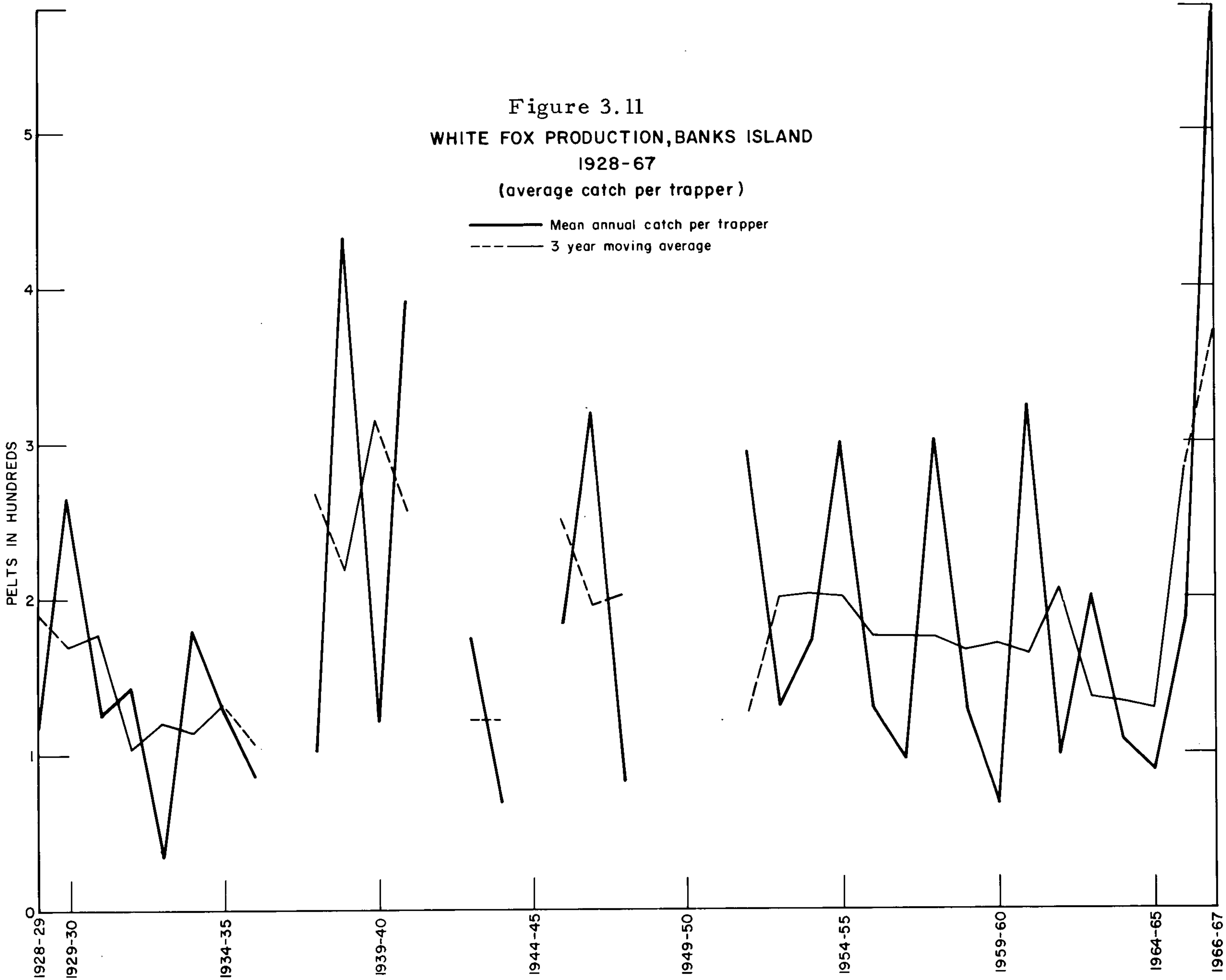
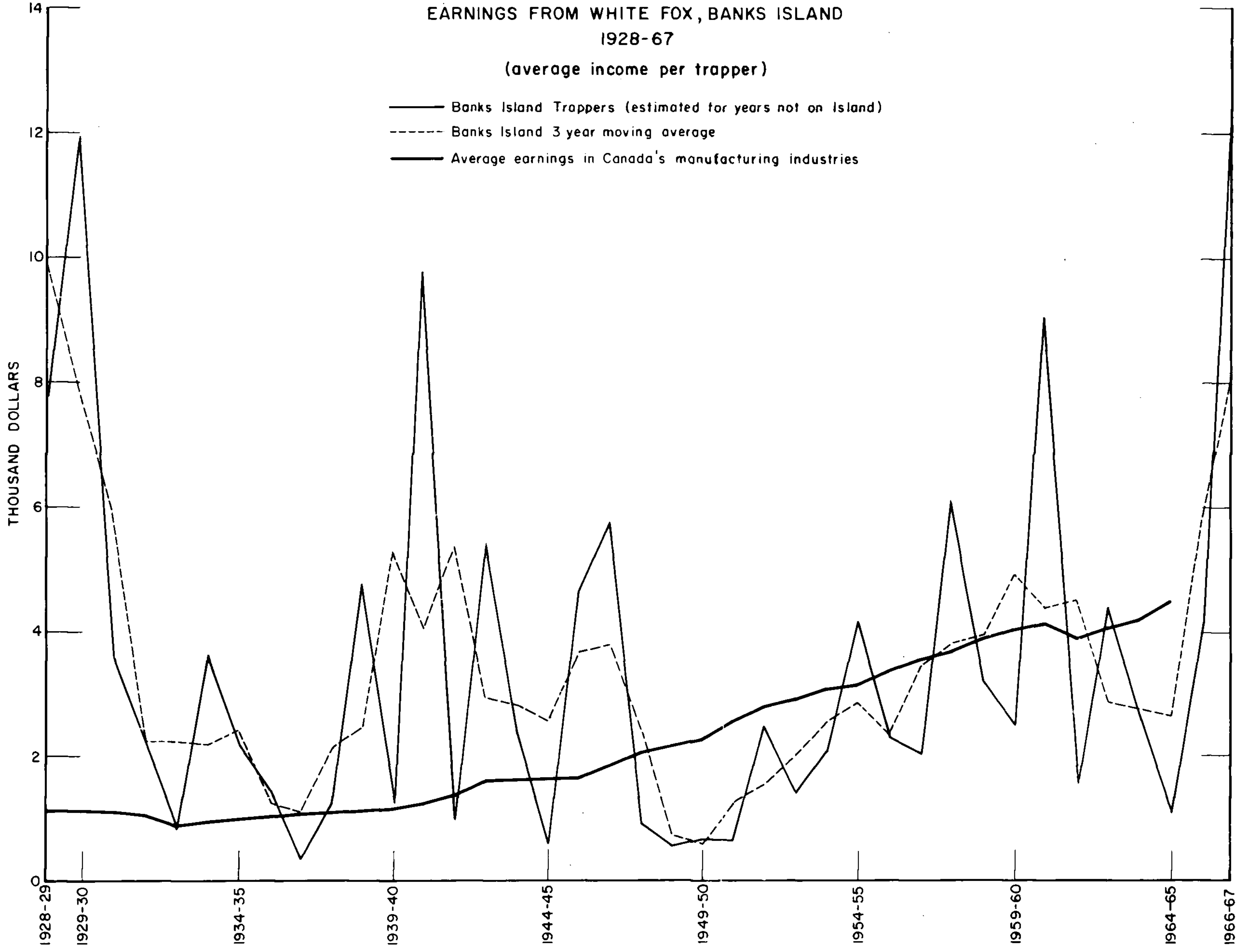


Figure 3.12

EARNINGS FROM WHITE FOX, BANKS ISLAND

1928-67

(average income per trapper)



desires, and deductions related to national or provincial services and benefits, are also ignored.

Mean trapper income has varied from one period to the next, and very much so from year to year, although Figure 3.12 indicates that over the 39 year span its general level has not increased. The national level of wages and salaries in manufacturing has, however, quadrupled during this time, with the result that today's trapper is in a relatively much weaker position. Until 1948, the trappers' income never fell below the national wage mean except in the years they were unable to reach Banks Island. The three year moving average shows that income was about double the national mean during the thirties, quadruple during the early war years, and fell to double again in the mid forties before plummeting in 1948.[1] This decline heralded another three years of economic stagnation during which income was less than half the national average. Since then the wide fluctuations in income have centered roughly on the national figure. The moving average shows a gradual recovery in the early 1950s to a high point exceeding the

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[1]On the mainland coast and in the Delta, trapping income probably fell below the national wage mean in 1930, and with the possible exception of the war years has continued to lag further and further behind.

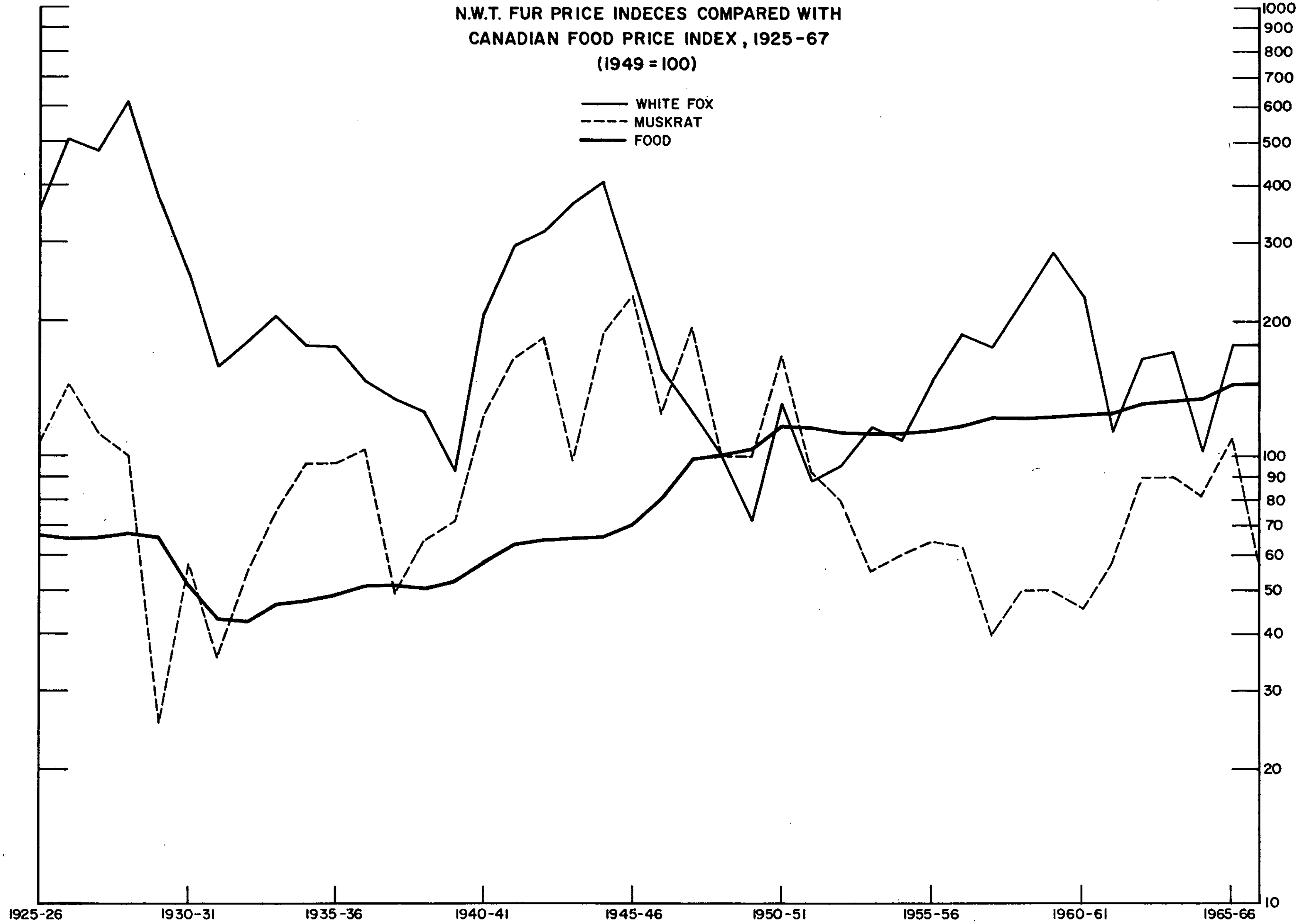
national mean in the late 1950s, another decline in the early sixties, and in the last two years a marked increase. Since 1951 the moving average has remained within 50 per cent on either side of the national mean, and usually much closer.

Aside from the very first years of settlement, two sustained earning peaks stand out. The first was the 1937-41 period during which mean income was $4,317, and the second was 1955-61 when mean income rose to $4,977. Possibly a third such peak is now occurring but it is too early to tell. Interestingly enough, the peaks and troughs in the moving average coincide rather closely with those in the price received per pelt (Figure 3.10), although the big earning peak for Bankslanders in the 1940s slightly precedes the price peak, for reasons already outlined. This strongly suggests that despite the many and variegated strands in the development of settlement and production over the years, the economic status of the Banksland trappers has been more closely linked to the general health of the fur market than to any other single factor or even combination of factors.

The spread of incomes during each period provides a further illumination of some of the characteristics of these periods already noted. For example, during the 1940s when the population was the least homogenous and trapper capability the most varied, the greatest differential occurs between mean average and mean high incomes. Conversely, when the opposite was the case during the 1950s (especially the later years) there was much less difference. Otherwise, the mean high income has been slightly over double the average (see Table 3.16). Those trappers who are consistently among the top three or four earners have fared extremely well over the years, and even today earn considerably more than does the average citizen in industry.

The allocation of income has also undergone change. Traditionally, there have been three fundamental areas of expenditure: food, fuel and capital equipment. The first two are inelastic, in the short run at least. Over the entire period however, fuel has become less costly. Present expenditure on all fuels may be as little as half that of a generation ago, even without adjusting for inflation. The change in food expenditures is less clear. Nationally, food prices have almost tripled since the Depression. (Figure 3.13 compares this increase with fur price trends). Yet local food preferences have changed so that although expenditure has undoubtedly risen, the degree cannot be stated. The focus of re-investment in capital equipment has changed,

Figure 3.13


N.W.T. FUR PRICE INDECES COMPARED WITH
CANADIAN FOOD PRICE INDEX, 1925-67
(1949 = 100)
WHITE FOX
MUSKRAT
FOOD
1000
900
800
700
600
500
400
300
200
100
90
80
70
60
50
40
30
20
10
1925-26
1930-31
1935-36
1940-41
1945-46
1950-51
1955-56
1960-61
1965-66

and the total has probably risen somewhat. One large expenditure no longer required is the maintenance and operation of the schooners. No expenditures were made for depreciation; in most cases when the schooners finally deteriorated they were not and could not have been replaced. With the exception of the schooners, however, capital stock had been maintained rather than exploited, and as equipment has become more specialized, complex and expensive, the reinvestment level has tended to increase. Schooner expenditures were in any case replaced by canoe and outboard purchase and maintenance, and the increase in the number of traps and dogs has further raised costs.

During the first phase of settlement when times were good (and relative to the mainland this was almost always the case), a fair portion of income was devoted to "luxury" expenditures. Non-essential durables and services, gambling and parties were important objects of expenditure; the avenues to prestige which to the Bankslanders was greater reward for their hard winter's work than mere cash. The Bankslanders were more successful at this than most of the mainlanders because they had more money. Yet despite the obvious displays of wealth, they were careful with their money. Slobodin recalls that the

Bankslanders had the reputation among the McPherson Indians of coming to Aklavik with two bags of money, one for gambling, and the other for their outfits (personal communication, 14 August 1966). The bags of money were doubtless apocryphal; but the tale itself indicates the shrewdness and foresight that were seen as characteristic of the Bankslanders.

During the late 1950s when discretionary income again reached high levels, such spending tended to be channeled into airplane charters, short sprees in Inuvik and the occasional holiday "outside", although such indulgences were not universal amongst the trappers. This type of spending still continues, but for most people is less significant than in former days. It has been partly supplanted by a new sector of expenditure in the last decade: housing, furniture and household goods. The maturation of the Banksland colony has given its inhabitants a more sedate but nonetheless prosperous image.

The white fox resource system was born on the mainland and successfully transplanted to Banks Island. There it found an environment which sustained and developed it well enough to withstand the periodic adversity the years visited upon it. Once it withered badly, and on other occasions wilted, but it clung to life. Today trapping on Banks Island is in good health, but in order to assess its future prospects we must first inspect and diagnose its present condition in detail. We must know not only its morphology and anatomy, but how it functions.

CHAPTER FOUR

SACHS HARBOUR TODAY

For an outsider, arrival at Sachs Harbour is exciting, whether for the first visit or the tenth. Almost all aircraft now come in on the gravel strip which straddles the ridge above the village, although it is not so long since they landed on the ice or water surface of the harbour. In winter, when the aircraft comes to a halt at the edge of the strip, one looks out into the twilight and the blowing snow, and there will be a dozen dogteams lined up. No manner of bitter weather prevents the people from coming to the plane, for especially in winter its arrival is an important event. Mail arrives, parcels come from relatives in Inuvik or Tuktoyaktuk, or there may be special orders to pick up -- a box of traps, two bottles of whisky perhaps, or a new radio. The trappers also bring bales of fur to the aircraft, for on this run the southbound freight is usually more valuable than that which comes in.

In summer, when walking down the hill from the air strip, one sees that the thin cover of moss and lichen is insufficient to hide the pale brown earth. Soil stripes have developed on the hillsides and everything appears to be flowing in a slow viscous manner down to the sea. The road, which connects the village, the airstrip and the weather station, is the only one on the island. Even the village itself is without streets.

The village[1]

At the crest of a knoll on the hillside, the entire village comes into view. Twenty or so buildings are strung out along the shore, covering almost a mile of waterfront. At first glance this may seem an incongruous arrangement in such a harsh, unsheltered and isolated locale, but each family needs its own waterfront space. Most of the buildings are small frame houses, each with a small tent or two nearby, a few oil drums outside, a dog team chained up, perhaps some spare lumber or sheeting around, and some clothes drying on a line. There are also two larger complexes: the Royal Canadian Mounted Police barracks at the foot of the road, and the Roman Catholic Mission beneath the bluff. And, looking back beyond the end of the airstrip, quite separate from the village, are the orange and white buildings of the weather station.

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[1] A more complete description of the village is given by Usher, 1966. In this chapter, "the present" refers to 1967. Developments since that date are footnoted.

The native houses are of frame and plywood construction. Although small, they are well insulated and strongly built, with large exterior porches. Most men have had some practical carpentry experience, and are proud of the buildings which they design and construct themselves. Heating oil is the standard fuel, all houses being equipped with oil stoves and space heaters.

Inside, the houses are divided into a large front room, and one or two separate bedrooms. Besides the oil range, the front room normally contains a "chrome set" of kitchen table and chairs, a couch, prefabricated kitchen cupboards and a formica counter with a basin, all ordered by catalogue from outside. On the walls may be a picture or two, as well as a religious motto or object. Most front rooms are kept clean and orderly, which is an achievement since the children play in them, the men use them as workrooms for repairing engines and other gear, foxes are skinned, dried and floured in them, and the women use them for cooking and for making and washing the clothes. Moreover, tea is usually on the stove and bannock is ready, for virtually all the social life of the village takes place in these front rooms.

There is no water supply system, nor is there any organized garbage or sewage disposal at Sachs Harbour. Water is obtained from lake ice, river water or snow, depending on the season. Waste is incinerated or dumped in the bay.

Electricity is not available for general use in Sachs Harbour, and the native people still depend on naptha pressure lamps for light, and dry cell batteries for the operation of small appliances.

In summer meat is stored in large ice cellars, which can be dug readily as the overburden is deep, silty and without stones, and ground ice occurs chiefly in the form of wedges. There are eight native-owned cellars with a total storage space of about 1500 cubic feet. These are usually shared by two neighbours, although there is one large community cellar east of the settlement.

Air, sea and radio links are now maintained with the mainland. A supply vessel visits the settlement once annually, and there is a weekly or biweekly aircraft from Inuvik. There is a post office at the weather station, and a commercial radio-telephone link with Inuvik in the village provides both telegraph and telephone access to mainland Canada.

Outside agencies

There are presently three non-native agencies operating in the community: A Department of Transport meteorological station, a Royal Canadian Mounted Police detachment and a Roman Catholic mission. These bring about ten outsiders to the community as transient residents, all single males, and of these seven are at the meteorological station. This station acts as an air-radio communications link for the region, and also maintains the Island's only airstrip. The two R.C.M.P. constables have numerous duties beyond policing the Island (for indeed crime and misdemeanour are extremely rare), and these pertain chiefly to the health and welfare of the community since there is neither doctor, nurse or administrator present. Although almost all Sachs Harbour people are Anglicans, the only mission there was established by the Oblate Order in 1962. In 1965 a large building was erected to house the church, the mission residence, and a meeting and recreation hall.[1]

On the whole, relations between whites and Eskimos have been good. In many ways, the Eskimos have become quite dependent on the existence of the white community at Sachs,

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[1] A Pentecostal mission was established in late 1967.

not only for their official duties but also as they provide facilities for recreation and entertainment. This dependence is mainly on the jobs and institutions rather than upon the individual members of the white community. Most whites are there for only a year or two, and in the eyes of the Eskimos they may come or go, be liked or disliked, but the job they fill remains, and its functions will continue regardless. No white person has ever spent more than five years at Sachs, and in this respect the community is unlike most others in the north, where through long residence a missionary or trader gains considerable personal power and authority in local affairs.

It is for this reason, and because the number of white residents is in any case so small, that the outsider domination so characteristic of northern settlements is largely absent at Sachs Harbour. Both the physical appearance and the life style of the village are the creation of its inhabitants. No outside agency has yet planned the settlement on a grand design, and no local functionary tells the native people how to live or what their opportunities will be. For the outsider, there is no sheltered refuge from the reality of Banks Island life in comfortable Crown housing estates. To live there is to do so on the terms and in the style of the Bankslanders themselves.

Population

The Eskimo population of Sachs Harbour on January 1st, 1967 was 73, divided into 16 families plus five single men. Twelv e of these families and three single men depended entirely upon trapping for their income. Table 4.1 indicates the origins and length of residence on the Island of these full-time trappers (the background and significance of these data has been discussed in the previous chapter).

The remaining family heads or individuals in the settlement, part time trappers whose income is largely derived from other sources, are as follows: two men, formerly excellent trappers, are now full time employees of the Department of Transport and the R. C. M. P. respectively. There are two widowed family heads, originally from Victoria Island, one older boy living at home temporarily, and a man from the Central Arctic paroled to Sachs Harbour. In addition, 28 children from 11 families were attending boarding school in Inuvik or elsewhere. These children are home only during July and August. This gives a total of 101 residents. There are also seven older children who are now permanently living elsewhere.

Any analysis of the structure, schedules and trends of this population must be approached with caution. In the first place this is a very small group, for which the

TABLE 4.1

Ethnic origin, birth place and place of origin of full-time trappers residing at Sachs Harbour, 1966-67

a. Ethnic origin

Alaskan Eskimo	6
Mackenzie Eskimo	1
Mixed Blood[a]	4
Copper Eskimo	4
Total	15

[a]Chiefly those descended from a union of an American whaler with a Mackenzie or immigrant Alaskan Eskimo woman.

b. Region of birth

Mackenzie Delta	6
Herschel – Tuktoyaktuk	0
Baillie Island district	3
Victoria Island	4
Banks Island	2
Total	15

c. Area of residence prior to emigration to Banks Island

Area	Number of trappers	Total years of residence on Banks Island	Average length of residence on Banks Island
Mackenzie Delta	6	59	9.8
Herschel – Tuktoyaktuk	1	7	7.0
Baillie Island district	2	38	19.0
Victoria Island	3	33	11.0
Banks Island[b]	3	24	8.0
Total	15	161	10.7

[b]Refers to individuals raised on Banks Island before becoming independent adult trappers.

d. Period of emigration to Banks Island

1928-36	1
1937-41	2
1942-48	2
1951-55	1
1955-61	6
1961-67	3
Total	15

Source: Field investigations

calculation of the customary statistics and parameters would be pretentious if not misleading. The composition of the group is continually affected by migration, non-resident family members, adoptions, and the temporary presence of married men who have left their families on the mainland, so that it is not a "breeding population" in a strict demographic sense. The people of Banksland are members of two larger groups: the W3 (Delta and Tuktoyaktuk Eskimo) and W2 (Western Copper Eskimo) registration groups, each of which approximate breeding populations. The Bankslanders may reasonably be seen as a selected sample of these larger groups, with similar demographic attributes. Very broadly speaking, these groups exhibit above average natality, mortality and infant mortality rates. The natality rate has probably always been high, whereas the mortality and particularly the infant mortality rates, which were formerly high, hav e been declining rapidly for at least a decade in the western region and more recently in the Coppermine area. Extremely high fertility rates are characteristic of the internal structures of these groups, and the median age is frequently under 15. This does not seem to have been a recent development, as such rates have prevailed for over a decade and possibly for three or four decades.

The demography of Sachs Harbour is essentially a reflection of this general situation. During the years 1964-66 there were 15 births and one death. Fertility ratios hav e been in the order of 1000/1000 since 1955, as well as for the year 1941 for which data are also available. It must be emphasized again that this is not a "breeding population" and such figures must not be taken at face value, although no amount of adjustment could negate the indication of unusually high fertility ratios and natural increase rates.

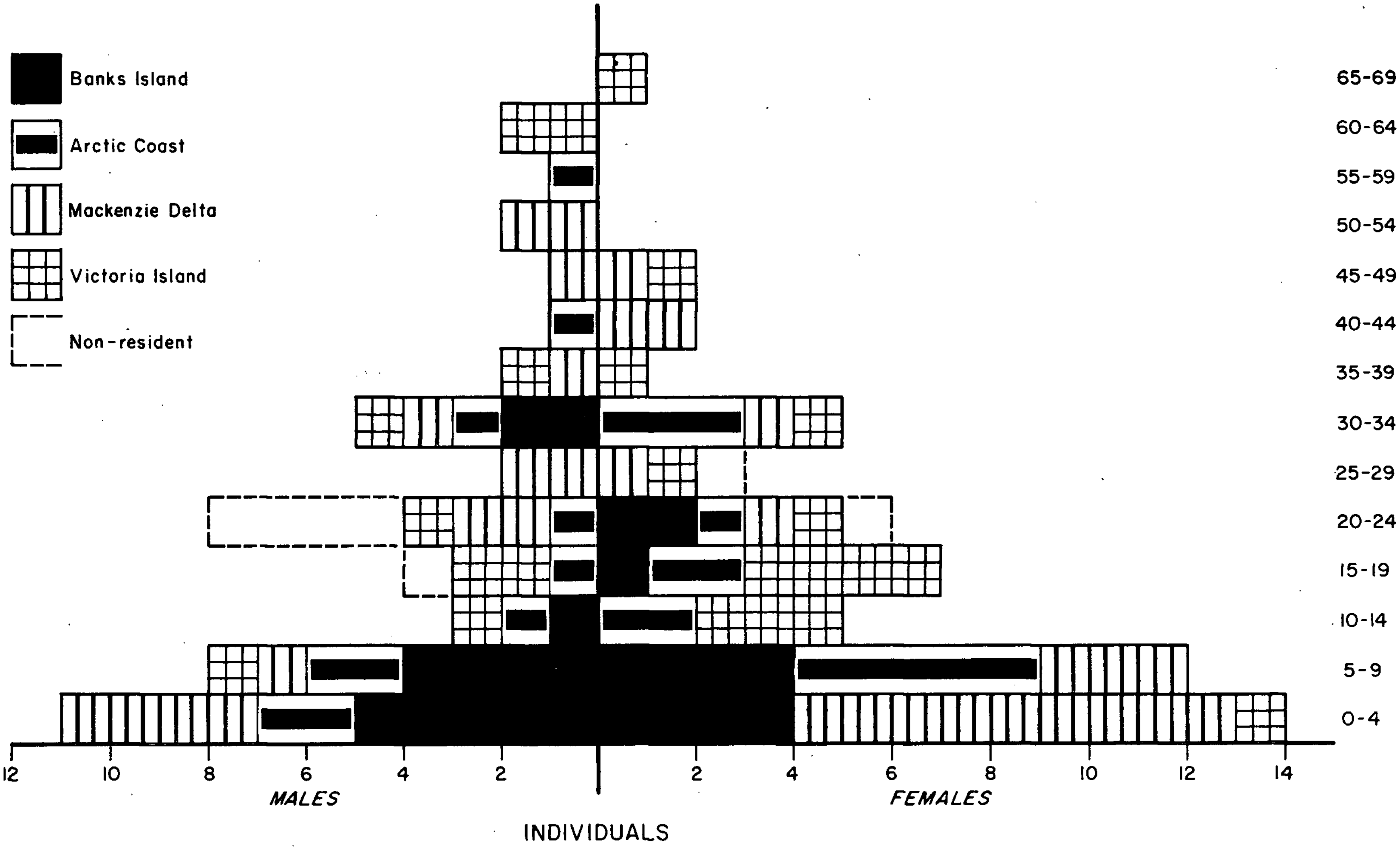
Figure 4.1 indicates the age-sex structure of the population. Certain age groups stand out, especially among males. Five men are in the age 50-64 bracket; their wives are on the whole much younger. It is the children of these older family heads who account for most of the bulge in the age 15-24 group. Another five men are in their early thirties, and their wives are generally of similar age. Outstanding of course, is the large number of children under the age of ten - 45 of the 101 residents. Virtually all couples, whether in their early twenties or late fifties, have progeny in this age group.

It cannot be concluded however, that a "population explosion" is imminent. In fact, the population of Sachs Harbour has remained fairly constant in the last few years, at about 100

Figure 4.1

POPULATION STRUCTURE BY AGE, SEX AND BIRTHPLACE

SACHS HARBOUR, I JANUARY 1967



people (including school children) and just under 20 trappers. This appears to be close to the desirable level in terms of exploiting the Island's resources, and should not be significantly exceeded. Despite the large number of children, there is reason to suppose that the number of trappers on Banks Island 20 years hence will not have increased and indeed may have declined. There are several mechanisms regulating the number of adults in the community, and particularly the number of trappers.

Although there is a very high rate of natural increase, the proportion of teenage boys going into trapping has for years been small, and with increased schooling and the changing social and economic pressures in the region as a whole, should become even smaller. The reasons for this will be discussed more completely in a subsequent section.

Immigration has been almost non-existent since the early 1960's. At that time, with reports of good fur harvests and good prices reaching the mainland at a time when DEWline construction employment was coming to an end, some Sachs Harbour trappers feared a flood of immigration, and the consequent overharvesting and ruination of the Island's resources. This culminated with the formation of the Banks Island Trappers Association, in 1963, and the proclamation of the Island as a group registered trapping area in which the association had exclusive rights, in accordance with the provisions of the Territorial Game Ordinance. No person may trap in this area without the express consent of the majority of the association's members. Any member who fails to exercise his trapping rights in the area for more than one year must apply to the association for readmission.

Since the association was formed, there have been only three formal applications for membership. Two were turned down and in the other case the successful applicant decided not to come. Even the mere existence of the association and its formal procedures has discouraged other potential applicants altogether. Opinion in the community is not unanimous about this restrictive approach to the Island's resources. Some feel keenly that they must protect and conserve them, so that their children may also enjoy a bountiful life from trapping and hunting. Others feel that the abundance should be shared, and that it is wrong to shut out their kin folk from the mainland. So far the majority have held the former point of view.

The creation of the group registered area was doubtless of immediate benefit to the Islanders in staving off the threat of overpopulation. It also allows the Islanders to maintain the character and integrity of their community as they desire.

For example, many people feel that they want to build a community of a permanent and harmonious nature, and they would not like to see a large number of young single trappers come over in the good winters and "mine" the country. Yet if there is a threat of underpopulation instead of over-population as may indeed be the case a few years hence, the Bankslanders will hav e to change their present restrictive approach, and try to encourage new blood into the community.

Marriage is also a problem in maintaining the current population level. Due to the limited choice in such a small population, mates are often sought from other settlements. Generally a young man will marry a girl from Tuktoyaktuk or Holman, and return to Sachs Harbour with her, whereas girls often marry into families from these other settlements, and move away from Sachs. So far this has had a balancing effect. But life at Sachs Harbour is a hard one for a woman. Even some of the older trappers relate that their wives had difficulty in adjusting to the rigorous and isolated life. With the great changes in social attitudes on the mainland, there are few girls today who would willingly marry a Sachs Harbour trapper, no matter how successful he were. The Banksland girls, schooled in Inuvik, are more anxious than ever to marry outside the community. Ervin has noted a tendency among Delta girls to reject native boys as mates altogether (1968:10-11).

Finally, there will be a tendency for the population as a whole to age. There are very few old people in the settlement now, but in ten years time several of the present trappers will no longer be active. In the past, when Banks Island was only a wintering place, people simply stayed back on the mainland when they became too old to trap. Now Sachs Harbour is home to these people, and it is by no means certain that they will return to the mainland. It seems likely therefore, that as older trappers retire, the proportion of fully productive families will decrease. This will certainly result in an increase in transfer payments into the community, as very few families, despite their present wellbeing, have any reserve in savings, and most could not support themselves for any length of time without trapping.

Education

The general level of education at Sachs Harbour is, compared to other Western Arctic communities, good, both at the adult and school age levels. About half of the adult population (17 and over) has been to school. Of those who passed school leaving age a decade or more ago, before the Inuvik regional boarding school came into operation, none went beyond grade six. One-third of the men and half of the women of this older group attended school (usually the mission schools at Aklavik, Shingle Point or Hay River), but reached only grade three or four. If one does not count those of Copper Eskimo origin, disparity of schooling between men and women is even greater. This was typical of the Western Arctic in the earlier days, when the young girls were the ones sent to school. Among the people of that generation, it is the wife who is literate and must handle correspondence and routine business affairs.

Some of the younger trappers, who were schooled in Inuvik, have reached higher grades and indeed have attended (though not completed) high-school. In general however, these men are far less committed to trapping than those over 30, and tend to shift between trapping on Banks Island and working for wages on the mainland.

Among the younger children, school attendance is extremely high, and achievement and perseverance are good. As there is no school in the settlement,[1] these youngers attend boarding school in Inuvik. Several Bankslanders in their early

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[1]After considerable agitation by the Community Association, a Federal day school was built at Sachs Harbour, and began operation in September 1968.

twenties have done very well in school, and have attended university or obtained steady jobs elsewhere. These people are no longer integral to the community and will almost certainly never return on a permanent basis.

Implications of education for the future

It was previously suggested that despite a high rate of population increase at Sachs, recruitment into the trapping profession may decline in future. Many observers have commented on the incompatibility of modern education, especially in regional boarding schools, with the maintenance of the old land-based way of life. Obviously children who attend school full-time, away from home, have no chance to learn the requisite skills of travelling, camping, and trapping on the tundra. Just as significant however is the decline in the prestige of trapping in the Western Arctic region.

On the mainland, trappers have been aware for a decade that their skills and hard work have brought them neither an adequate standard of living, nor a sense of worth in the eyes of the increasingly dominant white community. Their children who compare their fathers with other role models in the community, such as pilots, doctors and administrators, are keenly aware of this. A study of aspirations among school children in grades seven to twelv e in the Mackenzie Delta, by D.G. Smith[1], has shown that most youngsters place trapping very low in their evaluation of occupations. This study, conducted in 1967, showed that native children (mainly in their teens) ranked trapping fortieth out of 48 occupational types; similar low status being accorded to other land based (and native-identified) activities such as reindeer herding, and to menial labouring jobs in the town. A similar ranking of places where they would like to live, placed "on the land" at the bottom, and proceeded upwards through the local villages to the larger centres aroung Great Slave Lake, with the most desired locations being the major cities of Western Canada. This study found no significant differences in the occupational or locational aspirations of white and native children.

Sachs Harbour boys, when they are young, like most other boys want to grow up to be like their fathers. But these children, as they continue their schooling in Inuvik, can hardly fail to be influenced by the prevailing attitudes of their

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[1]The following data have kindly been supplied by Derek G. Smith, Northern Science Research Group, Department of Indian Affairs and Northern Development, from his forthcoming report, Natives and Outsiders: Pluralism, Poverty and Marginality in the Mackenzie River Delta.

peer group. In any case the tensions felt by so many northern children between the large modern centres where they have been schooled, and the small old fashioned villages whence they originate, between southern Canadian aspirations and northern Canadian opportunities, and between their own world of experience and that of their parents, certainly affect Banksland children as well. The establishment of a school in Sachs Harbour will certainly mitigate the shock of separation from parents and of coping with a new and different environment at such an early age, and the children will be much more a part of their community. Yet they will be encouraged to go beyond grade six, which will necessitate going to the mainland, and even those few who may choose to stay in the settlement and learn to trap will also visit the mainland on occasion. No child will be able to remain aloof from the influences of the world outside Banks Island, or from the alternative modes of life open to him. Each child will have to choose at an early age, even before he can be aware of the implications, what kind of life he intends to lead and thus where he should live and what he should do in order to achieve this end.

A local day school is doubtless more compatible with a future in trapping than is the boarding school system. Minor modifications of the school year which allow young boys to get out on the trail with their fathers will also help. But these things are certain to be of much less significance than the nature and extent of the social and economic changes occurring in neighbouring communities, especially in Inuvik. Whatever regard the parents hold for their commun ity and their way of life, whatever amount of money trapping can be shown to bring in dollars and cents, whatever privation and misery may exist on the mainland, there seems little doubt that most of the young people will aspire to a southern Canadian way of life, perhaps even in southern Canada. The impact of outside technology, outside attitudes and outside culture (as presented through locally available media) has been profound. Very few boys will voluntarily take up trapping on Banksland, especially as a life time commitment, and those who do will have difficulty in finding wives who will accompany them in such a venture.

Sociological attributes of the community

The basic unit of production, consumption and economic decision making is the nuclear family; the last function particularly lying with the head of the family. All of these decision makers live in Sachs Harbour by choice, and they came for the primary purpose of trapping. By doing so they committed themselves to the particular opportunities and vagaries of the trapping economy, as discussed elsewhere in this thesis.

At Sachs Harbour almost all the means of production as well as the produce itself are considered individual property, although many people still feel very strong kinship obligations in certain spheres of economic and social life. The idea of communal ownership of property between two families (except for father and son) is now generally alien to them; for example none would jointly purchase a boat or a skidoo.

There are trapping partnerships, usually based on kinship, but these are seldom permanent and it is quite possible and indeed common for men to trap independently. Sachs Harbour men are particularly individualistic, and most have a strong sense of personal initiative. Yet there is a profound closeness among the people which would not ordinarily be observed in a larger community. Even though physical sharing has declined, psychological inter-dependence, especially amongst kin, remains strong. The avoidance of overt conflict is a very strong trait amongst Sachs Harbour people, although as a corollary of this, there is also a tendency to speak ill of others in their absence. Balikci (1968) has described a similar, although more extreme situation among the Kutchin.

Foster's model of the "image of limited good", as an economic manifestation of the cognitive orientation, or basic world view, of peasant peoples (1965), is also congruent with some of the attitudes of the Bankslanders (and of neighbouring communities as well), particularly with regard to resources: " 'good things' exist in fixed and limited quantities...and... there is no way directly within peasant power to increase the available quantities....it follows that an individual or family can improve a position only at the expense of others." (Foster, 1965: 296-97). This view, evident in such statements as "leave some foxes for the rest" to a man departing for the trapline, or "that guy is always trying to get ahead", said disparagingly of another person, would appear to add to mutual suspicions and latent hostilities.

Another aspect of divisiveness in the community is the differing origins of the present population. The main division is between the "western people" from the mainland, and the Copper Eskimos from Victoria Island. The latter were latecomers to Banksland, and because of their differing history of contact and acculturation are somewhat less oriented to trapping, and tend to be less aggressive and individualistic than the westerners. There is a tendency for the westerners to look down on the Copper Eskimos: "Kogmoliks" is the pejorative term applied to these people, who are considered to be more primitive (indeed more "Eskimo"), less sophisticated and less clean. The distinction is somewhat apparent in housing, as the Copper Eskimos all live in one part of the village (albeit by their own choice), but the division is not really a deep one. There is no lack of social intercourse between the two groups, as they form trapping partnerships and even intermarry across ethnic lines. Both groups are predominantly Anglican, and there is no religious division in the community. Yet there is some mistrust and suspicion, and the older westerners, from whom the strongest impulse for immigration control has come, do feel that the Copper Eskimos should remain a minority element in the community.

Within the majority western Eskimo group, there is also a division. On the one hand are the older men of the coastal origin who have lived and trapped together for years, and were members of the early pioneering group. There is an extremely strong sense of solidarity and mutual obligation among these men, and although there may be strong disagreement between individuals over certain issues, they will not act against one another. On the other hand is a group of more recent immigrants, mainly younger men from the Delta, who are not as strongly obligated either through kinship or friendship to the early settlers, and who will more willingly oppose them or initiate action where thought necessary.

Despite these forces for fragmentation and factionalism, there is a surprisingly strong sense of community at Sachs Harbour. Among the more homogeneous group of early settlers, there was a sense of group identity as Bankslanders as early as 1940. With the growth of a permanent village with a stable population in the 1960s, the sense of community at Sachs Harbour has been further strengthened, although most individuals still have important ties with Tuktoyaktuk, Inuvik or Holman, depending on their origins. Sachs Harbour is after all a unique community in that all its adult members reside there by choice, not birth.

Traditionally the Bankslanders, like many other Eskimo groups, have been used neither to the idea of individual leadership (except in certain restricted cases), nor to the notion of collective action. There have been some signs of change recently however. One such was the formation of the Trappers Association, which stemmed from the recognition of the fact that it was possible to defend their individual interests collectively. In 1965 a Community Association was formed. Although the public meeting is still an unfamiliar forum for decision making, the Association has raised and spent money on community programmes, and has been able to exert sufficient pressures on government authorities to obtain a day school in the village. Some influence is exerted by the police and the missionary, but essentially the Community Association remains an instrument of the native peoples themselves.

That Sachs Harbour has become a viable community, despite the obstacles, surely attests to the success of the Banksland experiment in providing economic abundance, social stability and psychological gratification. The settlers' vision of a better life on Banksland has, despite some hard times, been vindicated.

The Bankslanders as trappers

The remarkable proportion of Canada's white fox production supplied by a mere fifteen to twenty trappers on Banks Island has already been mentioned. There seems little doubt that the top Banksland trappers are presently the best white fox trappers in the world. The individual catches of the leading trappers often exceed 500 foxes in good years. The record individual catch on Banks Island is 941 pelts, made in 1966-67, and so far as is known this is a world record.[1]

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[1]There were a few excellent trappers at Read Island in the 1930s and 1940s, one of whom reached 900 in a peak year. One trapper at King William Island was reported to have taken over 900 foxes on one occasion (personal correspondence, L.A. Learmonth, 5 March, 1968). N.W.T. game records indicate that for the most

This success is due to modern equipment and methods used, and to the skill and hard work of the trappers. Steel traps are used exclusively: deadfalls and snares are unknown today. Some of the best trappers run 800 to 1000 traps on lines up to 300 miles long. Some Eskimo trappers at Read Island, and a few white trappers on the mainland, used to run comparable lines, but they are no longer active. Although a few trappers in other parts of the Canadian Arctic also run long lines, they do not place nearly as many traps on them.[1]

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part, high catches on the Arctic Coast east of Read Island, and in the Keewatin, did not exceed 300-400 foxes. It seems doubtful that any white trapper in the north ever caught more than 500 in one season. There is no indication that Alaskan or Greenland trappers fare nearly as well, although some relatively high catches may have been made in Alaska in the early years of this century. The Soviet literature suggests that individual trapper productivity there is low. Most white fox trapping is in any case done by reindeer herders on a part time basis. There appear to be relatively few Soviet northerners whose primary profession is trapping. According to Tchirkova, the best trappers in the European U.S.S.R. took up to 170 foxes in the peak year of 1947-48 (1958a:112) and in the peak year of 1946-47, the leading trapper in all of Yakutia took 183 foxes (ibid: 136). A recent article by Syroechkovskii (1968) indicates that individual catches of 40 to 60 foxes in the Yenesei north are considered excellent.

[1]In the Eastern Arctic, for example, it would be considered most unusual for a man to own more than 300 traps, and the average is much less. According to Chesemore, no one trapping out of Point Barrow, Alaska, in 1962-63, had more than 200 traps (1964?:25). Norwegian trappers in East Greenland used to set 150 traps at the most (Goodhart and Wright, 1958:183). Accounts

The Bankslanders not only run long lines with many traps, but these are checked frequently and carefully. Six or seven trips a year of two weeks each are typical. Accounts of trapping elsewhere again indicate that other trappers usually spend less time on the trail, and accordingly, loss ratios of trapped foxes are higher. Skill and knowledge cannot be so easily measured and compared, but there is little doubt that the Bankslanders are outstanding in this regard as well. Most important is the orientation and motivation to the trapping life, and no people have a stronger tradition of trapping than the Bankslanders. The system of arctic fox trapping discussed in the next chapter is the most highly developed and successful one in the world.

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of the Soviet trapping industry (viz. Geller and Skrobov, 1967; Lavrov, 1932; Romanov-Il'inskii, 1958; and Skrobov, 1955) suggests that many foxes are still taken by means of deadfalls, snares, nets and rifles. Where steel traps are used, no individual tends such large numbers (ownership of traps of course rests with the trapping or herding collectives).

CHAPTER FIVE

FOX TRAPPING

The arctic fox on Banks Island

The chief fur bearer on Banks Island is the arctic fox (*Alopex lagopus*). As in most other parts of the circumpolar region, the white phase predominates;[1] indeed, the blue phase accounts for less than one per cent of the Banks Island catch. Red foxes (*Vulpes vulpes*), which are rare on the Arctic Islands, are obtained very infrequently. Ermine (*Mustela erminea*) are common to Banks Island, and are occasionally taken in the traps. Since these other species customarily account for about one tenth of one per cent of the catch, the present discussion is restricted to the arctic fox.

Our knowledge of the biology and behaviour of the arctic fox on Banks Island is quite limited. The only study of foxes on the Island was made by McEwen in 1955. There is a large literature on the arctic fox in other areas, particularly the Soviet Union, but one cannot assume that observations in other areas apply to Banks Island with the same force. Most of the

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[1] Hence the popular term "white fox", which is used locally and in fur trade. That name is used throughout the rest of this study and includes both the white and blue phase. However in this section which is primarily a biological account, the term "arctic fox" is used.

Canadian work on arctic fox biology has been done by A.H. Macpherson, although others such as Butler, Dymond and the Chittys have analyzed fox population dynamics, largely on the basis of fur harvest statistics. Most of the literature is concerned with denning, feeding, reproductive behaviour and the question of cyclic abundance. However, the arctic fox is a very peripatetic animal, and there is a great deficiency of information about the range, timing and cause of their movements.

Basically, it is known that Banks Island is capable of yielding very high fox catches, and that these catches fluctuate very markedly from one year to another. The very best trapping seasons on the Island have produced harvests of 7,000 to over 11,000 foxes, including those subsequently lost or destroyed in traps. Such harvests compare favourably with the returns from other parts of the Arctic, and are remarkable in view of the small number of trappers involved. It is true that these trappers have expended more than the usual effort to obtain foxes. Every year, thousands of traps are set along hundreds of miles of traplines over an area of as much as 10,000 square miles. Despite the fact that this effort varies only to a minor degree, the catch can vary by a factor of up to ten, even on a per trapper basis (Figure 3.11). Nine maxima appear to have occurred on Banks Island between 1929 and 1966, having a mean interval of 4.1

years, and a range of two to six years.[1]

Such fluctuations are not peculiar to Banks Island but have been observed among most populations of arctic fox. They are popularly referred to as cycles, but a definite and regular periodicity is seldom evident in the harvest data.

These maxima are sometimes synchronous, or nearly so, over large areas (viz. Chitty, 1950). For example, Figure 5.1 suggests a close relationship between fox maxima and minima on Banks Island and those on western Victoria Island. The determinants of fox, or more particularly lemming abundance would appear to be in near simultaneous operations over this large area. The relationship of the two populations is intricate, but unfortunately there is very little information on it, especially for Banks Island.

It is also evident that the abundance of foxes, or at least

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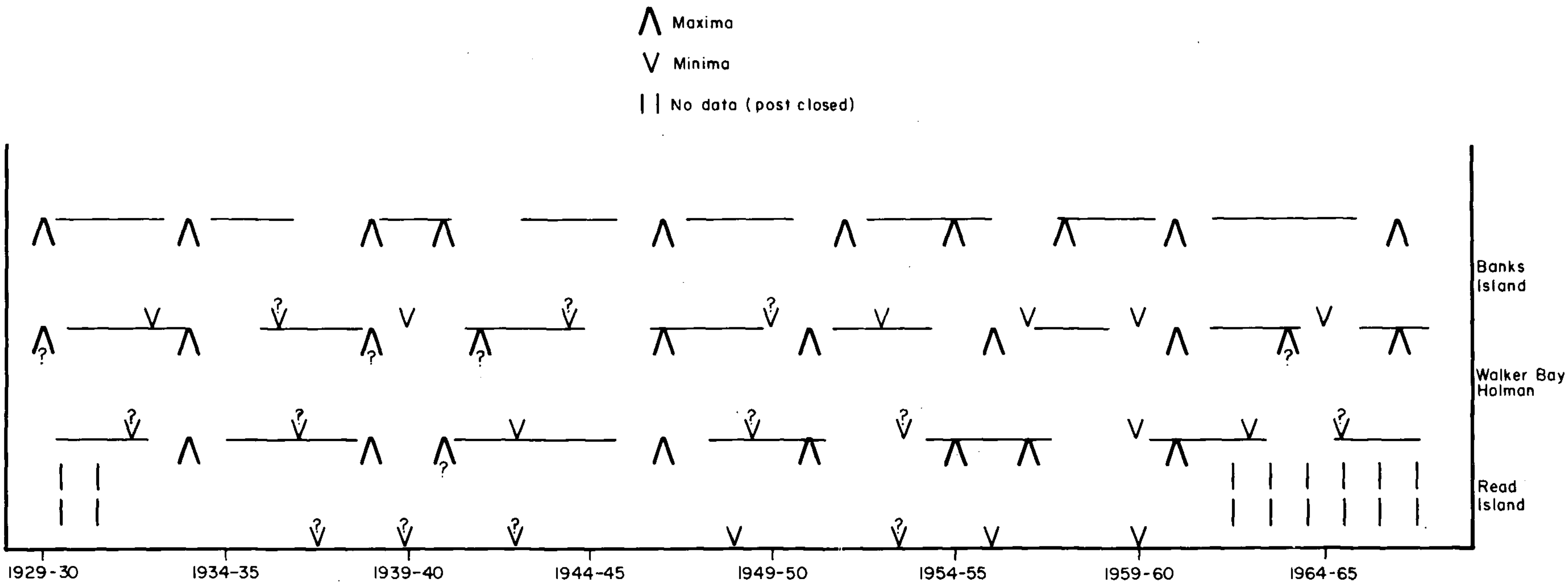
[1] The choice of cycle peaks is somewhat arbitrary. Because the number of trappers on Banks Island varied so much from year to year, the per trapper catch rather than the total catch is used to measure relative abundance. By the strict definition of a peak (a year in which the catch is greater than in either the preceding or following years), there have been twelve peaks since 1928. Not all these peaks are significant, however, as for various reasons trapper effort and the fraction caught differ from year to year. I have used only those seasons which trappers generally agree were ones of unusual fox abundance on the Island: 1929-30, 1933-34, 1938-39, 1940-41, 1946-47, 1951-52, 1954-55, 1957-58, 1960-61, and 1966-67. This method of choosing maxima is in conformity with Butler's usage (1953:245).

Figure 5.1

WHITE FOX MAXIMA AND MINIMA
WESTERN ARCTIC, 1929-68



A question mark indicates uncertainty in the year of occurrence or uncertainty that a true maximum or minimum occurred. A symbol placed between two years indicates the event may have occurred in either year.

Mainland returns west of Coppermine are very low throughout this period and are frequently confused by the sale of Banksland furs at these points. The identification of cycles on the mainland is therefore difficult although the data suggest a close relationship with the Islands.

the frequency with which they are trapped, also fluctuates during the trapping season, and that this variation may be a function of the total abundance of foxes in the season in question. Data were obtained for the distribution of the annual catch by month for the years 1964-68 (Figure 5.2). In each year except for the extremely poor season of 1964-65, about twenty per cent of the foxes were taken on the first trip.[1] This is particularly significant because as the men are setting their traps on the way out, the lines are being checked only once, on the return voyage, and only a few days after the traps were first opened. For the two average or slightly below average years of 1965-66 and 1967-68, there was a decline in December, although in the peak year of 1966-67, the catch was highest in this month, and subsequently declined.[2] There was a slight surge in the catch in January of 1965 and 1966, but common to all years was the low catch in February and the subsequent rise through March and especially in the last two weeks of the season. Particularly interesting was the inverse relationship of fox abundance and the proportion taken in spring. In the

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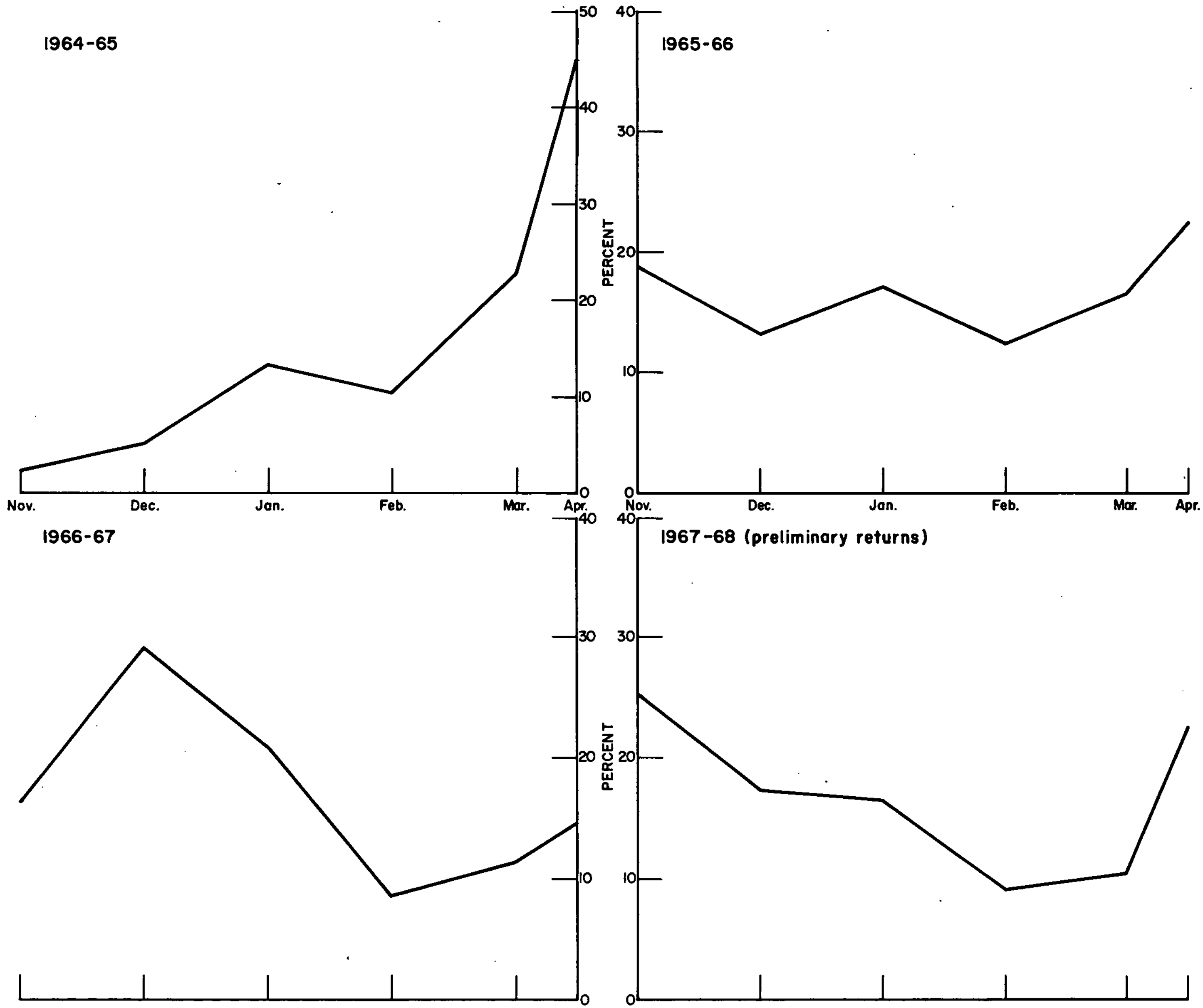
[1]The poor November catch in 1964 may be due to the late start many trappers made, since most had to stay in the settlement to participate in an air-lift of supplies from the mainland, as the annual supply vessel had been unable to reach the Island the previous summer due to ice conditions.

[2]A similar pattern for the peak year of 1951-52 on Banks Island is described by McEwen (1952).

Figure 5.2

PERCENTAGE DISTRIBUTION OF THE ANNUAL FUR HARVEST BY MONTH
BANKS ISLAND, 1964-68



very poor year of 1964-65, and to a lesser extent in the mediocre season of 1967-68, most of the harvest was taken at that season,[1] whereas the spring catch in 1967, although large in numbers, was not a significant proportion of the total season's take.

Habitat

Banks Island provides excellent habitat for arctic foxes; in particular, suitable terrain for denning, an abundance and variety of food, and few predators and competitors.

Observations by Canadian and Russian biologists (viz. Macpherson, 1969; Danilov, 1961; Dementyeff, 1958; Sdobnikov 1968; Tchirkova, 1958a) indicate that arctic foxes den in sandy, well drained, vegetated areas, particularly in stream banks and valley sides, preferably with southern exposure and an adequate water supply nearby. Unstable soils characterized by sorting and solifluction are avoided for denning, whereas hummocky ground with dryas or lichens, or grassy knolls are frequently ideal. Such conditions are wide spread in the lowlands of western and central Banks Island, and it is possible that the area supports one of the densest populations of arctic fox in the North American Arctic.

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[1]This pattern was also noted by Macpherson (1960:13) on Banks Island for the poor year of 1958-59.

Fyles has divided Banks Island into five physiographic regions (See Figure 5.3), the largest being "... a low plain of gently rolling hills, shallow valleys, and alluvial flats and b en ches ..." (in Thorsteinsson and Tozer, 1962:12). This surface, amounting to about sixty per cent of the area of the Island, consists of gravel and sands which in the main do not appear to have been glaciated during Wisconsin times. The overburden is frequently tens of feet thick, and inland it is dissected by a dendritic pattern of small streams. The 200 foot contour line lies 10 to 15 miles from the coast, and only in the southern part of this region are there large areas above 500 feet. The chief landmarks of this otherwise rather featureless landscape are the valleys of the four major rivers which drain the region. All but one rise in the hilly morainal belt near the east coast and flow north or northwest, then west, across the lowland to the Beaufort Sea. The lower thirty to fifty miles of the valleys are broat and flat, and the rivers themselves become braided. (The Masik River, although smaller, and draining a dissected upland, has similar characteristics). Away from the immediate braided channels the flats are grassy, and near the mouths contain myriads of small tundra ponds. Where the ground begins to slope away from the valley floors, it tends to form hummocks. The interfluves are frequently characterized by

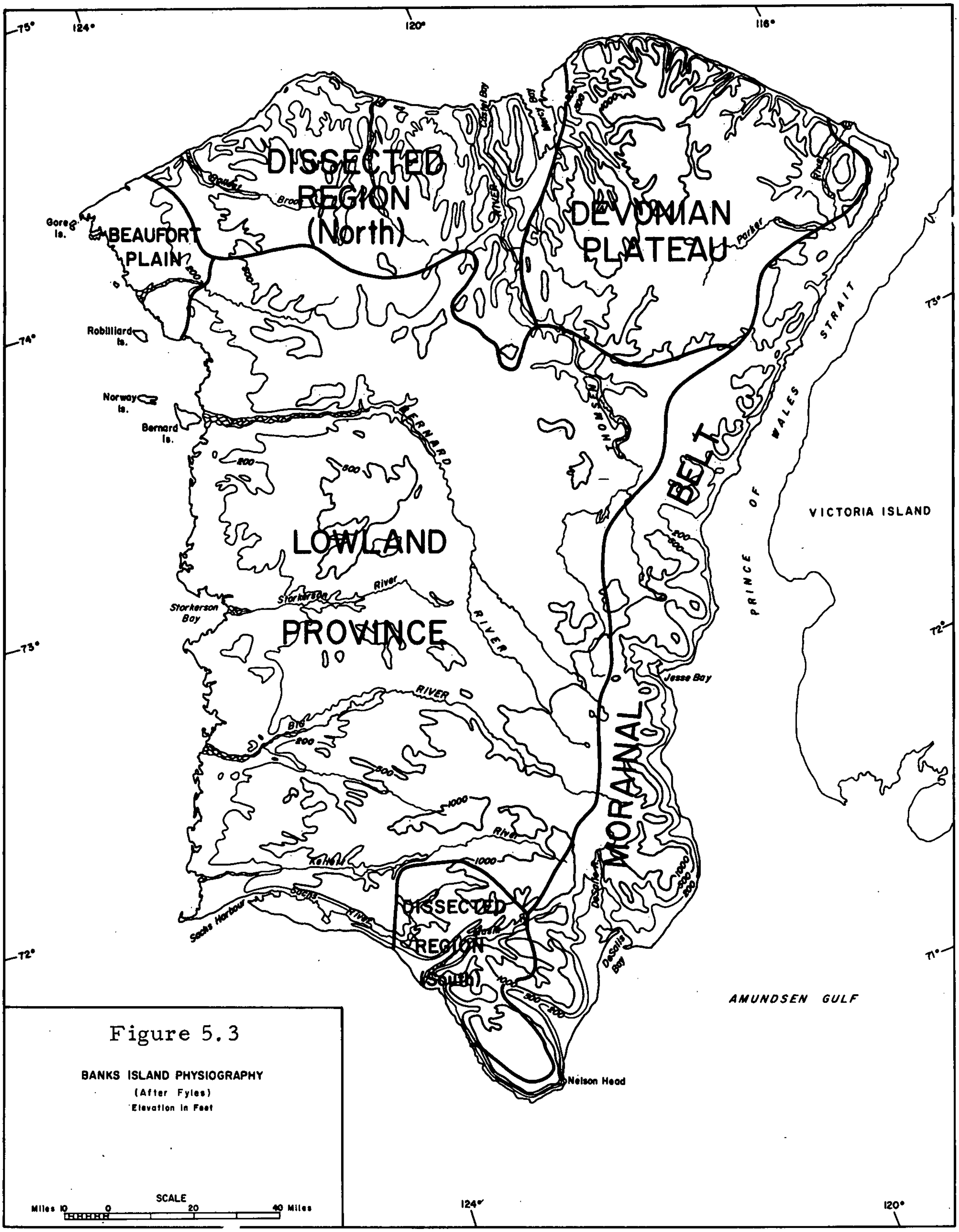

Figure 5.3

BANKS ISLAND PHYSIOGRAPHY
(After Fyles)
Elevation in Feet

SCALE
Miles 10 0 20 40 Miles

smooth, gravelly surfaces with a minimum of vegetation. Small knolls perhaps five to twenty feet in diameter are common features of many flat or gently sloping surfaces, except in sedge flats. Peaty areas and polygonal ground formations occur in some of the major river valleys but tend to be quite restricted. Although there are spectacular examples of patterned ground of various types on the Island, they are not widespread, and in the main the land surfaces are relatively stable.

The lowland thus provides ideal habitat both for foxes and for their chief prey, lemmings. Such conditions occur sporadically in other physiographic areas; for example in the Masik valley and probably the lower Thomsen River and Mercy Bay areas, which are part of higher and more deeply dissected regions in the north and south. In general, however, these other major regions do not appear to provide as suitable denning grounds, and are not as productive for trapping. The trappers themselves very soon learned that the lowland province offered both fox abundance and ease of travel. Almost ninety per cent of the current (1961-67) trapping area, and virtually all of the intensively used area, lie within this province. It will be recalled that the east side camps, whose immediate hinterland was the morainal belt, did not provide a good living; indeed the few trappers who did well at these locations generally extended their lines back into the lowland area.

The density of dens on Banks Island is unknown.[1] The Bankslanders do not trap dens, as the practice is to run long lines of evenly spaced traps. Fox dens are probably most prevalent in the tussocky valley sides or near low sandy banks. Since the trappers tend to follow valley flats, or coastal beaches, it is not surprising that even the most experienced know of perhaps only a dozen dens on traplines of over 100 miles. One cannot, therefore, make any estimate of den density from observational data.

McEwen, in his study of Banks Island foxes, found their chief food source to be lemmings, arctic fox, caribou and ptarmigan in that order (1955:28). Two varieties of lemmings inhabit the Island: the varying or collared lemming (*Dicrostonyx groenlandicus*) and the brown lemming (*Lemmus trimucronatus*). No systematic study of these animals has been made on the Island, although they are in effect the basis of its economy.[2] The cycle of the two species has been observed to be synchronous on Banks Island, but not always so (McEwen, 1955:51 and Manning and Macpherson, 1958:25).

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[1]An isolated observation by Maher (1964) showed three dens in ten square miles, on the north shore of the Bernard River, in the lowland physiographic province.

[2]W. J. Maher has made a brief investigation of lemming predators in the Bernard River area (1964, 1967).

The significance of arctic fox in the diet may be both seasonal and cyclical. The trappers state that in years of fox abundance, the cannibalizing of trapped foxes by their own kind is common, and the proportion of damaged pelts and half-eaten carcases rises significantly. Just such conditions prevailed at the time of McEwen's study.

In summer, the Island supports a large bird population, including cranes, ducks, and geese, and the ptarmigan is a year round resident. In spring, foxes are commonly seen prowling about the snowgoose nesting grounds at Egg River, and both birds and eggs are probably an important seasonal dietary item. The tendency of arctic foxes to scavenge on seal carcases left by bears has been widely reported in the Arctic, and Banks Island trappers have observed this as well. Thus, in winter, the frequent presence of open leads among the west and southwest coasts, and a large local polar bear population, probably provide another food source for the foxes.

The arctic hare (Lepus arcticus) is abundant in some parts of the Island, and is doubtless another source of food. It appears then, that foxes on Banks Island depend largely but not entirely on lemmings. The availability of other food sources, particularly at critical times of the year, may serve to raise survival rates beyond what even a periodically abundant lemming population could alone support.

In availing themselves of this food supply, foxes suffer little competition, and they are also relatively free from predators. There are only eight other terrestrial mammals native to the Island. Three of them (the two lemmings and the hare) are prey species, and two are ungulates whose existence is of little direct consequence to the fortunes of the arctic fox. The ermine is a competitor for the lemming supply, but is not nearly as numerous as the white fox, and moreover in some cases may be his prey. The other two are the wolf (Canis lupus), and the polar bear (Thalarctos maritimus). Wolves have been periodically abundant on the Island, but they are perhaps a greater threat to the trapper than to the fox. They can cause great losses by damaging trapped foxes, and although they doubtless prey on untrapped adult and cub foxes, there is no evidence that the level of such predation has ever been high. Wolves are reputed to eat lemmings and thus would be competitors of the white fox; on the other hand the remainders from their ungulate kills provide an additional food source for foxes. In any case wolves have been rare on the Island (at least in the southwest) for a decade.[1]

Polar bears (which are perhaps more correctly classed as marine mammals although they do occasionally wander inland) play a role similar to the wolves in fox ecology. They may at times prey on foxes, but the extra food they provide in the form of seal remainders may well outweigh the mortality inflicted. Grizzley bears, wolverines and coloured foxes, three potentially important predators and competitors, have been reported on Banks Island, but they are strays and not native to it, and therefore do not affect the white fox.

Several species of hawks, jaegers and owls present on the Island in summer are known to prey on lemmings, and some of them prey on cub foxes as well. Possibly more important than any of the above factors are epizootics which commonly occur in years of fox abundance. The proportion of the total stock affected is unknown, but it may be quite high. Parasites may be an additional factor in fox mortality.

Thus, although there is no direct census information on

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[1] The result of a successful poisoning programme undertaken between 1955 and 1959 to curb the widespread destruction of trapped foxes (McEwen, 1955 and Usher, 1966).

the arctic fox population of Banks Island, both the trapping returns and the nature of the habitat suggests that it is indeed abundant.

In order to proceed beyond these facts, it is necessary to rely on the findings of scientists in other areas, and on the observations of the Banksland trappers themselves. Some of the analysis which follows is therefore speculative. Although the trappers are keenly observant, many have developed their own theories on fox abundance and movements, and one must take care to separate observation from hypothesis when using such data.

Certain fundamental questions must be examined in order to understand the economic geography of Banks Island. Can we measure the abundance and sustainable yield of foxes on Banks Island, and how do these vary with time and place? Where do the foxes trapped on the Island come from? Are they resident or migratory, or indeed, can one speak of a distinct Banks Island population? Can trapping areas be delimited and their productivity measured, since traps are set in lines rather than networks, and especially if foxes are wide ranging and not restricted to relatively small territories?

Observation by Banks Island trappers

If there is anything the Bankslanders are certain of it is that foxes move, even migrate, over great distances. There has never been any mass tagging of arctic foxes in the Canadian Arctic, let alone on Banks Island, and we are again without direct evidence on this exceedingly important question. McEwen was unable to substantiate trappers' observations of "runs", but did not discount their possibility (1955:27). The trappers' theories about runs and migrations are inferred from circumstantial evidence. Many tracks in one direction, or a sudden catch (especially on the return trip) on trap lines previously thought "dead", are indications of significant movement, but how far such animals are travelling, and whether they maintain their apparent direction over long distances, simply cannot be known. Foxes caught inland with seal blubber stains around their mouths indicate they must have come from the floe edge; from which direction and at what time is again problematic. Many such occurrences suggest certain patterns of movement. Until better information is available (and it will only become so with a mass tagging programme), it would be ill-advised to reject the trappers' beliefs out of hand.

The Bankslanders believe that there is a basic seasonal movement of foxes, as follows: after freeze-up, some foxes begin to move off the land and on to the sea ice, where they spend most of the winter. In late winter, these foxes return to the land again to begin the breeding cycle. Reports of "runs" are most frequent before Christmas, when the trappers say the foxes (at least of south central Banks Island) move north and west, and during the last month of the season, when foxes have been trapped over 60 miles from the nearest coast, chiefly in spring.

The magnitude and importance of these movements is reputed to be a function of the population cycle. According to the trappers, the catch patterns described for the years 1964-68 are quite typical, and are to be explained by cyclic movements.

In very poor years, the trappers depend on heavy spring runs, which are interpreted as the beginning of an upturn in the cycle. In average years, it is expected that catches will be somewhat better in the early and late parts of the season, with the low point coming after Christmas during the coldest months of the year. In peak years, the pre-Christmas abundance of foxes is explained by the large numbers of young foxes believed to be present, and there is indeed an above average occurrence of immature "bluebacks".[1] A noticeable decline in total abundance after Christmas is expected. In the year following, the trappers

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[1]Whelps turn prime later than adults, and at the beginning of the trapping season the underfur on their backs still exhibits a bluish colouration.

believe that a good number of the previous season's foxes are still on the Island in the autumn, but depart with the onset of winter, resulting in a good catch on the first trip but a decline thereafter. Such a pattern was predicted by many of the trappers in the spring of 1967, and a preliminary tabulation of the 1967-68 returns show that this was indeed the case.

In addition, the trappers believe that there occasionally occur movements of great magnitude and distance, and these are associated with population maxima. Not all maxima are the result of migration waves, for in the occasional winter, very little movement is observed, and this is attributed to a continuing abundance of lemmings during the winter. In such cases, even the normal seasonal migration fails to develop. It is then possible to move one's trapline a few miles to the side and start getting foxes again; indeed this is necessary for good results, since once the initial line is trapped out, one cannot depend on late season runs. Such conditions are said to have prevailed in the peak year of 1938-39. In other peak years, such as 1966-67, the normal November-December exodus is thought to occur, resulting in very large catches during those months. There are still other years, however, in which high catches are attributed to migrations of more striking proportions. These are thought to be associated with sudden lemming declines which are synchronous over fairly wide areas, although that may not be a necessary condition. At such times foxes are said to be coming from Victoria Island or even further.[1]

To conclude, there is apparent evidence that foxes on Banks Island do indeed move, and in some seasonal or cyclic pattern, but we have no direct evidence of the numbers, distance or directions involved.

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[1] The Banksland trappers, and indeed the mainland trappers as well, have their own theories to account for mass movements of foxes associated with the cycle. Two elements are particularly common. The first is that the cyclic abundance of foxes is accounted for primarily by migration rather than changes in natural increase or decrease. In a good year, foxes from other areas have migrated to the Island, while poor years are the result not of mass starvation and death, but of outmigration, because foxes follow their food sources, which are also migrating. Some believe in migration circuits through the Canadian Arctic, for example from the other Arctic Islands to Banks Island, then to the mainland, across to Keewatin and north again into the islands. Others believe the migration pattern is circumpolar, with the foxes going to Alaska and the U.S.S.R.. Some white trappers share these beliefs; beliefs which are consistent with the concept of "limited good" which recurs in the local culture. The conflicts which arose in earlier years over supposed interruptions of the migration routes between Banks Island, Victoria Island and the mainland coast will be recalled. The belief in such migrations is still strongly held by all parties. The other belief is in the distinction between travelling and non-travelling foxes. All trappers insist that such a distinction is easily made. Travelling foxes are fat, while others, sometimes called "creek" foxes (for reasons uncertain), are very lean. Paradoxically, travellers tend to take bait, while the others are not attracted to it. Travellers also have better fur. It is assumed that any fat fox taken must have been travelling. Fat foxes are also said to die more quickly in the traps, but in view of the fact that some foxes can live over a month in the trap, any fat fox which did so would presumably no longer be fat, so this hypothesis is untestable if not tautological.

Biological observations from other arctic regions

Since observational data from Banks Island are so limited, it is necessary to examine what other investigators have discovered about other populations of arctic foxes. Their findings do not necessarily apply to the foxes of Banks Island, but they may suggest certain explanations for the phenomena observed there.

Life cycle

The life cycle and population dynamics of the arctic fox appear to involve an extremely high mortality rate amongst the young in all but the most favourable years. On Banks Island, foxes begin pairing as early as mid February, according to the trappers, and start opening and cleaning out their dens in late March. Mating apparently occurs in early April, and after a gestation period of about 53 days (McEwen, 1955:25), the young are born in late May or early June. These dates can, of course, vary from year to year. In the Keewatin, Macpherson found a mean litter size of 10.6 at implantation, with little change from year to year, but the number weaned varied from 4.6 to 9.7, the mean figure being 6.7 (1969:33-34). Further mortality occurs in late summer and fall and the life table devised by Macpherson (ibid.:41) shows that on the average less than four out of the original litter of 10.6 are still alive at the opening of trapping season. The animals mature within a year, and about one third of the females breed in their first or second year, while by the third year, 85 per cent breed (ibid.:32). Little more than five per cent of the cohort survives into the fourth year, although Smirnov (1968:82) who has developed a method of aging foxes by cementum deposition on the teeth, has recorded foxes nine years of age. It appears that in years of lemming abundance, whelp survival is very high, and their abundance at such times results in the very large harvests associated with the peak of the cycle.

Age structure and trap proneness

Cohort analyses of catches in Yamal (Smirnov, (1968:89), Cornwallis Island (Macpherson, 1969:26) and in the Keewatin (ibid.:28), indicate that in peak years perhaps 90 per cent of the catch consists of whelps. The proportion of whelps surviving to the trapping season which are trapped in the first year can be up to 90 per cent but may well be less. Macpherson has suggested the following hypothesis to explain the prevalence of whelps in peak year catches:

> "In a year of high abundance, the adults are relatively scarce, and remain in occupation of their breeding territories. The whelps, on the other hand, are numerous, and few of them enjoy the possession of settled territories. They may also be harried out of the territories of the adults, and thereby be kept on

> the move. The traps take the settled adults in whose territories they happen to have been set, but for the most part they catch the wandering, harried whelps. Consequently whelps are vastly overrepresented in the catches of such years." (1969:39).

Denning

In some areas of the Soviet north, den densities of the order of one per square mile to one per three square miles have been reported (viz. Danilov, 1961: Dementyeff, 1958; Shibanoff, 1958), although Boitsov (1937) believed the density for the U.S.S.R. tundra as a whole to be rather less. Macpherson (1969:15), in a survey of almost 2,000 square miles of the central Keewatin, found a density of one den per 14 square miles there. Fur returns from that region do not suggest that it is less productive than other parts of the Arctic. The Russian literature is seldom accompanied by maps or detailed accounts of the methodology and circumstances of den surveys, and thus one cannot readily account for this disparity in observed densities between the two countries. However, all dens are never occupied simultaneously. Den occupancy ratios have been recorded as high as 63 per cent (Macpherson, 1969:11) and 74 per cent (Shibanoff, 1958). Macpherson found that the highest rate occurred in the spring following a bumper harvest. However, in lean lemming years, a significant proportion of the dens are abandoned.

Movements

There appear to be several types of movement which arctic foxes undertake: local movements, migratory movements, dispersals and sporadic movements. McEwen has called these local, seasonal, migratory and sporadic movements (1951).

There is evidence that arctic foxes are territorial (viz. Macpherson, 1969:16), and local movements may therefore be defined as those occurring within the individual territories. The extent of these individual territories varies from year to year, depending on the abundance of food and the need to range more or less widely for it. The density of occupied dens may suggest the size of the territories, but, since Macpherson has concluded that den occupancy "... is limited neither by habitat nor by territorial behaviour" (1969:16), this would give a maximum estimate.

Among some populations of foxes at least, there is good evidence for migratory movements. These are fairly regular seasonal movements from one area to another and back again. Soviet biologists have long believed that seasonal migrations occur among their arctic fox populations (viz. Lavrov, 1932 and Shibanoff, 1958). The usual tendency noted is for the animals to move out to the sea ice in early winter and return to the land in spring. Perhaps the best documentation of seasonal migration has been made for the Yamal and Nenets area (Shilyaeva, 1968).

Dispersals refer to occasional mass movements over long distances which do not necessarily involve a return, and are associated with population maxima. They are the least known type of fox movement, and their documentation is often suspect. Sporadic movements refer to extra-limital occurances which are also normally associated with population maxima, and so may be included in the discussion of dispersals. There is no question that foxes do on occasion move over very long distances, and this is not restricted to land areas. For example, foxes have been sighted on the ice in spring up to 200 miles northwest of the Queen Elizabeth Islands (personal communication, E.F. Roots, 29 August, 1968), and their tracks have been observed all the way from Ellesmere Island to the North Pole (personal communication, C. Jonkel[1]). Although there is no evidence to support the circumpolar migration theory held by some trappers, it does seem probable that under certain conditions, large numbers of foxes do move a considerable distance. Such movements

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[1] From a letter to him from A.C. Aufderheide of the Plaisted Polar Expedition, 10 July, 1968).

are perhaps not unexpectedly associated with population maxima. Foxes may then travel 200 or 300 miles or even more in a short time, and it is at such times that strays are reported far beyond their normal range. Many Russian biologists accept this notion, although Canadian biologists have been more skeptical. Maksimov (1945) for example, describes foxes moving outwards in every direction from a central area like an earthquake from its epicentre, although terrain and the onset of freeze-up may act to channel these migrations. Braestrup (1941) has also found evidence for periodic invasions of Greenland by Canadian Eastern Arctic foxes, probably associated with sudden lemming scarcities. No such occurrences have been adequately documented in this country, although there is fragmentary evidence. Shilyaeva (1968) believes that even a well fed population with a good supply of food can get caught up in a migratory stream.

Hypotheses for Banks Island

Size of territories

In order to approximate the size of arctic fox territories on Banks Island, it is necessary to determine the number of breeding pairs. Since there is no direct information on this matter, one can only make a rather tenuous deduction, using known harvest figures for the Island, and reproductive data from elsewhere.

The very best trapping seasons on the Island have produced crops of 7,000 to over 11,000 foxes, including those lost from or destroyed in the traps. There are two possible sources, operating separately or in combination for such harvests. Either the foxes reside in the trapping area, or they are migrating through from somewhere else. Let us suppose that no foxes move beyond their individual territories, so that such catches must be accounted for entirely by local foxes with no immigration (the validity of this approach is explained below). This would require that in a trapping area of about 10,000 square miles there is a sufficient basic population to produce occasional catches of 10,000 foxes or more.

According to the findings already noted with regard to age structure and trap proneness, this would require a spring cohort of which a minimum of 10,000 survived their first six months of life. If 15 per cent of the cohort died during August, September and October (apparently a conservative estimate), 12,000 whelps were weaned, and as mortality between implantation and weaning would have been low, perhaps 13,000 in all were born. About 1,250 breeding pairs could account for such a progeny.

This would suggest territories of about eight square miles at denning time in peak years of abundance. Since breeding populations are thought to vary by a factor of no more than three (Macpherson, 1969:38-39), this would suggest that territories are seldom larger than 25 square miles in spring.

Movements

If the above territory sizes are approximately correct, local movements would be restricted to within a three mile radius of the den, and sometimes less in years of abundance (assuming roughly circular territories).

Soviet observations of fox movements are certainly congruous with those made by trappers on Banks Island, and suggest that there may indeed be a seasonal migration pattern there. Both the trappers' observations and the monthly distribution of the catch can be explained by the existence of a resident Banks Island population,[1] of which some age classes, particularly the adults, move seasonally to and from their breeding grounds. Low midwinter catches may be due to the

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[1]We are assuming, in the absence of any evidence to the contrary, that there is a distinct Banks Island fox population, and that most foxes at least return to the same denning areas year after year. One cannot discount the possibility, however, that at least occasional interaction and intermingling of fox populations occurs. For example, some Banks Island foxes may not return after wintering on the sea ice, but rather travel to Victoria or Melville Islands, or vice versa.

absence of part of the population, while the spring "run" is the result of the return inland to breed.[1] In a very poor year such as 1964-65, and to a lesser extent the mediocre year of 1967-68, the return of breeding adults would account for a large proportion of the catch due to the relative absence of young foxes. The patterns in Figure 5.2 are also consistent with an early winter movement to the coast, but not as clearly so as with the spring movement. The autumn variations seem to be more a fun ction of the fox cycle. In average years (e.g. 1965-66, 1967-68), the December decline may be explained by decreased fox activity, or their departure for the coast, or both. However, in the peak year of 1966-67, the spectacular rise in December was probably a result of the abundance of young foxes which, without their own territories, are more mobile, but not necessarily with any established pattern. However, it is not clear exactly when the adult movement takes place; some trappers feel they are the first to leave, and the young ones eventually follow. If this were true, the early part of the season would be unproductive in poor years when there

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[1] An alternate explanation, of course, is that fox activity, and therefore the fraction caught, increases in the warmer months. McEwen noted a tendency for fox activity to increase directly with temperature and daylight (1955:26). This would not rule out the seasonal movement hypothesis, however, since both may be operative.

are so few young foxes around, but it would not explain why at least part of the population stays inland throughout the winter. The upsurge in the January catches in 1965 and 1966 is left unexplained by the suggested seasonal movements, and the occasional catches of blubber stained foxes inland as early as January would also indicate that our hypothesis is incomplete.

If overland seasonal travel does occur on Banks Island, the maximum distances involved are probably 60 or 80 miles, although the distance travelled on the sea ice beyond the coast may add substantially to this.

Finally, mass dispersals may occasionally take place in the area. The possibility cannot be discounted that during population maxima, foxes may travel over distances of several hundred miles, and that, for example, a dispersal originating in central or northwestern Victoria Island could head across Banks Island, gathering more animals with it, and proceed to the Beaufort Sea. In any case, it is sufficient to note the possibility of such movements, since their existence does not really affect the outcome of the present discussion.

The most obvious conclusion to be drawn from the above discussion is that our knowledge of fox movements is extremely limited, and that a broadly based, long term tagging program is required to remedy this. Nonetheless, it seems reasonable on present evidence to suggest that these movements fall into three ranges. Intra-territorial movements are restricted to a few miles, depending on the year, but the average radius should be close to three miles. Overland seasonal migrations are probably up to 60 or 80 miles, although additional territory may be covered on the sea ice. Occasional dispersals at cyclic maxima may involve movements of 200 or 300 miles, and sometimes much more.

Trapping areas

If foxes movements were limited to their own territories, the problem of delimiting and measuring trapping areas would be relatively simple. As a general rule, a trap would be assumed to exploit or "tap" an area of three miles radius around it, since that is the approximate mean radius of fox territories on Banks Island. A trapline thus taps a band of terrain six miles wide. The land use area for a network of traplines would be bounded by a line three miles outside the perimeter of the network, except that any areas within it which were more than three miles distant in any direction from a trapline would constitute unutilized interstices.

The problem of unutilized interstices is removed by introducing seasonal movements into this land use model, as the animals in these areas would then have at some time to move through the trap lines. With regard to the exterior boundaries, if the resident foxes move down to the sea and back again, this need not affect the basic three mile limit around the network, unless some foxes normally resident outside this area must regularly pass through it while migrating. This is possible, as the accounts of trappers (and of many Russian biologists) indicate that foxes tend to move down river valleys and along coasts. It is hardly coincidental that trappers tend to favour such areas; for example, while less than 20 per cent of the lowland physiographic province is below 200 feet elevation, about 30 per cent of the intensively trapped area, and almost 40 per cent of the total trap line mileage area are. Fully 60 per cent of the trap line mileage lies along the coast or in the main valleys. It will be recalled that the valley sides are likely the best fox habitat in addition to providing natural routeways for both the fox and the trapper. If the valley migration route notion is at all valid, it would suggest that resident populations of entire watersheds tend to funnel through the major river mouths. On Banks Island, however, the divides between most of the watersheds are not significant landscape features. If there are any topographic determinants of fox migrations on the Island they would probably be the high plateaus of the north and south, and the eastern morainal belt. It may thus be more appropriate to conceive of a fox population resident in the area bounded by these features (consisting chiefly of the lowland province), in which the seasonal migration pattern is essentially an east - west one to the Beaufort Sea and back again. Most of this area is already trapped, and only in the Bernard - Thomsen watershed area, and the north side of the lower Bernard valley, might we suspect the present network of traps to be exploiting additional foxes residing outside the perimeter.

The judgement about which interstices may properly be said to be exploited in view of seasonal movements must be partly subjective, since there is no firm evidence, and the hypothesis is in any case speculative. The general density and configuration of traplines in the surrounding area, and the probable direction of fox movements, must be taken into account. Areas of several hundred or even thousand square square miles, enclosed by a single trapline, can hardly be considered to be exploited effectively.

What effect does mass dispersal have on this scheme? No doubt there are years in which the catch is greatly augmented by immigration or "through migration" of foxes, and by wandering young foxes without territories. The most reasonable supposition is that in the long run these movements balance out. Such migrations may seem advantageous to the trapper, since he can exploit an alien population in transit as well as the resident population of his own area. Eventually, however, it must be supposed that some of the foxes in his own area will migrate out, which will reduce his chance of catching them, and provide another area with an alien population in transit. If the migrations from northern Banks and Victoria Islands passing through southern Banks accounted for all of the big harv ests there, how could the frequent occurrence of simultaneous maxima at Sachs Harbour, Holman and Read Island be explained? Obviously there are times when foxes are abundant throughout the Western Archipelago in both trapped and untrapped areas (the possibility that all the foxes of this vast region could manage to gravitate exclusively to the relatively small utilized areas may be safely discounted).

Thus, while it is true that many of the foxes caught on southern Banks Island may have come from elsewhere, it would be difficult to maintain that the catch is consistently augmented two or threefold by immigration. Is it possible that untrapped areas in the Western Archipelago act as sanctuaries which supply surplus populations to the trapped areas? The Bankslanders believe this to be the case, and they have made efforts to keep the northern and eastern portions of the Island as undisturbed breeding grounds to stock the utilized area. If this were true, it would have to be shown that the depletion of a fox population by trapping is significantly greater than the natural mortality (and/or exodus) that would occur in an untrapped population. If it is not, there is no surplus. If there were a surplus, it would then have to migrate into the trapped area. On a seasonal basis, we would not expect this; in the case of dispersals, if migration were random in direction, on ly a small proportion would enter the zone of utilization.

Our conclusion then must be that in the long run, the catch of an area of several thousand square miles reflects the carrying capacity and productivity of that area. It then follows that other than for occasional mass dispersal, it is legitimate to speak of trapping areas associated with the distribution of traps and the network of trap lines. The three mile limit around the outside of the network accounts for the average extent of local movement and most cases of seasonal movement, on the assumption that in general, foxes crossing the boundary have either their origin or their destination within the trapping area and are not just passing through.

We have, then, a land use area which because of its definition can be mapped just as readily as the trap line network. This area includes the territories of most foxes in most years which are taken by the traps that lie within it. There is, of course, the problem of degree or intensity of use within this area. A trap which is set for the whole season, especially if it is frequently checked and cleared, should be expected to yield more than a trap set only for the last two months; such a trap exploits its area more effectively. Similarly a trap set in an area of dense fox population or along a migration route will also catch more foxes than one set in an area of sparse population or an area vacated early in the season. There is neither an even distribution of foxes nor of traps in the trapping area, although trappers appear to have learned through experience to set their traps roughly coincident with the greatest concentration of animals. We can measure and map the intensity of trapping effort (viz. the distinction made between moderate and intensive use in Chapter Three); we can only guess at the differences in fox distribution within the area. Nonetheless, in broad terms it is possible to define the area, measure it, and calculate the number of pelts taken per unit of it.

Abundance and sustainable yield

It is not possible to determine the absolute abundance or the sustainable yield of foxes on Banks Island, due to the lack of observational data. It may be inferred from trapping returns returns that the sustainable yield is not being exceeded since harvests continue to be abundant. Table 5.1 demonstrates that over a 40 year period, consistently good harvests have been obtained at the maxima; indeed the year 1966-67 produced an unprecedented harvest. The average yearly take has varied little from cycle to cycle (with the exception of the two unusual cycles between 1940 and 1951 in which trapping did not occur at the minima). Again, excepting these cycles and that of 1933-38 in which trapping effort was unusually low for extraneous reasons during the peak year, there has been relatively little variation in the mean annual per trapper catch by cycle. It was suggested in Chapter Three that there were times when the trappers did not appear to be arranging their lines in the most effective pattern and so failed to maximize their opportunities, but this did not necessarily result in overharvesting of the resource. There is, of course, differential pressure within the trapping area. Most trappers find they get better results towards the end of their traplines, rather than in the immediate hinterland of Sachs Harbour where a fairly close network of traplines exists. Overtrapping may be occurring in this area. On the other hand, there is a real variation in trapping intensity as the season progresses: close to home at

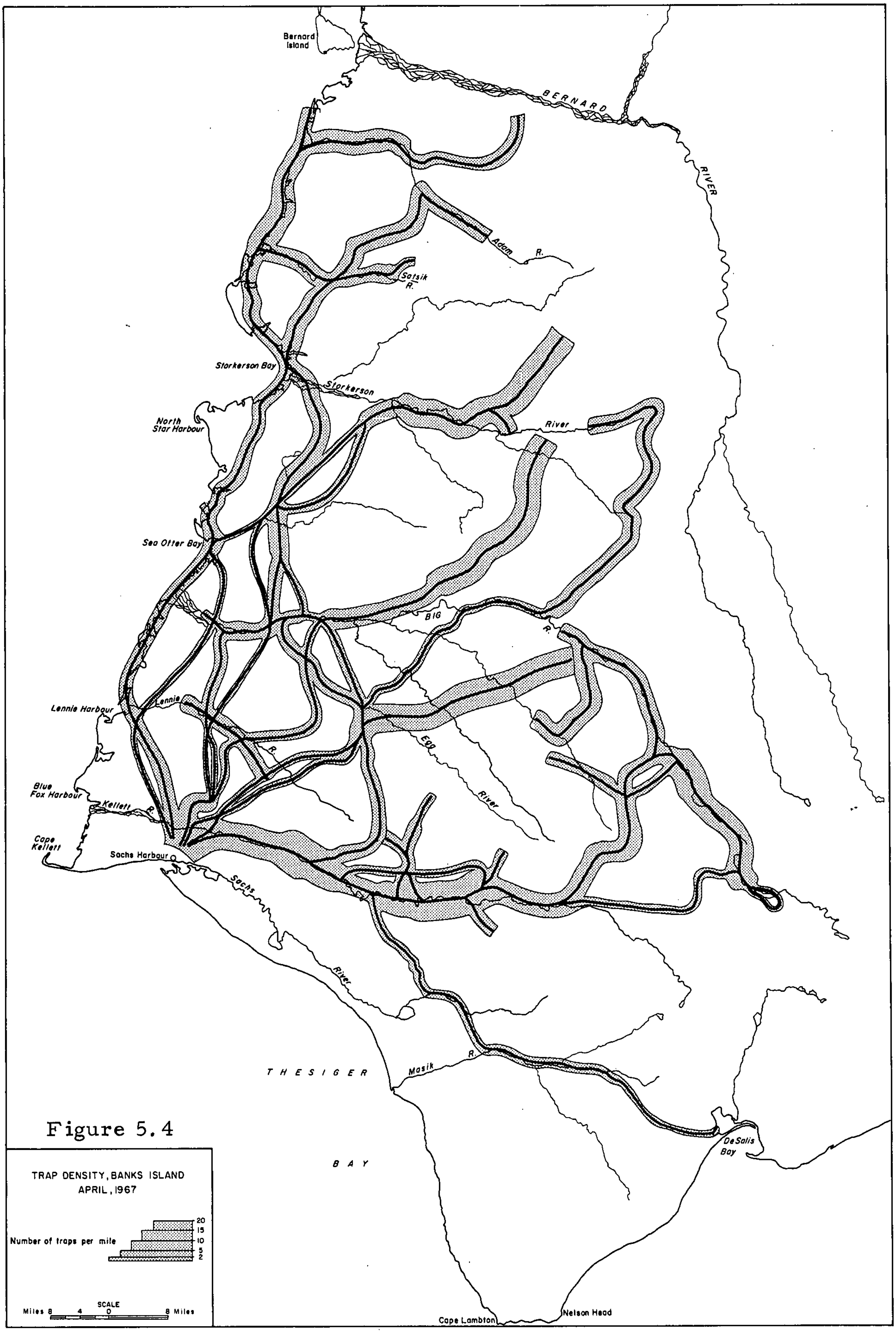
TABLE 5.1

Fox production by cycles, Banks Island, 1929-66

Cycle number	Years covered	Length in years	Number of years trapping occurred	Total number of trappers	Total foxes caught	Mean number of foxes per year trapped	Mean annual catch per trapper[a]	Range in mean annual catch per trapper
1	1929-33	4	4	55	7,672	1,816	143	38-265
2	1933-38	5	4	51	5,677	1,419	124	86-180
3	1938-40	2	2	27	7,967	3,984	278	122-433
4	1940-46	6	4	86	15,457	3,864	205	69-391
5	1946-51	5	2	42	7,034	3,517	202	83-320
6	1951-54	3	3	28	5,580	1,860	200	133-294
7	1954-57	3	3	32	7,421	2,474	176	98-300
8	1957-60	3	3	39	5,689	1,896	167	68-305
9	1960-66	6	6	105	17,378	2,896	168	91-322
Total	1929-66	37	31	465	79,465	2,563	177	38-433

[a]Based on the average of the yearly averages.

Source: Table A.5.



Bernard Island
BERNARD
RIVER
Adam R.
Satsik R.
Storkerson Bay
Storkerson
North Star Harbour
River
Sea Otter Bay
BIG
R.
Lennie Harbour
Lennie
R.
Egg
River
Blue Fox Harbour
Kellett R.
Cape Kellett
Sachs Harbour
Sachs
River
THESIGER
Masik R.
BAY
De Salis Bay
Cape Lambton
Nelson Head
TRAP DENSITY, BANKS ISLAND
APRIL, 1967
Number of traps per mile
20
15
10
5
2
SCALE
Miles 8 4 0 8 Miles

Figure 5.4

the beginning, then on subsequent trips the lines are extended. It should not be surprising that the areas trapped right from the beginning of the season should eventually yield fewer and fewer foxes, while the newly extended lines begin to reap a hitherto unexploited harvest. In good years there is no lack of foxes around the settlement if the catches from day lines are any indication. Not only do the trappers extend their lines as the season progresses but many also bring some traps forward from the beginning of their lines to place toward the end. As a result, by the end of the season, trap density on most lines is far greater at the extremities than in the close network nearer the village. Figure 5.4 showing trap density in April 1967, illustrates this very well, and it may be taken as a typical example of late season trap distribution. (The varying width of lines is a representation of relative density and does not imply any delimitation of exploited or unexploited areas).

The trapping season on Banks Island

There are very few days in the year when the Bankslander is not doing something directly or indirectly related to trapping white foxes. There are many ancillary activities related to the trapping livelihood, but in this section we shall concentrate on the trapping season itself and the immediate preseason preparation of the traplines.

Preparation can begin several months before the season, for seldom will a light aircraft arrive at Sachs Harbour in the summer without someone chartering it to deposit cornmeal and coal oil at strategic points along his line. On such journeys the trapper uses the opportunity to study the terrain from the air, perhaps assessing a new route he has in mind for the coming winter. Those trappers whose lines do not pass any lakes large enough for an airplane may stock their lines in other ways. Some go north by canoe in the late summer to places where their lines reach the coast. Others may wait until October and go inland by dog-team, preparing caches while hunting caribou.

Figures 5.5 and Table B.1. indicate the level of preseason activity in 1966. Summer preparation was fairly typical of previous years, while autumn preparation, particularly toggling,[1] was down, chiefly because of the unusually late arrival of adequate snow cover for travelling. In 1965, nine out of 16 trappers toggled traps before season, while six out of 17 did so in 1964. In most cases, the same individuals are involved, and these

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[1]Toggling refers to the practice of placing but not opening traps before the season begins. The sites are selected, and the trap chains affixed, so that on the first trip of the season, effort can be devoted to the actual opening and setting of the traps.

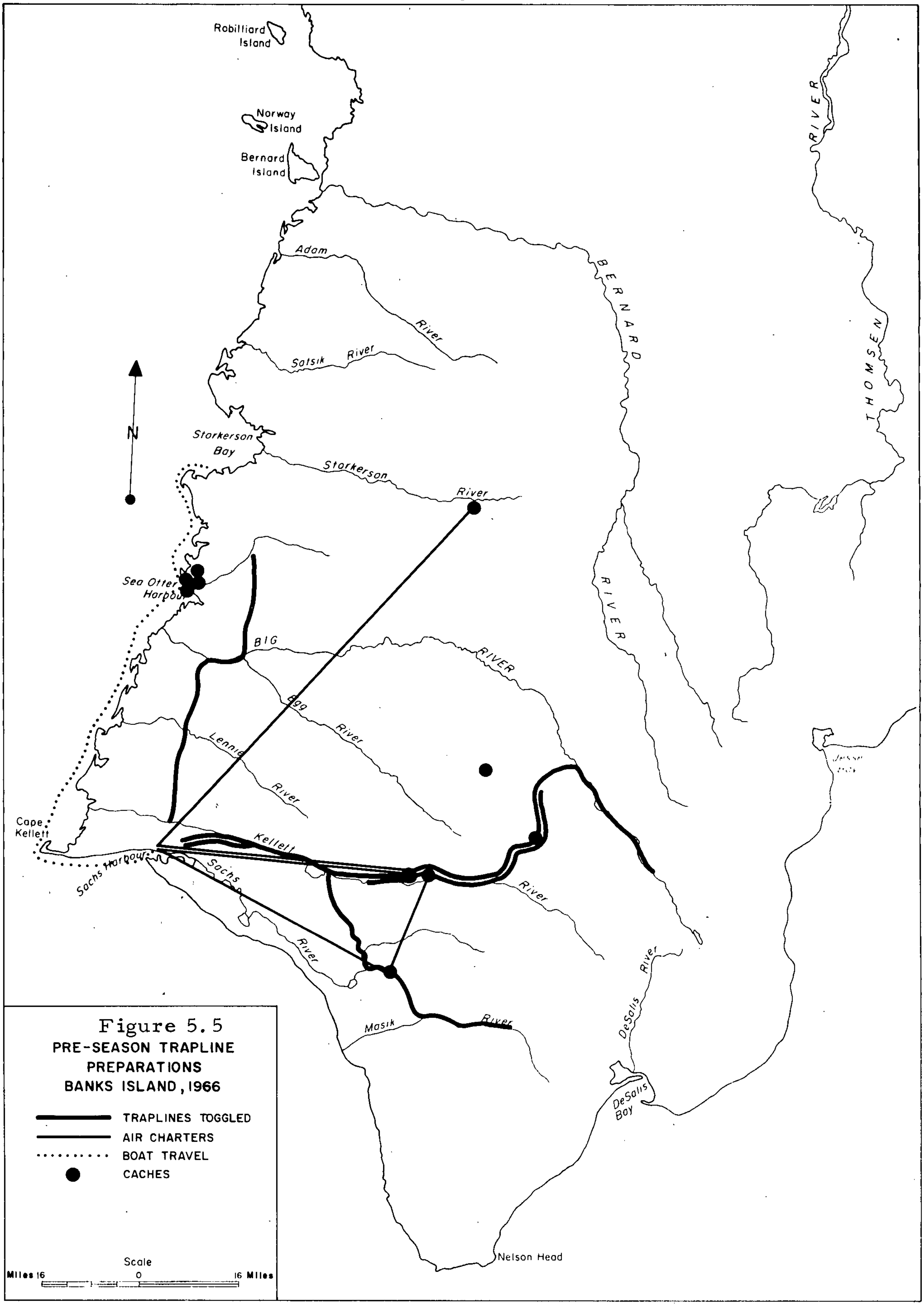

Figure 5.5
PRE-SEASON TRAPLINE PREPARATIONS
BANKS ISLAND, 1966

are usually the younger, more aggressive trappers. Some older men resent this practice,[1] since they feel all the trappers should start together "so that everyone can have the same chance". They appear to conceive of a fixed number of available foxes, of which the more someone else gets, the less remain for the others. The younger trappers are inclined to retort that anyone may toggle traps in October if he so chooses, and they fail to see why they should not be able to exercise extra initiative in trapping and reap the benefits therefrom.

There is little doubt that preseason effort can both lighten the subsequent workload and increase trapping success. The cost of chartering planes or of outboard fuel to lay caches was in every case less than $50.00, and although it would be difficult to place a monetary value on the benefits, the advantages of having several hundred pounds (perhaps half a sled load) of supplies already set out at various points on one's trail, should be obvious. The ability to stay out longer and set more traps need only result in two or three more foxes to have made the effort worthwhile. Those who cached seal meat at Sea Otter Harbour (the only location where there is an ice-cellar and thus where meat caching is possible), had an additional advantage, with virtually all their dogfeed needs for the winter

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[1]Toggling has developed since 1960, as during the schooner days the autumn was much too busy a period to allow it.

already on the trail. It seems remarkable that the practice is not more widespread in the North in view of the minimal investment, and the possibility of increased returns.

Toggling traps in October is also advantageous, although some feel wary of committing themselves to a particular route so soon. At the beginning of the season, one must haul traps, choose trap locations, build up mounds of earth and snow, toggle the trap chains in these mounds, then actually open and set the traps. This is time consuming; probably at least as much time must be spent at the trap site as in travelling between them, if not more. If one has already done everything but open and set the traps before season, clearly many more traps can actually be set on the first trip in November.

The N.W.T. game regulations provide for the opening of the trapping season on November 1st, although local trappers' associations are at liberty to request alteration as conditions warrant. There is considerable disagreement amongst the Banks Island trappers about this date; some feel it is too early and results in a high proportion of unprime foxes in the catch, while others feel that at this critical time of the year it is necessary to trap the foxes before they begin moving out of their districts. The latter opinion is held mainly by inland trappers. In 1965, the season was delayed ten days, much to the annoyance of some. In 1966, on the other hand, it started on the 1st, although it was a late fall, and clearly a peak year with many young foxes, which turn prime later than the adults.

Regardless of when the opening date is set, the trappers are anxious to get out as soon as possible. Conversation in late October turns on little else; plans are made and everyone is in a rush to ensure that all equipment is ready. Competition is especially keen where several trappers follow the same general route, and each wants to be the first to open his traps. Some men are off with first light, others are inevitably delayed and do not get away until the following day. In 1966, eight of 15 trappers managed to leave on opening day, six the next and the last man was off on 3rd November.

Normally the trappers make five or six trips during the winter, each of a fortnight's duration. The first trip of the season is extremely important, not only because the return per trap check is greater at this time of year (except in very poor years), but also because the amount of territory covered will tend to set the pattern for much of the rest of the winter. On the average, about 65-75 per cent of the traps are set on the first trip in November, covering perhaps 55-75 per cent of the final length of the trapline. Stopping and starting with a heavy load, a man can expect to average about four miles per hour travelling by dogs, while if he is making mounds, toggling and setting traps, five to seven minutes may be required for each set (although the fastest trappers can average two and a half or three minutes). In addition caches must be attended to: there are traps to be picked up along the way, and cornmeal and fuel to be deposited. Such caches may be spread along the line perhaps seven to 20 miles apart. With only about seven hours of effective daylight at this time of year, progress is necessarily slow.

In 1966 the mean length of the first trip was 20 days, of which 13 were spent going ahead setting traps, at a rate of 7.4 miles and 31 traps per day. The return journey, checking traps, goes faster although in a big year when a fair proportion of the traps must be cleared and reset, the pace is still slow. The overall rate for the first trip is about 10 or 11 miles per day, with minor variation from year to year. On the second trip, although there is less effective daylight, most of it is spent travelling and checking traps, so that more territory is covered. From then on daylight increases, the return per trap check tends to fall (except in poor years), requiring less work, and daily mileage increases to over 20 by the end of the season.

On the second trip, only slight extensions of the lines are possible, as effective travelling time is so short. Major extensions are made in January or February (some men make only one trip during these two months), and by the end of this period at least 90 per cent of the line has been completed. Such extensions are made partly because the immediate hinterland begins to get trapped out, and also because later in the year the catch is thought to be made up mostly of travelling foxes, and the longer the line, the more likely it will cross the path of a migration. The trappers thus feel that if they had to choose between checking a short line often or setting a lot of traps but seeing them less frequently, the latter would be a superior strategy. On the March trip, one is usually inspecting the full line, which by this time averages about 130 miles in length with 470 traps.

The last trip takes place in early April, and the traps must be shut before returning, Normally the season closes on the 15th, but adjustments are sometimes made for the Easter holidays, or in the case of a poor season a week's extension may be given. Some men pull their lines on the return trip, others on the outward leg so that they can take short cuts home. Most men take out their traps and cache them in piles of 50 or so along the way, although some traps are simply snapped and left toggled in the ground.

In a very big year it is not always possible to bring home the entire catch of a trip, and the frozen foxes must be cached on the trail. In such a case men may have to make journeys inland after the close of the season to pick up these foxes. Normally however, all activity related to trapping (except for the preparation of pelts) comes to an abrupt halt on the 15th of April.

During the 1966-67 trapping season, 43 per cent of the total number of man-days were spent trapping on the main lines, with another six per cent on other forms of trapping and hunting (see Table 5.2). Several men set short day lines close to the village, which they visited between trips on the main line. The very small amount of time spent on seal and caribou hunting indicates how well the trappers had prepared for the season. Even then, some of this hunting was in response to suitability of conditions rather than to prospective food shortages. Caribou are taken quite frequently on the trapline when the opportunity arises, particularly in November. However, this occurs directly in the course of trapping, and is therefore not counted as time spent primarily in the pursuit of caribou.

Visits to the mainland or Victoria Island accounted for over four per cent of the trapping man-days, an unusually high proportion. This leaves 46 per cent of the season which was actually spent in the settlement by active trappers. A

TABLE 5.2

Disposition of man-days during the trapping season of 1966-67, Banks Island

Number of trappers	15
Number of days in season	166
Number of man-days	2490

Activity	Time Period Nov-Dec	Jan-Feb	Mar-Apr	Entire Season
Total available man-days	915	885	690	2490
Trapping (main line only)	541	287	308	1136
Trapping (daylines & short trips)	19	30	17	66
Seal hunting	4	10	8	22
Caribou hunting	2	2	0	4
Total days hunting & trapping	566	329	333	1228
Visits to other communities[a]	32	68[b]	10[b]	110[b]

[a] i.e. trips to Inuvik, Tuktoyaktuk or Holman for business or pleasure.

[b] Does not include time spent in hospital at Inuvik by one man due to an injury.

Source: field investigations

significant part of this remainder was spent on activities directly related to trapping: the making or mending of travelling and trapping equipment, and the skinning, stretching and flouring of fox pelts for market. Numerous other chores such as hauling ice and fuel for home use demand time in the settlement as well.[1] The rest is leisure time. Both men and dogs require physical relaxation from the ardours of the trail, but perhaps more important is the need for families to spend some time together. A cheerless atmosphere of loneliness and depression pervades the village when the men are away, especially during "dark days" when visiting from house to house is at a minimum. The Christmas and New Year period is therefore a welcome break and the men all try to be home at this time. Later in the season, the trapping trips become staggered and there are always some men in town at any one time (except for the last trip in April), and though it is still very cold, daylight lengthens and an air of brightness returns to the community.

Trapping skills and route selection

Trapping success is a function of both fox abundance and trapping effort. Three components of trapper effort may be identified. A man must first be skilful in the techniques of trapping and travelling. For example, he must master the manual skills of toggling, setting and baiting a trap, and he must know the qualities of different kinds of terrain, snow and ice, both for travelling and trapping. Second, he must know

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[1]Time allocations for these activities are given in the following chapters.

and understand the habits and behaviour of the animals he is trapping. He must know how foxes approach the trap and thus how to arrange markers and baits, he must know when foxes are going for bait and what bait to use, and he must be able to judge where and when foxes are most likely to be plentiful. In the local parlance, he must "study foxes" and "know foxes". Finally he must work hard and maintain a good stock of capital equipment.

The first thing the trapper must do is select a route. Some of the factors involved in this have been mentioned in Chapter Three. Most of the older men have developed their routes out of long years of experimentation, sometimes in concert with partners who have long since emigrated. In some cases the sons have inherited these routes, and may have taken on new partners. Newcomers without immediate relatives, or whose relatives were already committed to other partners, have had to find their own routes. This they have done with the aid of maps and of bits of information picked up in conversation, although the established trappers are loath to share their personal knowledge.

Once established in a general area, the trappers seldom change their routes although they may make minor variations in places, particularly at the ends. This is partly because they get to know their routes well and become wary of changing to another route of unproven worth, and partly due to the time and load-saving practice of caching traps along the route at the end of the season. One no longer has to start from home with a full load of traps, but neither can one be as flexible in routing. The trappers generally avoid encroaching on their colleagues' routes, and this tends to work to the disadvantage of the new arrival, but there has been remarkably little friction over route selection in a situation where there is no institutionalized system of individual territorial or route-line rights. The relatively fixed pattern of routes persisting over several years is a recent development however. In the schooner days it was customary to remove all traps due to the uncertainty of the location of the next year's base camp. Since then the pattern has become much less flexible as individuals committed more and more equipment and knowledge to their routes. Formerly trappers were known to pull their entire lines and relocate them in mid-season to take advantage of localized fox abundance, but this has not occurred for several years.

Having selected a route, the Bankslanders travel in a fairly direct line along it, setting traps periodically along the way. Sometimes they are set as frequently as 10 or 15 to the mile, although the average is three or four. Some trappers set traps in pairs, most prefer to use a single trap at each site. Very occasionally, if a trapper happens upon an animal carcase or a fox den, or some other object likely to attract foxes, he will set out a number of traps around it. In the main traps are more or less evenly spaced, a quarter mile or so apart along the route.

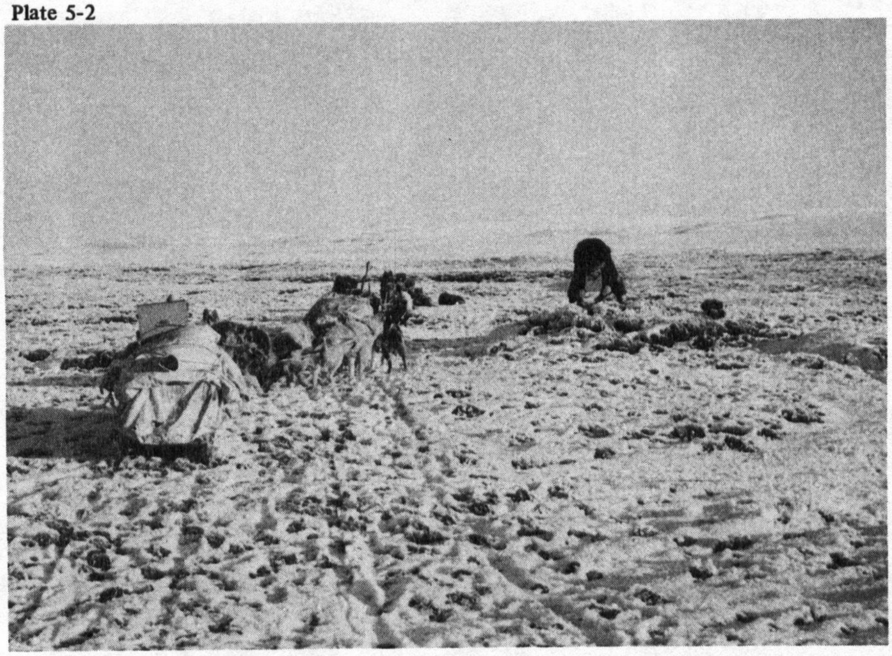
The general preference for coast or valley routes is apparent, although some trappers have overland trails. More specifically, the trappers quite naturally prefer such easily followed terrain features as low coastal or river banks, valley terraces or small stream beds. Where a flat or gently undulating surface is to be traversed, large markers of snow may be erected, but frequently the trappers make their way without these. Small knolls, crests of river or coastal banks, or other small eminences in the terrain are sought for individual trap sites, again partly because of their visibility and partly because foxes tend to frequent such features.

To the uninitiated traveller, slowly sledging across this vast, almost featureless, snow covered landscape in the dull blue half light of midwinter, it seems incredible that anyone could even approximately follow an unmarked route, let alone find every drifted over trap along it. A multitude of tiny visual clues escape this traveller, but the experienced trapper knows those of his own route well, and he also knows the little tricks of navigation by which he can orient himself, such as drift direction, snow consistency, stars, etc.. His well trained team of dogs will also assist him in finding the way. In fact, some trappers even if they have set out 700 or 800 traps over 200 miles, can probably visualize the location and set of every single one of their traps.

Steel leg traps are used exclusively. The normal model is the size $1\frac{1}{2}$ trap, usually with a single spring to which is attached a short length of chain with a ring at the end. Plates 5.1 to 5.16 illustrate the basic technique of setting a trap. If no existing knoll is available, a mound is built up out of snow or earth. A small hole is made in the knoll, and the ring is toggled a few inches deep into it. Early in the season, when there is little snow, this usually requires an axe, later on the snow knife is the essential tool. Snow is pressed down tig htly into the hole, sometimes with a small stone or clod of earth over the ring, and this soon sets and freezes hard. If done correctly it can only be removed with the aid of an axe at pulling time, otherwise a trapped fox can pull the trap out and

Plate 5-1

Plate 5-2

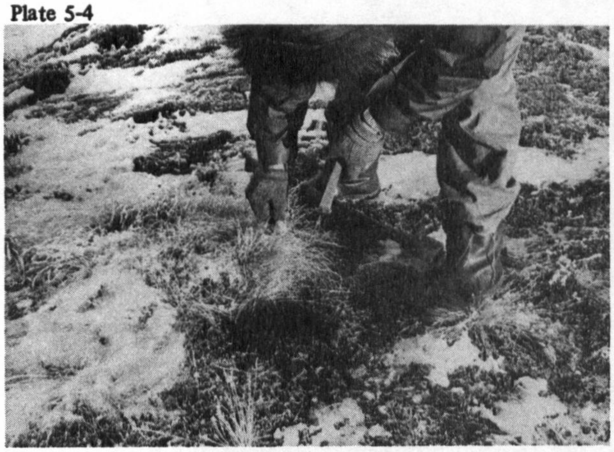


Toggling traps on small knolls near the watershed of the Big and the Kellett Rivers, October 1966. These are typical locations for traps.

Plate 5-3

Chopping a hole for a trap chain, Kellett River, October 1966. Note typical trap location, along crest of a low river bluff.

Plate 5-4

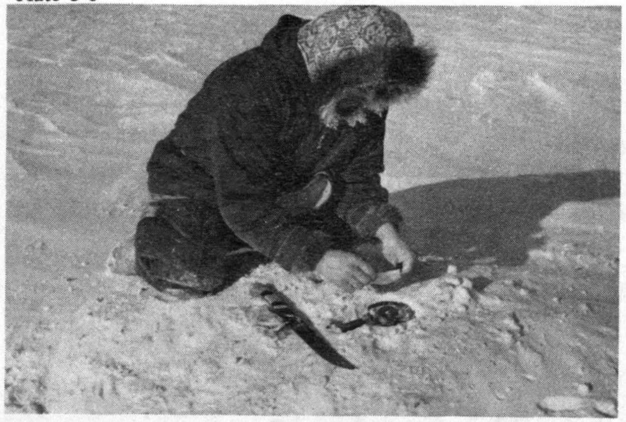


Toggling a trap chain, Kellett River, October 1966.

Plate 5-5

Burying a trap chain, Kellett River, October 1966.

Plate 5-6



Setting a trap, Adam River, April 1967. The trap is in a small depression in the snow mound.

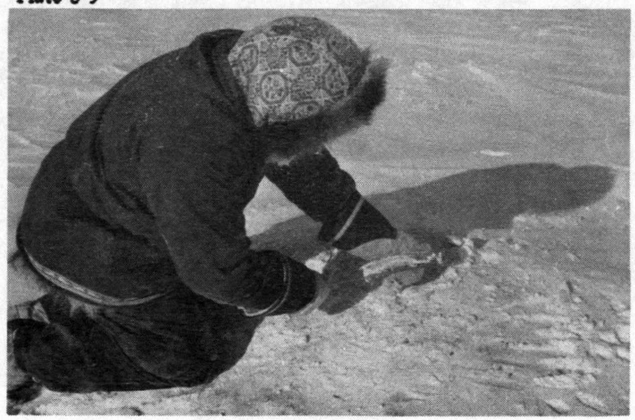
Plate 5-7

Sticking paper to the trap jaws to protect the tongue, Adam River, April 1967.

Plate 5-8

Spreading loose snow over a trap with a snowknife, Adam River, April 1967.

Plate 5-9

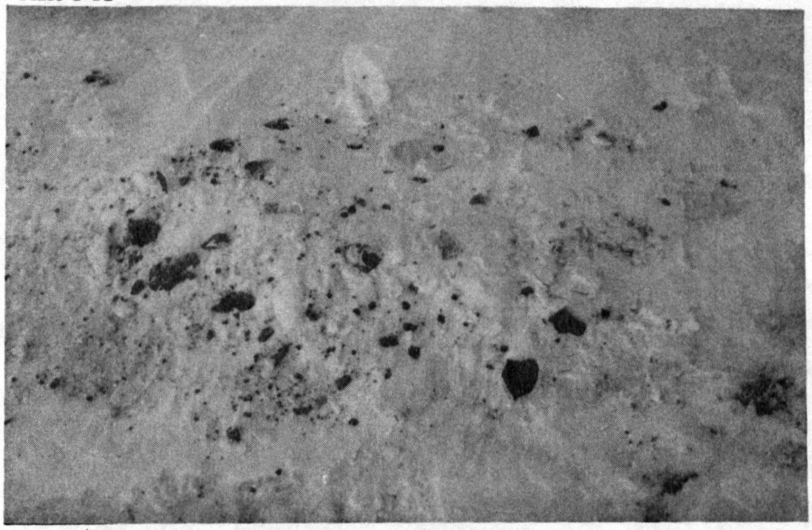


Shaving bait over a trap, Adam River, April 1967.

Plate 5-10

A fox trap, Satsik River, April 1967. The snowblock in the upper left is a marker. A small clod of earth to the right of the marker is used as a stump, and the trap itself lies under the patch of white snow in the centre of the mound below the stump.

Plate 5-11

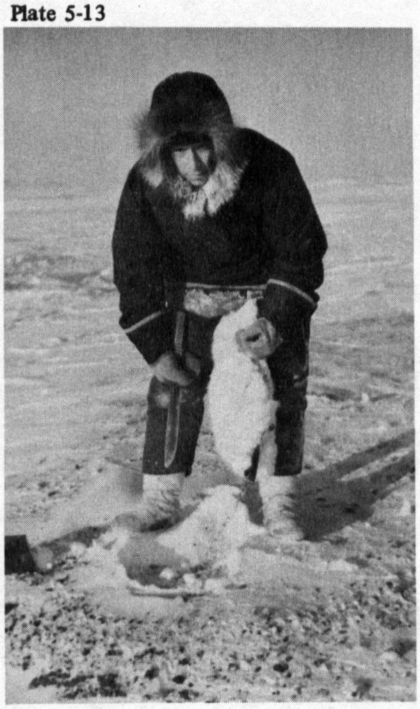


A fox trap, "blown out", Adam River, April 1967. Just below and to the right of the snow marker, the paper covering of the trap is exposed. Bait has been spread around the trap, instead of using a stump.

Plate 5-12

A fox in a trap, Kellett River, March 1967. Most foxes are found frozen and drifted over, as in this photo.

Plate 5-13



Removing a fox from a trap, Kellett River, March 1967.

Plate 5-14

A trapped fox, Egg River, March 1967.

Plate 5-15

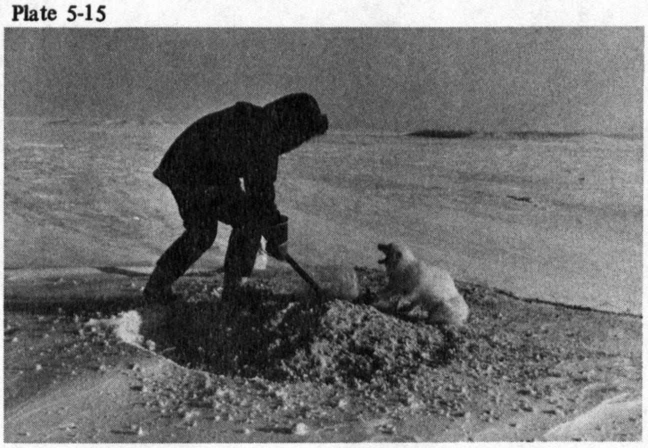
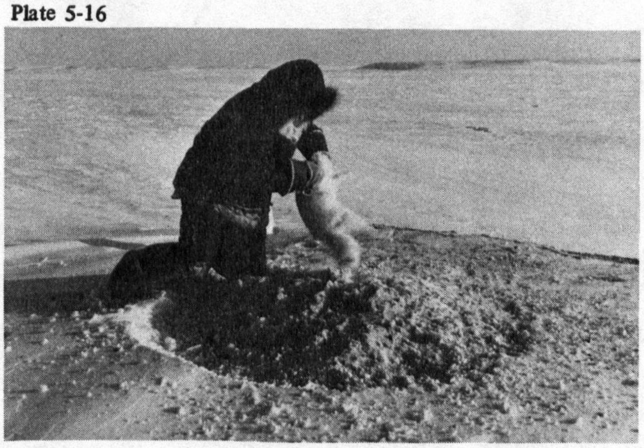


Plate 5-16



Killing a trapped fox, Egg River, March 1967. When a fox is found alive in a trap, it is first stunned, and then its neck is broken.

drag it off.

A small depression is made in the surface of the mound, in the shape of an open trap, about an inch or so deep. The jaws of the trap are opened, it is set in this depression, and then papered over.[1] The paper is stuck down at the edges with saliva, and serves the function of keeping an air space between the jaws and under the tongue, so that the functioning parts of the trap can remain operative and not be frozen in. Then a handful or so of fresh, loose snow is placed over the trap, and smoothed level with the surface of the mound with a snow knife. Care must also be taken that most but not all of the spring is covered with loose snow rather than being packed in, so that it can work easily but not be knocked out of place prematurely. Here a knowledge of the different types of snow and their properties when handled in particular ways is necessary. When snow is packed down and the air removed, it will set hard (this is also a basic principle of winter road construction), whereas the fresh, loose snow placed over the trap has no bearing strength and allows it to be triggered when stepped on

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[1]Toilet paper (preferably single ply) is invariably used. One square exactly covers a size $1\frac{1}{2}$ trap, and the roll can be carried on a loose belt around the waist, for convenience and ease of handling. Indeed this is referred to locally as the "trapper's belt".

by a fox.

The trap is then baited and marked. Bait can be placed in a variety of ways; either shaved or sprinkled around or over the trap, or placed in a lump near it, and it will only be used under certain conditions. Seal meat or blubber is often used on the coast, while caribou entrails are favoured inland. Other types of meat are also used, and some men have experimented with commercially prepared scents, although apparently not with extraordinary success. When foxes are not going for bait, especially in late winter, a small "piss stump" is used. This may consist of a clod of earth, a piece of bone or antler, or small lumps of snow cut from where the dogs have urinated overnight; any of these will attract a fox to urinate on it, and when the fox approaches the stump he will be caught. Sometimes both bait and stump are used. Usually a larger clod of earth or a block of snow, set a foot or so away, marks the location of the trap. There are many ideas on the appropriate methods of placing bait and stump relative to the trap. These, along with the exact techniques of covering and baiting traps, are the jealously guarded trade secrets of each individual, but the basic method outlined here is common to all trappers.

Although the rudiments of trapping can be learned quickly, the refinement of its skills comes only through years of experience. Even the best trappers feel they are still learning, although some men in their late twenties and early thirties are already highly skilled. To gain an intimate knowledge of fox behaviour is considered to take even longer, however. The mastery of this aspect of trapping is generally agreed to lie with a very few older trappers. There is no substitute for 30 or 40 years' experience.

Relative judgements can be made about the level of trapping skills and knowledge of foxes of each trapper, but there are no absolute measures of these factors. Trapping effort can be measured, however, and it is apparently the most significant of the three components of trapping success.

Effort inputs

There are numerous ways of measuring effort input and relating it to trapping success. Ten aspects of effort were measured in this study, as follows.[1]

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[1]The following analysis is of full-time trappers only, and deals exclusively with their performance on their main lines. Both effort and catch statistics have been excluded for day lines and incidental trapping, except for such catches in 1964-65 and 1965-66, which were impossible to distinguish. The incidental catches for those two years were very small however, and their inclusion does not significantly affect the analysis.

1. Size of dogteams.
2. Occurrence of toggling before season.
3. Configuration of the trapline.
4. Miles of trapline.
5. Return length of trapline.
6. Number of trapping trips.
7. Number of days spent on the trapline.
8. Distance travelled.
9. Maximum mumber of traps set (usually in April).
10. Number of trap checks.

Some of these parameters are self-evident, others must be explained. With regard to configuration of traplines, most men set one continuous line from beginning to end. However, there are other variations such as circular lines or forked lines, and any of these may have small spurs in one or more places. Some lines are looped, usually at the end, while occasionally men run split lines, i.e., two separate lines out of the settlement which are tended separately.

Miles of line is a measurement of the length of an imaginary line joining all traps according to the route normally followed by the trapper. In all cases it refers to the trapline at its maximum length (usually in April).

In the case of a straight line, return length is double the number of miles, while in the case of a circular line this is equal to it. Spurred, forked or looped lines, where some parts of the line are checked once and others checked twice in a trip, give a figure in between.

Only full scale visits to most or all of the trapline are counted as trips here. Occasional day or overnight visits to the beginning of the line, or journeys of a similar length representing false starts on longer trips due to bad weather or other circumstances, have not been included.

Distance travelled is the sum of all travel for all trips (as described above) over the season. It includes travel over short cuts where there are no traps, and the distance between the settlement and the beginning of the trapline, and brings into account trips which did not cover the full length of the trapline.

Trap checks (or trap visits) constitute the closest approximation to a universally comparative measure in fox trapping. Neither the idea nor the term appears to have been used in the literature on fox trapping, although clearly it is the equivalent of the unit of effort in fishing or the trap night in small scale trapping. Ideally such a measure requires standardization both in equipment and in the time period for which it is used. In fox trapping, where traps may not be checked for up to a month or more, a trap may be sprung within a few days after setting, and thus be useless the remainder of the time. The trap night is therefore of limited value as a measure because there is no way of determining how many and which traps are in fact operative on any given night. Clearly a line which is checked frequently should yield more than one which is left unattended over the same number of nights. Even disregarding this, the data would be extremely difficult to obtain, especially if they were being reconstructed from memory rather than by direct observation. The trap check is not without drawbacks, but the number can be totalled from memory with reasonable reliability. The main disadvantage is that the time intervals between trap checks are not uniform, especially where traps are visited both going ahead and returning on the same trip.

Trapping trips are normally undertaken about once a month. On a circular line, this provides a fair uniformity of interval. On a straight line however, there is considerable variation in the intervals, especially towards the end. If a man maintains a steady routine of two week trips between which he spends two weeks at home, the trap check interval at the beginning of his line is reasonably uniform at about two weeks. A trap at the the end of the line, however, may not have been checked for a month, and then the trapper turns around and checks it again a day or two later on his way home, only to leave it for another month. Especially in the latter half of the season, when the bulk of the traps are towards the end of the trap line, these disparate intervals will apply to most trap checks. Trap checks after an interval of a few days should not be expected to yield as much, on the average, as those made every three or four weeks.[1] However, the total number of times any given trap is checked during the year does not vary greatly - usually 10 to 14 times except in the case of circular lines when this figure is halved.

The trap check, although not a perfect measure, is the only one which incorporates both the number of traps set and the frequency with which they are visited.

In addition to these ten basic parameters, there are several rate measures which can be derived from them. These are:

1. Days out per trip.
2. Distance travelled per trip.
3. Miles travelled per day.
4. Days out as a percentage of the trapping season.
5. Maximum (April) trap density, measured in traps per mile.
6. Total foxes caught per trap check.
7. Retrieved foxes caught per trap check.
8. Loss rate (foxes lost as a percentage of the total number caught).

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[1] In 1966-67 (the only year for which reliable data could be obtained) 5716 foxes were taken on outward journeys and 2717 while returning, for a ratio of about 2:1, within the season the ratio varied from slightly more foxes on the return than outward before Christmas to about 9:1 in favour of the outward journey in March and April. Such a seasonal trend is to be expected, although the magnitude may vary. For most years, when foxes are much less abundant, probably the proportion of foxes taken on the return journey would be smaller.

The last three indices are related to the measurement of trapping success, which can be judged both in terms of the number of foxes actually retrieved, and of the total number of foxes captured including those which were subsequently lost or destroyed. In the latter case, it is assumed for convenience that animals which escape are not subsequently caught, although foxes are occasionally taken which bear the marks of a previous encounter with a trap.

These data were collected from every trapper for the three trapping seasons 1964-68, for a total of 263 trapping trips, and are summarized in Table 5.3.

All data were obtained through interviews. 1966-67 data were obtained continuously throughout the trapping season and their reliability is extremely high; as much so as could possibly be expected. Data for the previous years were obtained shortly after each season closed, and the trappers were asked to reconstruct their activities for the entire winter, aided by written records of catch by month which they all keep. These data are considered reliable, especially when aggregated. The Bankslanders are of course an elite group of trappers; in other areas where this activity is not as significant, post season interviews may not provide such reliable material.

Fortunately for our analysis these three seasons were quite different, the first being a very poor one, the second being average, and the third producing a record harvest. The

TABLE 5.3

Trapping effort, Banks Island, 1964-67

Totals	1964-65	1965-66	1966-67	Total	Three year mean
Trappers	17	16	15	48	16
Total foxes	1,793	3,263	9,504	14,560	4,853
Foxes retrieved	1,543	2,966	8,433	12,942	4,314
Foxes lost	250	297	1,071	1,618	539
Dogs	150	149	145	444	148
Number of trappers toggling before season	6	9	4	19	6
Line configurations –					
strait	10	10	4	24	8
strait + spur	1		8	9	3
circle (+ spur)	2	2		4	1
fork (+ spur)			2	2	1
looped	4	3	1	8	3
split		1		1	
Miles of line	2,042	2,417	1,813	6,272	2,091
Return length	3,560	4,095	3,556	11,211	3,737
Trips	85	102	76	263	88
Days out	955	1,283	1,136	3,374	1,125
Distance travelled	15,835	20,965	15,762	52,562	17,521
Maximum traps set	6,715	8,005	7,924	22,644	7,548
Trap checks	48,585	68,995	51,312	168,892	56,297
Means per trapper					
Total foxes	105	204	634		303
Foxes retrieved	91	185	562		270
Foxes lost	15	19	71		34
Dogs	8.8	9.3	9.7		9.3
Miles of line	120	151	121		131
Return length	209	256	237		234
Trips	5.0	6.4	5.1		5.5
Days out	56	80	76		70
Distance travelled	931	1,310	1,051		1,095
Maximum traps set	395	500	528		472
Trap checks	2,858	4,312	3,421		3,519
Rates					
Days per trip	11	13	15		13
Distance per trip	186	206	207		200
Miles per day	16.6	16.3	13.9		15.6
Days out as proportion of season (per cent)	32	50	46		43
April trap density	3.3	3.4	4.4		3.6
Total fox per trap check	.037	.047	.185		.086
Retrieved fox per trap check	.032	.043	.164		.077
Loss rate (per cent of total)	13.9	9.1	11.3		11.1

Source: field investigations.

mean annual per trapper catch over these three years was 270 foxes. This is about 50 per cent above the long term mean (see Table 5.1), so it is not entirely representative of an average cycle. Nonetheless a wide range of possibilities is covered by these three years. As line trapping has apparently not been subjected to this type of analysis before,[1] the figures given in Table 5.3 have considerable intrinsic interest. Beyond this, however, they provide a basis for identifying the factors most closely related to both individual and aggregate trapping success.

Analysis by season, 1964-67

Fox abundance is easily the most important single determinant of the total catch, as the latter varies by a factor of about six while most of the effort indices vary by less than 25 per cent. Indeed, there is no direct positive correlation of catch with effort from one year to another. Effort quotients (see "means" in Table 5.3) are greatest in the year of average abundance, with the good year following and the poor year last (the exceptions are the number of dogs and the number of traps,

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[1] Preliminary analysis of the 1964-65 data for Banks Island is given by Usher (1966), although where discrepancies occur the figures given here should be taken as correct. A simple methodology for measuring effort in area trapping (i.e. when trappers exploit distinct and mutually exclusive areas rather than setting their traps in long lines) has been suggested by Danilov (1959).

but these two represent a cumulative growth of capital stock over the three years, unlike the others which represent short term decisions on effort expenditure). Further consideration will be given to this fact when we analyse the expenditure of effort over the season in detail.

To identify the factors most closely linked with individual success, a correlation array was worked out involving trapping results (i.e. foxes taken), the basic input measures and the rates already discussed. The analysis was done separately for each year, and then for the mean annual performance of the 14 trappers who were active for all three years.

Table 5.4 indicates the factors most closely related to trapping success. In general, the parameters related to time (trips and days out) are the least closely associated with productivity, while the two functions of line length have a somewhat stronger relationship to it. The two best indicators are trap checks and the maximum number of traps set, although the distance travelled during the season is also quite strongly associated with success.

In almost all cases, the correlation of all these parameters is somewhat closer to the total number of foxes trapped than to

TABLE 5.4

Correlation co-efficients of selected effort inputs with trapping success

a. All lines

	1964-65		1965-66		1966-67		Three year mean	
	1	2	1	2	1	2	1	2
Trips	.523	.494						
Days out	.543	.524	.630	.620	.575	.543	.681	.695
Miles of line			.730	.722	.715	.654	.734	.708
Return length	.507		.578	.559	.727	.661	.787	.735
Distance travelled	.622	.539	.672	.652	.728	.683	.845	.824
Maximum traps set	.786	.788	.853	.844	.749	.694	.876	.851
Trap checks	.794	.769	.627	.613	.820	.808	.798	.797
	N=17		N=16		N=15		N=14	

b. Circular lines excluded

	1964-65		1965-66		1966-67		Three year mean	
	1	2	1	2	1	2	1	2
Trips	.525*							
Days out	.533				.575	.543	.672	.703*
Miles of line			.662	.650	.715	.654	.734	.680
Return length			.650*	.631*	.727	.661	.780	.736*
Distance travelled	.615	.526	.727*	.710	.728	.683	.883*	.866*
Maximum traps set	.789*	.797*	.837	.830	.749	.694	.882*	.854*
Trap checks	.848*	.844*	.788*	.781*	.820	.808	.924*	.929*
	N=15		N=14		N=15		N=10	

For each year: column 1=total foxes
column 2=retrieved foxes
*denotes correlation in Table b showing improvement over Table a.

Note: All correlations significant at the 95 per cent level of confidence. Correlations not significant at this level are not shown.

the number of retrieved foxes, although these differences are not significant.

The peculiarities of circular lines with regard to length factors and the number and significance of trap checks has already been noted. The anomalous position of some circular line relationships on scattergrams (Figures 5.6 and 5.7) suggested that their exclusion in the calculation of correlation coefficients might well improve the degree of association between certain input parameters and success. The results in Table 5.4 shows that this is indeed the case for most parameters and particularly for trap checks.

Although the number of observations is not great, the consistently close association of both traps set and trap checks with harvest success suggests that these two parameters have considerable predictive power as well. Accordingly, regression equations were obtained for them. In Figures 5.6 and 5.7, the regression lines for all trappers except those with circular lines have been plotted. Since many of the values for circular lines lie within the confidence limits of these regressions, and the equations themselves are very similar, it is not essential that circular lines be excluded from a general predictor equation unless they form a fair proportion of the total. The Banks

Figure 5.6

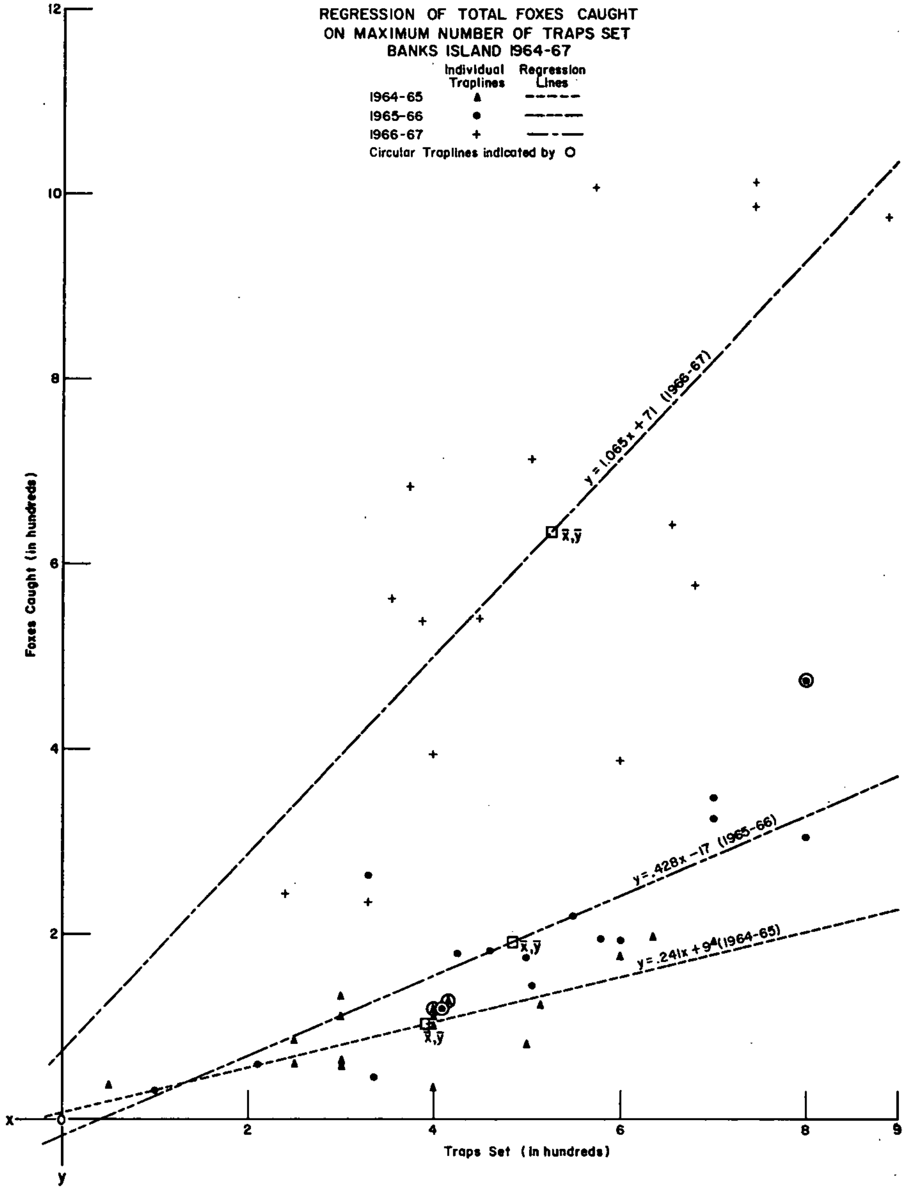
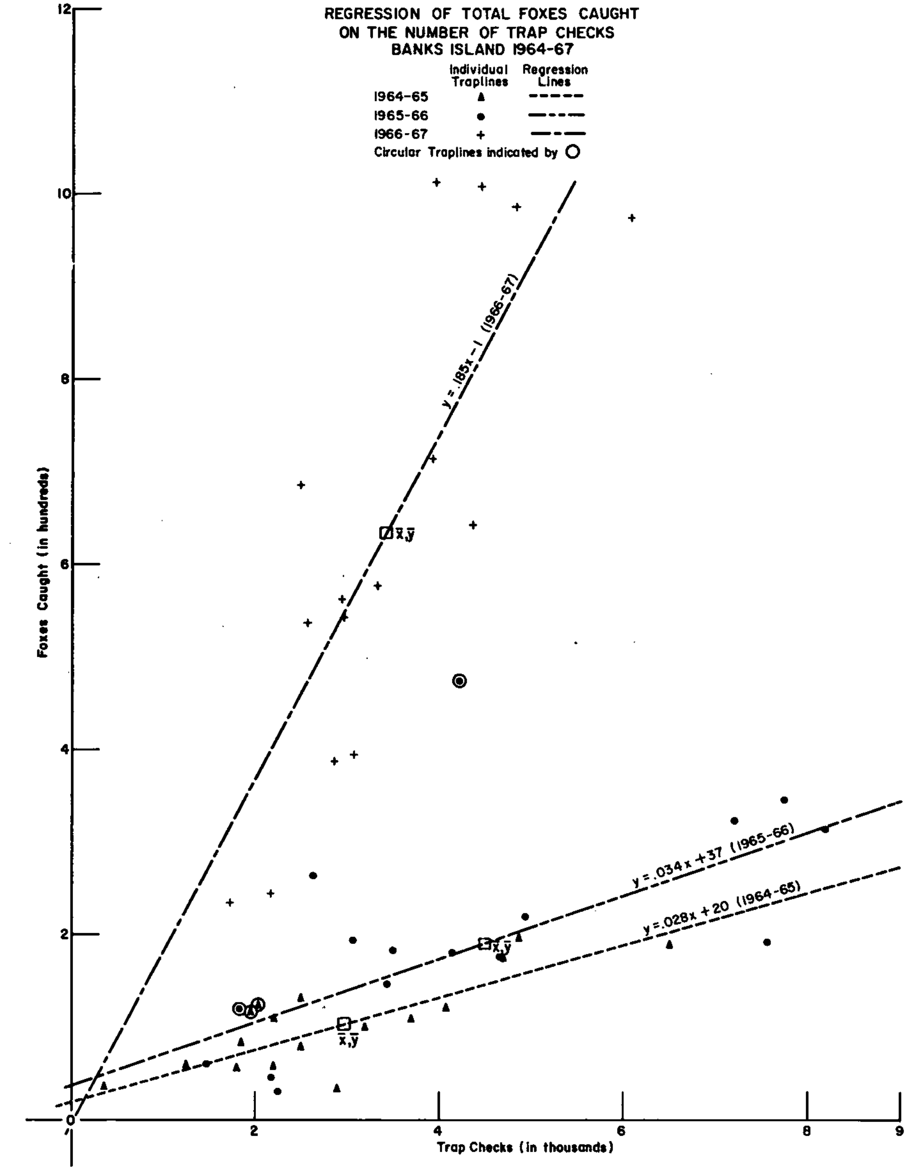


Figure 5.7



Island data suggest that circular lines as a class might exhibit significantly different relationships between effort inputs and success, but the number of observations is insufficient.

Intuitively, one would expect that a reduction in the interval between trap checks (and hence a greater frequency and total number of trap checks) would increase the total return, but the rate of increase in return per individual trap check may well diminish. For example if 100 traps are checked twice a month they should yield more than, but not double the number of foxes than if they were checked once a month.

Although both the number of traps and trap checks appear to be good predictors of catch, trap checks has the more universal application. The number of traps is admittedly an easier datum to obtain, and the degree of association between it and the catch is unquestionably high, but the slope of the equation must inherently reflect the frequency with which they are checked. With a given abundance of foxes, the regression of foxes caught on trap checks should have circumpolar application, whereas although an individual in Cambridge Bay might have the same number of traps as another in Baker Lake, unless they check them with like frequency, one would not expect them to have similar harvests.

As mentioned, the three years cover almost the full range of harvest possibilities on the Island. On no occasion has the 1966-67 mean catch of 576 retrieved foxes been exceeded, and only in five years has the low fallen below the 1964-65 mean catch of 91. The 1965-66 mean catch of 186 falls very close to both the long term mean and to the cyclic means since 1954. We have, therefore, regression lines which should be broadly characteristic of the maximum, minimum and mid point of the fox cycle. In almost any year, the regression of foxes on trap checks should fall between the two extremes plotted.

Figures 5.8 and 5.9 show the regressions for the 1964-67 three year mean. The mean annual individual catch for this period, based on the trappers included in the sample, was 315 total and 279 retrieved. This compared with the overall annual mean of 200 foxes retrieved per trapper during the most recent historical period (1961-67) and 194 since 1955. However, both the mean effort inputs, and the loss rate of trapped foxes appear to have remained fairly stable for quite a number of years, so that the values for the period 1964-67 are considered to be representative of as far back as the early 1960s or even the mid fifties.

On this basis it is possible to plot a regression valid for the long term (i.e. up to 10 to 15 years) means of both effort

Figure 5.8

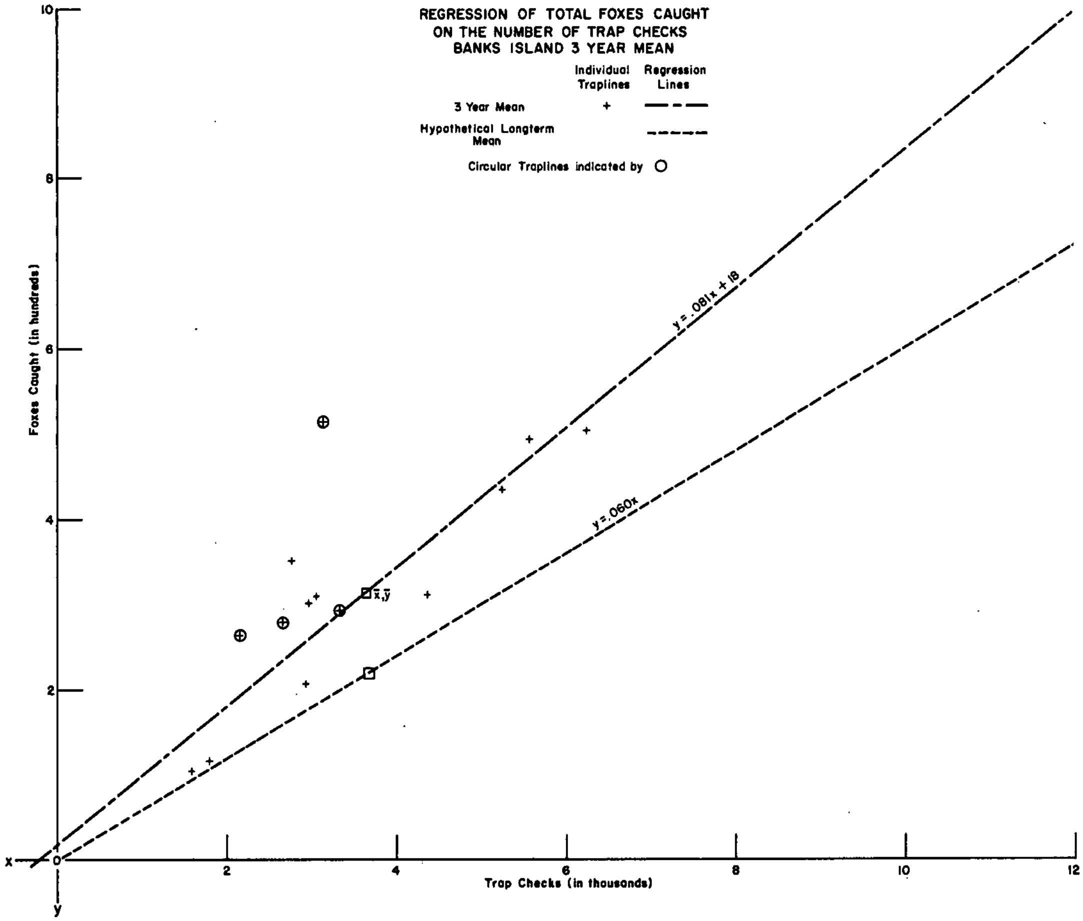
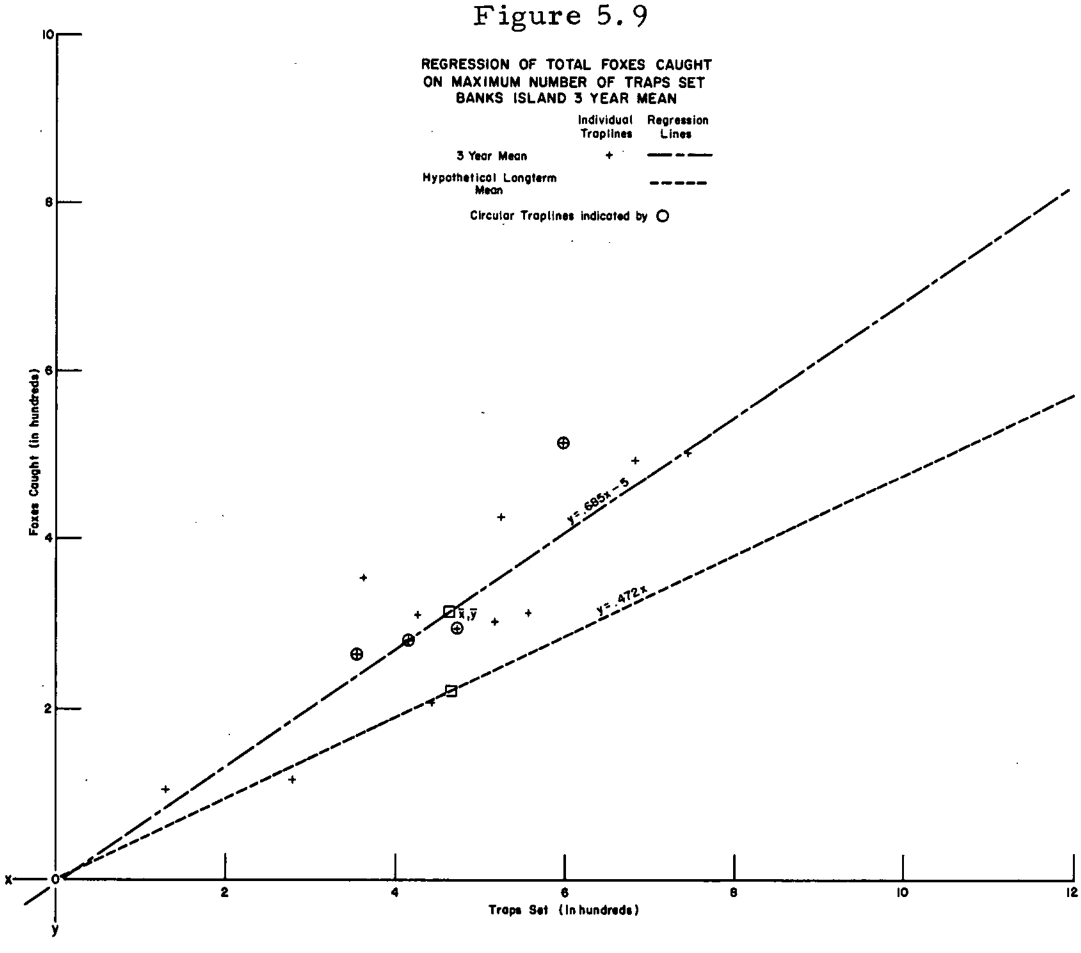


Figure 5.9



and catch. Current loss rates indicate that the mean annual total fox take is in the order of 220 per trapper, while from Figures 5.8 and 5.9, the number of traps set is 466 and the number of trap checks is 3,656. On logical grounds, the point of origin must be (x =0, y=0) and in fact this point is within the confidence limits of all the equations derived from the data. The lines plotted on this basis are shown in Figures 5.8 and 5.9. The equations are as follows:

Total foxes = .060 trap checks

Total foxes = .472 traps

Although there are clearly several sources of error in applying these estimator equations, they provide a first approximation of the relationship between effort and success in trapping on a full cycle or longer term basis.

Intra-seasonal analysis, 1966-67

A better understanding of the patterns and variations of trapping effort may be gained by breaking down the seasonal totals. With five to six trips being made in five and a half months, the season may be seen to fall into three parts. The period before New Year, lasting two months or less depending on the opening date, involves much work in setting out the line, but also is a period of high return per unit of effort. The midwinter period of January and February sees the virtual completion of the lines but the pace is less hectic and the returns are down. Despite the lengthening days and the opportunity for longer working days on the trail, this is the coldest part of the winter. Most of the time is spent in the less active work of checking the traps rather than setting them, and the trappers set out with considerably less enthusiasm at this time of year than in the early or late winter. The final period (March 1 - April 15) is only one and a half months long, but normally two long but quick trips are made, for it is at this time that the benefits of the line extensions made in January or February are reaped, and there is an increased possibility of fox runs. The number of trap checks invariably shows a large increase at this time.

The bimonthly data from Tables 5.5 and 5.6 show three broad trends. Effort, as measured by the length of line, distance travelled, number of traps and trap checks, and area utilized, continues to increase throughout the season. This results in an absolute increase in the harvest (number of foxes caught) but the yield per unit of effort (as measured by fox per trap check and fox per square mile) tends to diminish. Invariably the number of foxes taken in March and April is greater

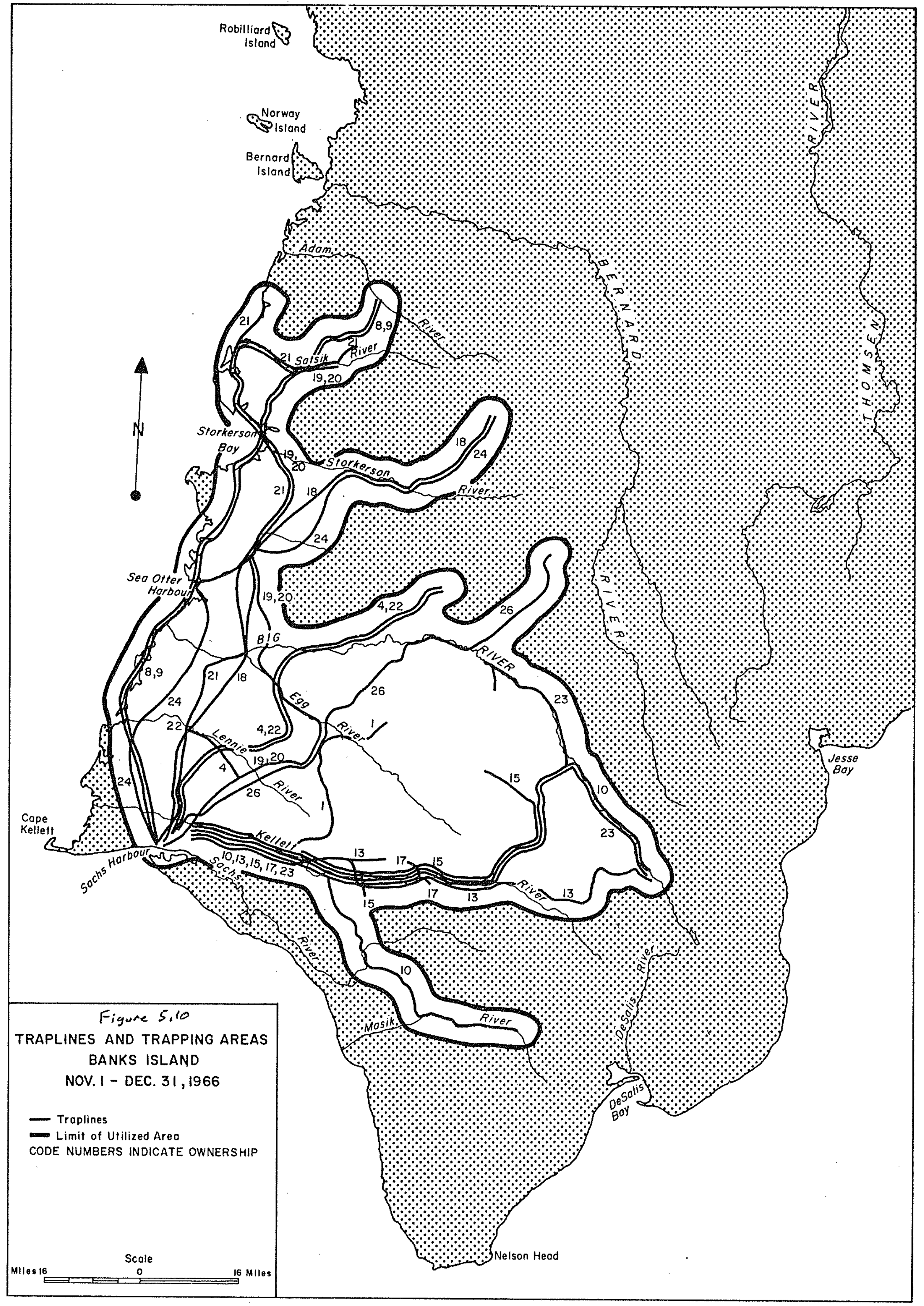


Figure 5.10
TRAPLINES AND TRAPPING AREAS
BANKS ISLAND
NOV. 1 - DEC. 31, 1966

— Traplines
— Limit of Utilized Area
CODE NUMBERS INDICATE OWNERSHIP

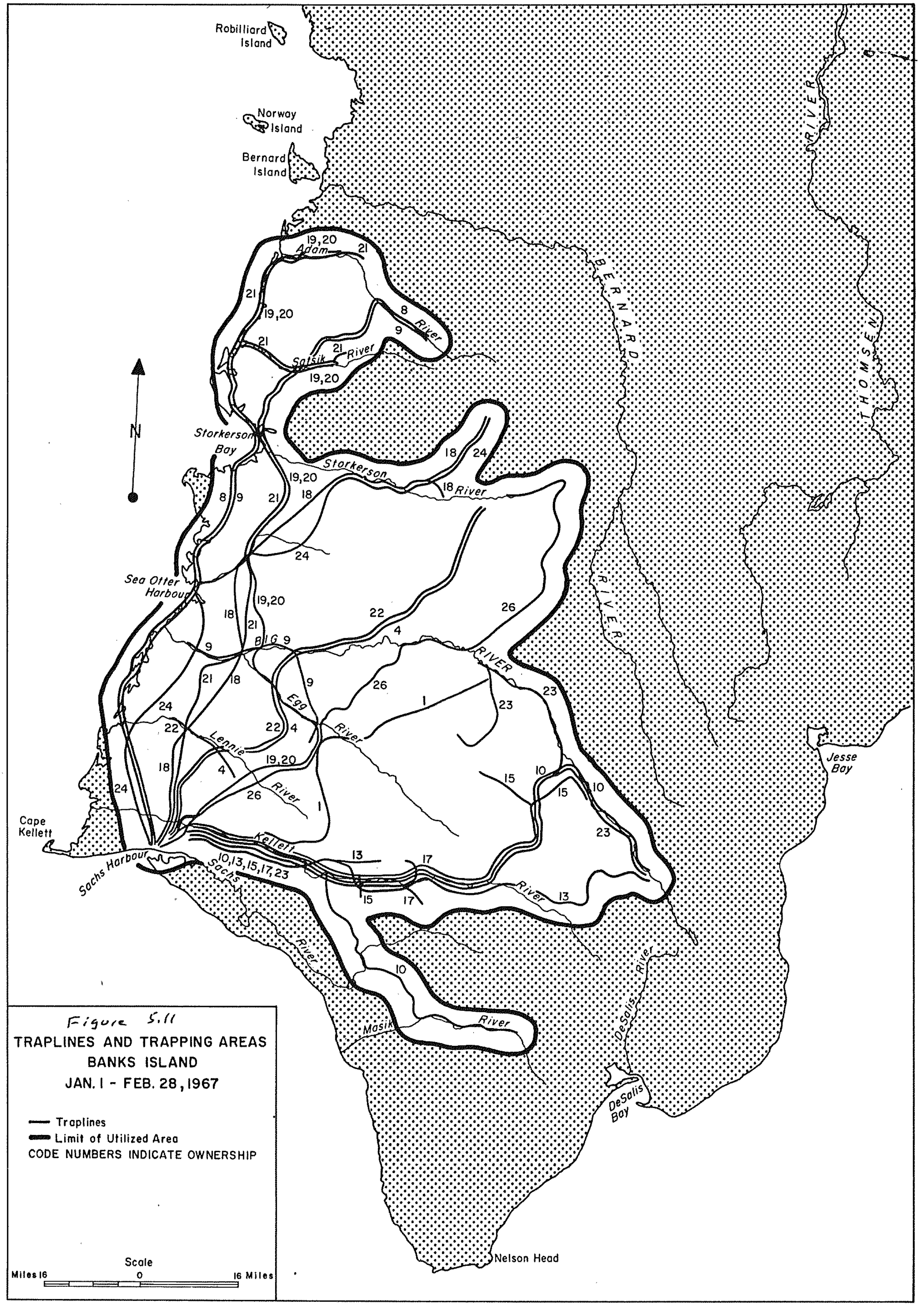


Figure 5.11
TRAPLINES AND TRAPPING AREAS
BANKS ISLAND
JAN. 1 - FEB. 28, 1967

— Traplines
— Limit of Utilized Area
CODE NUMBERS INDICATE OWNERSHIP

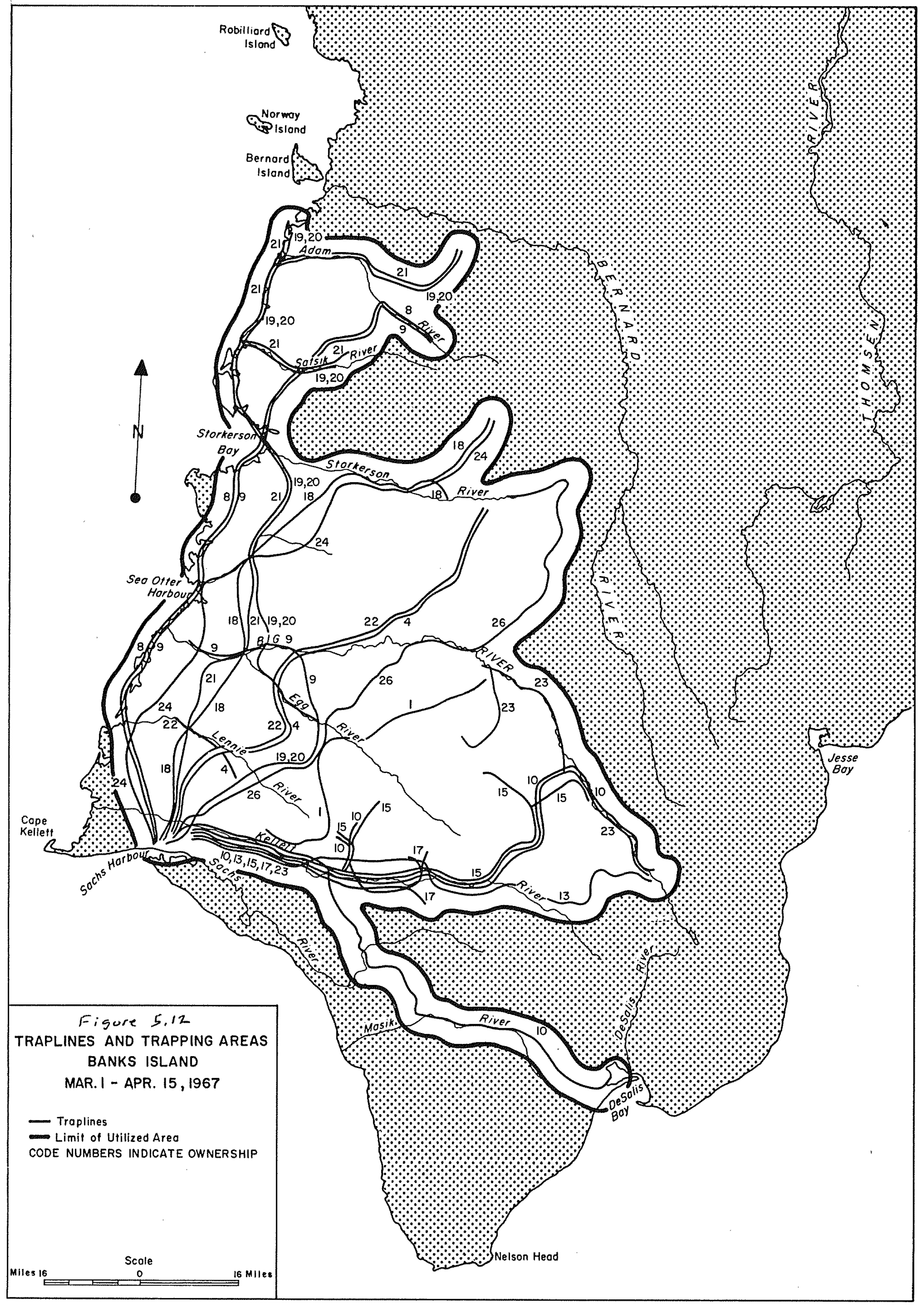


Figure 5.12
TRAPLINES AND TRAPPING AREAS
BANKS ISLAND
MAR. 1 - APR. 15, 1967

— Traplines
— Limit of Utilized Area
CODE NUMBERS INDICATE OWNERSHIP

TABLE 5.5

Variations in effort expenditure during the trapping season by bimonthly intervals, Banks Island, 1966-67, by per cent.

	1964-65			1965-66			1966-67			Three year mean		
	N-D	J-F	M-A	N-D	J-F	M-A	N-D	J-F	M-A	N-D	J-F	M-A
1. Foxes retrieved	9	23	68	31	29	40	46	28	27	38	27	35
2. Miles of line	54	98	100	62	92	100	82	93	100	66	94	100
3. Traps set	64	98	100	70	92	100	81	95	100	73	95	100
4. Trips	26	36	40	28	33	39	39	24	37	31	31	38
5. Days out	29	39	32	29	39	32	48	25	27	35	34	31
6. Distance travelled	19	38	43	23	35	42	38	23	39	26	32	42
7. Trap checks	14	37	49	19	34	48	33	27	40	22	33	45
8. Days per trip	+9	+9	−9	0	+15	−15	+20	+7	−27	+8	+8	−15
9. Distance per trip	−28	+8	+11	−21	+6	+10	−4	−1	+6	−17	+4	+9
10. Miles per day	−35	−2	+29	−23	−8	+31	−21	−9	+43	−25	−6	+34
11. Trap density	+18	0	0	+13	−3	0	0	+2	0	+11	0	0
12. Retrieved fox per trap check	−38	−38	+41	+65	−9	−19	+39	+2	−49	+38	−6	−18

Rows 1, 4 – 7: sum of three intervals = 100%.
Rows 2 – 3: third interval = 100%, other intervals shown as proportion of this.
Rows 8 – 12: percentage variation about annual mean.

Source: Table B.5.

TABLE 5.6

Areal extent and yields of trapping, by bimonthly intervals, Banks Island, 1964-67

a. Extent of trapping area in square miles (proportion of spring total in brackets)

	Nov.-Dec.	Jan.-Feb.	Mar.-Apr.
1964-65	3260 (57%)	5560 (97%)	5730
1965-66	5780 (63%)	8670 (94%)	9180
1966-67	5170 (80%)	6250 (97%)	6460
Three year mean	4740 (66%)	6830 (95%)	7240

b. Foxes retrieved per square mile (bimonthly breakdown)

	Nov.-Dec.	Jan.-Feb.	Mar.-Apr.
1964-65	.04	.07	.18
1965-66[a]	.16	.10	.13
1966-67	.76	.38	.32

[a]Approximate: data from 15 trappers adjusted for 16.

c. Foxes per square mile (per full season)

	Total	Retrieved
1964-65	.31	.27
1965-66	.36	.32
1966-67	1.51	1.34
Three year mean	.73	.64

than the number taken in January and February, and this may be due to increased fox activity, the return of foxes from the sea ice, or the mid-winter extension of the traplines, or some combination of all three. The fact that the return per trap check shows a marked decline through the season (except in very poor years when heavy spring runs occur) and that the yield per unit area data, although ambiguous, exhibit a similar tendency, suggests that the more intensively used areas closer to the village have experienced considerable trapping pressure by the end of the season. These areas are apparently not overtrapped as they continue to provide a good harvest with each cycle, but as the data suggest that further pressure would bring little extra yield, it may be concluded that a significant expansion of trapping effort within an approximate radius of 50 miles of the settlement could result in the sustainable yield of that area being exceeded. Were the trap lines not extended in midwinter, an even more drastic decline in the yield per unit of effort would occur. These extensions are designed to offset the decline close to the settlements; that they do so only to a slight extent indicates that the trappers either cannot or care not to extend their lines far enough. In any case, the first two months of the season are the most critical for the trapper, as the return on his effort is so much higher. The penality for reduced efforts in midwinter and even late winter is less harsh than for failing to have got a good start on the season, although again the very poor year appears to be the exception.

Annual variations in effort

On the basis of a preliminary analysis of the 1964-65 data, it was suggested that trapping effort would be greatest in a peak year when good early season performance would encourage the trappers to redouble their efforts (Usher, 1966:52, 54). The hypothesis was that effort tended to be a function of animal availability rather than pelt price (ibid.:58). The present data do not offer much support for this view, and indeed suggest that the determinants of effort may be rather complex. In fact, during the period under consideration, maximum effort occurred in an average year, and in the peak year, far from a redoubling of effort, fewer extensions were made after Christmas than in any other year.

One must first consider the knowledge the trapper has at hand on the first of November when he sets out on his line. He knows with reasonable certainty whether the forthcoming season will be good, bad or indifferent, and to some extent whether he can expect the major part of his catch in the fall or in the spring. He is also aware of the approximate current price level of white fox, and he may suppose that this will not alter very drastically during the year. Thus although the trapper cannot be clairvoyant, neither is he blind. In addition, he has certain economic obligations or goals, which vary from year to year, and which may influence the planning of his trapping programme. Finally, he is aware of which strategies with regard to effort output and location of line are most appropriate to the circumstances.

In the autumn of 1964, the outlook for both fox abundance and pelt price was poor, although an upturn in the cycle was overdue. The situation was complicated by the fact that no boat had been able to reach the settlement that summer, and an airlift had been organized for early December. Most men were unable to leave the settlement at this time, and trapping effort was thus necessarily reduced. How much so is open to question, but both total effort and yield per unit of effort were extremely low. The lines were considerably extended after Christmas, and runs brought improved trapping in the spring, although both the total effort quotient and catch remained low for the year as a whole.

The following year brought improved prospects for the catch and particularly for the market price. Indebtedness had been growing for several seasons, and 1964-65 had been particularly catastrophic. Individual economic obligations were therefore unusually large. Although the season did not start until November 10th, considerably more effort was put into trapping during the first two months than had been the case the previous year. During the midwinter period, significant extensions were again made to the lines, and interestingly enough the numerical increment in miles of line, traps set and trap checks was very close to that of the previous year. Effort and catch for the full season of 1965-66 rose considerably above the previous year, although yields per unit of effort were up only slightly.

By the autumn of 1966 it was evident that the forthcoming season would be one of unusual abundance, and moreover fox prices appeared to be steady. There was marked enthusiasm and determination to get out on the trail and do well on the first trip. Accordingly, effort quotients were extremely high for the pre-Christmas period, and the harvest was an unexampled success. Post-Christmas line extensions were minimal however, and the time spent on the trail, which usually increases during January and February, was well below the pre-Christmas figure. Several factors appeared to be at work. The unusual effort expenditure in the early part of the season may well have reached the maximum possible lev el, or even surpassed what could be sustained over the season. Hard work on the trail and a minimum stay at home between trips had demanded considerable energy from men and dogs. When foxes are in abundance, they are considered to be much more trap prone, and trappers agree that less care need be taken setting traps in the fall. The appropriate strategy is to put out as many traps as possible on the first trip, with less regard to the finer arts of setting and baiting than would be customarily given. A higher effort quotient in terms of miles of line, traps and trap checks thus becomes much more feasible in a good year than in a poor one. Later in the year, however, it becomes less feasible to extend the line very far, because any given length of line requires much more work in a good year than a poor one. It is both more difficult and less necessary to run a long line at the peak of the cycle.

During the early winter of 1966, there was great elation over the harvest; to return from a trip with 100, 200 or even 300 foxes was cause for celebration. There developed, however some apprehension in the community that fox prices might decline from their current favourable level, with such an abundance of pelts a lot of money was seen to hang on this possibility. Therefore men and women alike worked through late December and early January to skin, stretch and flour as many pelts as possible for the January auctions. Most men delayed their departure on the third trip (normally one sets out as soon after New Year's Day as possible) on this account, and did not get away until after the middle of the month. Unfortunately this course of action proved an unsuccessful gamble. Due to difficulties in chartering an aircraft, the furs did not reach the auction houses in time (although prices did not change significantly at the subsequent auctions). Having delayed the third trip, it then became difficult or impossible for most men to squeeze in a full six trips for the year.

Finally, the early season success was followed, for some people at least, by a feeling that the winter's task had been largely accomplished: they had already obtained several hundred foxes each, which by any standard was a lot, and they could now relax. Several men visited the mainland in January and February which is normally unheard of during the trapping season. These trips sometimes involved business transactions and invariably a spree, although the former was always offered as the justification for the visit. The end result was a total effort quotient well below that of the previous year, although certainly better than that of 1964-65. The rôle of price levels in economic decision making will be discussed in more detail in the following chapters. It is sufficient here to note that, contrary to our original hypothesis, animal availability is not the chief determinant of the effort quotient; both price levels and the current status of household economic obligations also play an important role.

The bimonthly data over the years suggest that the effort quotient under the present technological regime is approaching its limits. It is very doubtful if the pre-Christmas effort of

1966 could be significantly exceeded, although if followed up by the January-February increments characteristic of the previous two years, the total quotient could perhaps be 10 to 20 per cent higher than that of the maximum recorded in 1965-66. As mentioned above however, there may be strategic impediments to such an increase. The chief limiting factor is probably the number of traps to be handled. There are many other parts of the Arctic in which Eskimos run trap lines as long or longer than those on Banks Island, but nowhere is the density of traps along these lines even approached. The most energetic trappers on the Island have handled 800 or 900 traps. Some of these men believe they could work up to 1,200 or more in some years using their present means of transport; others do not feel they could ever handle this many.

Loss factors

Two aspects of loss may be identified in trapping: loss of time and effort on the trail, and loss of foxes. The chief cause of time and effort loss is wind. Snow can begin to drift at eight to ten m.p.h. and at about 12 m.p.h. the men find it difficult or impossible to set traps, for under these conditions the light new snow placed over the trap will blow out. This snow cover, even though very lightly packed, will set sufficiently in a day or two to withstand subsequent winds, but it cannot be worked with during a wind, and if a wind blows up within a few hours of setting a trap, the snow may be blown out. In the first case, the trapper must bide his time on the trail, while in the second, the previous day's work may be spoiled. Under certain conditions, trappers can leave their traps open and expect drifting snow to cover in the depression in the mound, but generally wind is a detrimental factor. In 1966-67, five per cent of trail time (54 out of 1,136 days) was spent laying over, chiefly on account of the wind.

More important is the loss of foxes which are caught, but for some reason are not retrieved or not sold. Foxes caught in the traps may be lost or damaged prior to retrieval due to three main causes. Generally, the most important is predation. When wolves were prevalent on the Island, their predation resulted in losses of 20 to 30 per cent of the catch (McEwen, 1956). Destruction by wolves has been negligible in recent years, due to their current scarcity in the region. Owls, weasels and even lemmings have been known to damage the pelts of dead foxes (although usually not irreparably), but the chief cause presently is cannibalism by other foxes.

Foxes can also escape from the traps, either by working loose a poorly toggled trap and running off, trap and all, or if their foot is not too far into the trap, by struggling so much that they break or chew their foot off. In 1966-67, out of the 1,071 foxes lost, 573 were damaged by other animals, 297 escaped by pulling out the trap, and 200 escaped by leaving their toes in the traps (one fox was accidentally dropped off the sled while travelling).

The total loss rate for the three year period was 11.1 per cent and although variation was not great, it varied inversely with effort. Relatively speaking, this is quite a low loss rate as on the mainland rates of a third to a half of the catch have been reported (Abrahamson, 1963:71 and Brack and McIntosh 1963:13), although the variety of predators is greater there. Nonetheless a considerable loss is represented: over $3,000 even in such a poor year as 1964-65, while two years later the loss amounted to almost $25,000. Trappers try to cut their losses by checking their lines as frequently as they can. This is particularly critical when there are runs on, as the trappers consider foxes most likely to cannibalize under these circumstances. Several men, especially those with long lines, experienced severe losses towards the termini in November and December 1966, when runs were said to have been at their height. As mentioned, a longer line is ordinarily considered desirable, although when predation is high, the premium is on more frequent trap checks.

Individual losses show a fair correlation with many effort indices, especially those relating to line length and distance travelled. This is not surprising as losses and overall success are closely associated: the more foxes a man gets, the more he is likely to lose as well. Despite variation from two to 27 per cent between individuals in the last three years, loss rates seldom exhibit any clear association with other factors. The exception is in 1966-67, when there were significant correlations (at the 95 per cent level) with length factors and with the number of traps, which reflects the experience of those men with long lines mentioned above. For the three year mean, the only significant correlation with loss rates was a negative one, with the number of trips, again as might be expected. Although some trappers at certain times could well reduce their losses, it seems unlikely that the general loss rate could ever be much under ten per cent with dog teams as the means of transport.

Even after the foxes are brought home, not all the pelts can be sold. Some may be unprime, others may be of very poor quality. When foxes are taken alive in the traps, they are skinned at the end of the day, but those already frozen must be taken home and thawed out before processing. When this is the case (as normally it is), it is not always possible to detect damaged or poor quality pelts until they have been thawed. It does not seem feasible to reduce the unsaleable fraction at present; such losses are inherent in the harvesting of a wild species. The handling and marketing of pelts will be discussed in more detail in Chapter Seven.

Effort and skill

An analysis of effort inputs has shown that the number of trap checks is the one most closely associated with individual trapping success, although the number of traps is also highly correlated with it. Effort inputs related to time (days out, number of trips) proved not nearly as important as the amount of equipment used and the frequency with which it is checked.

The very strong association of trap checks with success suggests that manual trapping skills and knowledge of fox habits are not of paramount importance in trapping. The two are not completely dissociated: running a lot of traps requires not only hard physical work but organizational ability and manual skill, as well as knowledge of travelling techniques and the local countryside. No novice could run 1,000 traps no matter how hard he worked. Yet big catches are invariably made by the younger, better equipped and more energetic trappers. The older men, who despite their superior knowledge and skill are less swift and handle less equipment, cannot match the younger trappers in gross production. A relative measure of skill and knowledge is provided by the parameter "foxes caught per trap check" (see Table B.2 and B.3).[1] It may readily be seen that variation in effort inputs varies far more than skill amongst the individual trappers. Correlation tests show no consistently significant relationship between trapping skill and success. The real master trapper will get a few extra foxes every trip that an inexperienced man would not have caught, other things being equal. The premium however, must be on setting a large number of traps and checking them with frequency and swiftness.

The effort quotients (and accordingly the catches) of the top trappers on the Island are probably close to the maximum possible under the present technological regime. It is unlikely that even the most enthusiastic trapper can or will regularly spend more than 60 or 70 per cent of the season on the trail. Further increases in speed and skill in travelling and trapping can only be marginal, and the number of traps used is now

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[1]When the trappers are ranked by this parameter (in any given year) the result is fairly close to the trappers' own assessment of each other's skills.

limited by the ability to handle them, and certainly not by inability to afford their purchase. A thousand traps, 250 miles of line, six trips a year, 10,000 trap checks - these are goals now within reach of the top men, and to which the rest can perhaps aspire, but their achievement would require supreme physical and mental effort so long as dogs are the means of transport.

CHAPTER SIX

HUNTING AND THE ANNUAL CYCLE OF ACTIVITY

April 15th brings an end to the trapping season, but not to the trapper's toil. His work merely enters a new phase with a different routine, but it is no less essential to his success as a trapper. The white fox alone does not provide a sufficient basis for a viable economy. There are other resources on the Island, which provide both man and dog with essential foods, and which are also a source of additional cash. The hard work, skill and capitalization that are essential to a man's success on the trapline are no less important to these adjunctive activities, which prov ide the basis of existence on the Island. In recent years it has become possible to import all food requirements, and theoretically one could live and trap without hunting at all. Yet the great expense of doing so, the preference for country meat as both human and dog food, and the absence of other demands on time in the offseason, combine to ensure that under present conditions hunting is an essential activity.

The chief economic fauna of Banks Island and its surrounding waters are (besides foxes), seals, caribou and polar bears. In this chapter, each of these animals, and the means of harvesting them will be examined in some detail, with a view to establishing the material and effort inputs required for the consistent achievement of certain harvest levels. Finally, animals of lesser economic significance will be discussed briefly.

Seals

The most important seal in Western Arctic waters is the ringed seal (Pusa hispida). Seals are considered to be relatively plentiful in the region of Banks Island, although little is known of the north and east coasts. In past years, when the Eskimos lived in dispersed camps, they had no trouble obtaining seals locally, and sealing at such camps as Sea Otter and Storkerson was considered to be very good. Recently seals have been hunted exclusively along the southwest coast, and particularly in the vicinity of Sachs Harbour itself. The seals of the Beaufort Sea area apparently migrate over considerable distances, unlike those of the Eastern Arctic. The Bankslanders believe there is a small resident population which can in certain seasons be distinguished from the migratory or "travelling" seals, but the bulk of the harvest is considered to come from the latter population. In spring and summer seals appear to move north-westerly along the coast between Nelson Head and Cape Kellett. Whether they return in the opposite direction in winter is not really known; it is possible that the animals complete their migration by another route. There do seem to be fewer animals in the area at this time, although seals are in any case much more difficult to obtain in winter, as will be explained below. Seals that maintain breating holes in the fast ice are thought to be in the resident population by the Bankslanders.

Due to the migratory nature of the seal population , it is not the Bankslander's exclusive resource. It may also provide a livelihood to the Holman Eskimos, as well as to the mainlanders. The total seal population is unknown, and until the migration pattern is ascertained, so is the level of predation on it. Apparently there is no threat of overexploitation, because the big catches throughout the region from 1963 to 1965 when prices were high, have not been followed by inadequate harvests.

The bearded seal (Erignathus barbatus) is also found in Banks Island waters. A large animal, it has recently amounted to two to nine per cent of the total catch along the southwest coast. It is a benthic feeder and inhabits shallow waters. The west coast of the Island thus provides a more suitable habitat than the southwest coast. "Ugyuks", as they are called by the Bankslanders, are reputed to be particularly plentiful at Sea Otter Harbour.

Many methods of seal hunting have evolved in the North American Arctic. These vary regionally, and even from one community to another. This is partly due to differing resource bases, economies and technological development. But seal hunting is intimately associated with sea ice; its presence or absence and particularly its form. The relationship between sea ice and seal hunting has been described for many parts of the arctic, perhaps best by Nelson (1966) and Haller (1967). A summary account of ice conditions on the coasts of Banks Island, particularly the southern and western shores, must precede the discussion of hunting.

Sea ice

In winter, all waters immediately adjacent to Banks Island freeze over. This ice, known as fast ice, is attached to the shore. Tides in the region are less than two feet, and true tide cracks do not exist. The fast ice is generally quite smooth, except when old ice is not completely melted during the previous summer, or when a fall storm breaks up young ice. Although cracks may open occasionally and quickly refreeze, the ice remains stationary and there is no accumulation of pressure ridges. At Sachs Harbour, winter ice reaches a thickness of over 80 inches (plus or minus 10 inches) in late May.

West of Banks Island beyond the fast ice, lies the permanent polar pack. Its edge may vary, with season and winds, from 20 to 100 miles off shore. In winter there is usually a lead between the pack and the fast ice. The position of this lead can be identified up to 20 miles away in overcast conditions by its dark reflection on the cloud cover.

Amundsen Gulf is often characterized by moving consolidated pack ice, especially in late winter. Leads form and then freeze over, but substantial bodies of open water may develop temporarily. Again, ice conditions may be "read" from afar by differing reflections on the cloud cover. Moving pack ice is especially common between Nelson Head and Cape Parry, due partly to strong currents. M'Clure Strait, Prince of Wales Strait, and the southeast coast are frozen solid during the winter.[1]

Break up in the Beaufort Sea - Amundsen Gulf area is controlled by several factors, including the movement of the polar pack, currents in the Beaufort Sea Basin, winds, and temperatures. The pack southwest of Sachs Harbour usually begins to disintegrate in May, and the absorption of solar

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[1]Maps of regional ice conditions may be found in the Pilot of Arctic Canada, Vol. 1, 1959.

radiation by the open water considerably hastens the process of breakup. In most years the winter ice melts completely. In unfavourable years however the main pack may not really break up and shift at all until late July or August, and dense concentrations of floes may remain throughout the summer, to be incorporated in the next year's ice cover. Occasionally, old ice from the polar pack enters Amundsen Gulf from the west.

The disintegration of the fast ice is in many respects unrelated to the breakup of Amundsen Gulf, and the two events are not necessarily simultaneous. The fast ice melts *in situ* from the top and bottom and is also subject to calving off at the floe edge. It also melts along the shore at the mouths of streams or rivers. In late May or early June, cracks begin to appear and widen in the fast ice, and later, puddles form on its surface. These seldom become deep, as the surface water is partially drained by the cracks. The distance from Sachs Harbour (which is somewhat indented from the general trend of the coastline) to the edge of the ice may be ten to 15 miles in mid-May and perhaps five miles a month later. At the more exposed coasts at Cape Kellett or southwest towards the Fish Lakes, the distances are correspondingly less. As the season proceeds, the floe edge becomes highly unstable and calving occurs frequently. Eventually the fast ice may break away right at the shore, first near the Masik River and later at Sachs Harbour. If in a previous summer the ice did not all melt, old grounded floes incorporated into the fast ice serve to anchor it and delay its ultimate breakup. In such a case the fast ice remains fixed to the shore, rotting slowly, otherwise it can break away close to shore relatively early.

Summer ice conditions in the vicinity of Banks Island vary from year to year. In most years Amundsen Gulf is largely ice free. In favourable seasons both the west coast and Prince of Wales Strait may also be ice free. Under less favourable conditions many floes will remain in Prince of Wales Strait, and the west coast may be so choked with ice as to render navigation impossible. M'Clure Strait is virtually never ice free, and is seldom navigable by ordinary vessels.

The period between the departure of the fast ice (usually early July) and the onset of new ice (early October) is considered the open water period. It is the time of year when boats are the only means of transport on the sea, although ice may still be present. Wind becomes the chief determinant of ice conditions at this time. One day there may be open water as far as the eye can see, but a wind shift can choke the area with broken ice in hours. When ice is present it is usually in the form of flat pans, some only a few yards across, others perhaps an acre or so in extent, accompanied by small debris ice resulting from the grinding of the floes one against another. Occasionally very large rafted pieces are present, which may be remnants of pressure ridges from the previous winter or shore formations built up by wave action in the fall. Except for large pieces that ground off shore, the ice is kept in constant motion throughout the summer by winds and currents.

Freeze-up commences in late September or early October in sheltered bays, and the landfast ice is generally complete within a month. A sharp drop in temperatures accompanied by calm weather can allow clear young ice to form rapidly and smoothly over large areas. On the other hand, gradual cooling and stormy weather cause a slower freeze up. Spray freezes on the beach and accumulates in ridges, while slush forms on the surface of the water near shore. The landfast ice is then formed by gradual accretion. Strong currents can keep the water open quite late at some locations, such as the south side of Kellett Sandspit.

Hunting Methods

At Sachs Harbour there are three basic methods of obtaining seals, which may be termed fast ice, floe edge and open water hunting.[1] All three involve high powered rifles with telescopic sights. The most popular bores are .222s and .243s. Arctic literature abounds with descriptions of seal hunting and so discussion here will be brief.

In spring, seals commonly bask on the fast ice by their breathing holes. The hunter, travelling by dog team, can spot "hauled-ups" (basking seals) from as much as a half mile away, or even further if he is searching from a high vantage point. The dogs are left several hundred yards from the seal, and the hunter stalks to within perhaps 150 yards. A clean shot is required, as an injured seal will slide down the hole and be lost.

Floe edge hunting is common to most seasons. The hunter waits at the edge, watching for seals to rise for air. He has but a few seconds to spot the seal, aim and fire. Only the head surfaces, presenting a target about the size of a grapefruit. Most seals are shot within a range of 200 yards, although some kills are made from a considerably greater distance. Dead seals are prone to sinking in summer and this can be a source of

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[1] Two or three Copper Eskimos place seal hooks in breathing holes very occasionally in winter, as is the custom in their former land. No seals were obtained this way in 1967.

considerable loss. Seals are retrieved with the aid of a small canvas covered plywood skiff. When the ice is still fast to shore, one travels to the edge by dog team. Later in the year when large pans are floating loose in the sea it is customary when hunting by canoe to use such floes as shooting platforms. In this case retrieval is effected by powered canoe and there is no need for the skiff.

In some summers, when there is little or no ice in the vicinity, hunting is done from outboard powered canoes. Running on low power, one simply sits in the canoe looking for seals. Normally they are swimming, and one waits for them to surface, as in floe edge hunting, but occasionally a seal will be seen basking on a small pan. In this case it is approached and fired on as in spring hunting on the fast ice.

Seasonal influence on hunting methods

Each of the above methods can be characteristic of the different seasons, but under certain circumstances may be used in combination on any given hunt. The pattern and productivity of seal hunting varies somewhat from year to year, being mainly a factor of ice conditions. The general pattern is as follows.

Spring sealing usually begins in early May, after the men have had a chance to relax from the last trapping trip and continues for six to eight weeks. Spring is also the season when the men take their families camping. During the last two weeks in May, most families go to the Fish Lakes for a week or two. The women jig for fish, and the men go out on the sea ice to hunt seals. The days are long and relatively warm, the geese begin to arrive, and usually the weather is fine enough for children to play and the women to sit out fishing for long periods in comfort. For them especially, this is a welcome holiday after being cooped up in the houses over the long winter. Later, in June, some families go to sealing camps either at Mary Sachs or near the Fish Lakes. This is partly because the floe edge is closer to shore at these points, and also because following the thaw, the ground around the houses in the village is very wet, and many people prefer to camp out on the well drained pebble beaches until the village is more habitable.

Most seals are taken at the floe edge during the spring months. Men go singly or in parties, by dog team, usually for no more than 18 or 20 hours as their camps are so close at hand. If there is a group, some men will nap, make tea or boil meat periodically, but there will always be at least one man on watch for seals. Of all the resource harvesting done by the Bankslanders, this is the most communal. There is some sharing of the proceeds of the hunt, and the men enjoy both the comradeship and the competition inherent in the group endeavour. Sometimes men hunt alone at the floe edge, which is probably more efficient, but normally two or three go together. Sometimes there may be six or eight men within 200 feet of each other, but their deployment is flexible, as at any time one or two of them may decide to go a half mile further along to see if their luck will improve.

A few seals are taken at their breathing holes in spring, but this method is generally not as productive as floe edge hunting. Men are always on the look out for "hauled-ups" when travelling to and fro on the ice. Later in June, floe edge sealing is best at night when the sun is low, as more seals seem to appear then, while at the height of the day, one is best hunting "hauled-ups", which have come out to bask in the warm sun. In some years, it is possible to hunt "hauled-ups" on the fast ice after the floe edge itself has become unsafe. Finally, some men load their canoes and outboards on their sleds and take them to the floe edge to engage in open water hunting. Thus all three hunting methods may be used in the spring, although floe edge sealing is by far the most common.

Depending on the manner of break up, there may be a brief hiatus in seal hunting when it is impossible to travel by either dog team or canoe. This usually occurs close to or over the Dominion Day celebrations which in a sense mark the beginning of a new economic year. Dog teams are tied up for the summer, and seal hunting begins with a view to putting up food for the winter ahead.

In canoe hunting, men usually go singly, but occasionally in pairs. The distance travelled from the settlement is governed chiefly by weather conditions (men seldom go more than ten miles off shore for fear of being caught in a sudden storm), and the fact that seals are usually plentiful enough within a few miles of the settlement so that there is no reason to go further. Rather than going to any one spot, the hunters move around, seeking concentrations of seals. Such trips may last as long as 18 hours but are usually much shorter. Sometimes the men may come into shore at Kellett or near Fish Lakes and camp for the night, and go off again to hunt the next day. If there is ice, the hunts usually last longer and are more likely to involve camping out for a night or two. The men move from floe to floe, staying perhaps one hour, perhaps 12, depending on their luck, and of course they are also alert for seals while travelling in their canoes. Again, larger groups may gather on a floe, and the atmosphere and reoutine is very much like spring floe edge hunting. Most hunting is done to the west of the settlement in the vicinity of Cape Kellett. Ice, when present, is normally closer to shore there than at Sachs Harbour, and this is thought to concentrate the travelling seals closer to the beach. Wind is an important consideration in summer hunting (viz. McLaren 1961a). Sachs is on an exposed coast, and the Beaufort Sea can be quite stormy, particularly in late August and Sept ember. On really rough days, canoe hunting is impossible, but even if the water is only riffled, the possibility of sighting seals as they surface is considerably reduced. McLaren has calculated that under ideal conditions, a seal can be seen from about one third of a mile distant (1961b: 163), while Foote has estimated that waves six inches high will reduce visibility to less than 150 yards (1967b:111).

Observations kept at Sachs Harbour between July 13th and October 4th, 1967, indicated that 49 out of the 83 days were unsuitable for hunting due to high winds. This problem was particularly acute in September, when 27 days were too windy. The presence of ice, however, can mitigate the effects of wind. During July and August, for example, when it was windy at the settlement it was sometimes possible to go into the heavy ice off Cape Kellett and find virtually calm waters. On the other hand, in September the ice had moved out of the vicinity and there was nothing to afford protection from the winds.

By mid September, most men have obtained a sufficient supply for the winter, and sealing virtually ceases until the following spring. Formerly some men were in the habit of going down to Kellett Sandspit by dog team in mid October for a few days to hunt seals, as the currents keep the water open late there, and they obtained much of their winter supply at this time. Recently the universal acquisition of large canoes and outboards has made summer hunting much more productive, and the fall hunt has become unnecessary.

Winter hunting is exclusively of the floe edge type. Dogteam travel on the sea ice can begin in late October or early November, although the margin itself is still wet and spongy. It is bitterly cold at the floe edge in winter, yet one must lie still in wait, watching for seals through the smoke rising off the water in the dull twilight. If a man has not put up a sufficient food supply, he will have to hunt at times during the winter, but in recent years this has seldom been necessary. Nowadays, if the weather is good and open water appears, a few men do go out, but this is more because the opportunity has presented itself rather than through necessity.

TABLE 6.1

Annual seal harvest, Banks Island, 1955-67

Year	Number of seals[a]	Number of hunters[b]	Mean take per hunter
1955-56	570	7	81
1956-57	310	5	62
1957-58	500	11	45
1958-59	205	13	16[c]
1959-60	615	16	38
1960-61	920	19	48
1961-62	934	19	49
1962-63	1025	18	57
1963-64	1125	18	63
1964-65	2599	18	144
1965-66	1298	19	68
1966-67	1268	17	75
Means	947	15	63

[a]Approximate figures in most cases. Totals generally include bearded seals, which may vary from two to nine percent of the total catch (the average is about four percent).

[b]Does not always coincide with the number of full time trappers (Table A. 5), as sometimes different people are involved in each activity.

[c]There is no apparent reason for this low catch. The total harvest figure is probably incomplete. All figures before 1960 may be of limited reliability.

Source: R.C.M.P. Annual Detachment Reports, Sachs Harbour; field investigations.

Production and consumption

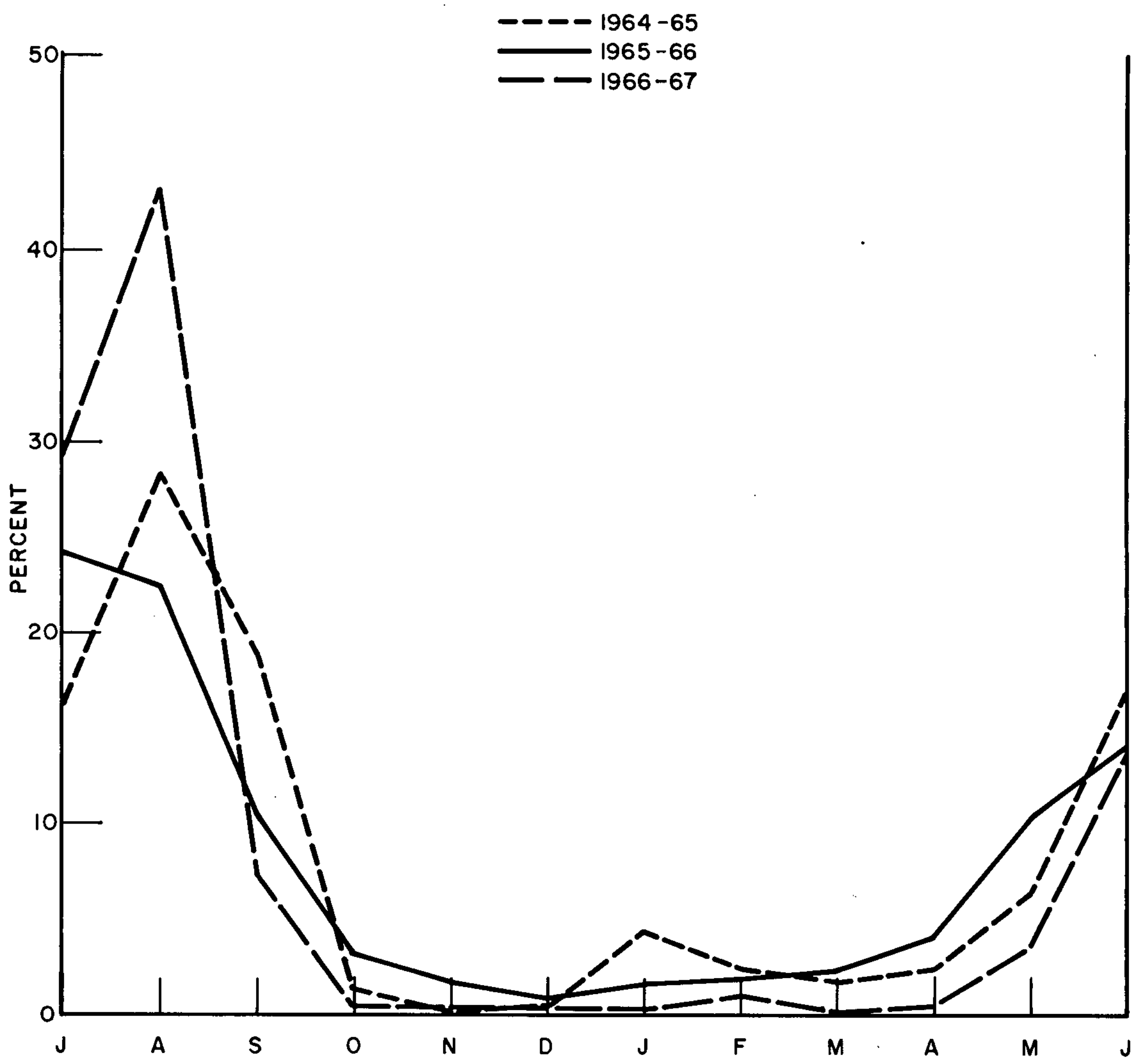
Table 6.1 shows the annual seal harvest since 1955. Individual catches vary considerably depending on skill, inclination and equipment. In recent years, the better hunters have consistently obtained at least 75 or 80 seals. This easily meets dogfeed requirements and greatly exceeds the need for byproducts. From 1963 to 1965 seal skins were at a high value, and in the year 1964-65, both mean value and volume of seal skins produced per hunter exceeded the corresponding figures for foxes for the first and only time in the experience of Bankslanders. Since then, skins have occasionally been sold, but this represents an effort to maximize the benefits from a resource harvested chiefly for food. Current price levels provide no incentive to hunt seals commercially.

Seal meat is always used in combination with cornmeal for dogfeed so that total requirements can be quite flexible; the more seals obtained, the less cornmeal required. The economics of this will be discussed in the next chapter. For the present, eighty seals may be taken as a desirable annual catch per hunter.

The seasonality of the harvest is shown in Figure 6.1. The importance of the May-September period, and particularly the two months July and August, is clear. Although there is some variation from year to year, the basic pattern is the same. The intense summer activity reflects at once the coincidence of greatest opportunity for hunting, ease of hunting, availability of seals and the need for dogfeed. Opportunity costs are also lowest at this time.

A distinct seasonality in seal meat requirements for dogfeed also exists, and is not coincident with the harvest. Basically dogs are fed every night except from mid June to mid October when they are fed every second night. There are

Figure 6.1
PERCENTAGE DISTRIBUTION OF THE ANNUAL SEAL HARVEST
BY MONTH
BANKS ISLAND, 1964-67



approximately 300 feeding nights per year. A team of nine dogs, (which is the average at Sachs Harbour), requires half a ringed seal at every feeding (about two pounds per dog) or 150 per year, if the dogs are fed solely on seal meat. However, seal meat can be mixed and cooked with cornmeal or oats, in which case only a half pound of meat per dog is required.[1] Used in this way, one seal lasts for ten feeding nights and a minimum of 30 seals are required per annum. Between these two extremes, any combination of cooked and raw feed over the year will require an intermediate number of seals, which can be calculated from Figure 6.2.

These calculations apply to ringed seals only. In order to relate catch statistics to feed requirements, it is necessary to remember that the seal harvest figures include bearded seals, in addition to ringed seals. If, on the average, four per cent of the catch consists of the larger bearded seals, the total meat yield will be over ten per cent greater than from a harvest of ringed seals only. The effect of the bearded seal component on the feed requirements as measured in seal units is shown in Figure 6.2. The figure of 80 seals used above as a desirable average catch includes this component

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[1] See Appendix E for weights and utilization of seal carcases.

Figure 6.2

RELATIONSHIP OF THE NUMBER OF FEEDING NIGHTS IN WHICH DOGFEED MUST BE COOKED TO THE TOTAL NUMBER OF SEALS OBTAINED

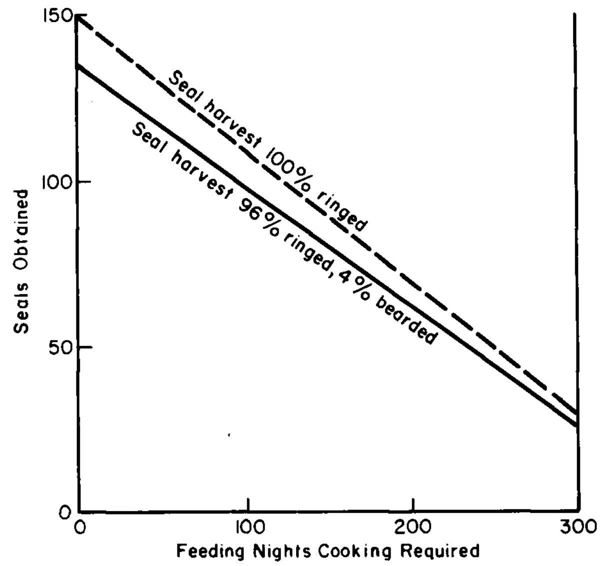
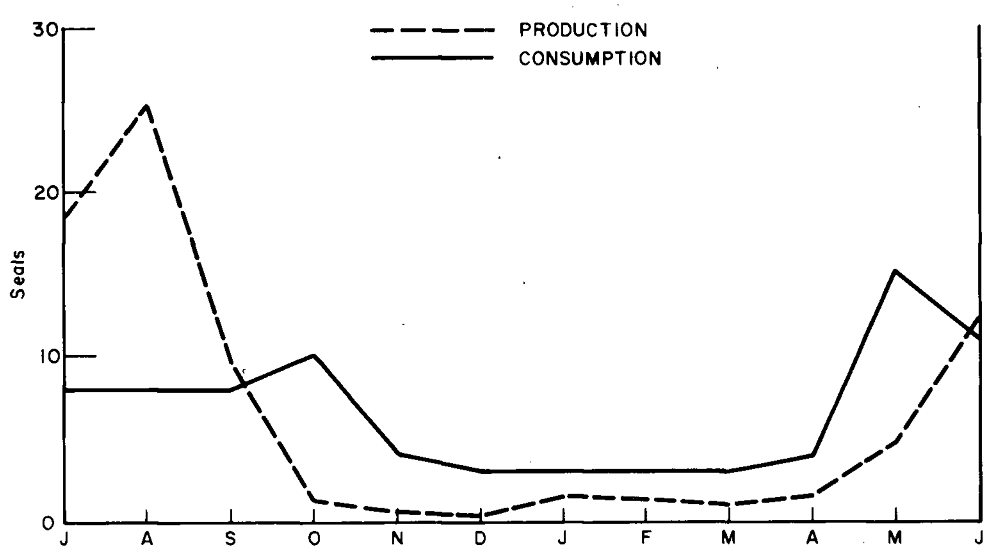


Figure 6.3

PRODUCTION AND CONSUMPTION OF SEALS BY MONTH BASED ON AN ANNUAL HARVEST OF 80 SEALS



of bearded seals, and provides the equivalent meat yield of about 90 ringed seals.

The actual feeding pattern begins with nightly feeding in mid October, and between then and the opening of trapping season two weeks later, the men begin to cook dogpot. The trappers generally cook every night while on the trail, and some or most nights while at home, until about the end of April. The dogs are then fed raw meat every night until mid June when they revert to alternate night feeding.

The practice of cooking dogfeed is an old one, probably introduced by white trappers around the turn of the century. The light weight and imperishability of cornmeal or oats are great advantages for long distance travel and long term caches, and they make inexpensive substitutes when meat is scarce. Moreover, the trappers consider it good for dogs to have a warm meal in winter instead of a regular diet of frozen meat. Cornmeal is thus essential on the trail, and in any case, very few hunters can or wish to obtain the 130 or more seals which would be required in the absence of any other food. On the other hand, one does not want to cook every night, since hunting seals for raw feed is easier and more enjoyable, especially when seals are readily available. The feeding pattern outlined above involves cooking for about 150 nights, or half the total feeding nights of the year. This combination requires 90 ringed seals, or about 80 seal units counting bearded seals.

Figure 6.3 shows the mean annual production - consumption cycle by month for a hypothetical household (one hunter, nine dogs, 80 seals). The production cycle is derived from the 1964-67 three year mean (Figure 6.1), and the consumption cycle from the normal feeding pattern. Paradoxically consumption requirements are greatest when the dogs are idle, and lowest when they are most productive although generally consumption reflects production. July and August are months of great surplus, June and September of slight surplus, while the rest are deficit months.

The nature of the summer surplus is particularly interesting. From May until about mid August, seals are fed to the dogs within a short time of slaughter. During the warmer days, carcases will eventually putrefy if left on the beach, although a few men have shallow pits or cellars in which to store seals (most ice cellar space is reserved for human foods such as caribou, geese and fish). The production rate exceeds requirements however, and a surplus is gradually built up during the summer. Later in August, as cooler weather prevails, seal carcases will keep fairly well in the open air. The animals are also putting on fat and a carcase may at this time yield ten pounds more blubber than five or six weeks previously (see McLaren, 1958: 63). The trappers, having a cushion of a few weeks' dog feed, can now take advantage of improved storage conditions and the increasing fat yield to begin accumulating the winters' feed supply. Thirty seals is an acceptable minimum to maintain a team from October to April, and anything above this amount will diminish the frequency of having to cook dog feed in winter. Seal hunting is thus quite intensive in late August and early September. As mentioned in the previous chapter, some men go sealing at Sea Otter Harbour in early September and cache seals there. Ordinarily it is quite feasible to obtain the requisite supply before unfavourable sealing conditions set in in September.

Two additional facts must be noted before closing this discussion. First, there is virtually no waste of harvested seals, and it is therefore legitimate to assume that 80 seals harvested means 80 seals consumed. Secondly, there are occasionally other sources of dog feed which can be significant, such as foxes, rabits and rutting bull caribou.

Inputs and Efficiencies of Seal Hunting

The chief technological items required in seal hunting, aside from the rifle, are the means of transport, which are twofold: the dog team and the powered boat. The first requires no additional investment as it simply maximizes the use made of an already existing and necessary facility. The second however, requires a major investment and has little additional utility. If seal hunting were not essential, there would be no need for large boats and powerful motors and less need for each man to have his own boat. Yet the summer period is when the greatest number of seals can be obtained with the least time and effort and at the lowest opportunity cost. Although summer sealing requires a canoe and outboard, the trappers consider the depreciation, maintenance and operating costs involved are more than offset by higher productivity achieved during the trapping season due to the assured supply of dogfeed.

Capital equipment and investments will be discussed in detail in the next chapter. An indication of the expense of summer hunting is the fact that in 1966 the hunters were using 20 foot canoes with engines of a mean rating of 13½ horsepower. The latter was a considerable increase over the 1964 figure, and yet many hunters were talking in terms of 22 foot canoes for greater loads, and 18 and 20 horsepower engines for greater power and speed.[1] Gasoline and oil costs are also an important consideration.

A less important expenditure, but one common to all types of hunting, is ammunition. This understandably varies from one season to another. For example fast ice hunting involves shooting at a stationary target from a fixed platform, floe edge hunting a moving target from a fixed platform, and open water hunting a moving target (although occasionally a fixed one) from a moving platform.

The reports of hunters and direct observations of hunting expeditions provided data which enable direct comparisons of the inputs and efficiencies of seal hunting under various conditions (see Appendix D). All information relates to floe edge sealing as ice conditions favoured this method during virtually the entire period of field study. A comparison of winter, summer and spring floe edge hunting is given in Table 6.2.

The number of seals observed per hour tend to confirm the impression that fewer seals are present in the winter months, even though the winter figure may be a somewhat low estimate. The data are not strictly comparable, however,

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[1] An element of sport and prestige is doubtless also involved.

TABLE 6.2

Comparison of winter, spring and summer floe edge hunting efficiency, expressed as ratios per seal retrieved

	Winter	Spring	Summer
Number of seals observed	1.4[a]	2.7	3.9
Observations per hour	0.45[a]	1.63	1.62
Number of seals shot at	n.d.	2.1	1.8
Number of shots fired	n.d.	2.5	2.8
Seals shot	1.1	1.5	1.4
Seals sunk	0.1	0.5	0.4
Potential hunting time[b]	2:51	1:39	2:23
Travelling, time[b]	1:26	0:03	0:36
Total time[b]	3:56	1:41	2:38
Gasolene (gals.)	nil	nil	2.1
Oil (qts.)	nil	nil	0.36

[a]Approximate, possibly an under estimate.

[b]Measured in hours and minutes. Potential hunting time includes time spent stationary in watch and also while travelling in open water or along the floe edge. Travelling time includes the latter plus travel to and from the settlement or camps, in areas where hunting is impossible. There is some overlap between potential hunting time and travelling time, so that the total of the two exceeds the figure for total hunt time.

Source: Appendix D.

as visibility conditions are neither uniform from hunt to hunt nor season to season. Darkness reduces visibility in winter and fog can do so in all seasons.

The loss rate is lowest in winter. In spring and early summer, changes in the specific gravity of seals and in surface water salinity make loss through sinking an important consideration.

Observational data on the number of shots fired show little difference between spring and summer floe edge hunting, as would be expected. The ratios are not far from the figures of 3.5 given by Haller for Cumberland Sound (in Anders, 1967:158), and 3.2 given by Foote for East Baffin Island (1967b:113). Fast ice hunting requires fewer shells per seal; open water hunting many more. Data given by Foote (ibid.:113-115) for East Baffin is probably representative of Sachs Harbour as well.

There is no apparent reason for the much higher ratio of seals shot at to seals seen in spring than in summer, nor can it be said whether this is typical. It is however, the main reason for the differential between spring and summer in time required per seal retrieved. If the difference is merely due to chance, it would be legitimate to average them and conclude that approximately two hours hunting time is required per seal. In fact this is probably the case. If the figure of 3.5 seals retrieved per hunt in the summer of 1966 were representative, it would have necessitated 28 trips per hunter, where as in fact most men probably went out 20 times or less. Travelling time is relatively unimportant in both seasons. Winter hunting time requirements are not much greater, due mainly to the lower loss rate, but travelling time is significant so that in terms of total time, winter hunting is considerably less efficient.

It is important to note that the data in Table 6.2 apply to hunting as a collective endeavour. This complicates the question of measuring productivity by "units of effort", as

McLaren has suggested for the Eastern Arctic.[1]

Individual productivity should (and almost certainly does) decrease with the number of people hunting in close proximity, especially in floe edge sealing. If three men went hunting for ten hours together in the spring, they would, according to Table 6.2 see about 16 seals. They would shoot at 12 of these (using 15 rounds of ammunition), killing perhaps nine, and retrieving six. They would split the catch and each man would go home with two seals for his day's work. Suppose however, that only one man had sat by that same spot. He would not have seen only one-third of the seals; very possibly he would have seen all 16, and if he did not attempt to kill 12 of them, he probably would have tried for at least 10. Had he been with the others, he could not have made as many attempts himself. Frequently all the hunters sight a seal simultaneously. Sometimes two will fire at the same time, but usually if one person gets a quick shot away the others make no attempt, for of course the seal is either already dead or has dived below the surface. In the latter case there may be a second chance

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[1]An assessment of seal hunts by number of seals per hunter per hour (or day), with no differentiation according to the number of hunters involved (1958:89).

if the animal resurfaces within shooting range, but this does not always happen. Alone however, our hunter gets more chances and uses fewer rounds altogether (although they are all his own), because there is no possibility of two or more simultaneous shots. Data are lacking on the relative efficiency of collective versus individual hunting, but there are no _a priori_ grounds for believing that there is a significantly greater chance of three hunters killing a seal once it has been sighted and is within shooting range than one man alone. Theoretically if each man scores on every second shot, it follows that if three shoot simultaneously there is only one chance in eight that all will miss. Usually only one man gets to shoot however, and if anything his aim is less sure because of the competition. Alone, a man may have several seconds to aim while the seal is surfacing, while in a group he is also racing against the fastest shot - which can occur within a second or two of sighting. Our lone hunter can thus expect to kill the same percentage of seals he shoots at as did the group, or nearly so. The sinking rate is the same, and thus the lone hunter has every possibility of going home with four or five seals. Under identical circumstances then, catch per unit of effort (i.e. hunter-day in McLaren's terms) can vary severalfold depending on the number of hunters involved.

TABLE 6.3

Theoretical catch per hunter per day, Sachs Harbour and selected Eastern Arctic locations

	Sachs Harbour	Arctic Bay	Padloping	Igloolik
Winter floe edge hunting	2.1	0.1	0.2	0.3
Spring floe edge hunting	7.3	0.9	1.3	1.7

With this reservation in mind, one can compare theoretical productivity on Banks Island with that of some Eastern Arctic points as determined by McLaren (1958) (See Table 6.3). The length of McLaren's hunting days are not defined; in order to make the comparison we must assume arbitrarily a length of six hours actual hunting time in winter, twelve in spring. Evidently summer hunting conditions at Sachs are not replicated in the Eastern Arctic, as McLaren gives no comparable indices. A winter catch per unit of effort of 0.22 seals per hunter per day per mid winter availability index[1] (for higher latitudes) is used in calculating the Eastern Arctic figures.

According to McLaren's catch per unit of effort indices (1958:47), at no season and with no method (except fast ice hunting) will a hunter be likely to get more than two or three seals per day on the average except in a few very favourable locations such as Cape Dorset. Indeed, Haller found actual productivity in Cumberland Sound even lower than McLaren's

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[1]A measure devised by McLaren (1958) to measure relative availability of seals to the hunter, based on seal population and the configuration of the coastline.

theoretical predictions would indicate (in Anders 1967:81). At Sachs, on the other hand, average catches per hunter per day tend to be much higher than this in spring and summer, and indeed when conditions are ideal, individuals have been known to get 20 seals in a single day. Even larger individual catches have been reported from Holman.

There is clearly a great discrepancy in production between east and west, but it is due neither to the skill of the Banksland hunters nor to the richness of the surrounding seas. Far more likely, it is indicative of the migratory nature of the seal population. McLaren's availability index was designed for a non-migratory population. It is inapplicable to Banks Island where at any one point, given sufficient time, the population of a whole region passes within range. The extent and magnitude of these migrations are unknown, but in view of the difficulties of applying resource management techniques developed in the Eastern Arctic, the necessity for further research in the west is evident.

An important consequence of the seal migration and the resultant high catches per unit of effort is that travel distances in seal hunting at Sachs are relatively short. For example, Haller found that spring and summer hunting in Cumberland Sound involved distances of 14 to 24 miles travelled per seal landed (in Anders, 1967:68, 70). Under similar though not identical conditions at Sachs, these distances were much less. Probably under five miles per seal are required in spring floe edge hunting by dog team, and perhaps ten miles in summer boat hunting depending on conditions. In the summer of 1966, the 2000 gallons of gas used in seal hunting probably represented about 10,000 miles of travelling, or just over 10 miles per seal landed. Similarly, the area utilized is rather smaller than for Cumberland Sound camps. Figure 6.4 shows the sealing areas and currently utilized camps. The limits of sealing do not include the occasional hunting trips to Sea Otter Harbour. Probably over 90 per cent of all seals are taken within the area of intensive sealing. This area of about 200 square miles produces very large harvests - almost 300 pounds of edible meat per square mile. This does not reflect the productivity of the local waters of course, since the population is in transit.

Time costs in seal hunting

The seal migration, and the resultant possibility of harvesting large numbers in a very restricted area, allow the Bankslanders to hunt with a fairly low investment in time and money (other than depreciation costs on canoes and outboards).

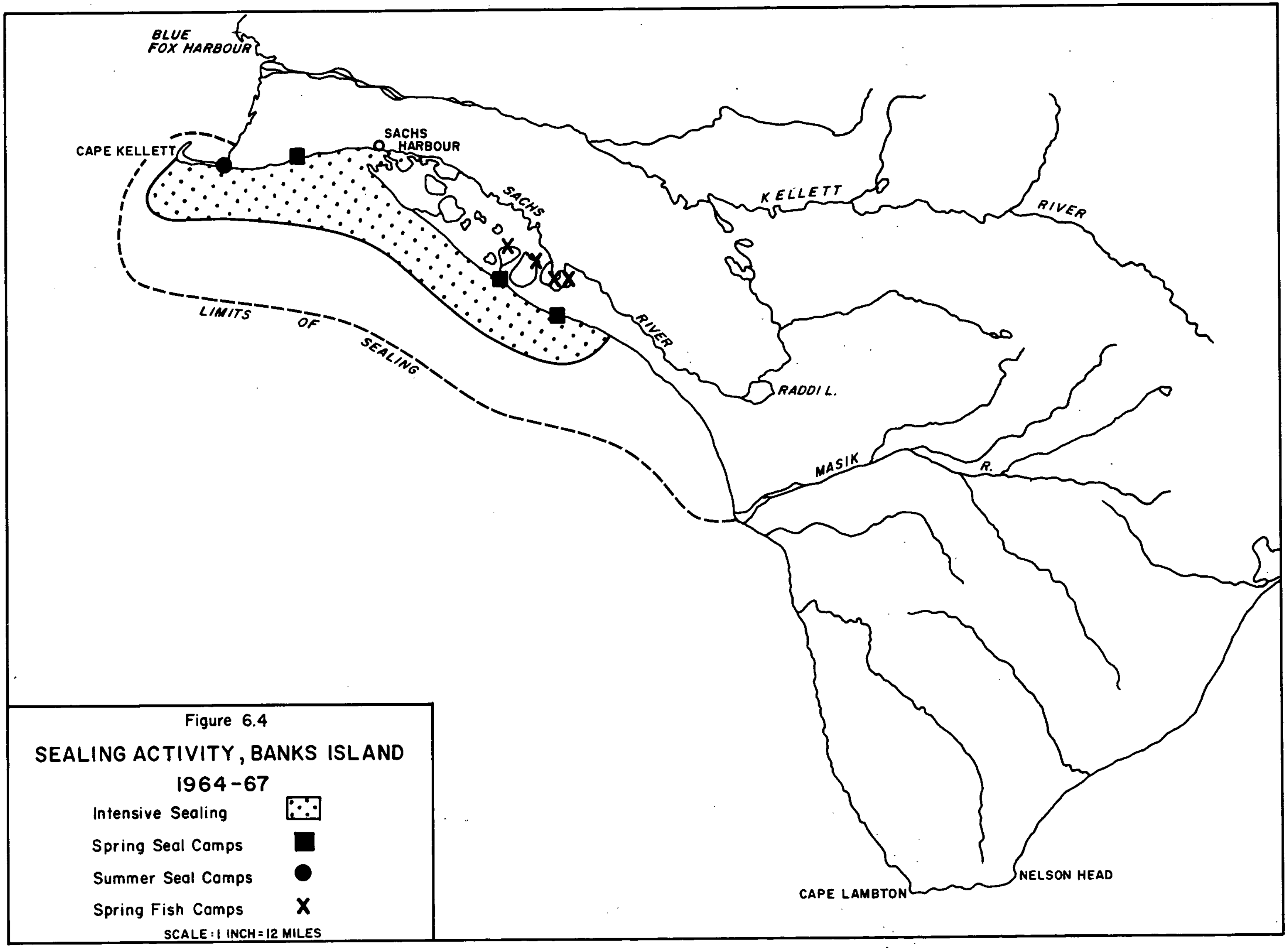


Figure 6.4

SEALING ACTIVITY, BANKS ISLAND 1964-67

TABLE 6.4

Time requirements for obtaining eighty seals per year at Sachs Harbour, N.W.T.

Season	Seals[a]	Hunting time[b]	Total time[b]	Hunting days[c]
Spring	19	31:21	31:59	3
Summer	53	126:19	139:34	12
Winter	8	22:48	31:28	6
Total	80	180:28	203:01	21

[a]Based on Figure 6.3

[b]Based on Table 6.2

[c]Hypothetical hunting day assumed to be twelve hours long in spring and summer, six in winter.

On the basis of average returns (Figure 6.3), if a hunter desires 80 seals he would obtain 19 in the spring hunt (April-June), 53 in the summer (July-September), and eight during the winter (October-March). He can get these seals in 203 hours or 21 hunting days (Table 6.4). If he does not wish to do any winter hunting, he can get an additional eight seals in summer by devoting an additional two days to sealing in that season.

The spring requirements, even if the time required estimates are low (see above) are easily met as the weather for sealing is frequently good. Winter requirements, so long as they are kept low, are not difficult to meet in terms of actual hunting time, but the number of potential hunting days can be few. Weeks may go by without the ice opening up, and it is this fact, rather than the arduousness of the hunt, which poses a threat to the trapper if he is short of dogfeed. He is quite likely to get a seal or two for his day's work, but he may be held back from the trail two or three weeks waiting for that day to arrive.

Summer time requirements are also not great; theoretically the hunter can obtain the desired number of seals in two weeks or less of concentrated hunting. Again, however, weather and ice conditions intervene. For example, only one half of the days between July 7th and September 7th may be suitable for hunting. On the average, a hunter must be prepared to go out every day for a month in order to get in 14 full hunting days. If loose ice is constantly in the vicinity, most days may be suitable for hunting; in years when there is no ice to mitigate the effects of wind, there may be hardly 14 good days in an entire summer. Only with data for several decades could probabilities be established for the number of days one must set aside in order to get a given number of suitable hunting days, and in which periods the best weather is most likely to occur.

Tentatively it may be suggested that if a man requires 14 hunting days, he should set aside at least four weeks and possibly six to guarantee that he will get out for that number of days. At present with few alternative opportunities or demands on their time, Sachs Harbour hunters can hunt at a leisurely pace during two months or more of open water. However, a man could select a continuous period of time such as July 28th to September 7th in which to hunt, or perhaps two periods from, say, July 7th to 21st and August 10th to September 7th. By building adequate storage pits, he could do most of his sealing in the early summer or even the spring if he wanted to use the late summer period for some other purpose. In this case he might need a few extra seals to make up the essential blubber requirements for winter. Summer need not be fully occupied by seal hunting, and a man can have at least two weeks in mid summer and probably another two or three in September free. During these times, a man could earn some cash if casual labour were available, visit the mainland, or do nothing at all, without prejudicing his ability to meet his dogfeed requirements.

Caribou

The Banks Island caribou is an intergrade species between the barren ground and Peary caribou, more closely resembling the latter. There has been some debate on the taxonomic status of the genus *Rangifer* and its various species (Kelsall, 1968: 23-24). The Banks Island caribou has been formally classified as *R. arcticus pearyi* by Manning (1960:47), and *R. tarandus pearyi* by Banfield (1962:60 ff). The animal is slightly smaller in size and lighter in pelage than the barren ground caribou. The population is resident to the Island although on occasion there is some interchange with herds on Victoria Island and possibly the Queen Elizabeth Islands as well.

Abundance

Several estimates have been offered of the summer population of the herd. Stefansson suggested a figure of 2,000 to 3,000 in 1914 (1921:255), while Manning and Macpherson estimated about 4,000 in 1952-53 (1958:65). In 1951 there appears to have been a great population increase and a subsequent die-off (McEwen, 1955:46; and Macpherson, 1959:27). McEwen believed the die-off to be due to environmental factors while Macpherson suggested that overcrowding was the cause. The latter investigator therefore concluded that the Banks Island population was close to its maximum potential and that hunting would assist in reducing violent population fluctuations. McEwen on the other hand thought, as of 1955, that mortality was exceeding natural increase and thus hunting should be reduced. Subsequent, less spectacular die-offs were noted in late 1954 and late 1957. These events curiously enough coincide with fox maxima on the Island, although the connections between these events, if any, is not known. Fluctuations in the caribou population seem to have been less severe since the wolf control program was effected, but again the chain of casuality, if any, is not clear. A census conducted by Macpherson (1960) in 1959 on the basis of flight transects gave a population of 2,351 caribou on the Island, apparently indicating a reduction over previous years. The herd is currently thought to be in good condition and abundance by the trappers, and there have been no incidents of reproductive failure in recent years so far as is known. Hunting continues to be successful with no sign of detrimental effects, and the current population may exceed Macpherson's 1959 estimate.

The migration patterns of caribou on the Island have not been ascertained. The animals appear to be concentrated in the lowlands and are uncommon in the northern and southern extremities of the Island. Caribou are frequently sighted in groups of five or ten, sometimes singly, occasionally in herds of 30 to 50 depending on the season and locale. The great herds and distinct migration patterns of the Barrens are unknown on Banks Island. In the Bankslanders' experience, the caribou tend to be north and east in summer, south and west in winter. The location of kills by month during the 1966-67 (Figure 6.5) shows a clear westward advance during the autumn months. In this case, the location of the kills

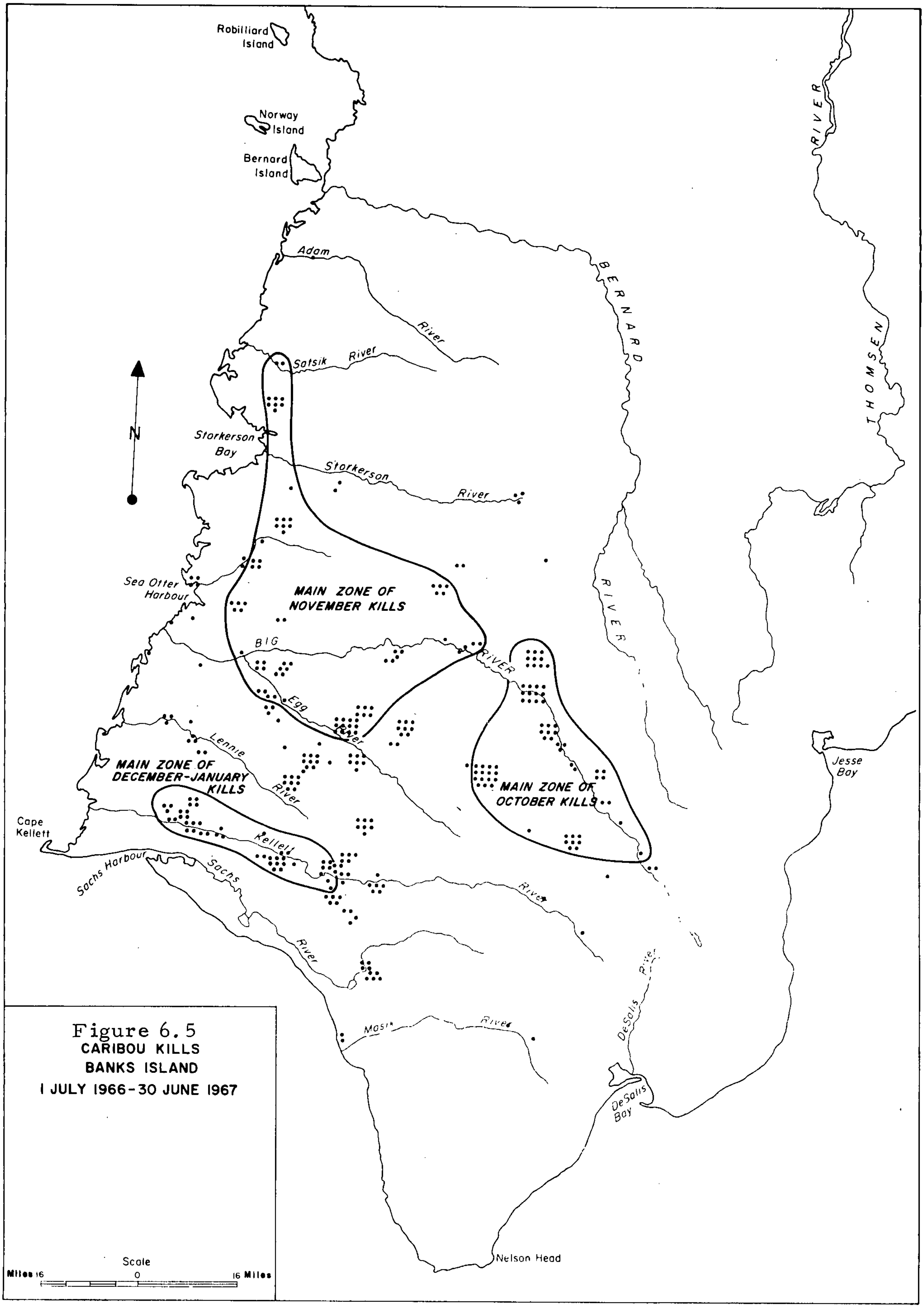


Figure 6.5
CARIBOU KILLS
BANKS ISLAND
1 JULY 1966-30 JUNE 1967

TABLE 6.5

Annual caribou harvest, Banks Island, 1951-67

Year	Number of caribou	Number of hunters[a]	Mean take per hunter
1951-52	187	9	21
1952-53	218	9	24
1953-54	107[b]	10	11
1954-55	271	20	14
1955-56	175	10	18
1956-57	75	5	15
1957-58	300	11	27
1958-59	140	17	9
1959-60	180	17	11
1960-61	249	21	12
1961-62	232	23	10
1962-63	299	20	15
1963-64	225	21	11
1964-65	280	20	14
1965-66	289	21	14
1966-67	306	20	15
Means	221	16	14

[a]Does not always coincide with the number of full time trappers (Table A.5), as usually more people are involved in caribou hunting.

[b]Total may be incomplete.

Source: General Hunting Licence Returns, Fort Smith; R.C.M.P. Annual Detachment Reports, Sachs Harbour; field investigations.

is not to be explained by hunter preference or custom. The men fan out north and east of the settlement until they start finding caribou, travelling through territory in which caribou appear only in subsequent months.

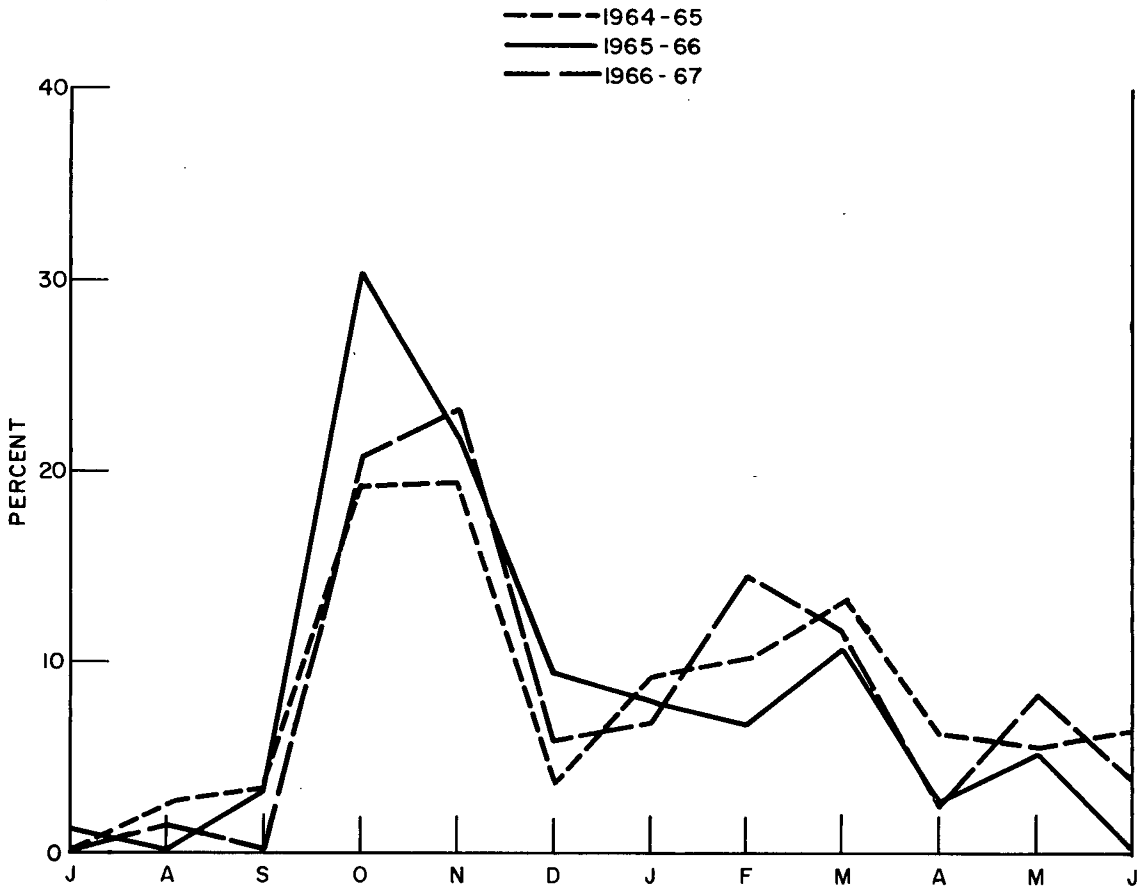
Utilization of the herd is indicated in Table 6.5. The kill over the last few years has remained stable and has probably amounted to ten per cent or less of the herd. A few Holman hunters go to southeastern Banks Island in some years to hunt caribou, and may take a dozen or so. The substainable yield of the Island herd is unknown but there is no evidence of depletion. Caribou is used exclusively for human food except in an emergency. There appears to be virtually no waste of meat, and skins are used for bedding. The meat yield per animal is given in Appendix E.

Hunting patterns

Figure 6.6 shows the marked seasonal pattern of caribou hunting. After sealing ends in September, there is a brief lull in activity. Those who do not go to the mainland may hunt ptarmigan or owls around the settlement, work on sealskins, haul up their boats and repair winter travelling gear. The tenor of life is relaxed and there is much visiting from house to house.

Freeze up and accumulation of snow cover is variable. Snow can occur in any month, but not until mid September is it likely to remain on the ground. Overland travel by dog team is ordinarily possible by the end of September, but in some years the ground may be bare well into October. Everyone feels the change in the air and a mood of anticipation comes over the village. In mid September, men begin declaring their lack of interest in seal hunting, and good sealing weather is ignored. By the end of the month , dog driving is the main

Figure 6.6
PERCENTAGE DISTRIBUTION OF THE ANNUAL CARIBOU HARVEST
BY MONTH
BANKS ISLAND, 1964-67



topic of conversation. With eagerness and excitement the men begin to exercise their dogs and prepare their sleds.

During October the caribou are in prime condition. The meat is considered to be at its peak in flavour and back fat is thick. For this reason the men would ideally prefer to take all their caribou at this time of year, were it logistically possible. Although travelling is often slow and difficult due to the thin snow cover, there is a feeling of competition to reach the hunting grounds first, and many men try to leave around the first of October. Some go caribou hunting for a few days, then go out again to toggle traps. Others may make a longer trip and combine these activities. Those who do not toggle may still go caribou hunting in October, and perhaps jig for fish in the lakes as well.

Men who have not hunted in October do so while setting traps in November. The caribou are more spread out and a man can usually count on seeing a few while travelling on the trap line without making special hunts. Most caribou killed at this time are cached, mainly because the toboggan is already partly full. Some will be brought in later in the year when convenient or necessary, the rest provide a ready source of food on the trail. The viscera supply an immediate need for bait.

Hunting declines during the dark days, although a few men may make short hunting trips from the settlement as the caribou are normally close. As the days lengthen, there is a slight increase in the number of caribou taken, but the kills occur on the trap line and no special trips are made. Some men go inland to hunt in May or June, but only for a few days and generally not so far inland as in the autumn. One old Copper Eskimo woman walks inland with pack dogs to hunt in July and August; otherwise there is no summer hunting on the Island. The summer is thus a period of meat deficit in relation to production, with the greatest shortage occurring in September.

Fall effort inputs

Most fall kills are made in the upper valley of the Big River, or in its tributaries above the Egg River. Sometimes the hunters come upon a small herd, other times upon solitary young bulls. The latter tend to be curious at this time of year, and will approach hunters if the dogs can be kept quiet. Table 6.6 shows the time and distance factors involved in the fall hunt for three separate years, based on trips in which the chief purpose was caribou hunting. Per hunter effort seems to have increased over the period, although this is complicated by toggling and fishing activities which were included in some

TABLE 6.6

October caribou hunting, Banks Island, 1964-66

	1964	1965	1966
Number of hunters	13	11	7
Number toggling on same trip	1	9	2
Total days out	105	119	93
Total miles travelled	1825	1450	1400
Total caribou killed	70	80	55
Days out per hunter	9	11	13
Miles travelled per hunter	140	132	200
Caribou killed per hunter	5	7	8
Caribou killed per day	.67	.67	.59
Miles travelled per caribou	26	18	25

Source: Field investigations

trips. Indices of time and distance per caribou remained relatively constant. Data from 1966 showed that less than one quarter of the days out were actually spent in hunting caribou, the rest being used for travelling or other activities.

Some of the caribou meat obtained in October is cached on the trail for winter use, some is hauled home for the rest of the family, and of course some is eaten during the trip. In 1966, about 16 of 55 were cached, and 28 hauled home, leaving 11 which were consumed immediately. Caribou are cached under piles of stones or are slushed over and left to freeze. The hides are particularly suitable for sleeping skins at this time of year and many are taken home to be cleaned and stretched. October is the rutting season and the meat of mature bulls which has an overpowering odour at this time, is quite inedible except to the dogs. Only four such animals were killed in October 1966.

Caribou hunting requires little capital investment as it simply maximizes use of the dogteam. It does require a high powered rifle (usually of .270 or .30-06 calibre) and a telescopic sight, although such fire-arms are also necessary for bear hunting. There are no accurate data on the number of shells used per animal, but taking all types of conditions into account it is probably three or four. Time requirements are also minimal, as caribou hunting is so frequently compatible with other activities. Generally a man need devote no more than two weeks of the year to the exclusive pursuit of caribou. This time is best spent in October, and possibly late May as well. In neither case does it conflict with other demands.

Requirements

Caribou requirements are somewhat difficult to ascertain as substitute or supplementary foods are not only available but desired. A man living almost entirely on caribou while on the trail will eat three to five pounds per day - perhaps a whole caribou on a three week trip. Foote recorded a similar intake under such conditions among Point Hope Eskimos (1965:274).

At home, the average family requires about one caribou per week (over ten pounds per day) if there is no other food. A family living on caribou alone would certainly require over 50 animals per year. Most hunters however, get less than one third this number. There are other less important sources of country meat, but the Bankslanders have come to regard imported food stuffs such as bread, spreads, soup, macaroni and tinned fruit as essential components of their diet. Caribou is certainly a staple, and a highly regarded one, but is not the sole source of human nutrients. It supplies about 30 per cent of the Bankslanders' sustenance, and as there is seldom considered to be a shortage of meat, this would appear to be the culturally desired proportion.

Polar bears

Abundance

The southwest coast of Banks Island, particularly around Nelson Head and Cape Kellett, provides good denning habitat for polar bears. Harrington (1968:7) has identified this coast as one of 15 core areas for denning and cubbing in the entire

Arctic, and the chief area in the Canadian Western Arctic. Polar bears are very wide ranging beasts, and little is known of the size, structure, territory or movements of the population which breeds in the vicinity of Banks Island. Indications are that their availability to hunters at any particular time and place is largely a function of ice conditions. Bears thrive in a mixed habitat of ice and water within reasonable reach of land, so that their distribution is chiefly along the margins of the permanent polar pack (Scott, Kenyon _et. al._, 1959:367) and Harington, 1964:5). In winter their range tends to extent southwards - in the Western Arctic to Banks Island, Amundsen Gulf and the mainland shore. They may even be found inland many miles from the sea. In summer they retreat north with the ice. In years when Amundsen Gulf and the Beaufort Sea are ice free, there are no bears at all (although they have on occasion been sighted swimming tens of miles from the nearest ice or land). If a heavy concentration of ice persists throughout the summer, bears may remain in or close to the area, and will be more available to hunters not only in the summer but often in the following winter as well. In 1966, when ice persisted around Sachs Harbour for much of the summer, an unusual number of bears were taken in that season. As Harington has stated,

> "It is extremely doubtful that . . . the number of polar bears has oscillated greatly throughout northern Canada, although basic information on the actual population of the region is unknown. It cannot be denied, however, that some bear seasons are "better" than others - on a regional level at least. Some factors contributing to higher survival and reproduction are suitable combinations of ice, open water and land, adequate prey (mainly seals) and forage." (1961:5).

The annual harvest is given in Table 6.7. It does not include bears sometimes taken by Holman hunters off Nelson Head. There is little basis for estimating the regional bear population and its sustainable yield, although if there is a discrete Banks Island population it probably numbers several hundred, judging by Harington's estimates for the Canadian Arctic as a whole (1964:9). There is no clear evidence of a decline in local availability - the very low per hunter takes during the last two years could be due to a variety of factors quite unrelated to population. Due to international concern for the survival of the polar bear as a species, the Territorial government introduced quotas for each settlement on the first of July 1967. The Banks Island quota has been set at 18 bears per annum. In general, all of the hunters partake of this resource or at least attempt to. Bear hunting propensity or skill does not consistently reside with any particular individuals or groups within the community.

The per hunter take fluctuates noticeably, although neither as sharply nor as regularly as the fox take. Unlike the fox

TABLE 6.7

Annual polar bear harvest, Banks Island, 1951-67

Year	Number of bears	Number of hunters[a]	Mean take per hunter
1951-52	15	9	1.7
1952-53	28	9	3.1
1953-54	20	10	2.0
1954-55	29	20	1.5
1955-56	15	9	1.7
1956-57	21	5	4.2
1957-58	32	10	3.2
1958-59	31	16	1.9
1959-60	34	16	2.1
1960-61	27	18	1.5
1961-62	43	21	2.0
1962-63	20	18	1.1
1963-64	48	19	2.5
1964-65	27	18	1.5
1965-66	10	19	0.5
1966-67	17	19	0.9
Means	26	15	1.77

[a]Does not always coincide with the number of full time trappers (Table A.5), as sometimes different people are involved in each activity.

Source: General Hunting Licence Returns, Fort Smith; R.C.M.P. Annual Detachment Reports, Sachs Harbour; field investigations.

take however, this variation is not due to spectacular population fluctuation. Ice conditions have no doubt influenced this curve, but the most important factor is probably an economic one, related to fox trapping, which will be discussed in the following section.

Utilization

Although accurate figures date only from 1951, bears have long been a significant resource to the Bankslanders. During the early years, Captain Pedersen offered good prices for bears and the per hunter take was probably similar to that of recent years. During the late 1930s and 1940s when prices were extremely low, bear takes on the Island appear to have declined. Although early returns are incomplete, they indicate an upturn toward the end of the war when the general demand for all furs, particularly in the Western Arctic, increased. Since then, prices have steadily risen, particularly in the last decade, but this has not resulted in a commensurate increase in effort for reasons explained below.

Bears are presently taken chiefly for their pelts, which bring prices of $150. to $300. to producers, although the meat is also utilized. Some of the choice cuts are used for human food, the rest is given to the dogs. The Bankslanders regard the meat as a welcome change, although few would care to make a steady diet of it. Edible yield is given in Appendix E.

There are occasional losses. For example, during a hunt off Nelson Head in May 1965, three freshly killed bears, including the pelts, had to be abandoned when the ice began to break off and move. In the summer of 1966, two bears were shot in open water and could not be retrieved. If bears are killed a long distance from the settlement, it is usually impossible to haul all the meat home and most of it must be abandoned. In no instance would a bear be killed for meat and the skin left unused.

Hunting patterns

Bears are killed whenever and wherever they are seen, and as a result many are taken close to the village, often in association with seal hunting, at least in summers when ice is prevalent. Sometimes special bear hunting trips are made in spring to Nelson Head or north of Storkerson Bay. Occasionally bears are seen and killed along the traplines. The location of all bear kills made between July 1, 1964 and June 30, 1967, is shown in Figure 6.7. Of a total of 59 bears killed, 45 were taken near Sachs Harbour and eight near Nelson Head. This pattern is understood to be typical, except

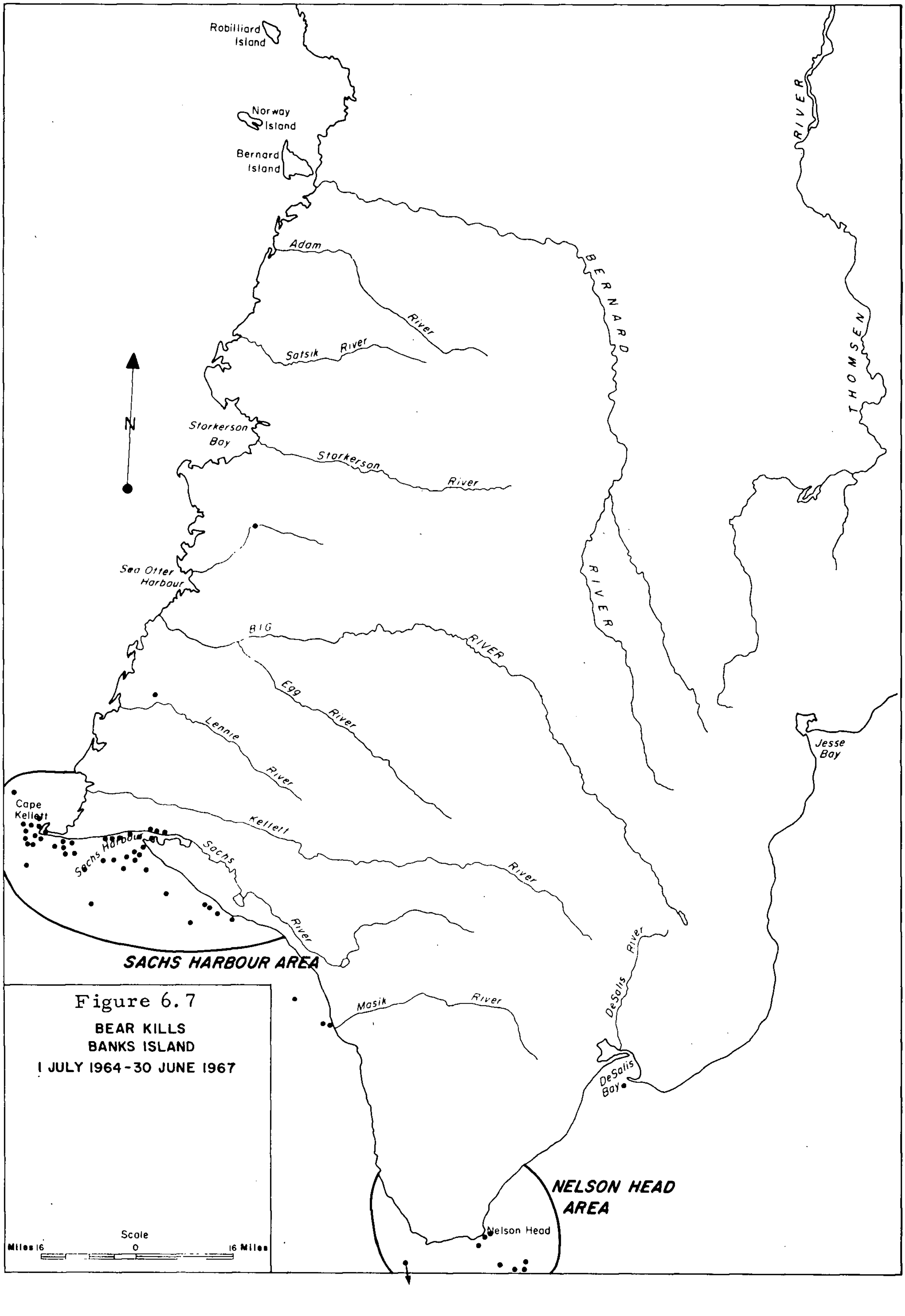


Figure 6.7
BEAR KILLS
BANKS ISLAND
1 JULY 1964-30 JUNE 1967

that the Sachs area is perhaps overrepresented, since there were very few successful spring hunting trips during the years under study.

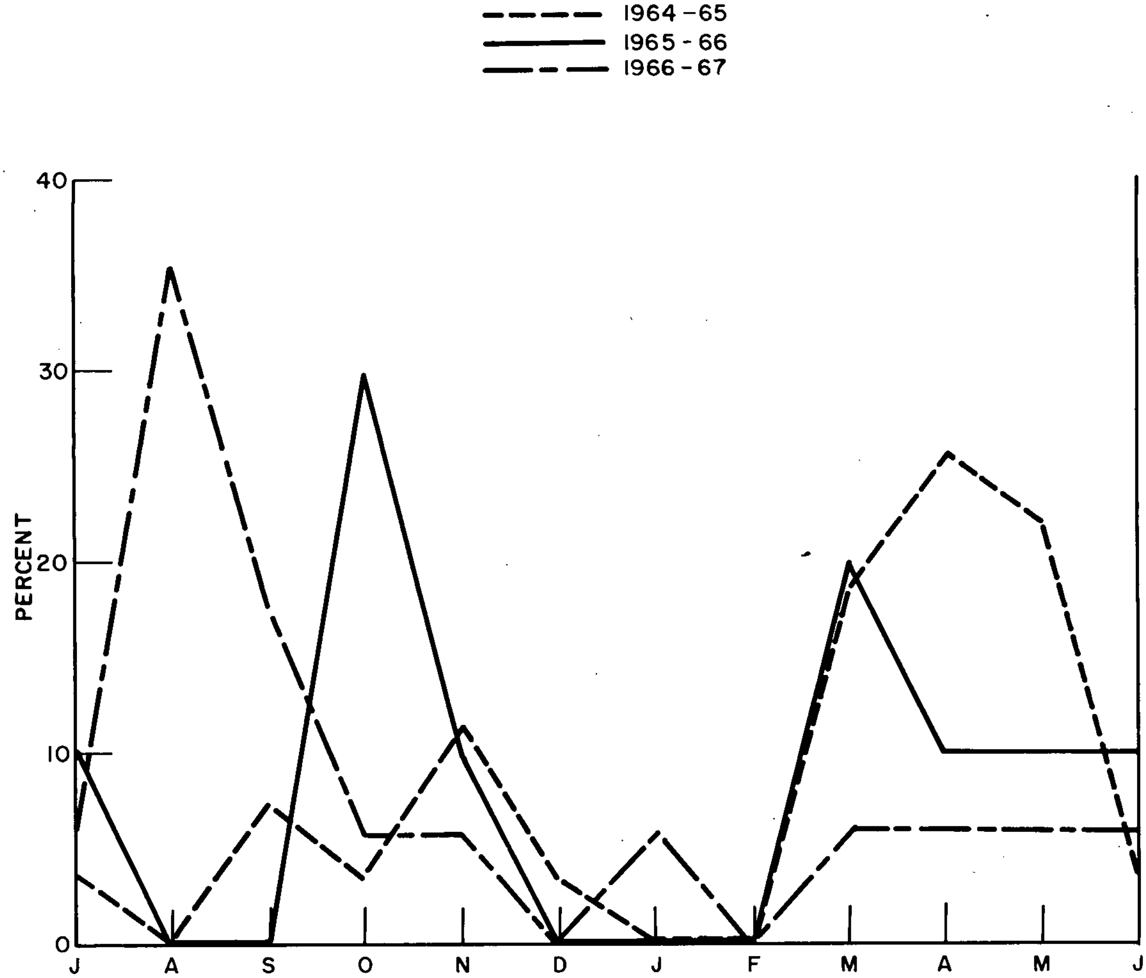
The seasonality of the bear harvest varies much more than that of any other resource, as a result of the interplay of physical and economic factors (see Figure 6.8). Bears may be taken at almost any time of year (February was the only month in which no kills were made in any of the years examined) but chiefly in either of two seasons, spring or summer. When spring hunts are made, usually two or three men travel together by dog team. On such hunting trips it is not uncommon for hunters to set their dogs loose when a bear is sighted. The dogs nip at the bear from behind, which makes it halt, and present an easier target for the hunter. Well trained and agile dogs are required, and many men have lost good sled dogs which were not quick enough to get out of a bear's range when it turned to attack. In no other form of hunting and trapping activity at Sachs Harbour is the excitement of the chase as keen, the danger to men and dogs as high, or the recounting of the tale such a matter of pride.

Spring bear hunting trips are generally made in early May and last up to a fortnight. In both 1965 and 1966 each hunter travelled an average distance of about 190 miles, obtaining 0.7 bears the first year and none the second.

Figure 6.8

PERCENTAGE DISTRIBUTION OF THE ANNUAL POLAR BEAR HARVEST BY MONTH

BANKS ISLAND, 1964-67



Investment in these trips is very small except in time, but there are few alternative demands at this season. The success of these trips is much less predictable than in any other form of resource harvesting. Bear hunting is not an essential activity, although in some years the money is a significant income supplement. The ante is low and there is always a chance of big winnings, since individuals have been known to return with five or more skins from a hunt.

A few bears are killed each year with set guns, usually in the late winter. These guns (usually old shot guns) are set in a pit in the snow, with bait wired to the trigger, and then covered with a snow block. The bear smells the bait, breaks into the pit, and by moving the bait pulls the trigger so that he will generally be shot in the head. One or two individuals own large leg traps for bear but these have not been used in recent years. Territorial game legislation has at times protected cubs and female bears with cubs. Traps are non-selective and are therefore discouraged.

The relationship between bear hunting effort and fox trapping success

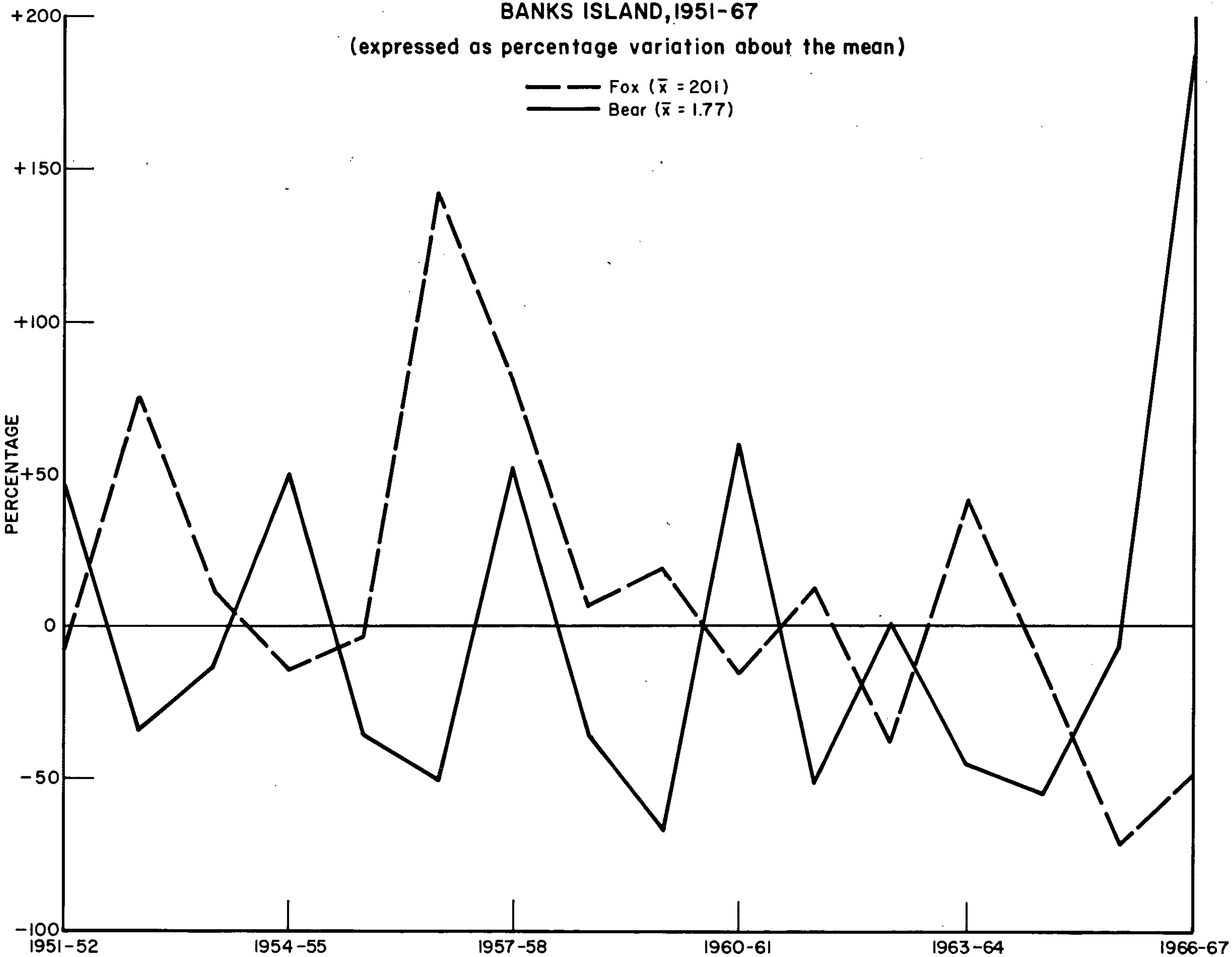
Figure 6.9 shows a roughly inverse variation between individual fox and polar bear takes. In 12 out of 16 years when trapping was below average, bear takes were above average, and vice versa. When trapping has been good there is no great

Figure 6.9

COMPARISON OF ARCTIC FOX AND POLAR BEAR TAKES PER TRAPPER

BANKS ISLAND, 1951-67

(expressed as percentage variation about the mean)



need to make a special effort to hunt bears in the spring, nor indeed is there much time to do so as a good season means much work skinning and preparing pelts, and possibly trips inland to haul foxes and other gear which could not all be brought out during the season. If trapping has been poor, the need is great and time is available, so that if weather and ice conditions permit, the more likely is it that special trips will be made for bear hunting in May. For example, about half of the trappers went bear hunting in May 1965 and 1966, but in 1967 no one made serious efforts to do so although some men had said they planned to.

The case is a good example of the necessity of understanding the utilization of specific resources in the context of the general resource complex. Potential income from maximum trapping effort is invariably higher, and usually much higher, than from maximum bear hunting effort, so that in the observed tendency of bear and fox takes to vary inversely, bear takes are the dependent variable. No man would actually go bear hunting instead of tending his traps, even though some will say they might do so in March or April. Such remarks probably reflect the strain of the trapping season and a desire for its end, rather than being statements of intent. The men are well aware that the March and April trapping trips are very important in any year, and that only an incredible stroke of good fortune could yield greater returns from bear hunting at this time. Increased bear hunting occurs as a response to poor trapping after, not during the season. This is why the polar bear is to the Bankslanders not so much a substitute for foxes but a supplement to them. Holman Islanders are also known to make special polar bear hunting trips to Prince of Wales Strait when trapping is poor, although generally before the end of the trapping season (Usher, 1965:158). It remains to be seen whether this situation holds in other parts of the Arctic, as it would be of significance to polar bear management. If true, it suggests that hunter pressure on the polar bear population is primarily an inverse function of fox abundance, with the curve distorted to some degree by local environmental conditions. Price per bear pelt, which has been steadily rising over the years, appears not to be an important factor.

Birds

There are many species of birds on the Island, but few are of economic significance. The most important is the lesser snow goose (Chen hyperborea). These geese nest in great numbers at the mouth of the Egg River, about 40 miles north of Sachs Harbour. The arriving population varies considerably from year to year. Estimates have ranged from 15,000 to

120,000, but McEwen thought 50,000 to 60,000 the more likely norm (1958:126-27). The birds arrive over a three week period peaking in late May. Some stop to feed on the grassy flats southeast of Sachs Harbour, but almost all of the birds ultimately nest in a 10 or 12 square mile area in the mouth of the Egg River valley, at its confluence with the Big River. Hatching occurs around the end of June, and there is some dispersal to adjacent parts of the Island later in the summer. In late August the geese depart for the south.

At present Sachs Harbour hunters are permitted to take 30 geese per family, but only in the immediate vicinity of the settlement, since the area to the north is now a sanctuary. Egging is forbidden by law. The geese are prized as a welcome change in diet, and the quota is almost always fulfilled. The down is sometimes plucked and used for winter clothing.

All geese are taken in spring, sometimes right at the settlement, in other cases near by in association with spring fishing and sealing. The birds are in excellent condition at this time. In the autumn, they are thinner and by the time they pass over the settlement from the north, they are flying high and out of shotgun range. Other geese such as brants (Branta nigricans) are seldom taken as the bag limit applies to all types of geese, and the snow goose being larger and tastier is considered the most desirable.

Various species of eider ducks are found on the Island, but the annual per hunter take is not more than 15. They are not considered good eating, and goosedown is generally used in preference to eiderdown. Some are fed to the dogs or used for trap bait.

Willow ptarmigan (Lagopus lagopus) and rock ptarmigan (L. mutus) are year round residents of the Island. Manning, Hohn and Macpherson estimated the density of each species at three to five per square mile (1956:6). The average hunter probably obtains 50 or more each year (including some accidentally caught in traps), mainly in spring and fall. Although small, they are well liked roasted or in soup.

Snowy owls (Nyctea scandiaca) are occasionally abundant on Banks Island, as like foxes they are dependent on the lemming cycle. Their numbers have been estimated to vary from 2,000 to 20,000 over the cycle (Manning, Hohn, and Macpherson, 1956:106). After good breeding seasons they are ubiquitous, particularly in September and October, after which most fly south. In such years utilization is heavy. In the autumn of 1966 for example, many hunters obtained 30 to 50 owls. They are almost always shot, but in earlier years some individuals set short traplines for them. This involved very little effort as no covering or bait is necessary. The traps need only be placed on small knolls or other likely owl perches, as the birds will invariably alight on the traps and be caught. Owls are occasionally used as human food, but are mainly considered good dogfeed. In years of abundance they tend to be very fat in the autumn and half an owl per dog is considered sufficient, especially if the dogs are not used to them. In the dog pot, one and a half will feed a team of seven.

Fish

Fishing has been of minor importance on Banks Island. There is a small arctic char (*Salvelinus alpinus*) run in the Sachs River. The peak of the spring run is thought to occur when the ice goes out from the mouth of the river, some miles up from the settlement. To fish at this time would involve hauling nets and a skiff over the ice, and by the time the water is open in front of the settlement, the run is over. The fall run occurs around the third week of August, and several families set nets in the river about eight miles abov e the settlement.

In 1966, 14 nets were set in the river, for an average of 13 days, all within the space of 200 yards. Most were about 20 yards long with a mesh size of $3\frac{1}{2}$ or 4 inches. During the run, the equivalent of 193 units of effort[1] yielded an approximate gross weight of 900 pounds of fish (all char), giving 4.7 pounds per unit of effort. Of these about 25 per cent had been partially destroyed by sea ice. Of the remainder about two thirds was eaten at the time and one third put in ice cellars to be used later in the year.

In late May, most families visit the fish lakes and the women and children do a little jigging through the ice. Char and trout (Salvelinus namaycush) may be obtained in these lakes. Each family probably gets no more than 30 or 40 fish, which may average only a couple of pounds each, although a few larger ones are taken. Many nearby inland lakes contain char, trout and crooked backs (Coregonus clupeaformis) in varying combinations. Raddi Lake and Siksik Lake were frequently fished before 1948, both with jigging hooks and nets. Presently some people fish in Survey and Robert Lakes (part of the Kellett system) in the autumn. Trout of up to 30 pounds have been taken in these lakes, but two or three pounds is the more normal weight. Winter fishing is most uncommon. A

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[1]One gill net 50 yards by 6 feet set for 12 hours. This measure was used during the area economic survey program conducted by the Industrial Division, Department of Indian Affairs and Northern Development, on the recommendation of the Fisheries Research Board of Canada (Arctic Unit).

few fish of the various saltwater species are occasionally taken in the harbour in front of the Settlement.

Arctic hare

The Arctic hare (Lepus arcticus) is of minor economic significance. The animal is said to be abundant in late winter in the Masik Valley and in the Kellett Valley just below Survey Lake. V ery occasionally special trips are made to obtain hares if food is short; in 1965 one man got 60 in the Masik Valley. They are used primarily as food for dogs or humans. The fur is used locally for children's parka trim, and pelts are sometimes sent to relatives on the mainland. That food value exceeds fur value is evidenced by the fact that hares are sometimes fed to the dogs unskinned. Some men may shoot two or three dozen in a year, others very few. Hares are sometimes caught accidentally in traps in the winter. Probably no more than 200 are taken per annum on the Island.

Muskoxen

Of all the creatures of Banks Island only one, the muskox, has experienced drastic over exploitation during the century since man reoccupied the Island. Muskoxen were apparently common in the 1850s, according to the accounts of M'Clure and Collinson. Stefansson, despite his extensive travels saw none, and concluded that late nineteenth century exploitation by the Copper Eskimos had led to their extinction, although he thought that a few might still exist in the seldom visited southern part of the Island. A permanent close season was declared on muskoxen throughout the Northwest Territories in 1917, and still remains in force. No sightings of muskoxen were recorded in the literature between 1911 and 1949 (see Harington, 1963), although one former resident recalls that a muskoxen was seen by hunters near Lennie Harbour in the early 1940s (personal communication, C. Gruben, Tuktoyaktuk, 24 July, 1967). There have however, been many sightings in recent years, and there is no doubt that the population has rapidly increased. Macpherson estimated there to be about 100 muskoxen on the Island in 1959 (1960: 9), and Harington estimated 150 in 1963 (1963: 4). An incomplete aerial census of the Island conducted by the Game Management Service of the Northwest Territories in April 1967 counted over 350 animals. Muskoxen appear to be concentrated in the northern highlands, although there have been several sightings in the Masik and Kellett River areas, and in recent years a muskoxen has wandered into the village of Sachs Harbour every summer. They are least common in the western lowlands, and it is probable that muskoxen and caribou utilize separate habitats, at least at certain times of the year (viz. Tener, 1965:48). The possibility of opening a very limited season or quota on muskoxen for Eskimos and/or sport hunting in the Arctic Islands has been discussed by the Territorial Council and the northern press in recent years. The muskox may therefore become a significant resource to the Bankslanders in the future. Sport hunting is the more likely prospect on the Island, since the animals are most abundant at the north end, where it would be uneconomic if not impossible for Eskimos to go hunting for domestic purposes.

Marine Mammals

Two types of whales are common in the waters off southwestern Banks Island: the white or beluga (*Delphinapterus leucas*) and the bowhead (*Balaena mysticetus*). The former is a small whale which travels in schools. Although many of the Bankslanders have both the knowledge and equipment to hunt belugas, none do so. They state that the hunting conditions are not as suitable as in the shallow waters off the Mackenzie Delta, where the mainlanders hunt. In particular, the time and place of beluga occurrence is not at all predictable, so that seal hunting is a much more reliable and rewarding pursuit.

Observations of bowhead whales have been increasingly frequent in recent years. They have been protected from commercial hunting on an international basis since 1912, and today there are no Canadian Eskimos familiar with bowhead whaling techniques. The potential yield of meat and muktuk is tremendous, since the whales weigh 40 or 50 tons. Unsuccessful attempts were made to initiate whaling at Sachs Harbour in the 1950s, and some equipment was obtained. Local break-up patterns are not conducive to successful hunting, spring sealing is not compatible with whaling, and federal and international regulations prohibit trading and trafficking in whale products, and discourage their use for dog feed. Accordingly bowheads are not a resource to the Bankslanders (although interest is expressed in the chase itself) nor is it likely they will become one. A full discussion of the problem of whale hunting is given by Usher (1966:71-73).

Walrus are an infrequent stray in Western Arctic waters. Usually one is taken every two years or so, and of course they provide a large amount of dog feed on such occasions.

Other animals

There are other occasional exotic visitors to the Island or its waters, such as grizzly bears, wolverines, narwhals and hooded seals, but these are never taken or used for food or fur. Mention must be made however, of the wolf and the fox as dog feed sources. The former is rarely obtained and its flesh is even more rarely used.[1] The latter is an important source of dogfeed in years of abundance. Where smaller, thinner foxes are used, one per dog is normal, and then a fat supplement may be required. Fat foxes (some carcases may be sheathed in a half inch or more of subcutaneous fat) are very rich and half a carcase is quite adequate for a dog. A man who traps 500 foxes has also obtained nearly one-third of his annual dog feed requirements, although in fact a good percentage of carcases are not used, especially if they are very lean. Edible yield is given in Appendix E.

Country food production

Total annual food production is given in Table 6.8. All data presented in this section are calculated on the basis of a hypothetical "typical" trapper, based on recent production trends previously noted, and edible yields as given in Appendix E. By weight, about three quarters of the food produced is used for the dogs. Figures 6.10 and 6.11 show the sources of dogfeed and human food on a monthly basis, while gross production of dogfeed and human food is compared by month is Figure 6.12. The significance of the two staples,

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[1] Although the pelt is prized for the making of womens' parka ruffs.

TABLE 6.8

Typical annual production and use of animal foods by an average Banks Island trapper

Animal	Number obtained	Weight utilized for dog feed (lbs.)	Weight utilized by humans (lbs.)	Total weight of food produced (lbs.)
Seal	80	3638	60	3698
Caribou	15	30	1170	1200
Bear	1.5	361	40	401
Goose	30	0	105	105
Duck	15	20	19	39
Ptarmigan	60	0	54	54
Owl	20	75	4	80
Fish	55	0	107	107
Hare	15	42	40	82
Fox	200	460	0	460
Total		4627	1599	6226

Source: Table C.1

seal and caribou, is evident. The former amounts to 79 per cent of locally produced dog feed and the latter 73 per cent of human food. However it may also be noted that certain other sources have pronounced seasonal importance. For example, birds and fish are produced in much greater quantity than caribou in the spring, and seal, fish and bear are important in summer. Foxes and bears provide a significant addition to the dogs' diet during the winter, with birds supplementing in autumn and hares in spring. In terms of gross production, the summer months are by far the most important for dogfeed. The bulk of human food is produced

Figure 6.10

TYPICAL PRODUCTION OF DOG FEED BY AN AVERAGE BANKS ISLAND TRAPPER, BY SOURCE AND MONTH

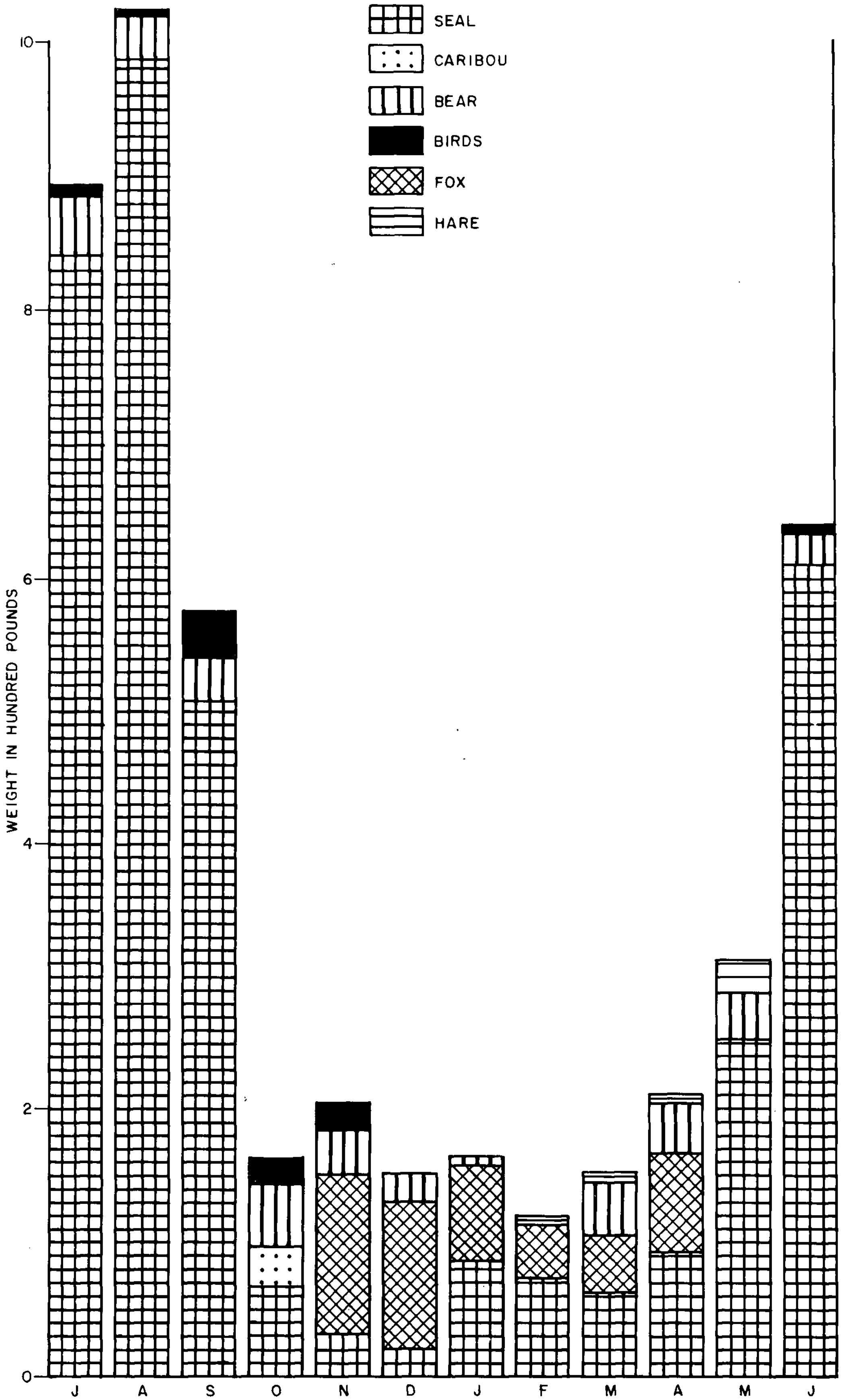


Figure 6.11

TYPICAL PRODUCTION OF HUMAN FOOD BY AN AVERAGE BANKS ISLAND TRAPPER, BY SOURCE AND MONTH

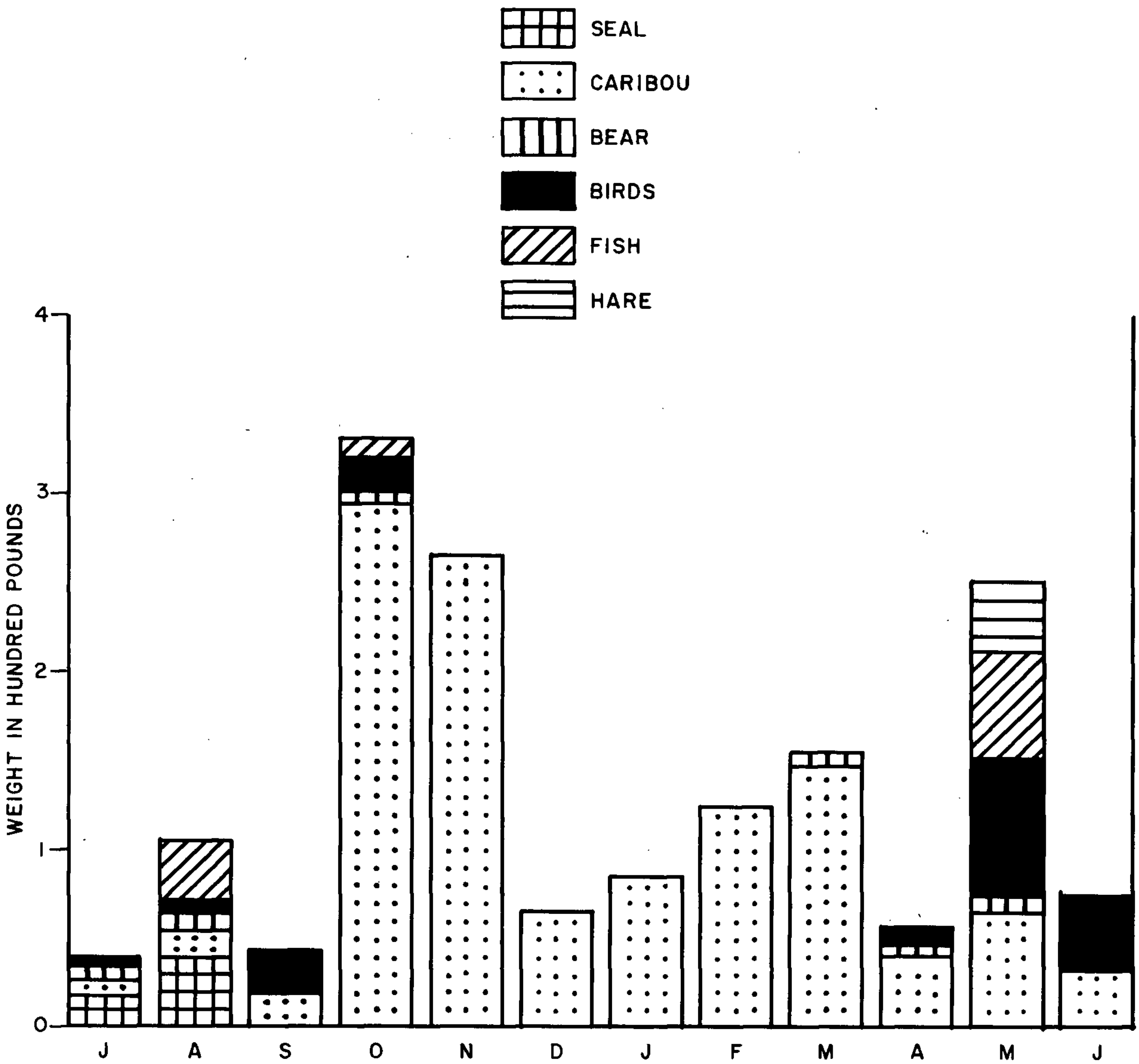
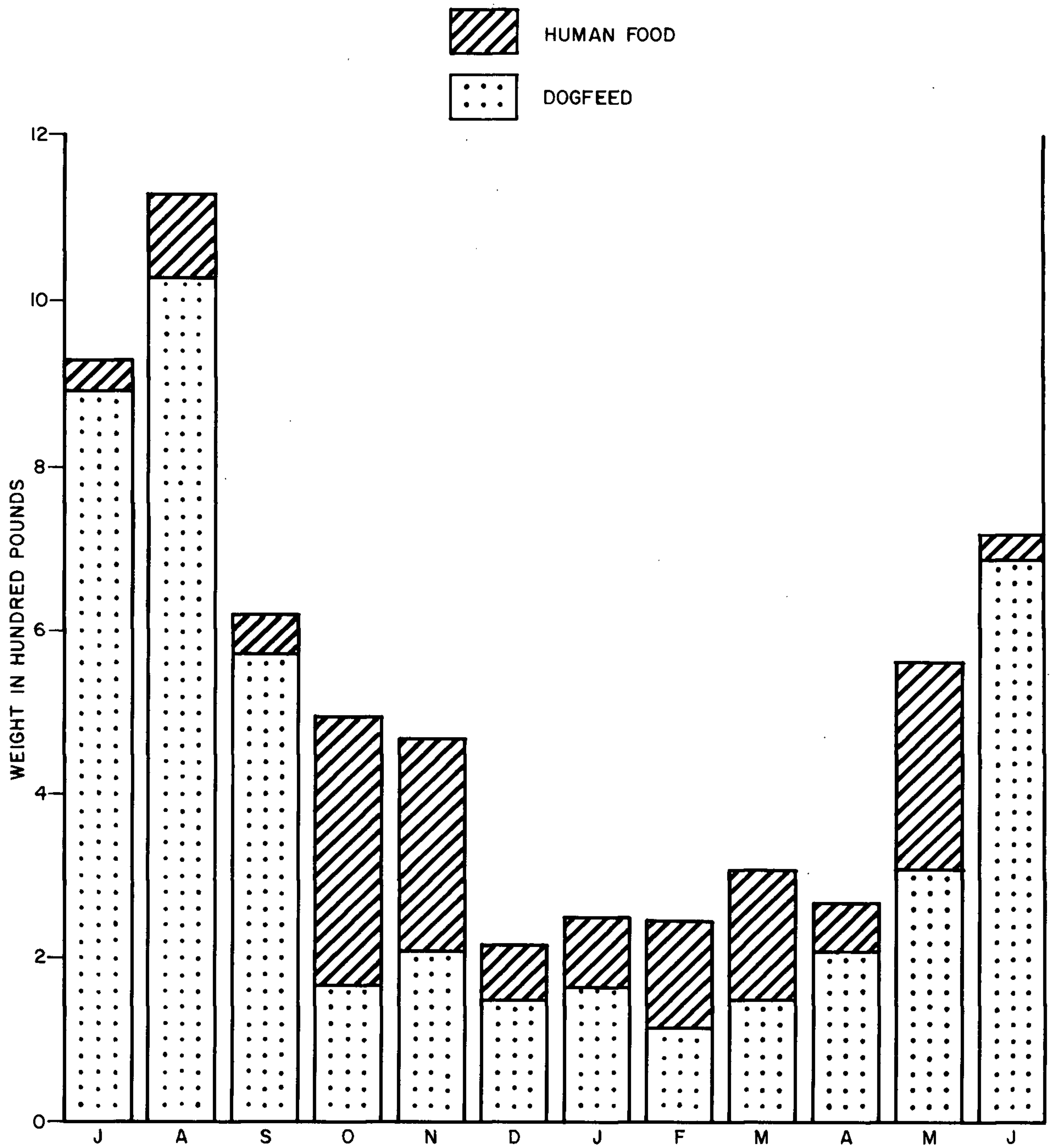


Figure 6.12

TYPICAL PRODUCTION AND USE OF ANIMAL FOODS BY MONTH, BY AN AVERAGE BANKS ISLAND TRAPPER



in October, November and May, with the remainder of the winter months being slightly more important than the summer months. As most meat is used for dogs, total production still exhibits a pronounced peak in the summer season (Figure 6.12). The data refer to the actual production of food; through the medium of food storage techniques, seasonal diet patterns are evened out and fluctuations damped. The use of imported dogfeed in winter has already been noted. Fox, bear and other meats obtained for the dogs tend to be viewed as a bonus, so that rather than being added to the total meat supply to be used in conjunction with cornmeal, they are fed raw to the dogs in order to obviate cooking and reduce dependence on cornmeal. Thus the true significance of the high proportion of other dogfeed produced in winter should not be overestimated in terms of feeding nights. Five pounds of seal meat will be cooked in the dog pot and suffice for a whole team. Five pounds of bear meat or fox meat on the other hand will be fed raw and serve only two dogs.

In the case of the human diet, cold storage facilities allow the meat component to be much more steady than the production graph would suggest. There are, however, periods of relative shortage which tend to occur in the late summer, late winter and to a lesser extent after Christmas. Dependence on particular foods at any given time is not quite as extreme as depicted on the graph, again due to storage. Yet the majority of tables are set with geese in the spring, fish in the late summer, and caribou all through the winter.

The small amount of seal annually assigned to human use consists, roughly in equal proportions, of the tender and flavourful meat of young seals, and of seal oil rendered for consumption chiefly as a dip for dried meat. The caribou meat used for dogs is that of the occasional rutting bull killed.

The annual cycle: Time expenditure and productivity

The details of the annual cycle of life and particularly of economic activity at Sachs Harbour have been described in this and the previous chapter. It seems that no general discussion of Northern peoples, whether it be in the geographic or ethnographic literature, is complete without such a description. There is no doubt that knowledge of the annual cycle furthers our understanding of how a people adapts to its environment through the media of its culture and history, and also of the significance and role of this cycle in the development of institutions, interactions and values within the group.

It is possible, however, to go beyond verbal description, and to introduce some considerations with regard to the annual cycle which have so far received insufficient treatment in the analysis of hunting and trapping economies.

There are first of all other time scales which may be important to consider. Economies based on fur bearing animals are generally cyclic to a greater or lesser degree. There are good and bad years in all such economies, due either to distinctly cyclical occurrences such as the nine or ten year cycle of snowshoe rabbits in the boreal forest, or events of indefinite periodicity such as high or low water levels, severe winters, freezing rain, etc., all of which affect the breeding success and survival of the economically important species. In the Arctic, the fox cycle is well known, and is of profound importance to the Bankslanders in particular. The annual cycle has certain variations which can be predicted depending upon the progression of the fox cycle. Another time scale to be considered is the life cycle of the producer: how many years he works, which are his most productive years, what long term economic goals he sets for himself, if any, and what role his children are expected to play as they come of age. These longer time cycles will be discussed in Chapter Seven.

Secondly, while it may be appropriate to describe a "typical" annual cycle or even some variations of it, it must also be realized that events or series of events in a cycle do not occur in a vacuum; they may affect events later in the same cycle or in subsequent cycles. The various events and trends which are described in any annual economic cycle are the tangible manifestations of individual and group decision making with regard to the allocation of time and effort. Every day people make decisions about what they will do and where they will go in response to their perceived needs and opportunities. In any situation where an individual must decide and act upon various options, he advances along a mazeway in which every new move at once opens new options and closes off others. Where outlays of time and capital are involved, the ideal response to new economic situations can seldom if ever be achieved; one cannot be completely flexible since there is a friction of movement to be overcome in reallocating scarce investment resources. Thus a decision to go fishing or to make a visit to Inuvik during the peak sealing season could affect a person's ability to go trapping in February. A successful trapping season might allow a person to spend a long holiday on the mainland the following year, or to make one less trapping trip the next season. The expenditure of considerable effort on toggling in autumn commits an individual to a particular area at an early date, and he may be delayed or prevented from moving his line if necessary. A decision to stay home and clean foxes for auction in January may prevent a trapping trip being made in March. Choosing to enlarge one's house instead of purchasing a new canoe might lower one's efficiency in sealing and trapping for three or four years. Every decision has consequences; these may be manifested dramatically in an opportunity seized or lost eight months or two years subsequently, or collectively they may result in a gradual trend toward the increase or elimination of certain activities. We have tried to show some of the intricacies of the annual cycle in this study.

Thirdly, it is possible to quantify certain aspects of the annual cycle and show graphically the relative importance of the seasons and activities according to various criteria. The percentage of man days spent each month on trapping, hunting, wage employment and visits to other communities is shown in Figure 6.13. The pattern of time expenditure on trapping during the season has already been discussed in Chapter Five. It should be noted that although everyone is out on the trapline for most of the first two weeks of April, the time expenditure for the whole month shows a drop from March, since the season ends on the 15th. The level of post season activity in May 1967 was rather atypical, as in most seasons it is possible to haul everything in before April 15th. On the other hand, the October time expenditure (toggling) was lower than usual.

Figure 6.13
MONTHLY EXPENDITURE OF TIME, BY PERCENT, SACHS HARBOUR, 1 JULY 1966-30 JUNE 1967

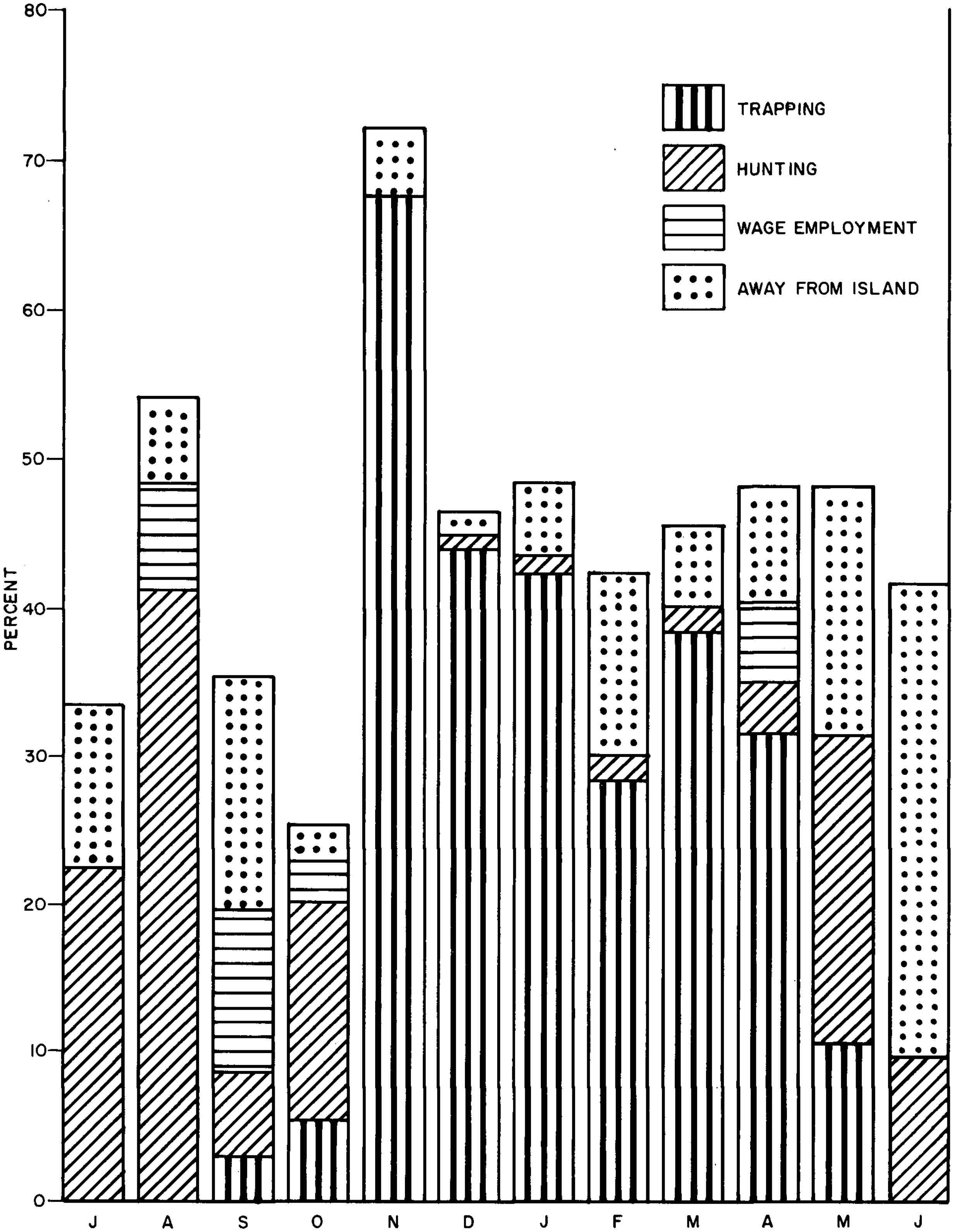


Figure 6.14
ALLOCATION OF MAN-DAYS, BANKS ISLAND
1 JULY 1966 - 30 JUNE 1967

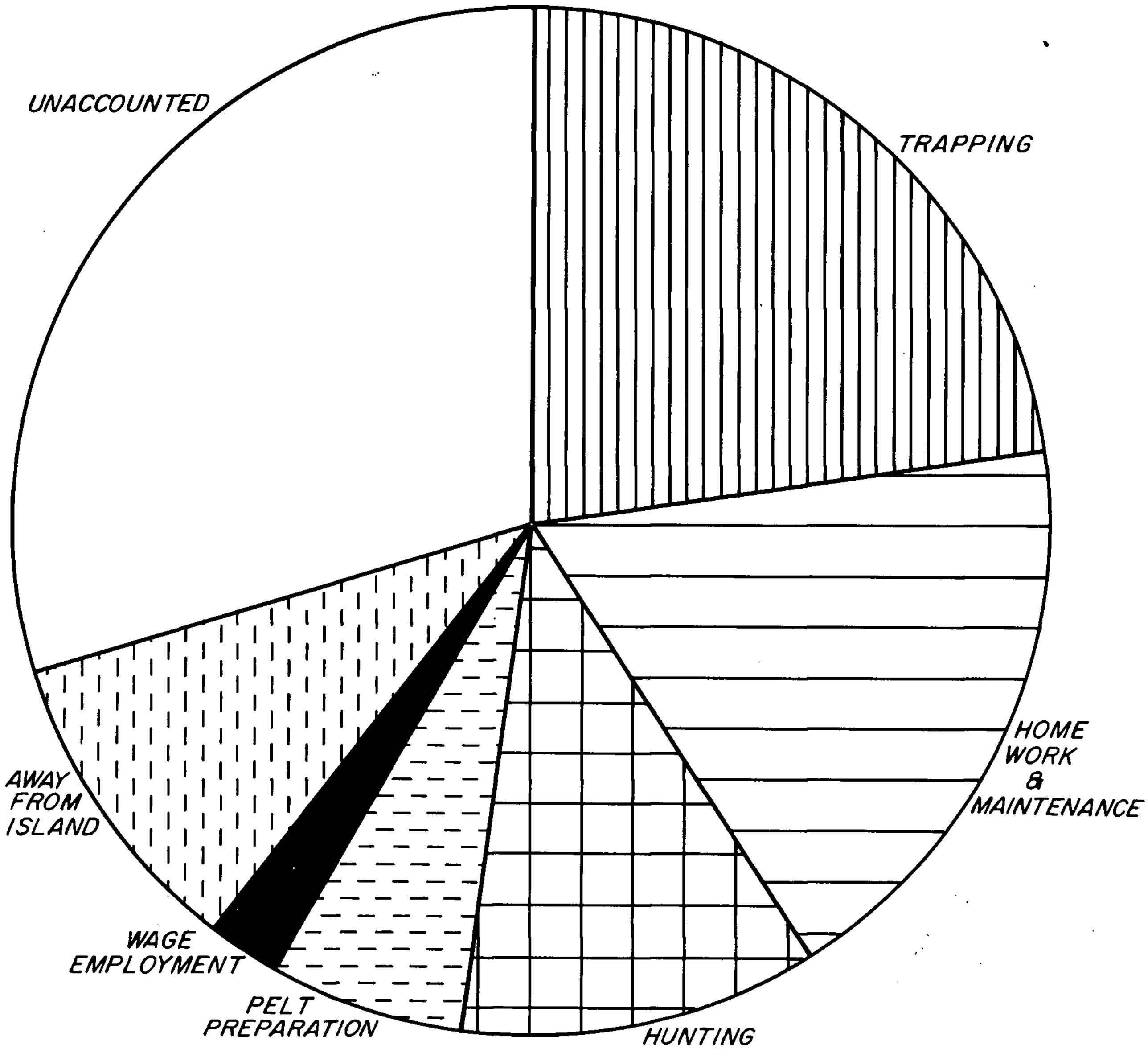
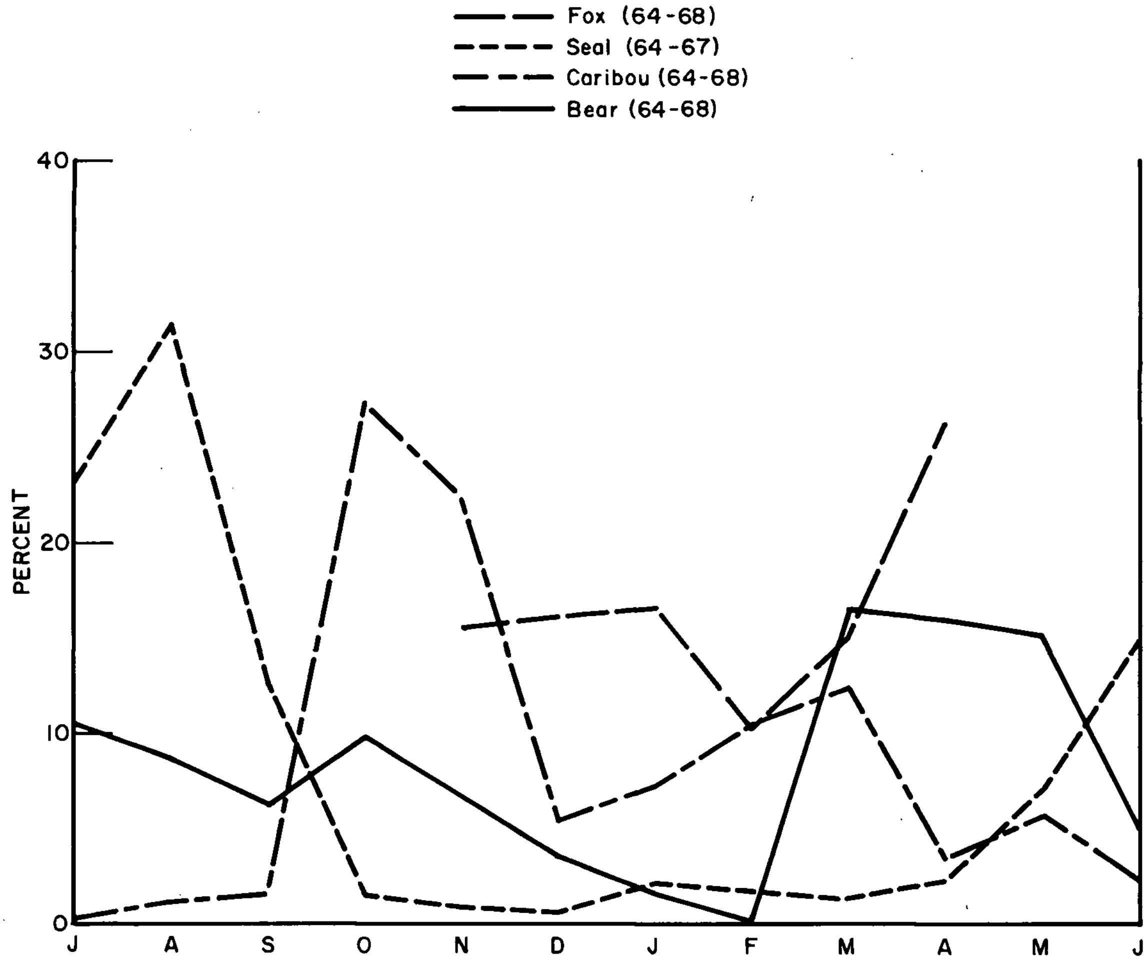


Figure 6.15

MEAN PERCENTAGE DISTRIBUTION OF THE HARVEST BY MONTH
FOX, SEAL, CARIBOU AND BEAR
BANKS ISLAND, 1964-68



The minimal importance of hunting in winter is evident. Normally the level of hunting activity for the months of September, October and June is somewhat greater. The timing of wage labour in the cycle is fairly typical, as will be described further in Chapter Seven., although the total amount may be slightly above normal. The time spent away from the Island is particularly interesting as it is clearly greatest in the relatively slack months of September, February and June.

Two other forms of endeavour are also important. One is the preparation of pelts and hides. Some of this work is done by women, but in 1966-67 it was estimated that the trappers themselves spent over six per cent of their time on pelt work. Even more time consuming are the host of activities involved in the preparation of gear and the maintenance of the home. Much of this work may only require an hour or two at a time, but when added up ; it amounts to almost one fifth of the total available man days. On a per household basis, for example, hauling water is estimated to require 24 days per year, and hauling fuel another six. Feeding dogs (not counting feeding nights on the trail) probably amounts to 15 days, and such chores as repairing and making travelling and trapping gear, handywork around the house, moving and storing goods at boat time, etc., accounts for at least another 35. If a man undertakes to build a new house or to make major repairs or additions to his present one, more time will be required. Figure 6.14 shows the division of time between these major activities for the year 1966-67. 33.9 per cent of the time is spent in productive activity (hunting and trapping), and 24.4 per cent on supporting activity (home work, maintenance, pelt preparation). Including wage labour, 60.4 per cent of the number of man days are spent working. This compares closely with the typical industrial or clerical situation in Canada where people are on the job 66 per cent of the year.[1] The trapper's hours are of course quite irregular, but the comparison of total time inputs shows that the amount of leisure time available to the Bankslanders is not unlike that of many working people in the other parts of the country.

There are minor variations in time allocation by specific activity from year to year. Hunting time is usually greater then the level shown in Figure 6.14, while trapping is about the same. Home work and maintenance probably varies only slightly, while pelt preparation is ordinarily less time consuming. The sum total of working activities is probably representative. Time spent away from the Island is generally less than was the

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[1]Based on a five day work week, with two weeks vacation and ten statutory holidays.

case in 1966-67.

Time spent on home maintenance and travel preparation is greatest in autumn, and that on pelt preparation is greatest in spring. The addition of these activities to Figure 6.13 would tend to smooth out total worktime from month to month.

The monthly distribution of the total catch of the chief economic species is also indicative of the annual cycle (Figure 6.15). This method of presentation shows a clear dominance of seals in summer, caribou in fall, foxes in winter and bears in spring. It serves to dramatize the seasonal nature of economic activity during the year, but overemphasizes the importance of species whose total harvest is relatively small (e.g. bears). Figure 6.12, on the other hand, which shows food production by weight over the year, emphasizes the importance of the summer months.

CHAPTER SEVEN

INVESTMENT, INCOME AND EXPENDITURE

In any modern hunting and trapping system, investment in capital equipment is high. Sachs Harbour men know that the return on their effort is maximized by using the best equipment and maintaining it well. This chapter will begin by illustrating the nature and magnitude of this investment, from which the production costs of fur and game can be derived. The next section will discuss the sources and magnitude of income. Particular attention will be given to the preparation and marketing of pelts, and to comparing income from cash and kind with production costs. Finally, the general expenditure pattern will be examined.

Capital goods and operating costs

There are two foci of investment in capital goods: items used directly in trapping and hunting, and those used for travelling and camping. The former consists of traps and firearms. A well equipped trapper owns 600 traps or more, and four firearms, including two high powered rifles with telescopic sights. Two important items of travelling and camping equipment are for summer use. These are the freight canoe and the outboard motor. Dogs do not ordinarily represent a capital cost, as a full quota is maintained by breeding, although people occasionally buy dogs from mainland people or from each other. During rabies epidemics on the Island, mainland dogs are in considerable demand. The cost of purchasing a good team of nine dogs on the open market would probably be $500. Toboggans are used in winter when the snow cover is good, but in the autumn and spring mud sleds are preferred. Other major items are harnesses, dog lines and chains, and a tent. In addition there are numerous small items, such as axes, snow knives, sled anchors, dogpots, ladles, gas cans, rope, primus stoves, kitchenware, lamps, and sleeping bags. Many of the above items are handmade, but the materials must still be imported. The chief sectors of operating costs are ammunition, corn meal for dogfeed, gasoline, outboard oil, and naptha gas for pressure lamps and stoves.

These goods are itemized in Table 7.1, which shows their replacement costs and depreciation rates. The depreciation rate is taken as the equivalent of the mean age of all items of a given type, based on the assumption that the trappers'

TABLE 7.1

Investment in capital goods, depreciation and operating costs per hunter, Banks Island

Capital Goods

Item	Replacement value	Expected life in years	Annual depreciation
Hunting and trapping equipment			
600 traps, size 11/2	$ 750.00	10.0	$ 75.00
.22 rifle (birds, small game)	70.00	3.5	20.00
.222 rifle (seals)	175.00	3.0	58.33
.243 or .30/06 rifle (big game)	175.00	6.0	29.17
12g. shotgun (birds)	135.00	8.5	15.88
2 telescopic sights (4 power)	130.00	10.0[a]	13.00
Subtotal	$1,435.00		$211.38
Travelling and camping equipment			
20' canoe	$ 600.00	6.0	$100.00
15 HP outboard[b]	500.00	3.5	142.86
toboggan (10' bottom)	50.00	2.5	20.00
mud sled (12')	50.00	3.5	14.29
harnesses	125.00	2.0	62.50
dogline and chains	50.00	10.0[a]	5.00
tent	80.00	2.0	40.00
other gear (see text)	200.00	4.0[a]	50.00
Subtotal	$1,655.00		$434.65
Total	$3,090.00		$646.03

Operating Costs

Item	Annual Expenditure
Ammunition (rounds: .22 – 500, .222 – 350, heavy guage – 150, shotgun – 125)	$135.00
Cornmeal (1100 lbs.)	220.00
Gasolene (150 gals.)	187.50
Outboard oil (25 qts.)	37.50
Naptha gas (50 gals.)	62.50
Total	$642.50
Total annual depreciation and operating costs	$1288.53

[a]Estimated value, where data biased or unavailable.

[b]In fact, there are very few 15 HP outboards in use. Most are in the 9.5-10 HP or 18-20 HP classes, and there is a gradual transition toward the latter. Mean rating of all engines in the settlement, however, is approximately 15 HP.

Source: field investigation.

capital stock as a whole is not aging or depreciating. Where data could not be obtained or are biased due to a recent trend towards certain items, an estimated value is used. The table is based on a census of capital goods taken in May 1967, and represents a refined and updated version of that presented previously by Usher (1966: 90).[1] This basic "outfit" costs $3,090, (not including dogs), and depreciates at a rate of 21 per cent per annum. Annual maintenance and operating costs are virtually equal and together amount to almost $1,290. Some trappers spend more than this. They may have more traps, more rifles, and a spare outboard, and they may purchase dogs from time to time. Costs and investment have increased in the last several years and will continue to do so. There is already a trend toward larger canoes and outboards, and more important, winter transport will gradually b ecome mechanized. Initial attempts to introduce snowmobiles on Banks Island, and the problems encountered have previously been described by Usher (1966: 89-94).

The importance of an adequate stock of capital equipment cannot be overemphasized. Each of the items listed in Table 7.1 is an essential tool of production. There is no more

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[1]Similarity in mean life of equipment between the two censuses confirms the validity of using these figures to calculate depreciation.

important investment a trapper can make. Trappers who have for what ever reason been unable to equip themselves adequately are bitterly aware of the cost (viz. Usher, 1966: 87-88).

Production costs

Detailed calculations of production costs, and the basis and method of deriving them, are given in Appendix F. Briefly, they are based on direct input costs (consisting of both operating and depreciation costs) plus the reallocations of dogteam maintenance costs[1] to each commodity. No attempt is made to ev aluate human labour and include this in production costs. The most important data are given in Table 7.2

Although there have been numerous studies of the hunting and trapping economies of the north, the costs of production of country food and pelts have rarely been adequately ascertained. Some have assigned values to country produce according to other criteria, as discussed below. Foote (1967b: 116f) and Haller (in Anders, 1967: 83-84) have derived the operating costs per seal for east Baffin Island, but had to estimate depreciation costs. The true cost of maintaining a dogteam

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[1] The average dogteam travels 1,620 miles per year, at a cost of $974.72, giving a per mile cost of $.60.

was not included in their calculations. Their data were not presented in a form comparable to that given here, however it may be inferred that costs per landed seal or per traded skin on east Baffin are not greatly different from those at Sachs Harbour. For example, operating costs per landed seal during the open water season in east Baffin varied from $3.42 to $5.65. If as at Sachs Harbour, depreciation costs are about equal to operating costs, the total figures would be about $7.00 to $11.00, which compare to $9.15 at Sachs Harbour.

Where there is great variation in output, despite relatively constant inputs, as in fox trapping, the cost per item given in Table 7.2 is a mean value only. Variation in cost per fox pelt with total output is shown in Figure 7.1

The essential features of the method outlined here have long been well known to economists and accountants. Yet this method has not hitherto been applied fully to the analysis of hunting and trapping economies, despite the fact that approximate data at least are not unduly difficult to obtain. It has wide applicability over time and place, particularly as the basic input-output matrix (Table F.3) allows the effect of changing costs or ecological dependence to be computed in simple and uniform fashion. Finally, it seems likely that the production costs given in Table 7.2 are indicative of those over much

TABLE 7.2

a.

Production costs of country foods and pelts, Banks Island

Commodity	Cost per animal	Cost per lb. edible food	Cost per[a] pelt
Fox	$ 4.34	$ .91[b]	$ 4.34
Seal	7.78	.17	9.15[c]
Caribou	9.70	.12	--
Bear	50.67	.19	50.67
Goose	.93	.27	--
Duck	.13	.05	--
Ptarmigan	.04	.05	--
Owl	1.00	.25	--
Fish	1.09	.58	--
Hare	.53	.10	.53

[a]This is a duplication of cost per lb. of edible food, not a separate cost. Either may be used depending on the primary use made of the animal.

[b]Based on direct input costs of $2.10 per fox.

[c]Based on number of saleable pelts (60) which is less than the total taken. It is assumed for other species that all pelts retrieved are saleable.

b.

	Total cost	Mean cost per lb.
Dogfeed[a]	$708.09	$ .17
Human food	256.09	.16

[a]Excludes foxes.

Source: Appendix F.

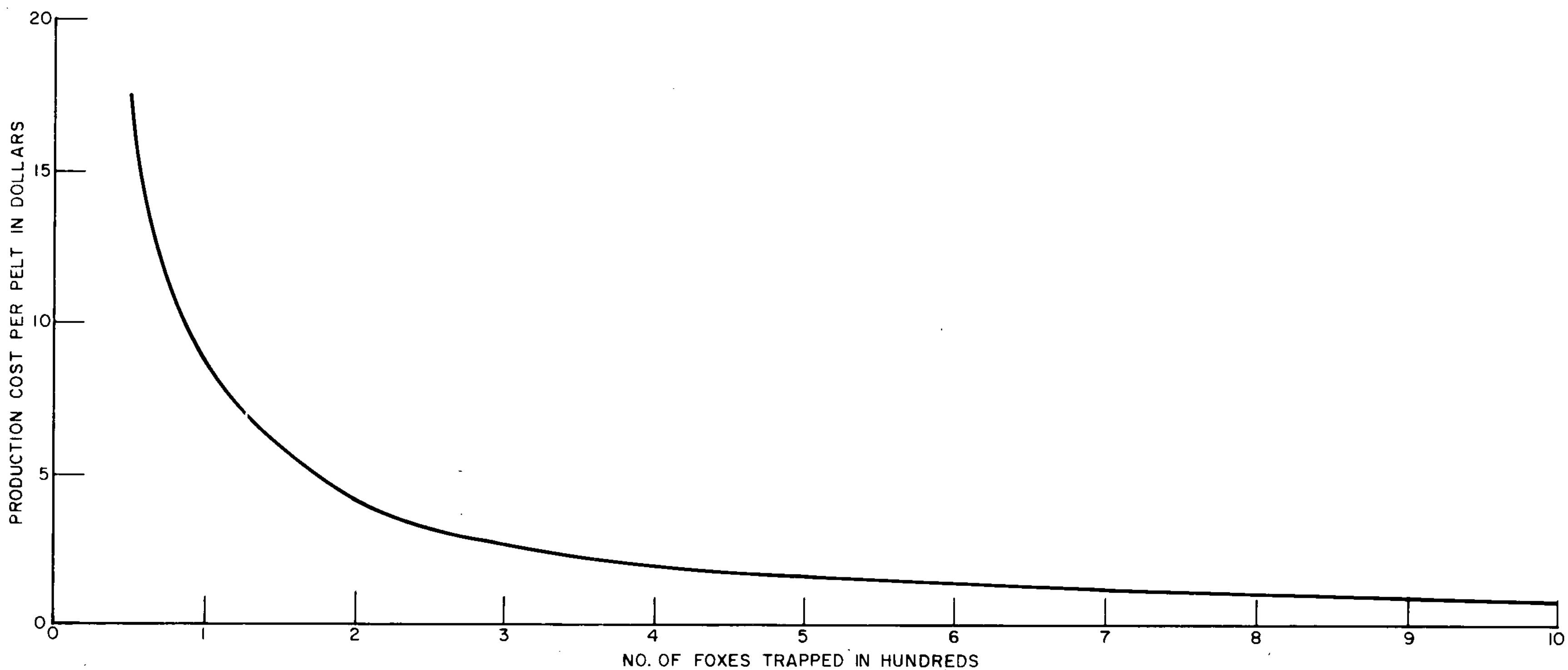
of the north. Variation in local ecology, hunting methods and allocation of time and investment will certainly alter the values, but the general order of magnitude will probably not differ greatly.

Sources of income

Two features of personal income at Sachs Harbour are remarkable. The first is that virtually all of it is derived from the sale of furs, the second is that it varies in the extreme from

Figure 7.1

VARIATION OF COST PER PELT WITH NUMBER OF FOXES TRAPPED



one year to another. Let us first examine the sources of income.

Cash income data for the four years 1963-67 are given in Table 7.3.[1] During this period, fully 95 per cent of the full time trappers' income was derived from the proceeds of trapping and hunting, while for the community as a whole the figure was 87 per cent.

The chief alternative source of income is wage labour. There are two full time positions open to native people at Sachs Harbour: special constable with the R.C.M.P., and (since 1965) maintenance work with the Department of Transport. There is also a limited amount of casual labour, available usually as bull cook or heavy equipment operator for the D.O.T. in summer, occasionally as guide to visiting investigators. Casual labour provides 1.3 per cent of full time trappers' income and is usually earned by only two or three people. The opening of permanent wage positions at the settlement has tended to recruit local trappers, although data for 1963-67 indicate that these wage positions do not provide a larger gross income in the long run (i.e. there is no opportunity cost for trapping).

Handicrafts account for less than one per cent of community income and is earned entirely by women. Several women are highly skilled, but demands on their time for household chores,

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[1]None of the income data in this section include the profit accruing to the owner of the village trading post.

TABLE 7.3

Sources of community income, Sachs Harbour, 1963-67

Source	1963-64		1964-65		1965-66		1966-67		4 year means	
a. Entire community										
	N=101(20)		N=92(19)		N=100(19)		N=101(21)		N=100(20)	
Fur	$84,000*	(88.8%)	$61,210	(84.0%)	$ 83,503	(78.5%)	$217,233	(91.6%)	$111,737	(87.3%)
Wages	4,465	(4.7%)	4,802	(6.5%)	12,000*	(11.3%)	14,000*	(5.9%)	8,817	(6.9%)
Handicrafts	1,100*	(1.2%)	784	(1.1%)	1,200*	(1.1%)	600*	(0.2%)	921	(0.7%)
Statutory payments	2,512	(2.6%)	2,919	(3.9%)	2,758	(2.6%)	2,556	(1.1%)	2,686	(2.1%)
Relief	2,565	(2.7%)	3,361	(4.5%)	6,845	(6.5%)	2,858	(1.2%)	3,907	(3.1%)
Total	$94,642	(100.0%)	$74,076	(100.0%)	$106,306	(100.0%)	$237,247	(100.0%)	$128,068	(100.0%)
Income per family	$ 4,732		$ 3,899		$ 5,595		$ 11,297		$ 6,484	
Income per capita	$ 937		$ 772		$ 1,063		$ 2,349		$ 1,287	
b. Full-time trappers only										
	N=92(19)		N=86(17)		N=75(16)		N=69(15)		N=81(17)	
Fur	$82,648	(95.0%)	$61,633	(91.8%)	$ 79,487	(91.8%)	$198,064	(97.4%)	$105,458	(95.0%)
Wages	865	(1.0%)	1,863	(2.8%)	1,000*	(1.2%)	2,000*	(1.0%)	1,432	(1.3%)
Handicrafts	1,000*	(1.2%)	684	(1.1%)	1,000*	(1.3%)	525*	(0.3%)	827	(0.8%)
Statutory payments	2,464	(2.8%)	2,565	(3.8%)	2,298	(2.6%)	2,142	(1.0%)	2,367	(2.1%)
Relief	0	(0.0%)	360	(0.5%)	2,697	(3.1%)	564	(0.3%)	905	(0.8%)
Total	$86,977	(100.0%)	$67,105	(100.0%)	$ 86,582	(100.0%)	$203,295	(100.0%)	$110,939	(100.0%)
Income per trapper	$ 4,578		$ 3,947		$ 5,411		$ 13,553		$ 6,626	
Income per capita	$ 945		$ 780		$ 1,154		$ 2,946		$ 1,379	

*estimated
N=number of people (number of families or trappers)
Source: Traders Fur Record Books and Fur Export Tax Returns, Sachs Harbour, Inuvik and Fort Smith, N.W.T.; Dept. of Indian Affairs records, Inuvik, N.W.T.; field investigations.

child rearing, mending and making clothing and preparing pelts is so great that they have little time to earn money in this fashion.

Transfer payments (unearned income) are very low at Sachs Harbour. They comprise 5.3 per cent of community income and a mere 3.0 per cent of full time trappers' income. This was slightly lower than for Canada as a whole, where 6.2 per cent of personal income was derived from transfer payments during those years.[1] Statutory payments consist almost entirely of family allowance benefits. Direct relief has always been minimal at Sachs Harbour. Most payments are made to widowed heads of families. Payments to able bodied trappers have provided less than one per cent of their income over the last four years, again closely comparable to the national average (direct relief accounted for 0.4 per cent of personal income in Canada during the same four years). Only in 1965 has relief ever risen above one per cent of income, for reasons described below, and in some years trappers required no relief at all. This is in startling contrast to other northern

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[1] Calculated on the basis of transfer payments of a welfare type made directly to individuals by all levels of Government. These include Family Allowance, Old Age and Disability Pensions, Veterans Pensions and Allowances, Unemployment Insurance Benefits, Workmen's Compensation and Direct Relief. Source: Canada, D.B.S., National Accounts, Income and Expenditure, 1967.

TABLE 7.4

Fur income and transfer payments as proportions of total cash income for selected communities or regions of the Canadian north

Community or region	Fur income as per cent of total	Transfer payments as per cent of total	Time period	Source
Sachs Harbour	87	5	1963-67	Table 7.3
Coral Harbour	69	10	1958-61	Brack, 1962:51
Lake Harbour	29	18	1966-67	Higgins, 1968:136
East Baffin	24	26	1965-66	Anders, 1967:181
Coppermine-Holman	21	36	1962-63	Usher, 1965:204, 228
Aklavik	14	25	1965	Bissett, 1967:135
Keewatin Mainland	13	36	1961-62	Brack & McIntosh, 1963
Cape Dorset	12	13	1966-67	Higgins, 1968: 115
Tuktoyaktuk	8	17	1961-62	Abrahamson, 1963:53

settlements (Table 7.4). In most other Arctic communities direct relief is high, and other sources of cash sufficiently low that statutory payments are an important component of total income.

Income from furs

The number and value of the chief pelts and skins produced are given in Table 7.5. From 1963 to 1967, about 78 per cent of fur income was derived from fox pelts, 19 per cent from seal skins, and three per cent from bear skins. The high proportion of income from seal skins is atypical, and is due to the unprecedented seal price boom of 1963-65. This boom came at a fortunate time for the Bankslanders, towards the end of a series of lean fox years. Indeed in 1964-65 more income was

TABLE 7.5

Income from pelts and skins, by type, Banks Island, 1963-67

	Fox			Bear			Seal			
Years	Pelts	Value	Per cent of total income	Pelts	Value	Per cent of total income	Pelts	Value	Per cent of total income	Total
1963-64	1,982	$ 47,578	57.6	39	$ 5,850	7.1	974	$29,220	35.3	$ 82,648
1964-65	1,498	21,728	35.3	27	3,700	6.0	2,043	36,205	58.7	61,633
1965-66	2,932	70,046	88.0	8	1,200	1.5	919	8,421	10.5	79,487
1966-67	8,447	189,567	95.7	15	2,275	1.1	672	6,222	3.1	198,064
Total	14,859	$328,919	77.9	89	$13,025	3.1	4,608	$80,068	18.9	$421,832

Source: Traders Fur Record Book, Fur Export Tax Returns, Sachs Harbour, Inuvik and Fort Smith, N.W.T.; field investigations.

realized from seals than from foxes, for the first and only time in the history of the Island. The normal longterm pattern is at least 85 to 90 per cent of fur income accounted for by foxes, with seals and bears making up the total in approximately equal proportions. In earlier years, seal skins could not be sold at all, but a steady, modest market should continue to exist for the foreseeable future. Bear skins have always been a minor source of income, and although prices should continue to rise, the quota system will probably ensure that gross income from this source will not increase significantly. There is no doubt that the Bankslanders' near-complete dependence on fox furs will continue.

Figure 3.12 indicates the extreme cyclic pattern of fox fur income. Since this source is so dominant, the relative stability of the other sources of cash can only dampen the effect of these fluctuations very slightly. Income is quite likely to vary by a factor of four over a cycle. The implications of this for expenditure and finance will be discussed below.

Finally, the total proceeds of trapping are by no means equally shared. The highest individual income each year is well above the mean (Table A.6) and Table 7.6 shows the range in incomes for the last three years.

TABLE 7.6

Distribution of fur income, Sachs Harbour, 1964-67

Income bracket ($)	Number of Earners 1964-65	1965-66	1966-67
0– 1,999	1	3	
2,000– 3,999	9	4	
4,000– 5,999	6	5	2
6,000– 7,999	1	2	1
8,000– 9,999		1	2
10,000–14,999		1	5
15,000 & over			5

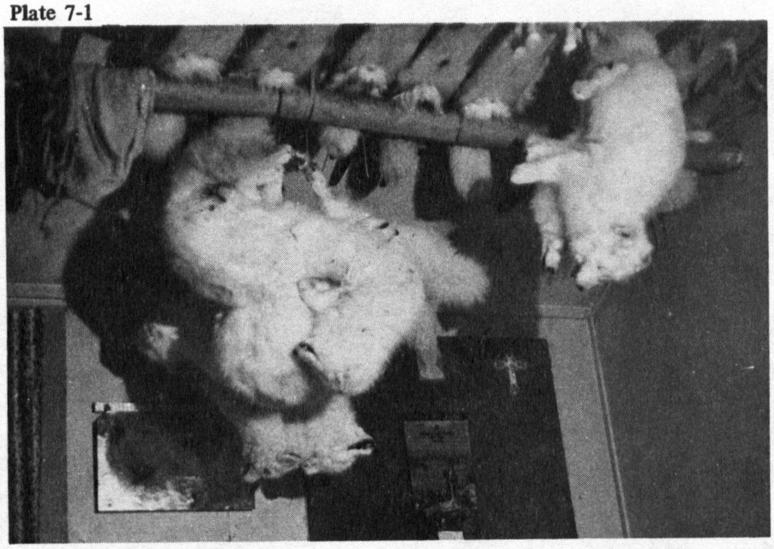
Source: Traders Fur Record Book, Fur Export Tax Returns, Sachs Harbour, Inuvik and Fort Smith; field investigations.

The preparation of pelts and skins

Between bringing an animal home and sending its pelt to market, there are certain necessary processes involved which incur costs to the producer and may also reduce slightly the total number of items he has for sale. Let us examine these steps in detail for the white fox. Plates 7.1 to 7.8 illustrate much of the process.

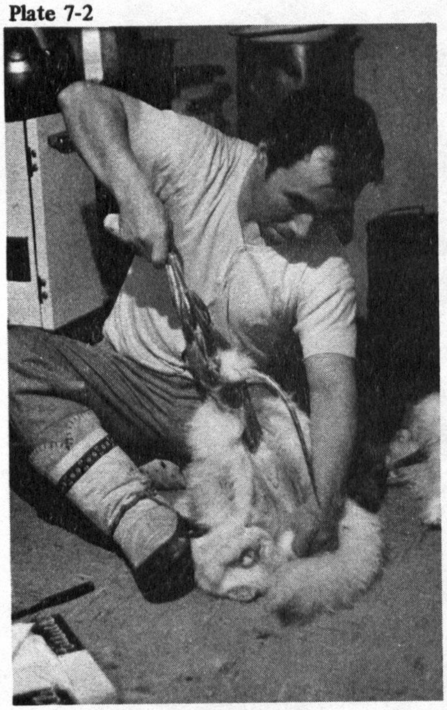
If the animal was not skinned on the trail the frozen carcase must be brought into the house and thawed (some are left until spring and thawed in the open air). The animal is then skinned. Slits are made along the hind legs to the anus, and the bone is pulled out of the tail. The pelt can then be pulled off the carcase towards the head, like a glove. An experienced man can do this in five minutes or less on the average without exertion. If the subcutaneous fat is heavy, the pelt must be fleshed. This

Plate 7-1



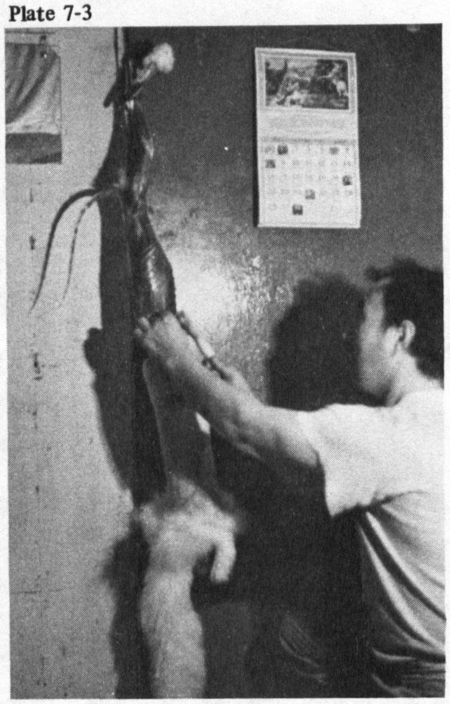
Thawing foxes indoors, December 1966.

Plate 7-2



Skinning a fox, December 1966.

Plate 7-3

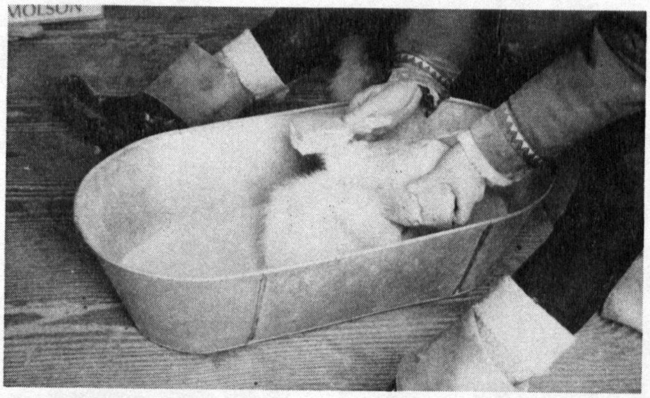


Skinning a fox, December 1966.

Plate 7-4

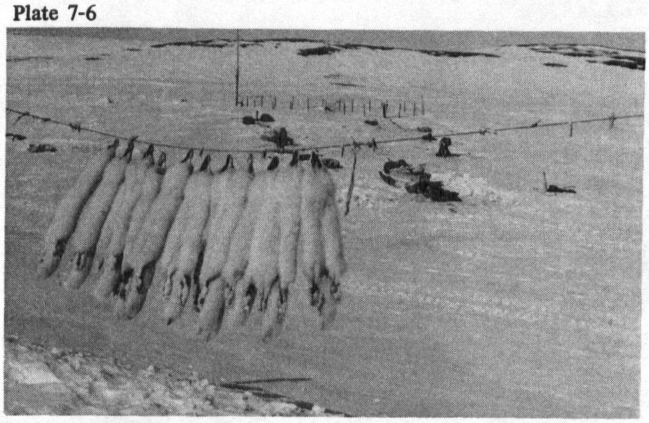
Stretching fox pelts, May 1965. The pelts are pulled over stretchers and left to dry.

Plate 7-5



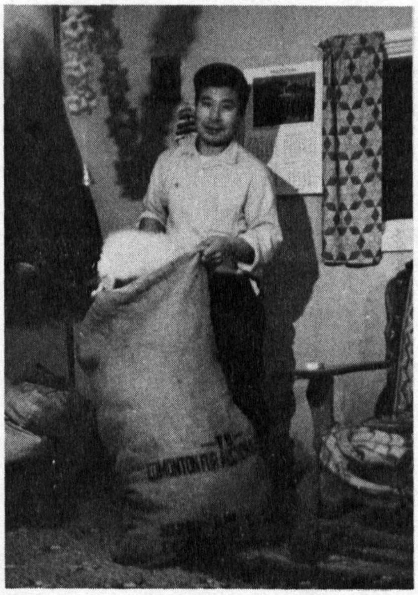
Flouring foxes, May 1965. A mixture of cornmeal and flour is rubbed in and then brushed out.

Plate 7-6



Airing fox pelts on a clothesline, May 1965.

Plate 7-7



Baling fox pelts, December 1966. Pelts are usually shipped to auction in bales of 50.

Plate 7-8

Shipping furs by air, January 1967. About $20,000 worth of fur is contained in the bales in the centre of the photo. These will reach southern auction houses within the week.

is usually done by the women and can take up to 20 minutes, although some pelts will not require any fleshing at all. A few pelts at this stage may have to be repaired or discarded. They may be found to be rubbed, unprime, wooly or otherwise of poor quality, or they may have bald patches or damaged areas which were indiscernable when the carcase was still frozen, or the hide may have been cut during skinning or fleshing. Most pelts can be repaired. Cuts are mended with a needle and thread, or patched using bits of otherwise unsaleable pelts. Unprime or wooly pelts are not wasted but used in handicraft work. Unsaleable pelts do not ordinarily exceed one or two per cent of the retrieved catch, although the general quality of the crop can vary from year to year.[1]

Pelts are then stretched on a frame, skin out, and dried - inside the house in winter, outside in spring. Stretching takes a minute or two, while drying takes at least a half day under good conditions. After removal from the stretcher, foxes are "floured", which consists of rubbing a mixture of cornmeal and flour into the fur and brushing it out. This serves to clean blood, fat and dirt stains, and brightens

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[1] This can depend on weather and snow conditions; for example foxes are often rubbed (i.e. close cropped with no guard hairs) on their shoulders and flanks from burrowing in the snow in years when it is coarse and icy, or has a crust.

and fluffs out the fur. Reasonably clean pelts can be floured in five or ten minutes but dirty ones may take longer. In the latter case the addition of gasoline to the cornmeal and flour helps. Finally the pelts are hung from a clothes line, fur side out, to air out in the wind. An hour's labour per pelt is not an unusual requirement for proper processing. A few individuals choose to hire out this work, usually to women in the settlement, but occasionally to Tuk or Delta women as well. The usual charge is $0.50 per fox for each of the four main processes - skinning, fleshing, stretching, and flouring, - or a total of $2.00.

The pelts are now ready for sale, although if they are to be sold through southern auction houses, they must be baled in burlap sacks (usually fifty pelts per sack), sealed and tagged for export, and shipped by air.

Seal skins also require a considerable amount of work. The fleshing process is particularly laborious and the skins should be washed before stretching, although there is no process akin to flouring after stretching. $2.00 to $2.50 is commonly paid for the entire process if it is hired out. Bear skins can take three hours to flesh and careful stretching is necessary to ensure the proper shape.

Sachs Harbour trappers have a reputation for carefully and thoroughly prepared pelts. This has helped to earn them above average prices for their furs. Even if a trapper pays to have his furs prepared, the increased return more than covers the cost.

The marketing of pelts and skins

Unlike many other producers of raw furs, the Bankslanders are in the enviable position of having several outlets. There is a local trading post, two stores in Inuvik (although almost all of the Banksland trade goes to one of these), and three auction houses in the south with whom the trappers conduct business.

The Bankslanders trade about one third of their furs by value within the N.W.T., and export the rest (Table 7.7). Every trapper splits his sales at least two ways, and some sell to as many as five different traders or agents. Yet they are by no means operating in a perfect market. Most trappers and particularly the better ones, consider Edmonton their prime market. They have long dealt with an agent of the major auction house in that city. Not only do they send their furs to this agent, but they also order their outfits at Edmonton retail or even wholesale prices through him, and he also handles the shipping of these goods. This arrangement is of great advantage; the trappers obtain goods at lower prices than in the north, and they usually realize a greater net return on their furs, despite a six per cent commission on sales, a small

TABLE 7.7

Destination of furs taken on Banks Island, 1964-67 (by percentage of total value)

Destination	1964-65	1965-66	1966-67	Three year mean
Sachs Harbour	28.1	21.8	11.6	17.0
Inuvik	14.0	11.4	17.2	15.3
Edmonton	45.4	55.3	56.1	53.9
Montreal	3.4	9.1	11.0	9.2
Vancouver	6.2	1.4	1.9	2.6
Other[a]	2.9	1.0	2.2	2.0

[a]Refers to local sales to private individuals, sales in Holman Island or Tuktoyaktuk, and exports to other auction houses.

Source: Traders Fur Record Book, Fur Export Tax Returns, Sachs Harbour, Inuvik and Fort Smith, N.W.T.

TABLE 7.8

Cost of furs and skins f.o.b. selected locations

	Fox	Seal	Bear
Sachs Harbour	$4.34	$ 9.15	$50.67
Inuvik[a]	4.52	9.93	55.17
Edmonton[b]	5.50	11.26	68.00

[a]Includes shipping costs

[b]Includes shipping costs, export tax and six per cent sales commission

Source: Table 7.2, field investigations.

drumming and cleaning charge, the fur export tax[1] and the air freight (see Table 7.8). The trappers send their best furs to auction, and trade the poorer ones locally.[2]

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[1]$0.50 per fox and $5.00 per bear, no tax on seals. These taxes were abolished on July 1, 1967, by decision of the N.W.T. Council.

[2]During the years 1964-67 the fraction of pelts directly exported was just over one half by volume but over two thirds by value. Some of this differential was admittedly accounted for by the higher prices offered outside.

Every trapper trades at least some of his fur in the settlement. Those who for some reason cannot get credit in Edmonton (and this is rare) are forced to trade all their fur locally. Yet even the most prosperous like to keep some fur to trade at the local store for immediate needs, shortages if personal outfits run low or arrive late, or for special trapping and travelling gear which only the local trader carries. A few trappers also prefer to conduct a significant part of their trade with one of the Inuvik store keepers. There they can obtain high credit ratings against which they can obtain large amounts of cash on short notice when in Inuvik. This facilitates transactions for gear or other items with private individuals in the Delta, as well as the financing of gambling debts, drinking parties, or other locally incurred obligations.

The Bankslanders deal with three major auction houses and occasionally one or two others. When possible, they try to send their furs where they will bring the best price, although this can never be certain before the auction takes place. No trapper can afford to be completely flexible, however. Selling furs is not a simple cash transaction in an open market since credit, and all the commitments that implies, is also involved. To the degree that the trapper wishes to maintain a high credit rating, he must be a reasonably regular and reliable client of one particular trader or auction house. Since this credit rating is essential to his operation, he must sacrifice some freedom in the market place in order to guarantee his security. Accordingly, most furs are sent to Edmonton, where the trappers can obtain the best credit terms and services.

The other auction houses however, provide certain specific advantages. Credit for furs shipped to the Hudson's Bay Company auctions in Montreal can be transferred directly to the Tuktoyaktuk store, where some trappers prefer to purchase certain major items such as canoes and outboards. The highest prices for bear skins are usually realized through a Vancouver auction house, and most Sachs Harbour bears are ultimately marketed there. Once furs have been consigned the trappers can only await their statements and hope for the best, although on occasion, if they receive reports of major price differentials between auction houses they will withold the unsold balance and request its transfer to the more favourable location.

Private transactions are made with transient white residents or visitors for a small number of pelts as souvenirs or garments. This usually amounts to no more than one or two per cent of the turnover in fox pelts, and perhaps slightly more of the seal skins. Bear skins are more likely to be sold in this fashion, but the majority are marketed through traders and auction houses.

Greater returns are realized on exports, but there is inevitably some delay. If a trapper sells locally, he can realize income on a piece of fur as fast as he can skin and stretch it. If he sends his fur to an auction house, he may wait several weeks and even months before they are sold, although if he is a big and reliable customer he can receive advances[1] on his shipments. Most trappers in Northern Canada have not been able to afford the luxury of delaying their realization of income by sending their furs out.[2]

Figure 7.2 indicates the time-lag between the harvesting of furs, realization of income from local sales, and from exports. In fact unless credit is advanced, income is not necessarily realized in the same month that furs are exported although the bulk are sent out in time for the major auctions which occur every month or so during the season. Unless a large proportion of furs go unsold at any particular auction, income is normally realized within eight weeks of shipment from Sachs Harbour, and usually sooner. The curve for local sales indicates how these cover immediate needs, holding

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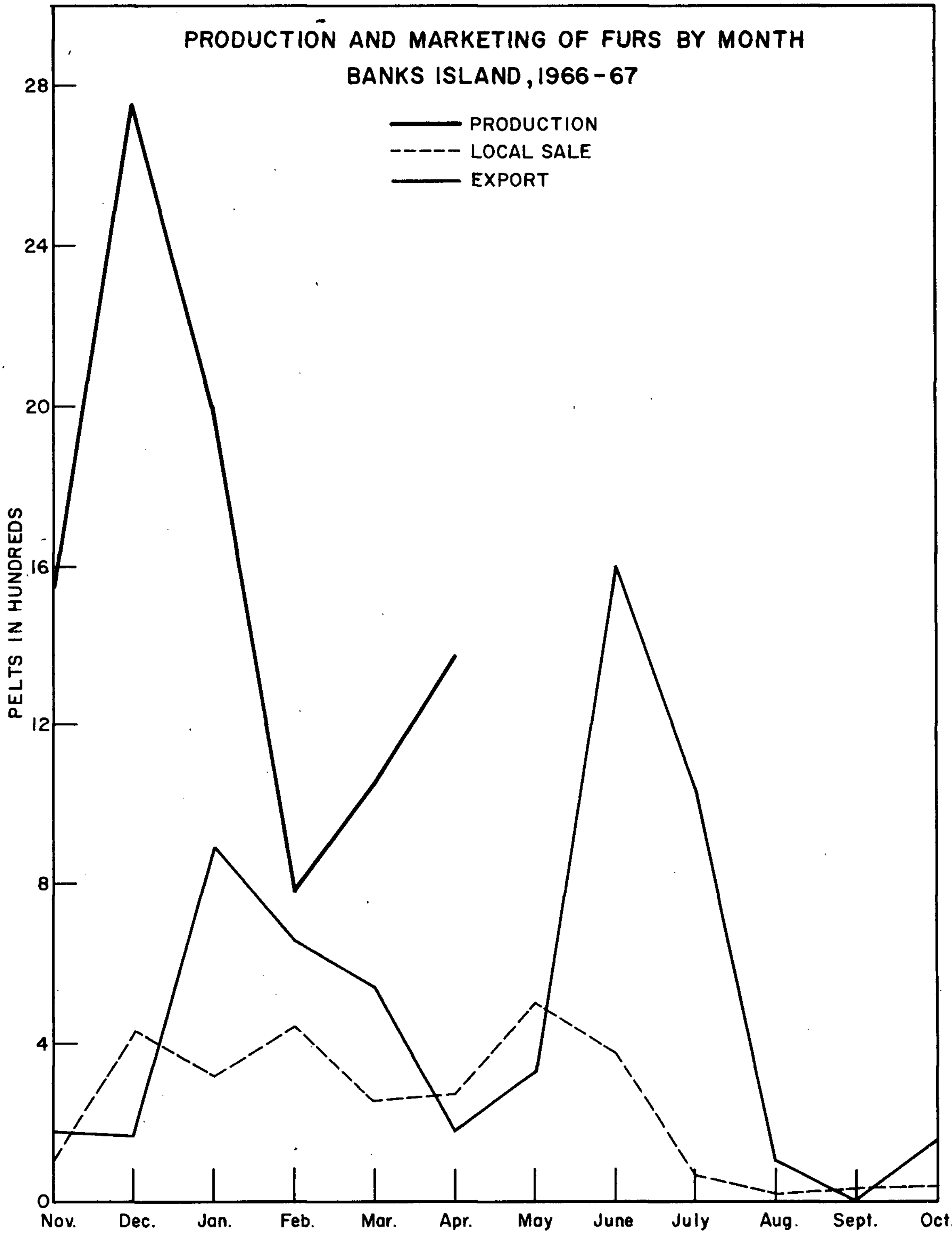
[1]Advances are partial payments by auction houses for furs received but not yet sold. They are not to be confused with credit, where the trapper is given money on the strength of his ability to deliver furs at a future date.

[2]The recently introduced system of advances in the N.W.T. has been referred to in Chapter One.


PRODUCTION AND MARKETING OF FURS BY MONTH
BANKS ISLAND, 1966-67
PRODUCTION
LOCAL SALE
EXPORT
PELTS IN HUNDREDS
28
24
20
16
12
8
4
0
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.

more or less steady over the winter and spring, and declining in summer. This pattern is typical. The curve for exports, on the other hand, indicates the delayed realization of income. The 1966-67 pattern was somewhat unusual, having two peaks. As mentioned in Chapter Five, there was a general attempt to export a large quantity of furs for the January auctions. The vast number of furs and the need for postseason trips inland to bring them to the settlement resulted in the delay of the export peak to June and July. Normally there is only one peak, which occurs in late winter and early spring, since in most years it is possible to have prepared and exported almost all furs within a month of the end of trapping.

There is a reputed tendency for the market to open strongly in the winter and weaken in the summer months. The trappers therefore try to send their furs out as early as possible. The rush to export in January 1967 represented an attempt to avoid glutting a weak market in summer.

It is apparent that the Bankslanders have a far more advantageous marketing system than do most northern trappers. Nonetheless, it is still characterized by particularism, since many of the benefits of this system accrue from personal knowledge and acquaintance. In Sachs Harbour and Inuvik the trappers depend on small trading posts, each owned and operated by a single person, and in Edmonton they rely on one individual agent in a local auction house. Should any of these cease to play an active role, or their enterprises fail, the Bankslanders would have great difficulty making alternate arrangements. The present marketing structure, advantageous though it is, is tenuous and perhaps impermanent.

Income in kind

The problem of evaluating income in kind has not received much serious attention in the context of northern trapping and hunting economies. However, appropriate methods have been evolved in agricultural economics, and it will be useful to examine these and establish their relevance to the northern case.

The Dominion Bureau of Statistics has a standard procedure for estimating income in kind as a component of farm income (Canada, D.B.S., Farm Income, 1958). There are two sources of farm income in kind. The first "...represents the value of that produce grown by farm operators and consumed in the farm home.....valued at its alternative market price, i.e. the price the farmer would have received had it been sold." (ibid., 16). This includes food stuffs, wool and forest products; the domestically produced and consumed raw materials of subsistence - food, clothing, shelter and warmth - valued at the opportunity cost of consumption.

The second source is imputed house rent (maintenance cost), calculated on the basis of repairs, depreciation, return on investment and taxes. D.B.S. considers house rent as income in kind since these costs are already included in the totals for all farm buildings in farm business expenditure, despite the fact that they are family living costs and not true business costs. Instead of deducting them from general farm operating expenses, they are added to income in kind as an equivalent. Between 1926 and 1957, imputed house rent accounted for roughly one third of farm income in kind in Canada.

Two objections may be raised immediately to applying this methodology to northern subsistence income. Country produce in the north is not harvested in the context of a cash or market economy. Since commodities are not generally sold either on a local exchange or a commercial basis, the alternative sale value cannot always be ascertained. Second, there are no buildings (other than occasionally a small frame tent as a warehouse) involved in local resource production, and therefore rents, imputed or actual, do not enter into the calculation of production or business costs. The family dwelling is thus more properly treated as a family expense, and thus does not appear on the income side of the ledger.

Attempts to evaluate country produce in non-agricultural subsistence economics have been few and inconsistent. Dyke (1968:36) in a study of the household economy of outport Newfoundland, has used opportunity costs in some instances. In a recent study of Alaskan native resources (Federal Field Committee.....1968:292) values were assigned to country food on an unspecified basis. A reference paper on the N.W.T. (Canada, Department of Northern Affairs.....1965:107) used substitution costs but failed to distinguish between dogfeed and human food. Substitution costs have been used previously by the author in a study of the Coppermine-Holman region (Usher 1965:224).

Three methods suggest themselves in determining the value of country produce. The first is to use local exchange rates, i.e. what trappers and hunters exchange commodities for between themselves. Such transactions do not always occur, and if they do, they may be in fulfillment of more or less obligatory bonds, in which case cash value can not be readily ascertained. The second is the commercial value paid to producers; for example the landed value of fish in a commercial fishery. This is in fact the opportunity cost of domestic consumption, and the method used by D.B.S. for farm income. Again, data are not always available since the production of many commodities is purely for domestic purposes.

The third method is to use substitution costs. If a man did not or could not obtain seal or caribou meat, how much would it cost him to feed his family and his dogs? The complication lies, of course, with what is to be substituted, since there are often several possibilities. Caribou meat for example, could be replaced by cheap protein substitutes such as beans, or by more expensive ones such as tinned meats, or by the most similar foods, which would be more desirable in terms of cultural preference and taste, such as fresh or frozen beef, pork or reindeer. The guiding principal should be to substitute those commodities which would be the most likely substitute in view of local preference and economic capabilities. Indeed, the individual might wish to purchase the very item he is not producing. In such a case, substitution costs would equal either the local retail price of this commotity, or its local exchange value.

The three methods are compared in Table 7.9, using data for Sachs Harbour. The fact that local exchange values are relatively low is _prima facie_ evidence that non-economic considerations are operative in these transactions, so that they provide unsuitable data for the present purpose. Alternative market price, or opportunity costs, while

TABLE 7.9

Values of country produce, per pound

Item	Local exchange value (approximate)	Commercial landed value	Substitution cost (or retail price)
Seal	.10	n.a.	.22[a]
Caribou	n.a.	.30[b]	.50[b]
Ptarmigan	n.a.	.40[c]	.55[c]
Fish	.10[d]	.25[c]	.35[c]

n.a. – not applicable or not available.

[a]Substitution cost based on equivalent cornmeal and tallow value.

[b]Based on Mackenzie Delta reindeer herd operations. Price paid to producers is approximate and was derived from Hill, 1967. Retail price applies to Mackenzie Delta outlets.

[c]Based on price paid to producers and retail costs respectively, in the Mackenzie Delta (D.G. Smith, personal communication, 23 April, 1969).

[c]Exchange value in Mackenzie Delta (D.G. Smith, ibid). No value is available for Sachs Harbour.

Sources: as cited; field investigations.

appropriate in the market economy, can seldom be obtained in the north since traffic in local commodities is rare. Substitution costs are therefore the most appropriate index of income in kind, on the grounds that data can always be derived, and that the individual would indeed have to substitute the commodity if he did not produce it himself.

At Sachs Harbour the substitutes for seal meat are cornmeal and tallow, since they are cheaper than purchasing fish from the mainland and almost as desirable. The most appropriate substitute for caribou is reindeer meat sold commercially in the Delta. Similarly the values ascribed to birds and fish are their retail values in the Delta (deemed the nearest point where such commodities are retailed). For present purposes, shipping costs from the Delta to Banks Island can be ignored.

Thus, according to Table 7.9, seal meat (and other marine mammals if harvested) has a value of $0.22 per pound. Caribou meat is worth $0.50 per pound, and this would apply to bear meat and, for the lack of other data, to hares as well. The example of ptarmigan values ($0.55 per pound) and the local regard for goose meat would suggest that these two fowl at least are considered a higher quality food and thus have a higher substitution cost than caribou. Fish are valued at $0.33 per pound. Considering the mix of food sources at Sachs Harbour, a general value of $0.25 a pound may be placed on all dogfeed, and $0.50 per pound on all human food. Accordingly, typical income in kind per trapper is $1,157 in dogfeed and $800 in human food, for a total of $1,957 per annum (See Table 6.12). This source of income is generally constant.

Since no clothing or warmth values are derived from country produce, the calculation of income in kind is restricted to food value alone. Pelts and skins are rarely used for clothing at Sachs, except for trim, and seal oil is no longer used for heat and light.

TABLE 7.10

Gross profits on country produce, Banks Island

Commodity	Cost ($)	Substitution cost or sale value[a] ($)	Gross profit ($)
Fox pelt	4.34	22.00	17.66
Bear skin	50.67	145.00	94.33
Seal skin	9.15	17.00	7.85
Seal meat, per edible lb.	.17	.22	.05
Caribou meat, per edible lb.	.12	.50	.38
Fowl, per edible lb.	.05-.27	.55	.28-.50
Fish, per edible lb.	.58	.35	-.23
Dogfeed, all types, per edible lb.	.17	.25	.08
Human food, all types, per edible lb.	.16	.50	.34

[a]Substitution cost used for meat products, recent (1963-67) approximate average prices paid to producers used for furs and skins.

Source: Tables 7.2, 7.9.

Profitability of trapping and hunting

Table 7.10 indicates the gross profits reaped in the major economic pursuits of the Bankslanders. It may readily be seen that under normal circumstances, trapping is not only the chief source of income but also the most profitable activity. Even an extremely poor catch should cover trapping costs, as the latter are equivalent to less than 40 foxes at current prices. Other fur bearers certainly supplement cash income but are by no means as profitable per unit. Indeed seal skins have lately become unprofitable; the mean price given in Table 7.10 includes the peak years of 1963-65, whereas presently most skins are going for $10.00 or less. This is well below the break-even sale price in Edmonton (see Table 7.8) and allows little or no profit locally. However, a seal provides over \$10.00 in food value, and so as long as this food is essential, the sale of the skin increases the return on an investment already made in any case. Gross profit on the whole animal is almost \$20.00, and if its primary use is for food, only the shipping costs and commission can be legitimately charged against the skin (if indeed it is exported at all). If both meat and skin are utilized, sealing is quite profitable. If the skin had little or no sale value, it would be profitable to hunt sufficient seals for dogfeed and no more. If seal meat were no longer necessary (e.g. with the advent of mechanized transport) and skins did not sell for at least \$10.00 to \$12.00, sealing would be unprofitable and the capital equipment used for it would become a liability rather than an asset.

With regard to food production in general, the profit on human food is much greater than that on dogfeed. Both caribou hunting and fowling (all types) yield an excellent gross profit, although interestingly enough, fishing is done at a considerable loss on a per unit basis.

The fact that certain pursuits are conducted at little or no profit, or even incur a loss, demonstrates both the integration of all the separate activities into a way of life that is not neatly divisible, and that profit is not the sole or even the most important motivation for certain types of behaviour which are normally characterized as "economic". Fishing for example, is done because it is an enjoyable diversion and brings a welcome variation to the diet. Goose hunting would occur even if it resulted in considerable loss, for the same reason. Decision making with regard to the major activities (fox trapping, sealing caribou hunting and bear hunting) is more likely to occur with profit considerations uppermost, although the trappers may also derive non-economic gratifications from these pursuits. Secondary pursuits such as fishing and fowling have a higher entertainment or diversion component, so that strict economic considerations may be overridden. Within this integrated life way, however, there is a rank ordering of hunting and trapping activities. Trapping is clearly the most important of these, followed by sealing, caribou hunting, bear hunting, fowling and fishing. These generally occur at distinct seasons, so that there is little conflict between them, but in the event of conflict there is little doubt about priorities. The above ranking may vary slightly with the seasons; for example, the relative priority of sealing and caribou hunting will shift as the autumn sets in. The chief limiting factor which the trappers themselves would perceive is time (which itself is a function of long term need and is in effect seen as an opportunity cost). For example, fishing will be conducted not with regard to its economic return, but rather to its relationship with seal hunting. So long as sealing is going well, and the trappers have no fear that they will not ultimately be able to obtain the requisite harvest, they will set fish nets during the run. Again, if sealing became unprofitable in gross terms, the men would still hunt in the summer so long as they had the equipment and there was no alternative activity. They would do so not simply to utilize an existing capital investment, but because they enjoy it and would rather hunt than do nothing, even at a cost. The limiting factor is time, not money. While there is a limit to the economic loss they would be prepared to sustain, the principle remains that gratifying activities will be curtailed in response to demands on time sooner than on money.

Total gross and net income

Gross trapping income includes cash receipts from sales plus all income in kind. Mean annual cash income from furs for full time trappers at Sachs Harbour for the years 1963-67 was $6,296, plus $1,957 in kind for a total gross of $8,253. Other sources of income contributed to total gross earnings of $8,583 per trapper, for an annual per capita income of $1,786. This was considerably above the averages for the N.W.T., the Yukon and the Atlantic Provinces, and compared with $2,069 for Canada as a whole during those years.

Net trapping income (i.e., imputed wages from trapping) can also be derived, in broadly the same manner that farm net income has traditionally been calculated by D.B.S.. (Farm Income, 1958). Operating expenses and depreciation charges, plus in this case net income in the form of dogfeed, is deducted from gross trapping income.[1] Mean annual net trapping income at Sachs Harbour for the period 1963-67 was $6,137. per trapper. Assuming income in kind, and depreciation and operating costs to be reasonably constant, net income varied from approximately $3,500. to $13,000. during the four years. The latter represents an unusually high figure, while per trapper income could dip as low as $1,500. in a poor year if not mitigated by the sale of seal skins as in 1964-65.

The long term average, even if slightly lower than the figure of $6,137. for 1963-67, compares very favourably with other incomes in the Canadian salary and wage structure. Farm income is difficult to ascertain on a per farmer basis, but Sachs Harbour trapper income certainly exceeds

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[1] The distinction between total and realized gross farm income does not apply to trappers and hunters since there is never an appreciable inventory of unsold or unconsumed produce whose net change at year-end must be calculated in the total. Supplementary payments and subsidies are not normally available to trappers and hunters, and do not enter into the calculations of income. The problem of buildings and rents has already been discussed.

it.[1] It is also well above the average income in the fishing industry, where gross receipts per man in the primary sector amounted to $3,807 during the 1962-66 period (Canada, D.B.S., Fisheries Statistics of Canada, 1962-66). Converted to an hourly basis for a standard work week, Sachs income, at over $3.00 per hour, is above the national average in industry ($2.39 in June 1967 - Canada, D.B.S., Annual Supplement to the Canadian Statistical Review, 1967). It compares favourably with the most skilled rates for such industries as pulp and paper, iron and steel, aircraft production, and trucking (non-operators), which are in the $3.00 to $3.50 range. They are distinctly higher than those for such industries as underground mining, food and textiles (Canada, Dept. Labour, 1967), and are about double those for farm labour (Canada, D.B.S., Farm Wages in Canada, 1968). Needless to say, trapper income also exceeds that of large numbers of salaried people in sales and services, and in the lower ranks of white collar employment. It must also be noted that due to certain advantages with

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[1]Realized net income per census farm (excluding house rent) was $2,801 in 1966 (excluding Newfoundland). However about one third of all farms were non-commercial (gross sales of $2,500 or less) so that this is a distinct underestimate of net income for full time farmers. Gross sales by commercial farms for 1965 were almost $11,500 per farm. Realized net income averages roughly one third of realized gross on all farms; if this holds true for commercial farms, their net would average about $4,000 (Canada D.B.S., Farm Net Income, 1967; Census of Canada, 1966).

regard to taxation customarily enjoyed by land based northerners, disposable income is even higher relativ e to that of the aforementioned occupational groups.

In terms of income, there is clearly no opportunity cost for trapping on Banks Island. It is true that many trappers, although highly skilled in their own trade, have few or no marketable skills were they to give up trapping. It is noteworthy however, that even with retraining, vocational education, or a significant upgrading of academic skills to the matriculation level, there would still be no (or at least inconsequential) opportunity costs in terms of the kinds of employment and income levels to which these skills could provide entry.

Personal expenditure

The Bankslanders need not worry about the basic necessities of life, and indeed enjoy a very comfortable standard of living. Such judgements are relative of course. Compared with other native northerners, the living standards of Sachs Harbour people are very high. Comparisons with other peoples and places in Canada are more difficult because the spending priorities are different, as well as the necessity of considering intangible values concerning the "good life".

Table 7.11 indicates that a normal expenditure of $ 5,400 per annum is required to maintain the standard of living that

TABLE 7.11

Annual and cyclical family expenditures, Sachs Harbour

Item	Annual expenditures		Cyclical (four year) expenditures	
	Normal	Minimum	Assumption A	Assumption B
Capital equipment	$1,300	$ 650	$ 5,200	$ 5,200
Food (exc. dog feed)	1,200	1,000	4,400	4,200
Shelter	300	50	1,200[b]	1,200[b]
Heat and light	600	500	2,200	2,100
Furniture and household goods	500	100	2,000[b]	2,000[b]
Clothing	500	300	1,800	1,700
Transportation and communication[a]	400	50	900	700
Tobacco and alcohol	300	200	1,000	900
Miscellaneous	300	100	900	800
Total	$5,400	$2,950	$19,600	$18,800
Mean	n.a.	n.a.	$ 4,900	$ 4,700

[a]Does not include local dog or snowmobile transport.

[b]Since these items have, in general, a life of longer than four years, the full level of expenditure is not necessarily required in any given cycle, although for ease of presentation they have been given as such.

n.a. – not applicable.

Assumption A – Two years at normal expenditure and two at minimum, adjusting for fixed and variable long term costs.

Assumption B – One year at normal expenditure and three at minimum, adjusting for fixed and variable long term costs.

most trappers now enjoy on Banks Island. In lean years, expenditure can be cut back, but first we will examine the breakdown of expenditure.

Capital equipment has already been discussed. A long term average expenditure of almost $1,300 is required, although if necessary this can be cut back to the operating costs alone, which are almost $850.

Food represents a relatively fixed cost for any family, although expenditures can be reduced in poor years (see Appendix G). Despite the fact that freight charges add 20 to 25 per cent to southern Canadian prices, the availability of country food allows Sachs Harbour people to eat very well indeed in terms of both nutrition and local tastes, on a food budget comparable to that of a middle class family in southern Canada.

Shelter is cheaply obtained at Sachs, since there are no land costs, rents or property taxes. The size and style of houses are modest by southern standards, although well above that of other northern communities before the Federal Government commenced its Arctic-wide housing programme.[1] They are comfortable and adequate by local standards, which is the most important measure. The cost given in Table 7.11 is calculated on the basis of an initial investment of $3,000 in building materials for a house which will last 15 years, and $1,500 worth of improvements during its life. Accordingly, annual costs can be quite flexible, although in the long run the $300 average must be maintained. Heat and light are on the other hand very expensive, and represent virtually fixed costs.

Furniture and household goods, and clothing, can be quite variable expenditures and cover a wide range of items (including tools - many men have accumulated several hundred dollars worth of high quality tools for construction and repairs). The purchase of major pieces of furniture and appliances are of

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[1]This programme has not been extended to Sachs Harbour due to lack of need.

course quite irregular. Certain basic items of clothing however, are fixed. People do not maintain large and varied wardrobes, and much clothing is handmade, but the raw material for outer clothing such as duffle, grenfell, moose hide and wolverine are very costly, and parkas, mitts and mukluks are heavily used and short lived.

Since the cessation of summer schooner voyages, most families have attempted to get to the mainland every couple of years or so by plane. Sometimes only the man goes, but on other occasions the wife and even the children will make the trip. Aircraft are often chartered, (frequently on a joint basis) to bring in supplies, ship out furs or stock the traplines. Communication with the mainland for family or business purposes by telegraph, and more recently by telephone, is a small though frequent expense.

Finally, the majority of Sachs Harbour adults are smokers, and consume alcohol as well, and these items as a component of family expenditures are very similar to that of the average Canadian family.[1] Miscellaneous expenditure includes such items as movies, community association membership, magazine subscriptions, toys and records.

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[1]There is no liquor outlet in Sachs Harbour, and orders must be placed in Inuvik and shipped by air.

Some of the outlets for spending and credit have already been mentioned in the section on marketing. A few further remarks on the transactional framework are offered here. Most transactions take place without cash, since dealings with both local storekeepers and outside auction houses are on account. The trappers can also instruct their credit holders to pay for certain local purchases such as fuel and aircraft charters. However, many items of capital equipment, clothing and household goods are purchased C.O.D. by catalogue through mail order houses (C.O.D. purchases have amounted to over $700 per family per annum in recent years). Movies, telegrams and fur royalties also require ready cash. Private sales of furs and handicrafts, and the leftovers from trips to Inuvik bring cash into the settlement, but it is usually in very short supply.

Table 7.11 also shows the degree of flexibility in the expenditure pattern. While an annual cash income of $5,400 is desired to maintain the standard of living, in any given year, family expenditures can be reduced below $3,000 without impairing their long term standard.

In such a case, all purchases of new capital equipment, building materials and household goods are deferred, trips to the mainland forgone, and consumption of food, fuel, clothing, alcohol etc., reduced to the minimum tolerable level. To cut expenditure below this level could result in malnutrition of people and dogs, considerable discomfort, and impaired performance in hunting and trapping.

It is probable that some such paring will have to be done at least once in the four year cycle. It is possible that this will be necessary for two or even three of the four years. The consequences of this are shown in Table 7.11. It will be seen that over the cycle, even if it is a lean one, the average annual level of expenditure cannot be reduced drastically from the "normal"rate (i.e. where pared expenditures are not required at any time in the cycle. In the long run, a family simply cannot get by with an annual cash income of much less than $5,000. This refers, of course, to what is locally perceived to be a reasonable standard of living, and not to a subsistence level exist ence. Nor will all families have to reach this level, but the younger and more ambitious ones will if they are to make their life on the Island.

When expenditure must be held back in poor years, there will be major outlays in good years. Major investments in trapping and hunting equipment, household furniture and appliances, housing starts or improvements, inter-community travel and aircraft charters are characteristically cyclic in a white fox economy. The trappers speak of "going ahead" in these years. Liquor consumption and gambling increase both locally and on trips to the mainland, where conspicuous consumption is one of the gratifications of having had a good year.

Beyond these normal cyclic occurrences are years, and particularly cycles, when income is considerably above the adequate norm, as has recently been the case. This has not happened often on Banks Island, and the consequences of such events are not entirely clear since they occur in the context of other changes as well. Very possibly they presage significant new stages in the development of the community. To some degree the surplus may be held over as credit against the new cycle, but as will be noted below, saving is not an outstanding feature of the Sachs Harbour economy. There is also some dissipation of the surplus, by a few trappers at least, in the form of bigger and better sprees on the mainland. However, some capital is invested in significantly new ways beyond the normal catching up on equipment and supplies noted above.

There are some historical precedents. Both the initial few years of settlement and the 1937-41 period were unusually prosperous, and resulted in considerable investment in schooners and capital equipment, which greatly assisted in the development of a corps of first class trappers and in the successful colonization of the Island. The prosperity of the years 1958-61 coincided with the decline of schooner travel and resulted, among other things, in permanent housing and a local demand for more frequent and regular air services. Lean years at the time of this critical transaction could have resulted in the failure of a viable permanent settlement. The present surplus may herald the successful introduction of mechanized transport, since almost all trappers indicated that they would be purchasing motor toboggans in 1967. Although the technological context is new, such investment decisions are reminiscent of earlier days when the trappers were just as quick to seize new opportunities in their quest for a secure and satisfying livelihood on the Island.

The economy: savings and credit

Long term savings are insignificant in the local economy. Only seven individuals had bank accounts in 1967. Of these, two were women who received considerable monies from handicraft production, one was the local store keeper, and two were in wage employment. Thus only two men who live entirely by trapping had accounts. In some cases these bank accounts served primarily as repositories for inheritance money received in trust a generation ago. Most accounts are small since the level of savings generated by trapping is low.

As a result there is little or no capital available for entrepreneurial activity or community investment. This is why it has been possible to examine the economy through the household unit. The community economy is essentially the sum of a number of more or less successful household operations or enterprises. There is no pool or flow of capital which exists or operates above this level requiring a super household institutional structure for its administration.

Two exceptions may be noted. First was the ability of one individual to accumulate sufficient capital (or at least obtain financial backing) to open a small store a decade ago. This was most unusual in the context of a trapping economy, and it was important in the establishment of the permanent village. Secondly, since the establishment of the Community Association in 1965, there has been a modest but steady accumulation of capital for community purchases and enterprises.

The lack of savings is also important in understanding trapping as a family enterprise. This discussion must be qualified by noting that very few people have died a natural death of old age on the Island since they generally returned to the mainland upon retirement, and the many external economic and social changes have not resulted in a stable population in which the transfer of enterprise from one generation to the next can readily be observed. We therefore present a model of the family enterprise rather than an empirical review of actual cases.

During the course of a man's trapping career, he saves very little money in the normal sense. Surpluses are used to build up the stock of capital goods, to build, improve and expand the family dwelling, and to purchase or replace major household appliances and furniture. If the trapper is about 25 years old at the birth of his first son, he will have an apprentice and assistant to help him on the trail when he is 40. Many trappers see this as potentially the peak of their career - a time when they are still strong and healthy, and in a position to reap the benefit of accumulated knowledge and skill, a good stock of equipment and the energies of a young son still part of the family. Five or ten years later, the son will be on his own, and if he still traps in partnership with his father it will be as an equal (economically at least). As the old man slows down, he can no longer handle all his equipment, and so passes some on to his son who n eeds it to get a start. Since the older man's trapping life is now not much longer than that of his equipment, what is left is allowed to depreciate. To some extent this is true of the house and furnishings as well. The son may live at home immediately after marriage but will want to build his own house long before he can inherit his parents'.

Thus, when a man dies, it is rare that his estate can be converted into cash. He almost certainly has no cash or liquid assets, and will have long since used up any credit he may have had with storekeepers or auction houses. He may have a house, furnishings and a modest stock of capital equipment, but all are distinctly secondhand, and since they either cannot be transported out of the community or are not worth it, the only market for them is the very restricted local one. Such an inheritance has little other than sentimental value to the children.

The result is that every generation of trappers starts virtually from the beginning in terms of physical assets. The trappers' legacy lies in how well he teaches his son to trap and hunt, to survive on the tundra, to be a strong, self-reliant and proud individual. The intangible legacy can be priceless, the physical one is often valueless. Unlike the family farm or family business, where cleared land, livestock, machinery, buildings, inventories and customer goodwill can be passed on, capitalization in trapping, although high, depreciates so rapidly that nothing remains at the end of a career. Not surprisingly this contributes to a much less stable situation with regard to the maintenance of the family enterprise through generations. Since the sons start virtually afresh, there is no opportunity cost for failing to trap, should more attractive alternatives be available.

In view of the cyclic nature of the economy, and the lack of savings, the role of credit becomes clear. It is the essential means of financing through the lean years. There are years in which many families do not earn the minimum requirement of $3,000. In such years the extension of credit, often in substantial amounts, tides people through for perhaps two, three or even more years until a good year allows them to pay their debts. Beyond this, credit allows people to maintain themselves above the minimum, and to make essential purchases when circumstances would not otherwise permit (i.e. if a new outboard is needed during the low part of the cycle). The Bankslanders are fortunate in dealing with a firm in Edmonton which will allow them several hundred (even thousand, on occasion) dollars in long term credit, beyond what they can obtain locally. An important factor is the success of the trapping colony on Banks Island has been the nearly unbroken access to large amounts of credit, from backers who have recognized the competence of the trappers and the abundance of their land.

Most northern trading posts do not nowadays extend nearly enough credit to maintain a trapping economy such as the Bankslanders'. Although in lean years the Islanders have collectively owned tens of thousands of dollars, they have generally found that, given some good seasons, their debts can be paid off, and they are not in eternal servitude to their creditors (contrary to the pessimistic view expressed on this subject in a previous report - Usher, 1966:106).

The health of the economy can only be measured on a cyclic basis. So long as income covers expenditure over the cycle, the trappers remain reasonably secure. It is always possible that as a result of a drastic fall in fur prices, debts contracted at the beginning of the cycle cannot be repaid by the end. This however, would not be the fault of the credit system but rather of world fur market conditions. In the Bankslanders' experience, the credit basis of the trapping economy has been the essential financial mechanism for the maintenance of the community.

CHAPTER EIGHT

CONCLUSIONS

In the foregoing chapters we have examined the genesis of the trapping community at Sachs Harbour, as well as its ecology, technology and economy. Viewing Banks Island as the ultimate frontier of trapping in the Western Arctic, we have analyzed the spatial pattern of settlement and resource exploitation there, as well as the process of adaptation by the settlers to this new environment. By means of participant observation and interviews, detailed data were obtained on investment of time and money by the trappers in their various economic activities. These data provided the basis for correlating effort inputs with trapping success, which in turn enabled the calculation of tentative predictor equations for trapping success applicable to other areas with similar fox abundance. Quantitative analysis of seal, caribou, polar bear and other types of hunting showed the manner in which these activities are integrated with trapping into a total resource system. Finally, methods were presented for the evaluation of production costs of fur pelts and animal foods, as well as the evaluation of income in kind.

In concluding this discussion of the trapping resource system on Banks Island, we ask whether it meets the three criteria posed by Firey:[1] ecologic possibility, economic gainfulness and social adoptability. In answering these, it is also necessary to show whether the conditions and tendencies leading to stability or instability are internal or external to the system, and whether they are the result of historical accident or of more enduring forces. In answering these questions we seek to discover not only the future of the Banks Island resource system, but also whether this system as a generic type can be transplanted or instituted elsewhere.

The ecological basis of trapping

From an ecological viewpoint, the trapping and hunting system on Banks Island appears to be stable. Although the arctic fox is very mobile, there appears to be a distinct Banks Island population or at least a regional one which is exploited largely if not exclusively by Sachs Harbour trappers. There is no evidence that any of the major economic species are being or have been overharvested during the 40 years of settlement, since there have been no longterm declines in production per man or per unit of effort.

Figure 8.1 shows the various territories required to support the present level of population at its current economic

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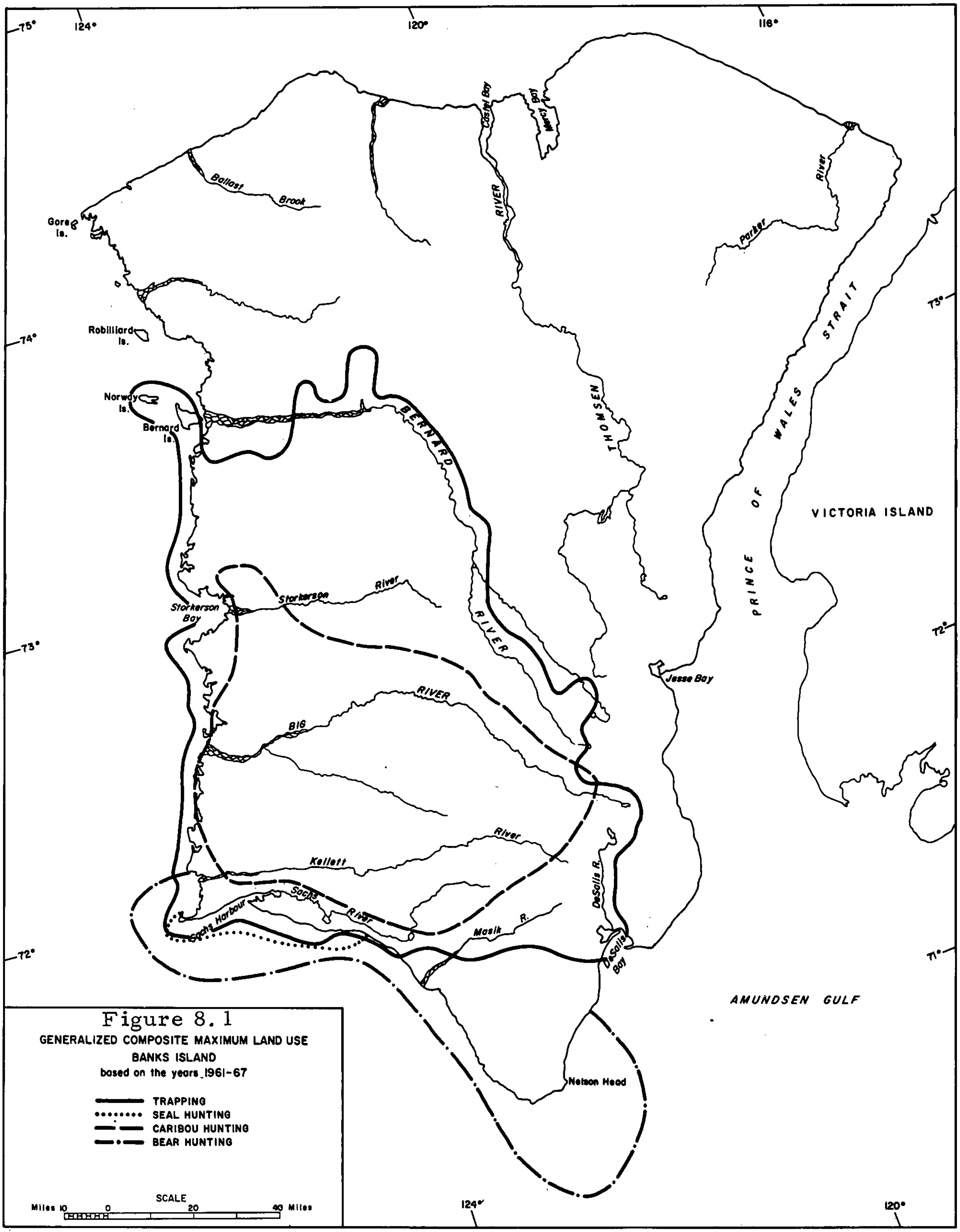
[1] Previously discussed in the introduction.

standard. Fox trapping requires the largest amount of territory; the area available for this pursuit constitutes the real limit on the number of trappers the Island can support. Most of the best trapping grounds are now being used, although a few individuals wishing to exploit the north-central part of the Island could probably do so without seriously prejudicing the success of Sachs based trappers. The likelihood of anyone actually setting up a winter trapping camp in that area is in view of the current attractions of settlement life, small. The number of trappers operating out of Sachs Harbour appears to be optimal, although possibly a few more could be accommodated without detriment to either the resource base or individual productivity. Thus there does not appear to be any internal threat to the equilibrium of the Banks Island ecosystem.

Events occurring elsewhere might affect Banks Island in the next decade, although this is not likely. Two faunal resources are not wholly indigenous to the Island: seals and migratory birds. Some migratory birds, especially those whose wintering grounds in the U.S.A. are endangered by urbanization or pollution, may be affected but they are not an essential economic species to the Bankslanders.



75°
124°
120°
116°
74°
73°
72°
72°
71°
124°
120°
Gore Is.
Ballast Brook
Castel Bay
Mercy Bay
RIVER
Parker River
Robilliard Is.
Norway Is.
Bernard Is.
BERNARD RIVER
THOMSEN
PRINCE OF WALES STRAIT
VICTORIA ISLAND
Storkerson Bay
Storkerson River
Jesse Bay
BIG RIVER
Kellett River
Sachs Harbour
Sachs River
Masik R.
DeSalis R.
DeSalis Bay
AMUNDSEN GULF
Nelson Head
Figure 8.1
GENERALIZED COMPOSITE MAXIMUM LAND USE
BANKS ISLAND
based on the years 1961-67
TRAPPING
SEAL HUNTING
CARIBOU HUNTING
BEAR HUNTING
SCALE
Miles 10 0 20 40 Miles

Much of Banks Island has been leased for oil exploration, although no drilling has yet occurred. Should active exploration or production take place, there could be adverse ecological effects, having unpredictable consequences for the trappers. Plans for the transport of crude oil by super tankers through the Northwest Passage raise the possibility of pollution of Banks Island's coasts and adjacent waters, an obvious threat to the natural resource base.

The introduction of new resource harvesting technology could also upset the present ecological balance. The widespread use of snowmobiles, for example, might lead to overharvesting as will be discussed below.

The ecological conditions which support the Banks Island trapping system are not unique. Fur harvests over the last several decades indicate that a broad belt of land sweeping eastward from Banks Island through Victoria and King William Islands, the northeastern Mackenzie District, most of the Keewatin District, to Southampton Island and Foxe Peninsula may support arctic foxes at a similar level of abundance as Banks Island itself. Caribou are available in much of this region, as are seals in the coastal areas. There are also large areas in the Soviet North which offer a similar ecological basis for such a trapping system.

The economic basis of trapping

Trapping on Banks Island has unquestionably been economically gainful. It has brought good returns on investment, and yielded high individual incomes. There is no opportunity cost in trapping, for the adults at least, since any jobs which might be opened to them on retraining would not bring them a higher standard of living. This success has resulted from a strong motivation toward economic gain and the social legitimacy of trapping as a means to this end, as well as from high levels of technology, organization, skill and capitalization. The Sachs Harbour economy exhibits reasonably long term stability , but is vulnerable in several respects. This is partly because the local economy has virtually no internal dynamic - in the absence of a supra-family economic structure or flow of money or goods, the trappers' vital economic links go not to each other but to the outside.

The Sachs Harbour economy, like all fur based economies, is vulnerable due to price instability (although not to instability of supply, since over the cycle, this is reasonably constant). At present, the threat is not so much one of changing fashion, but of an increasingly short supply of foxes in a market where these pelts are used for moderately priced trim rather than on their own as luxury furs. The increasing share of the market held by Sachs Harbour trappers may not be to their advantage if the total supply dwindles to the point where manufacturers will seek substitute furs. The localization of the source of white foxes will also intensify the cyclic nature of their supply, and hence the instability of their price. The economic welfare of the Bankslanders may to some extent depend on the continued productivity of trappers elsewhere.

Like so many primary producers in Canada, the Bankslanders sell on an unprotected, international market and buy in a protected, national one, but their problem is compounded by a lack of even rudimentary guarantees or insurance. The present system of credit and marketing is advantageous to the Bankslanders, and, from a producer's point of view, is probably the most satisfactory one yet evolved in the history of northern Canadian trapping. It is none the less vulnerable since it is extremely individualistic and depends largely on personal reputation and acquaintance. In any case, there is very little security in trapping because no matter how well a man does, the realizable gain on his assets is relatively small, and most forms of public or private insurance such as unemployment benefits, crop insurance, or sickness benefits are either not available or would be prohibitively costly. Economic security remains a family or community matter rather than a public or national one. In view of the small number of people involved, it seems unlikely that this situation will change.

Yet the Bankslanders have survived the economic vicissitudes of the last 40 years, and only during the crisis of 1948-51 did white fox trapping lose its economic viability for them. The circumstances which created that situation - inability to trap in all years, large outstanding debts and extremely low fur prices - seem unlikely to occur in combination in the foreseeable future. Most trappers feel they could continue to make a living even if fox prices averaged as low as $10.00 per pelt. Such judgements are bound to be affected by the standard of living in other communities and other walks of life, however, since deprivation is a relative state rather than an absolute one. The rise in personal income on the national level over the last 40 years has been contrasted with the relatively unchanged situation in fur incomes. The Bankslanders cannot rely on a rising market to increase their incomes; this can only come through improved productivity and reduced overheads.

Under present circumstances, it is quite clear that white fox trapping can be the basis of an economically rewarding way of life. It can provide individual incomes far greater than those presently obtained by most white fox trappers, and which also exceed earnings from most local unskilled or semiskilled wage positions. Much of Banks Island's uniqueness in this respect can be traced to particular historical events or circumstances, and admittedly the Banksland way of life was nurtured in an era when trapping was the rule all across the North. However, since the ecological basis of the Banksland trapping system is widespread, increased capitalization, and improved marketing and credit facilities could greatly augment total Canadian white fox production, and many other trappers in other areas could realize good incomes from this industry. There is nothing about either the technology or economic organization of trapping on Banks Island that cannot be reproduced elsewhere.

The fact is that trapping is not an inherently outmoded economic pursuit. As has been the case among farmers and fishermen, there have been too many trappers employing too little capital and technology and too few skills. Just as in these other industries however, there are modern and profitable methods which can be introduced. So long as the basic resource is considered desirable, and a demonstrably satisfactory livelihood can be gained from it, it is far more desirable to seek a rationalization of the industry than its abandonment. As has been shown on Banks Island, such things as a good stock of capital equipment, skill and hard work on the trail, and the judicious use of aircraft can bring the white fox trapper a good income. In addition, further improvements are in the offing, particularly the snowmobile, which could make trapping both easier and more profitable.

On Banks Island, for example, many of the effects of the introduction of snowmobiles (which began in earnest in 1967) can be envisaged. Aircraft could be used in summer to cache gasoline instead of cornmeal, and unless sealskins were selling well, expenses could be greatly reduced by abandoning the summer seal hunt. Speed on the trail could be at least doubled, enabling either double the number of trips and trap checks, or permitting several extra weeks at home during the winter. In peak years, increased frequency of trap checks would both increase productivity and reduce losses. In poorer years, the snowmobile could enable men to run longer lines, especially in spring, to take advantage of hitherto unexploited country. In the coldest and often least productive months of January and February, the men could make their monthly trips in perhaps a week instead of two weeks, and have more leisure time at home. Almost certainly the snowmobile will encourage trapping partnerships since men will be reluctant to travel long distances alone.

It is possible of course, that the increased trapping effort which snowmobiles permit could result in overharvesting. So long as fox prices do not fall drastically however, it seems likely that the Bankslanders will use the snowmobile to give themselves more leisure time rather than to double their trapping effort, except in special cases as noted, where the extra effort would bring great returns, through the more efficient use of the resource.

The social and cultural basis of trapping

Trapping has apparently provided a life style both socially and psychologically satisfying to the Bankslanders. Many of the reasons people give for both coming to and staying on Banks Island express ideals about social as well as economic life. The external forces affecting this "socially adoptable" system are extremely important. Community social life, although exhibiting a distinct internal dynamic, is in many respects simply a variant of that characteristic of the Western Arctic as a whole. To the degree that Sachs Harbour people identify with this larger region, and have links with people and institutions in its other communities, they are also affected by the social forces acting within and upon it.

We have already shown how this specialized trapping community arose during a particular historical stage in the development of a unique fur trade region. Many of the values and goals which made the Bankslanders' way of life socially adoptable were peculiar to that era and place, and are nonexistent among (or irrelevant to) a younger generation which might otherwise have followed the same road. The fidelity which people over thirty still claim to the "old ways" (which to them mean not the aboriginal ways of an unremembered past, but the traditional fur trade life which did not really die on the mainland until the 1950s) is not shared by younger people, on whom the impact of education, of the media, and of Inuvik itself has been profound.

There is no question of the present generation of trappers abandoning this life, although they will be quick to adopt new ways which promise to make life easier, more secure and more enjoyable. They will be ab le to accommodate changing wants and new ways to their basic life style. Movies, mail, airplanes, and trips to Inuvik are all becoming more important, and they can constitute distractions from trapping itself. Twenty years ago when the events of one winter's day were those of the next as well, there was nothing special to stay home for from the trail. Today, movie night or the arrival of an airplane are reasons to delay departure, even at the risk of being subsequently held up for bad weather. The presence of a day school and thus of the children all year round will increase the already strong orientiation to home and family, and the introduction of electricity and further household improvements will continue to increase the contrast in comfort and ease between home and trail. These things will doubtless make many men less willing to spend long periods away from home. Life in the scattered winter camps is over; settlement living is now sufficiently attractive that only the rare individual would give it up for more productive but isolated and distant trapping grounds. With technological improvements such as snowmobiles, however, these ameliorations can be accomodated without detriment to trapping success.

Younger people are either unaware of this opportunity for good incomes, independence, steady family lives, and (for men at least) psychological gratification, or are unimpressed by it. In either case very few are opting for this way of life, even among the Banksland children. There are some who have, but it remains to be seen how strong their commitment to it will be, and how easily they may choose other opportunities.

The Banksland way of life is stable from the point of view of those who are now in it, but recruitment of new trappers may become a problem.

The Banksland trapping system is unique because it originally arose in an area in which, although it was economically gainful and socially adoptable, it was ecologically unstable. Only through its transplantation to Banks Island could all three conditions be met, and the system survive and develop. Although it was ecologically sustainable and economically feasible in many other parts of the Arctic, nowhere else did the sociological prerequisites exist. To the east, the Eskimos were never as acculturated and commercially oriented as the western people. Trapping never evolved into a modern way of life in the Central or Eastern Arctic. It became an unsatisfactory means of existence there not because the resource disappeared, but because the meagre returns gained through primitive, undercapitalized trapping methods no longer met the needs of the people. With the rise of both population and expectations in the North, the fur resource can no longer be the sole basis of the economy, although there is a sound ecological and technical basis for this resource to employ a moderate number of people at a good standard of living all across the Arctic. The likelihood of this coming about however, is small.

The trends in government planning in the north have already been alluded to in Chapter One. The revitalization of the trapping industry does not figure in these plans. Less easy to document is the widespread negative image from which trapping suffers in much of the north today, even among the adults. Trapping has been explicitly and implicitly discouraged in many ways all across the north. Since the mid 1950s government authorities have consistently tried to find alternative sources of income for Eskimos; to wean them from trapping and hunting rather than improving the methods and organization of these pursuits. These efforts have included the development of commercial fisheries, garment manufacturing, carving, non-renewable resources, construction and services. Since 1964, when Jenness recommended Eskimo emigration to the south as a solution to northern unemployment and poverty (1964:174 ff.), the Department of Indian Affairs has increasingly encouraged greater mobility in the Eskimo labour force.

These endeavours have been necessary and beneficial, but they were never coupled with attempts to revitalize the land-based way of life. The economic and social disparity which has grown up between what is left of this old life, and the life style of the increasingly numerous and powerful white transients, has engendered a crisis of self confidence and purpose among many Eskimo people. To them, trapping symbolizes all that is "inferior" and "inadequate" about the old way of life and indeed about their very identity. So trapping is rejected along with all the other old ways which now manifestly fail to bring either money or happiness.

Father Brown has suggested that trapping in the N.W.T. be reopened to whites, whose diligence would provide a positive example to native trappers, and that trapper education be made an integral part of the school system (1966:43). There is indeed evidence that trapping has become a native-identified occupation, to be looked down on by both whites and natives alike. Yet the effectiveness of the white trapper as a behavioural model must be questioned, since in most of the areas inhabited by white trappers before World War Two neither excellence nor commitment to trapping ever became widespread among the native people. Furthermore with the great rise in income in most industrial and agricultural pursuits since the Depression, relative to fur prices, one would hardly expect a great influx of white trappers in response to the general availability of trapping permits.

The inclusion of trapping in the school curriculum can make little headway against the overwhelmingly metropolitan values which education and the media express just as surely in the North as anywhere else. Education no longer consists of learning the "Three R's" so that an individual may be better equipped for his chosen profession, but is rather a means of inculcating the values of a technologically sophisticated urban society, and of developing people to fill the roles that such a society requires. The expression of local values and the fulfillment of local interests are increasingly difficult in modern North American society, and await profound social changes beyond the scope of the present discussion.

Not only do these broad trends affect the north as a whole, but specific small communities are constantly in danger of disruption by economic activity outside, or by the decisions of large bureaucratic organizations, who act in the name not of local good, but of national or corporate interests. A decision to build a defence base, to make a harbour, to build a pipeline, to enlarge the Mounted Police barracks or the school, or to establish a mission, can profoundly affect a small community despite the lack of any consultation with its inhabitants, let alone their permission. These things can overwhelm a once viable way of life, even unintentionally. Sometimes the effect is slow and cumulative, at other times sudden, but just as profound in either case. The possibility of such events occurring at Sachs Harbour cannot be ignored when assessing its future.

To conclude, there is an ecological and economic basis for an expansion of white fox trapping on the Banksland model, but social ideas, decisions and institutions presently militate against such a development. Thus we see that resource use plans must be socially adoptable as well as ecologically possible and economically gainful if they are to succeed. Similarly, one cannot understand the dynamics of a particular pattern of resource use without investigating all three aspects of it. Resource planning cannot proceed on the assumption that only one or two of these aspects are relevant, and the others may safely be ignored.

Sachs Harbour itself is today as vibrant and healthy as ever it has been. Its future is clouded not by inherent deficiencies of resources, capital, people or imagination, but by forces beyond its horizons and beyond its control. As a lone trapping community in a land in transition and doubt, it is like the one remaining leaf in an autumn storm. How easily can economic decisions made far away, or government decrees, unthinking in their generality, tear the leaf from the branch which brings it life.

APPENDIX A

HISTORICAL STATISTICS

TABLE A.1

White fox pelt production, Canada, cumulative by region, 1928-67.

	Canada	N.W.T.	N.W.T. proportion of Canadian total (per cent)	Western Arctic	Western Arctic proportion of Canadian total (per cent)	Herschel-Pearce	Herschel-Pearce proportion of Canadian total (per cent)	Banks Island	Banks Island proportion of Canadian total (per cent)
1928-29	18,572	15,252	82.3	*	–	*	–	480	2.7
1929-30	37,617	35,576	94.7	26,100	69.4	*	–	2,914	7.7
1930-31	71,877	58,768	81.8	9,900	13.8	4,000	5.6	1,886	2.6
1931-32	67,416	41,554	61.7	21,200	31.5	8,400	12.5	1,854	2.8
1932-33	33,385	25,687	76.9	10,200	30.5	6,900	20.7	608	1.8
1933-34	61,400	52,467	85.5	28,900	47.1	11,000	17.9	900	1.5
1934-35	68,366	52,615	76.9	14,100	20.6	7,900	11.5	1,667	2.5
1935-36	45,743	25,897	56.7	18,900	41.4	6,500	14.2	1,462	3.3
1936-37	22,191	19,854	89.6	5,000	22.5	800	3.6	0	0.0
1937-38	55,907	49,255	88.2	14,000	25.0	3,100	3.5	1,648	2.9
1938-39	56,396	42,884	76.1	26,600	47.2	7,800	13.8	6,502	11.5
1939-40	32,535	30,461	93.8	9,500	29.2	1,700	5.2	1,465	4.6
1940-41	48,411	46,497	96.1	21,000	43.4	6,400	13.2	5,479	11.4
1941-42	62,534	50,970	81.6	18,600	29.8	1,200	1.9	0	0.0
1942-43	74,190	60,521	81.5	36,300	48.9	*	–	4,208	5.7
1943-44	30,332	28,310	93.4	11,300	37.3	2,700	8.9	1,861	6.3
1944-45	17,969	16,765	93.3	6,600	36.7	800	4.4	0	0.0
1945-46	27,169	20,854	76.8	*	–	*	–	3,909	14.3
1946-47	67,314	57,750	85.9	26,900	40.0	7,300	10.8	4,800	7.1
1947-48	55,423	53,227	96.0	15,300	27.6	2,400	4.3	2,249	4.0
1948-49	34,775	31,317	92.1	3,900	11.5	800	2.4	0	0.0
1949-50	19,775	9,989	50.5	8,100	40.9	300	1.5	0	0.0
1950-51	52,566	39,739	75.5	32,400	61.6	700	1.3	0	0.0
1951-52	53,654	49,787	92.7	14,600	27.2	8,600	16.0	2,648	4.8
1952-53	40,710	36,474	89.7	6,700	16.5	1,500	3.7	1,199	2.9
1953-54	36,370	27,178	74.7	6,100	16.9	2,700	7.5	1,733	4.7
1954-55	81,783	60,483	73.9	36,100	44.2	10,300	12.6	6,000	7.3
1955-56	31,728	27,720	87.4	15,900	50.0	2,800	9.0	1,045	3.2
1956-57	28,338	24,049	84.8	10,800	38.0	800	2.9	410	1.4
1957-58	31,890	28,939	90.6	13,842	43.4	3,719	11.7	2,871	9.1
1958-59	26,539	23,026	86.8	10,363	39.0	2,382	9.0	1,965	7.5
1959-60	14,457	10,443	71.7	3,607	24.9	1,037	7.2	1,033	7.1
1960-61	51,995	38,462	74.0	23,743	45.7	5,645	10.9	5,625	10.8
1961-62	45,358	32,522	71.6	13,848	30.5	3,586	7.9	2,010	4.4
1962-63	9,880	9,162	92.7	6,742	68.2	4,081	41.3	3,543	35.4
1963-64	32,447	29,920	92.3	14,207	43.8	3,479	10.7	1,985	6.2
1964-65	40,831	27,041	66.2	7,246	17.7	1,837	4.5	1,555	3.9
1965-66	11,656	10,444	88.9	6,313	53.8	3,415	29.1	3,062	25.6
1966-67	34,126	33,185	97.2	22,846	66.9	*	–	9,497	27.8

*Uncertain or unavailable

Notes: Herschel-Pearce: includes all posts on the mainland coast from Demarcation Point to Pearce Point, all Delta posts south to and including Aklavik – Inuvik, plus Banks Island.

Western Arctic: includes all of the Herschel-Pearce region plus all posts on the mainland coast as far east as Spence Bay, plus all posts on Victoria and King William Islands and adjacent small islands.

As the Banks Island figures refer to production, while the others are based on exports, the two are not completely comparable, as not all furs are exported. The difference is small and of little consequence (at least 90-95 per cent of Banksland furs are exported), although it tends to make the Banks Island production slighly higher than it should be, relative to the other regions.

Source: Canada and N.W.T. – D.B.S., Fur Production of Canada (Annual); Western Arctic and Herschel-Pearce – Fur Export

TABLE A.2

Legal open seasons for white fox effective on Banks Island, 1917-67

Date effective	Legal open season, opening and closing dates inclusive
20 Sept. 1917	16 Nov. – 31 March
15 May 1929	2 Nov. – 14 March
20 Nov. 1929	16 Nov. – 30 March
22 July 1943	1 Nov. – 31 March
13 Dec. 1951	16 Nov. – 31 March
9 Feb. 1955	16 Nov. – 15 April
2 April 1962	1 Nov. – 15 April

Prior to the Northwest Game Act, assented to 20 Sept. 1917, there was no close season on fox in the N.W.T. Subsequent amendments to the Act were effected by Order in Council, and, after it was superseded on 1 July 1949 by the Game Ordinance of the N.W.T., by the Commissioner of the N.W.T.

These seasons also applied to blue fox and, usually, to coloured fox, and covered all of the N.W.T. north of the timberline, or in some cases, the Arctic Circle.

TABLE A.3

Length of residence on Banks Island, by place of origin

Years Wintered	Place of Origin: Delta	Herschel-Tuktoyaktuk	Baillie I. district	Victoria I.	Banks I.	Unknown	Total
1	15	1	5	6	2	3	32
2	1	3	4		1		9
3	2		7				9
4	3	2	4	2			11
5			2				2
6	1	2	3		1		5
7			1				3
8	2		2				4
9	1		1	1			3
10			1				1
11	1		1	1	1		4
12					1		1
13		1	1	1	1		4
14			1				1
15	1						1
16			1				1
17	1			1			2
18			1				1
28			1				1
Number of trappers	28	9	36	11	8	3	95
Total years or residence	109	42	220	47	63	3	484
Mean number of years	3.9	4.7	6.1	4.3	7.9	1.0	5.1

Source: field investigations.

TABLE A.4

Number of full time trappers wintering on Banks Island.
by year and by campsite, 1928-1967.

	Masik River	Sachs Harbour	Mary Sachs	Blue Fox Harbour	Lennie Harbour Big Bluff	Siksik Point	Sea Otter Harbour	North Star Harbour	Storkerson Bay	Satsik River	De Salis Bay	Nokaluk-Coal Mine	Jesse Bay	Total
1928-29			4											4
1929-30	5	4			2									11
1930-31		1		2			6				6			15
1931-32		4					3			6				13
1932-33				7		4	5							16
1933-34					5									5
1934-35	4	2									3	4		13
1935-36		6		2		2	2				1		4	17
1936-37	—	—	—	—	—	—	—	—	—	—	—	—	—	0
1937-38	4	2					2	2			4		2	16
1938-39		3		1			3	2		2	4			15
1939-40		3		1	2		6							12
1940-41		7					3			4				14
1941-42	—	—	—	—	—	—	—	—	—	—	—	—	—	0
1942-43		8		9							3		4	24
1943-44		10			3	3	11							27
1944-45	—	—	—	—	—	—	—	—	—	—	—	—	—	0
1945-46		5			2		7		3	4				21
1946-47		9					1				5			15
1947-48		24											3	27
1948-49	—	—	—	—	—	—	—	—	—	—	—	—	—	0
1949-50	—	—	—	—	—	—	—	—	—	—	—	—	—	0
1950-51	—	—	—	—	—	—	—	—	—	—	—	—	—	0
1951-52		3			4		2							9
1952-53		7			2									9
1953-54		6					4							10
1954-55		5					4				4	3	4	20
1955-56		8												8
1956-57		4												4
1957-58		6									3			9
1958-59		7					3				5			15
1959-60		9			1		2		3					15
1960-61		16									1			17
1961-62		20												20
1962-63		17												17
1963-64		18												18
1964-65		17												17
1965-66		16												16
1966-67		15												15

TABLE A.5

White fox pelt production, Banks Island, 1928-67

	trappers (full time)	recorded catches	recorded traplines	recorded catch	projected catch[a]	average catch (based on projected catch)	part time trappers and their projected catch
1928-29	4	4	4	480	480	120	
1929-30	11	10	11	2,814	2,914	265	
1930-31	15	11	2	1,411	1,886	126	
1931-32	13	8	6	1,504	1,854	143	
1932-33	16	6	2	230	608	38	
1933-34	5	4	0	842	900	180	
1934-35	13	9	3	1,217	1,667	128	
1935-36	17	9	5	777	1,462	86	
1936-37	0						
1937-38	16	12	11	1,235	1,648	103	
1938-39	13	13	13	6,352	6,502	433	
1939-40	12	10	6	1,315	1,465	122	
1940-41	14	14	14	5,479	5,479	391	
1941-42	0						
1942-43	24	18	14	3,758	4,208	175	
1943-44	27	14	12	1,311	1,861	69	
1944-45	0						
1945-46	21	16	8	3,384	3,909	186	
1946-47	15	14	10	4,581	4,800	320	
1947-48	27	20	14	1,959	2,234	83	4/15
1948-49	0						
1949-50	0						
1950-51	0						
1951-52	9	9	2	2,648	2,648	294	
1952-53	9	9	4	1,199	1,199	133	
1953-54	10	9	7	1,508	1,733	173	
1954-55	20	18	9	5,915	6,000	300	
1955-56	8	7	4	966	1,030	129	2/15
1956-57	4	4	3	391	391	98	1/19
1957-58	9	8	5	2,436	2,741	305	3/130
1958-59	15	10	9	1,415	1,940	129	2/25
1959-60	15	8	9	593	1,018	68	2/15
1960-61	17	17	17	5,470	5,470	322	4/155
1961-62	20	20	16	1,980	1,980	99	3/30
1962-63	17	17	17	3,425	3,425	201	3/118
1963-64	18	16	18	1,857	1,982	110	3/3
1964-65	17	17	17	1,543	1,543	91	3/12
1965-66	16	16	16	2,978	2,978	186	6/84
1966-67	15	15	15	8,646	8,646	576	6/851

[a]The projected catch is the sum of the recorded catch of each trapper plus the estimated catch of those trappers for whom there is no record. The estimate is based on several factors regarding the location, skill, and capital equipment of the trapper, plus the relative abundance during the season in question, and/or recorded estimates of the total catch.

Source: General Hunting Licence Returns, Fort Smith, N.W.T.; IA&ND/NAB 1000/176; field investigations.

TABLE A.6

Earnings from white, fox, Banks Island, 1928-67.

	Estimated price received per pelt	Value of Banks Island catch	Ave. income per trapper	Highest individual income
1928-39	$65.00	$ 31,200	$ 7,800	$ 9,000
1929-30	45.00	131,130	11,925	23,715
1930-31	25.00	47,150	3,575	5,500
1931-32	16.00	29,664	2,288	6,400
1932-33	22.00	13,376	836	1,364
1933-34	20.00	18,000	3,600	6,000[a]
1934-35	17.00	28,339	2,176	5,627
1935-36	17.00	24,854	1,462	2,890
1936-37		nil		
1937-38	13.00	21,424	1,339	3,263
1938-39	11.00	71,552	4,763	14,300
1939-40	11.00	16,115	1,342	2,816
1940-41	25.00	136,975	9,775	15,300
1941-42		nil		
1942-43	31.00	130,448	5,425	13,175
1943-44	35.00	65,135	2,415	11,375
1944-45		nil		
1945-46	25.00	97,725	4,650	10,000
1946-47	18.00	86,400	5,760	14,256
1947-48	12.00	26,808	996	2,400
1948-49		nil		
1949-50		nil		
1950-51		nil		
1951-52	8.50	22,508	2,499	3,927
1952-53	11.00	13,189	1,463	2,926
1953-54	12.00	20,796	2,076	3,060
1954-55	14.00	84,000	4,200	8,484
1955-56	18.00	18,540	2,322	3,960
1956-57	21.00	8,211	2,058	2,751
1957-58	20.00	54,820	6,100	10,560
1958-59	25.00	48,500	3,225	7,500
1959-60	37.00	37,666	2,516	4,329
1960-61	28.00	160,720	9,016	16,912
1961-62	16.00	31,680	1,584	3,312
1962-63	22.00	75,350	4,422	8,162
1963-64	24.01	47,578	2,643	6,338
1964-65	13.22	20,403	1,200	2,200
1965-66	22.05	65,673	4,105	10,500
1966-67	22.84	181,266	12,084	21,000

[a]One Banksland trapper forced to winter at Walker Bay made $8,300.

Note: Prices and earnings given in contemporary unadjusted dollars.

Source: Table A.5, IA&ND/NAB 1000/176, field investigations.

TABLE A.7

Indices for consumer prices (Canada) and pelt values (N.W.T.), 1925-67 (1949=100).

	Consumer prices (Canada)		Pelt values (N.W.T.)	
	All items	Food	White fox	Muskrat
1925-26	75.8	66.9	356.1	108.3
1926-27	74.5	65.7	508.0	145.0
1927-28	74.8	65.9	477.3	110.8
1928-29	75.7	67.5	615.3	100.0
1929-30	75.2	65.9	372.8	25.8
1930-31	67.8	51.7	252.0	57.5
1931-32	61.6	43.0	159.5	35.8
1932-33	58.7	42.5	221.7	45.8
1933-34	59.5	46.3	203.9	75.0
1934-35	59.9	47.2	174.0	95.8
1935-36	61.1	48.8	174.0	95.8
1936-37	63.0	51.4	147.7	102.5
1937-38	63.7	51.7	131.5	49.2
1938-39	63.2	50.2	126.4	65.8
1939-40	65.7	52.6	93.6	71.7
1940-41	69.6	57.9	207.6	122.5
1941-42	72.9	63.4	293.8	164.2
1942-43	74.2	65.2	318.2	183.3
1943-44	74.6	65.5	366.5	98.3
1944-45	75.0	66.3	409.1	187.5
1945-46	77.5	70.0	244.3	229.2
1946-47	84.8	79.5	153.4	125.0
1947-48	97.0	97.5	125.0	191.7
1948-49	100.0	100.0	100.0	100.0
1949-50	102.9	102.6	73.9	100.0
1950-51	113.7	117.0	130.3	167.5
1951-52	116.5	116.8	88.5	92.5
1952-53	115.5	112.6	95.2	80.0
1953-54	116.2	112.2	116.9	55.8
1954-55	116.4	112.1	109.0	60.0
1955-56	118.1	113.4	147.2	64.2
1956-57	121.9	118.6	187.5	62.5
1957-58	125.1	122.1	173.4	40.0
1958-59	126.5	121.1	223.1	50.0
1959-60	128.0	122.2	284.1	50.0
1960-61	129.2	124.0	227.3	45.8
1961-62	130.7	126.2	114.2	57.5
1962-63	133.0	130.3	163.3	90.0
1963-64	135.4	132.4	170.2	90.0
1964-65	138.7	136.9	104.9	80.8
1965-66	143.9	144.5	176.7	110.0
1966-67	149.0	146.4	177.8	53.3

Source: Canada, D.B.S., *Consumer Price Index for Canada (weighted 1947-48)* and *Fur Production*, (annual). The consumer price index is calculated on a calendar year basis and is entered here with the fur year ending in the middle of the price year, i.e. 1966-67 fur index corresponds to 1967 price index.

APPENDIX B

TRAPPING STATISTICS

TABLE B.1

Pre-season trapline preparations, 1966

	Summer							Autumn								
	Airplane Charter	Canoe Travel		Materials Cached				Toggling				Materials Cached				
Trapper number	Cost ($)	Cost ($)	Time (days)	Cornmeal (lbs.)	Fuel (gals.)	Other[a]	Seal (approx. weight, lbs.)	Miles of line	Number of traps	Days out	Days toggling	Cornmeal (lbs.)	Fuel (gals.)	Other	Caribou[b]	Seal (approx. weight, lbs.)
004	39			150	10											
008		20	3	350	30		750									
010	58			300	20			155	647	20	9			X	X	20
013								15	30	3	2					
015								40	50	14	5				X	
018		18	5	150	30		1145									
020		18	5	150	30		1280									
021		20	3	300	30	X	885	30	150	5	3	150	10			175
022	39			150	10											
023	46			450	5	X										
Totals	182	76	16	2000	165	X	4060	240	877	42	19	150	10	X	X	195

[a]Other includes chiefly items of store bought goods such as tea, sugar, butter, macaroni, etc., but also traps and other gear.

[b]As many fall killed caribou are cached but later brought home, it is impossible to state how much was cached for ultimate use on the trail.

Source: Field Investigations.

TABLE B.2

Trapping effort, Banks Island, 1964-67, by individual.

trapper number	partner number	line code	toggled before season	total foxes	foxes retrieved	foxes lost	dogs	miles of line	return length	trips	days out	distance travelled	traps set	trap checks	days per trip	distance per trip	miles per day	april trap density	total fox per trap check	fox retrieved per trap check	loss rate (percentage)
1964-65																					
001	002	1	yes	58	47	11	8	80	160	4	42	560	300	1800	10	140	13.3	3.8	.032	.026	19
002	001	1	yes	190	175	15	9	93	185	6	62	960	700	6500	10	160	15.5	7.5	.029	.027	8
003	022	1	yes	80	76	4	11	55	110	3	29	330	500	2500	10	110	11.4	9.1	.032	.030	5
004	002	3	no	125	121	4	9	210	210	6	67	1060	415	2015	11	177	15.8	2.0	.062	.060	3
007		1	no	34	26	8	9	105	210	5	51	940	400	2900	10	188	18.4	3.8	.012	.009	24
009	024	5	no	121	91	30	10	153	265	5	56	1260	515	4075	11	252	22.5	3.4	.030	.022	25
010	023	1	no	60	59	1	7	110	220	4	35	770	250	1250	9	192	22.0	2.3	.048	.047	2
013		1	no	110	100	10	9	90	180	5	51	730	300	2200	10	146	14.3	3.3	.050	.045	9
015	017	2	no	59	45	14	8	125	250	5	60	1000	300	2200	12	200	16.7	2.4	.027	.020	24
017	015	1	no	38	30	8	9	50	100	4	35	400	50	350	9	100	11.4	1.0	.109	.086	21
018		1	yes	85	76	9	7	98	195	5	50	865	250	1850	10	173	17.3	2.6	.046	.041	11
020	021	5	yes	176	151	25	9	150	290	5	68	1300	600	4700	14	260	19.1	4.0	.037	.032	14
021	020	5	yes	197	172	25	11	150	290	5	68	1300	635	4895	14	260	19.1	4.2	.040	.035	13
022	004	3	no	119	104	15	9	210	210	6	67	1060	400	1950	11	177	15.8	1.9	.061	.053	13
023	010	1	no	131	96	35	6	110	220	6	59	1040	300	2500	10	173	17.6	2.7	.052	.038	27
024	009	5	no	100	75	25	8	153	265	5	56	1260	400	3200	11	252	22.5	2.6	.031	.023	25
026		1	no	110	99	11	11	100	200	6	99	1000	400	3700	16	167	10.1	4.0	.030	.027	10
1965-66																					
001	002	1	yes	180	168	12	7	150	300	7	82	1600	425	4125	12	229	19.5	2.8	.044	.041	7
002	001	1	yes	314	304	10	9	150	300	7	82	1600	800	8200	12	229	19.5	5.3	.038	.037	3
004	022	5	no	220	207	13	9	153	210	7	79	1275	550	4970	11	182	16.1	3.6	.044	.042	6
006	018	1	no	46	40	6	8	125	250	5	58	865	335	2165	12	173	14.9	2.7	.021	.018	13
009	024	1	yes	175	162	13	11	145	290	6	74	1400	500	4675	12	233	18.9	3.4	.037	.035	7
010		3	yes	473	443	30	8	265	280	6	115	1525	800	4225	19	254	13.3	3.0	.112	.105	6
013		3	no	120	101	19	12	185	185	6	65	1130	410	1820	11	188	17.4	2.2	.066	.055	16
015		1	no	60	47	13	9	73	145	5	64	605	210	1470	13	121	9.5	2.9	.041	.032	22
017		1	no	30	27	3	9	55	110	12	80	1290	100	2220	7	107	16.1	1.8	.014	.012	10
018	006	1	yes	262	244	18	8	133	265	5	68	1180	330	2620	14	236	17.4	2.5	.100	.093	7
020	021	1	yes	322	257	65	13	180	360	7	95	1920	700	7200	14	274	20.2	3.9	.045	.036	20
021	020	1	yes	347	317	30	11	180	360	7	95	1920	700	7750	14	274	20.2	3.9	.045	.041	9
022	004	5	no	182	172	10	9	153	210	7	73	1205	460	3500	10	172	16.5	3.1	.052	.049	5
023		5	yes	195	170	25	7	180	250	4	61	850	580	3060	15	210	13.9	3.2	.064	.056	13
024	009	6	no	146	136	10	8	190	380	4	72	1290	505	3435	18	323	17.9	2.7	.043	.039	7
026		1	yes	191	171	20	11	100	200	7	120	1310	600	7560	17	187	10.9	6.0	.025	.023	10
1966-67																					
001		1	no	389	342	47	10	60	120	5	65	575	600	2880	13	115	8.8	10.0	.135	.119	12
004	022	2	no	541	516	25	9	95	190	5	58	880	450	2975	12	176	15.2	4.7	.182	.173	5
008	009	1	no	394	354	40	7	120	240	5	80	1220	400	3095	16	244	15.3	3.4	.127	.114	10
009	008	2	no	641	567	74	8	155	265	6	88	1330	655	4385	15	222	15.1	4.2	.146	.129	12
010		4	yes	1011	846	165	11	192	384	5	90	1400	746	3946	18	280	15.6	3.9	.256	.214	16
013		5	yes	562	536	26	12	100	175	5	66	785	355	2445	13	157	11.9	3.6	.230	.219	5
015		2	yes	236	213	23	9	117	234	5	76	850	330	1710	15	170	11.2	2.8	.138	.125	10
017		2	no	246	233	13	10	56	112	6	65	675	240	2165	11	113	10.4	4.3	.114	.113	5
018		2	no	712	634	78	11	110	220	5	73	1080	505	3925	15	216	14.8	4.6	.181	.162	11
020		2	no	987	867	120	12	182	364	5	86	1520	746	4844	17	304	17.7	4.1	.204	.179	12
021		2	yes	974	852	122	11	171	342	5	79	1487	890	6073	16	297	18.8	5.2	.160	.140	13
022	004	2	no	539	507	32	9	95	190	5	58	880	389	2568	12	176	15.2	4.1	.210	.197	10
023		4	no	578	441	137	10	140	280	5	87	1120	670	3330	17	224	12.9	4.8	.174	.132	23
024		1	no	685	586	99	7	110	220	4	62	910	375	2500	15	228	14.7	3.4	.274	.234	14
026		1	no	1009	939	70	9	110	220	5	103	1050	573	4471	21	210	10.2	5.2	.226	.210	7

Source: Field Investigations.

TABLE B.3

Trapping effort, Banks Island, three-year mean, by individual.

Trapper number	Year with partner	Line codes (by year)	Years toggled before season	Total foxes	Foxes retrieved	Foxes lost	Dogs	Miles of line	Return length	Trips	Days out	Distance travelled	Traps set	Trap checks	Days per trip	Miles per trip	Miles per day	April trap density	Total fox per trap check	Fox retrieved per trap check	Loss rate (percentage)
001	2	111	2	209	186	23	8.3	97	193	5.3	63	912	442	2935	11.7	161	13.9	5.5	.070	.062	13
004	3	352	0	295	281	14	9.0	153	203	6.0	68	1072	472	3320	11.3	178	15.7	3.4	.096	.092	5
009	3	512	1	312	273	39	9.7	151	273	5.7	73	1330	557	4378	12.7	236	18.8	3.7	.071	.062	15
010	1	134	2	515	449	65	8.7	189	295	5.0	80	1232	599	3140	15.3	242	17.0	3.1	.139	.122	8
013	0	135	1	264	246	18	11.0	125	180	5.3	61	882	355	2155	11.3	164	14.5	3.0	.115	.106	10
015	1	212	1	118	102	17	8.7	105	210	5.0	67	818	280	1793	13.3	164	12.5	2.7	.069	.059	18
017	1	112	0	105	97	8	9.3	54	107	7.3	60	788	130	1578	9.0	107	12.6	2.4	.079	.070	12
018	1	112	2	353	318	35	8.7	114	227	5.0	64	1042	362	2798	13.0	208	16.5	3.2	.109	.099	9
020	2	512	2	495	425	70	11.3	171	338	5.7	83	1580	682	5581	15.0	279	19.0	4.0	.095	.082	16
021	2	512	3	506	447	59	11.0	167	331	5.7	81	1569	742	6239	14.6	277	19.4	4.4	.082	.072	11
022	3	352	0	280	261	19	9.0	153	203	6.0	66	1048	416	2673	11.0	175	15.8	3.0	.108	.100	8
023	1	154	1	301	256	66	7.7	143	250	5.0	69	1003	517	2963	14.0	202	14.8	3.6	.097	.075	21
024	2	561	0	310	266	45	7.7	151	288	4.3	63	1153	427	3045	14.7	268	18.4	2.9	.116	.099	15
026	0	111	1	437	403	34	10.3	103	207	6.0	107	1120	524	5244	18.0	188	10.4	5.1	.094	.087	9

Source: Table B.2

TABLE B.4

Regression equations for trapping effort, Banks Island, 1964-67

Year	Equation	Standard error	Standard error of y
a. total foxes on trap checks, all lines			
1964-65	$y = .026x + 31$	.005	31
1965-66	$y = .033x + 61$	.011	96
1966-67	$y = .185x - 1$	.036	157
3 year mean	$y = .074x + 69$	.016	82
b. total foxes on trap checks, excluding circular lines			
1964-65	$y = .028x + 20$	.005	29
1965-66	$y = .034x + 37$	.008	64
1966-67	$y = .185x - 1$	.036	157
3 year mean	$y = .081x + 18$	.012	57
c. total foxes on traps set, all lines			
1964-65	$y = .241x + 10$	.049	32
1965-66	$y = .508x - 50$	.083	64
1966-67	$y = 1.065x + 71$	.261	182
3 year mean	$y = .721x - 13$	.114	66
d. total foxes on traps set, excluding circular lines			
1964-65	$y = .241x + 9$	.052	33
1965-66	$y = .428x - 17$	.080	57
1966-67	$y = 1.065x + 71$	.261	182
3 year mean	$y = .685x - 5$	.129	71

All regressions significant at 99 percent confidence level.

TABLE B.5

Bimonthly breakdown of effort expenditure
during the trapping season (individual means), Banks Island, 1964-67

	1964-65			1965-66			1966-67			three year mean		
	Nov-Dec	Jan-Feb	Mar-Apr	Nov-Dec	Jan-Feb	Mar-Apr	Nov-Dec	Jan-Feb	Mar-Apr	Nov-Dec	Jan-Feb	Mar-Apr
Total foxes	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	285	175	174	n.a.	n.a.	n.a.
Foxes retrieved	8	21	62	59*	55*	75*	257	155	151	108	77	96
Foxes lost	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	28	20	23	n.a.	n.a.	n.a.
Dogs	8.9	8.8	8.8	9.3	9.3	9.3	9.6	9.9	9.9	9.3	9.3	9.3
Miles of line	65	118	120	93	139	151	99	113	121	86	123	131
Return length	130	206	209	171	248	256	197	226	237	166	227	234
Trips	1.3	1.8	2.0	1.8	2.1	2.4	2.0	1.2	1.9	1.7	1.7	2.1
Days out	16	22	19	23	31	26	36	19	21	25	24	22
Distance travelled	174	354	414	296	464	550	398	244	409	289	354	457
Max. traps set	252	386	395	352	461	500	430	504	528	345	450	472
Trap checks	403	1049	1371	801	1460	2051	1126	927	1367	777	1145	1596
Days per trip	12	12	10	13	15	11	18	16	11	14	14	11
Distance per trip	133	201	207	163	218	226	199	203	219	165	207	217
Miles per day	10.8	16.3	21.4	12.6	15.0	21.3	11.0	12.7	19.9	11.5	14.7	20.9
Days out as % of season	26	37	35	44	53	57	59	32	46	43	41	46
Trap density	3.9	3.3	3.3	3.8	3.3	3.4	4.4	4.5	4.4	4.0	3.7	3.7
Total fox per trap check	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	.253	.188	.127	n.a.	n.a.	n.a.
Retrieved fox per trap check	.020	.020	.045	.071*	.039*	.035*	.228	.167	.110	.106	.072	.063
Loss rate (% of total)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	9.9	11.6	15.1	n.a.	n.a.	n.a.

n.a. – not available
*based on data for 15 out of 16 trappers

Source: Field investigations.

APPENDIX C

HUNTING STATISTICS

TABLE C.1

Typical production and use of animal foods, by month, by an average Banks Island trapper

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Seal – number	18.7	25.1	9.8	1.3	0.6	0.4	1.7	1.4	1.2	1.8	4.9	12.1	80.0
lbs. dogfeed	841	988	508	67	31	21	88	73	62	93	254	612	3638
lbs. human food	20	40	0	0	0	0	0	0	0	0	0	0	60
Total weight	861	1028	508	67	31	21	88	73	62	93	254	612	3698
Caribou – number	0.05	0.17	0.26	4.08	3.35	0.83	1.10	1.56	1.86	0.53	0.86	0.42	15.0
lbs. dogfeed	0	0	0	30	0	0	0	0	0	0	0	0	30
lbs. human food	4	14	20	296	267	65	87	125	149	41	68	34	1170
Total weight	4	14	20	326	267	65	87	125	149	41	68	34	1200
Polar bear – number	0.16	0.13	0.09	0.15	0.10	0.06	0.02	0.00	0.25	0.24	0.23	0.07	1.5
lbs. dogfeed	46	36	32	48	35	21	7	0	39	37	35	25	361
lbs. human food	10	10	0	5	0	0	0	0	5	5	5	0	40
Total weight	56	46	32	53	35	21	7	0	44	42	40	25	401
Geese – number	0	0	0	0	0	0	0	0	0	0	20	10	30
lbs. human food (Total)	0	0	0	0	0	0	0	0	0	0	70	35	105
Eider ducks – number	5	5	0	0	0	0	0	0	0	0	0	5	15
lbs. dogfeed	7	6	0	0	0	0	0	0	0	0	0	7	20
lbs. human food	6	7	0	0	0	0	0	0	0	0	0	6	19
Total weight	13	13	0	0	0	0	0	0	0	0	0	13	39
Ptarmigan – number	0	0	20	20	0	0	0	0	0	10	10	0	60
lbs. human food (Total)	0	0	18	18	0	0	0	0	0	9	9	0	54
Owls – number	0	0	10	5	5	0	0	0	0	0	0	0	20
lbs. dogfeed	0	0	36	20	20	0	0	0	0	0	0	0	76
lbs. human food	0	0	4	0	0	0	0	0	0	0	0	0	4
Total weight	0	0	40	20	20	0	0	0	0	0	0	0	80
Fish – number	0	15	0	5	0	0	0	0	0	0	35	0	55
lbs. human food (Total)	0	35	0	12	0	0	0	0	0	0	60	0	107
Arctic hare – number	0	0	0	0	0	0	0	1	1	1	12	0	15
lbs. dogfeed	0	0	0	0	0	0	0	6	6	6	24	0	42
lbs. human food	0	0	0	0	0	0	0	0	0	0	40	0	40
Total weight	0	0	0	0	0	0	0	6	6	6	64	0	82
Arctic fox – number	0	0	0	0	31	32	34	20	30	53	0	0	200
lbs. dogfeed (Total)	0	0	0	0	120	110	70	40	45	75	0	0	460
Total weight – dogfeed	894	1030	576	165	206	152	165	119	152	211	313	644	4627
Total weight – human food	40	106	42	331	267	65	87	125	154	55	252	75	1599
Total weight – all food	934	1136	618	496	473	217	252	244	306	266	565	719	6226

Note: The number of seal, caribou, bear and fox are based on the means of recent harvests, with the monthly catch based on data for the years 1964-68 (except for seals which are based on the period 1964-67). The total and monthly harvests of birds, fish and hares have been estimated (Chapter Six). The proportions used for dog-feed and human food have been estimated on the basis of field observations (in cases where the item is used exclusively by either dogs or men, this is noted in the above table by the notation "total" following the specified use). The calculation of weights is based on the conversion factors given in Appendix E, and attempts to take into account seasonal weight variation, seasonal variation in carcase use, and whether the item is being used by dogs or humans.

Source: Appendix E, field investigations.

TABLE C.2

Time expenditure by man-days for eighteen men involved in full-time trapping activity, Banks Island. 1 July 1966 – 30 June 1967.

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
Total possible man-days[a]	558	558	540	558	540	558	558	504	558	540	558	540	6570
Trapping	0	0	16	31	365	246	237	143	215	171	60	0	1484
(main lines)	(0)	(0)	(0)	(0)	(359)	(233)	(217)	(131)	(201)	(156)	(0)	(0)	(1297)
(day lines – short trips)	(0)	(0)	(0)	(0)	(6)	(13)	(20)	(12)	(14)	(3)	(0)	(0)	(68)
(pre or post season activity)	(0)	(0)	(16)	(31)	(0)	(0)	(0)	(0)	(0)	(12)	(60)	(0)	(119)
Seal hunting[b]	125	200	30	5	1	3	5	6	6	9	33	30	453
Caribou hunting	0	0	0	77	0	2	2	2	2	0	19	11	115
(hunting)	(0)	(0)	(0)	(77)	(0)	(2)	(0)	(2)	(0)	(0)	(16)	(5)	(102)
(hauling meat)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(2)	(0)	(3)	(6)	(13)
Bear hunting	0	0	1	0	0	0	0	0	0	1	0	0	2
Fishing	0	30	0	0	0	0	0	0	1	8	62	12	113
Wage employment	0	41	60	15	0	0	0	0	0	28	0	0	144
Away from the Island[c]	61	31	84	13	24	8	26	62	31	42	95	173	650

[a] Number of days in month times eighteen.

[b] Estimated for July to October.

[c] Visits for any purpose (including hospitalization) to other communities.

Source: Field investigations.

APPENDIX D

SOURCES AND METHODS FOR THE CALCULATION OF INPUTS AND EFFICIENCIES OF SEAL HUNTING

APPENDIX D

Sources and Methods for the Calculation of Inputs and Efficiencies of Seal Hunting.

Participant observation and personal interviews were employed to obtain data on seal hunting. The analysis of relative efficiency is by season rather than by type of hunting, as in 1966-67 conditions favoured floe edge hunting throughout most of the year. In Table D.1, inputs are calculated in two ways: per hunt and per seal retrieved.

Winter Hunting: There were thirteen separate hunts during the winter of 1966-67 (period 1 November - 15 April), all of the floe edge type, involving nine hunters who spent a total of twenty man-days on the ice. This does not include ventures that were unsuccessful due to the closing of the lead prior to the hunter's arrival, nor the few trips which involved the setting and checking of seal hooks. Data were obtained for all of the winter hunting trips by interview.

Spring Hunting: Data for spring (floe edge) hunting was gained through direct observations of two seal hunts in June 1965. There is very little supporting material as spring hunting was at a minimum in 1967. The figures given in Table 1 are thought to be representative, although the true success rate might be somewhat lower. Information on fast ice hunting is insufficient

TABLE D.1

Inputs and efficiencies of seal hunting[a]

	Per Hunt			Summer Totals	Per Seal Retrieved			
	Winter[b]	Spring[c]	Summer[d]		Winter[b]	Spring[c]	Summer[d]	Summer[e]
Retrieved4	1.4	9.5	3.5	963	1.0	1.0	1.0	1.0
Sunk	0.2	4.5	0.8	431	0.1	0.5	0.2	0.4
Hits	1.6	14.0	3.5	1332	1.1	1.5	1.0	1.4
Shots	n.d.	24.0	9.8	4200	n.d.	2.5	2.8	4.4
Number of seals shot at	n.d.	19.5	6.3	n.d.	n.d.	2.1	1.8	n.d.
Number of seals observed	1.8[g]	25.5	13.5	n.d.	1.4[g]	2.7	3.9	n.d.
Potential hunting time[f]	4:00	15:40	8:20	n.d.	2:51	1:39	2:23	n.d.
Travelling time[f]	2:00	0:30	2:10	n.d.	1:26	0:03	0:36	n.d.
Total time[f]	5:30	16:00	9:15	n.d.	3:56	1:41	2:38	n.d.
Gasolene (gals.)	nil	nil	n.d.	2000	nil	nil	n.d.	2.1
Oil (qts.)	nil	nil	n.d.	350	nil	nil	n.d.	0.36

[a]Includes ringed and bearded seals.

[b]Based on reports of thirteen hunts.

[c]Based on observations of two hunts.

[d]Based on observations of four hunts.

[e]Based on post-season interviews of sixteen hunters.

[f]Measured in hours and minutes. Potential hunting time includes time spent stationary in watch and also while travelling in open water or along the floe edge. Travelling time includes the latter plus travel to and from the settlement or camps, in areas where hunting is impossible. There is some overlap between potential hunting time and travelling time, so that the total of the two exceeds the figure for total hunt time.

[g]Approximate, possibly an underestimate.

n.d. – no data

to tabulate. It is probably the most efficient in terms of material costs (i.e. ammunition), but very time consuming - perhaps almost as much so as winter floe edge hunting.

Summer Hunting: The great majority of seals are taken at this time. Data were obtained from direct observation of four seal hunts in July and August 1966, plus post season interviews for that summer with the hunters, in which aggregrate inputs and and production were ascertained. This has provided a means of cross checking some data. The aggregate data on ammunition includes shells used for resighting, contests, birds and some open water hunting. The true ratio for summer floe edge hunting is probably close to the figure derived from the observational data. The aggregate data show a much higher and doubtless more accurate loss rate through sinking. The observational results are definitely atypical in this respect. However, the possibility of recovering sunken seals in summer is good under certain conditions. The sea water is quite clear and many areas within a mile or so from shore are not more than six or seven fathoms deep. There it is possible to recover seals with a small dragging hook. Those taking the precaution of hunting in shallow areas have been known to recover several hundred pounds of meat in this manner during a single hunt.

Both sources of information relate mainly to floe edge type hunting. Ice was present through most of the summer of 1966, and relatively few seals were shot directly from the canoes. Open water hunting is the least efficient in terms of ammunition and fuel, but ranks high in productivity per unit of time. The loss rate through sinking is probably somewhat less than in floe edge hunting, because with the boat already in the water and in motion, retrieval time is much shorter.

APPENDIX E

COMPONENT WEIGHTS OF SELECTED SPECIES AND THEIR UTILIZATION, BANKS ISLAND, N.W.T.

APPENDIX E

Component Weights of Selected Species and their Utilization, Banks Island N.W.T.

1. Seals

a. Ringed seals

Body weights were obtained for 74 ringed seals (34 males, 40 females) at Sachs Harbour, most during the late summer of 1966. Biological measurements of these seals are given by Usher and Church (1969:9). It is believed that the age class distribution of these seals was representative of the population as a whole. Carcase weights were obtained for 40 of the above seals (i.e. after the removal of the front flippers, the skin and some blubber, but not the viscera). These averaged 76 per cent of dead body weight, with little deviation during the summer season at least. Weight of bone and viscera are adapted from McLaren (1958:61).

total body weight	86.6 lbs
carcase weight	65.8 lbs
bone	14.0 lbs
viscera (not including kidneys) and other waste	13.0 lbs

Seals for winter use are stored and frozen uneviscerated. In spring and early summer, the viscera are removed due to rapid putrefaction. In the former case, the edible yield per seal (as dog feed) is 51.8 pounds, in the latter 38.8 pounds.

b. Bearded seals

Body measurements, sometimes incomplete, were obtained for 15 bearded seals. Eight body weights were recorded, and seven carcase weights, but only in two cases were both weights obtained for the same seal. Furthermore, the treatment of the carcase is not uniform. Sometimes it is skinned, like a ringed seal, in other cases only the viscera are removed. The situation was further complicated by the fact that in the summer of 1966, fully 63 per cent of the catch consisted of first year seals (versus 19 per cent for ringed seals). The hunters considered this remarkably high, but the normal ratio is not known. The average weight of seven young bearded seals was 202 pounds. Adults are known to reach 600 to 800 pounds. The average landed weight at Sachs Harbour, taking into account the appropriate portion of young seals, is unknown. However, in calculating meat yield in the present study, mean edible weight is taken at four to five times that of the ringed seal.

2. Caribou

Body weights were obtained for 13 caribou, of which ten were males. Two of the females were yearlings. There is thus an overrepresentation of fall caribou (viz. Figure 6.6) and of males[1] which would tend to make the sample mean body weight greater than that of the population as a whole. However, fawns are also overrepresented, which would counterbalance this effect. The mean weights given below are therefore representative or nearly so. There is of course considerable variation by age and sex. Mean fall weight of three mature bulls was 213 pounds, and of five young bulls 170 pounds. One adult female weighed 149 pounds.

Bone weight is estimated at 25 per cent of total body weight according to Foote (1965:358). The head and legs account for 15 per cent of body weight in the Banks Island sample, leaving another ten per cent or slightly more of bone weight in the dressed carcase. Ledger and Smith (1964) found bone averaged about 15 per cent of dressed carcase weight in the Uganda kob, which leaves a marginally greater edible meat yield than Foote's index. The proportion of bone weight is

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[1] Information obtained for 280 of 306 caribou killed during the year 1966-67, showed that 180 were males one year and older, 69 were females one year and older, and 31 were fawns.

probably very similar in all Cervidae.

body weight	160 lbs
head	11 lbs
legs	13 lbs
hide	9 lbs
inedible viscera	26 lbs
edible viscera	6 lbs
dressed carcase	95 lbs
edible carcase weight[a]	79 lbs
edible carcase weight[b]	81 lbs

[a]Foote index

[b]Ledger and Smith index

Mean edible yield per dressed carcase from the Banks Island sample may be taken at 80 pounds. This is in close accord with White's estimate of 50 per cent edible yield for members of the deer and dog families based on meat packers' assessments of stock cattle (1953:397).

3. Polar Bears

Foote has estimated the average live weight of polar bears at 800 pounds, of which 75 per cent is edible blubber and meat (1965:353). Comparison of carcase weights to live weights of two winter bears at Sachs Harbour, adjusting for bone, suggests that the edible portion is about 70 per cent, in winter at least. Very few of the bears killed at Sachs in 1966-67 were full grown - more frequently they were in the 300 to 450 pound range. Foote's estimate is based on full grown animals, but seldom does the hunt yield animals solely in the upper age classes. Very possibly the mean weight of bears actually harvested is about 500 pounds, yielding 350 pounds of meat. If loss and wastage (due to inability to haul all the meat, and to the discarding of blubber scrapings from the hide) amounts to 25 per cent or more, the edible yield is probably 250 pounds per bear.

4. Birds

a. Snow Geese

Snow geese weigh four to six pounds (Manning, Hohn, and Macpherson, 1956:37). The edible component (mainly flesh) is probably about 70 per cent of live weight, for geese and other birds as well, according to White (1953:398)

b. Eider Ducks

Eider ducks weigh three to four pounds, of which about 2.5 pounds are edible (Manning, Hohn and Macpherson, 1956:47 and Foote, 1965:363).

c. Ptarmigan

Willow ptarmigan are about 1.5 pounds and rock ptarmigan about 1.0 pounds (Manning, Hohn and Macpherson, 1956: 54-55).

d. Owls

The mean weight of seven owls taken in October 1966 was 5.1 pounds, of which about 80 per cent is suitable for dogfeed.

5. Fish

Although some very large fish are taken on Banks Island, the great majority of the catch ranges from two to four pounds. Edible weight is about 75 per cent of round weight (Brack and McIntosh, 1963:153).

6. Arctic Hare

Manning and Macpherson obtained a mean weight of 11.3 pounds for 11 adult hares in summer, but many of these were either pregnant or lactating (1958:9). The mean eviscerated weight of 36 hares taken at Castel Bay in April 1967 was 7.9 pounds. Live weight was probably between nine and ten pounds. Edible yield for humans is probably about five pounds, and somewhat more for dogs.

7. Arctic Fox

McEwen (1955:23) obtained a mean weight of 5.76 pounds for male foxes and 4.98 pounds for 170 female foxes, with a range of 3.5 to 11 pounds for the entire sample. However, other investigators have recorded foxes of over 20 pounds. McEwen considered his sample biased as it consisted of foxes taken in late winter when they tend to be lighter. White (1953:397) gives a mean weight of nine pounds. The edible portion for dogs is probably about 75 per cent live weight.

8. Wolves

The mean weight of six wolves recorded by McEwen in 1955 (1955:40) and one shot north of Storkerson Bay in April 1967 is 84 pounds. Edible weight is probably 40 to 45 pounds.

APPENDIX F

PRODUCTION COSTS OF COUNTRY PRODUCE

APPENDIX F

Production Costs of Country Produce

It is possible to calculate the cost of harvesting any type of animal, and accordingly, the production costs per pelt or per pound of food. These calculations are intricate and require several intermediate steps. They are based on the annual depreciation and operating costs of the stock of capital equipment, as given in Table 7.1. However, many of the separate items have more than one use, and the correct proportions of the costs must be assigned to each activity. Dog team travel must also be costed and proportionally assigned.

Table F.1 gives a breakdown of annual dog team travel and use. Table F.2 gives direct input costs per dog team, and allots costs to each activity on the basis of Table F.1. Table F.3 is a simple input-output matrix showing direct input costs for each activity. Table F.4 shows the costs per animal and per pound of each species harvested, and derives cost for dog feed and human food production.

It is necessary to carry the analysis further however, since some commodities are not produced for final demand but as intermediate inputs for other forms of production. The direct input costs of dogfeed must be reallocated, since dogfeed is itself an input to mos t types of hunting and trapping. Table F.2 showed only the direct input cost of dog travel. Table F.5 shows the true cost which is a combination of direct inputs and dogfeed production costs. (Costs of fox production have not been reallocated from Table F.5 since their use as dogfeed is only a secondary and incidental purpose of their harvesting.) In Tables F.6 and F.7, dogfeed production costs are added to the direct input costs of each of the major commodities produced. First, the cost per pound of seal, caribou and bear meat is calculated, then the cost per fox, bear and seal pelt. Bears and seals have been assigned a cost for both meat and pelts. Either cost can be used, depending on the primary manner of utilization, but not both simultaneously.

TABLE F.1

Approximate annual travel per dog team

Year	Trapping[a]	Caribou hunting	Bear hunting	Seal[b] hunting	Other[c]	Total
1964-65	965	120	80	100	200	1465
1965-66	1340	95	80	100	200	1815
1966-67	1080	105	0	50	200	1406
Adjusted means[d]	1130	110	80	100	200	1620
Proportion (per cent)	70	7	5	6	12	100

[a]Includes estimates for day lines.

[b]Estimated.

[c]Estimated; includes travel to camps, hauling gear or produce, hire of dog teams, settlement use, etc.

[d]Adjusted to probable long term average, ignoring unusual circumstances.

Source: Field investigations

TABLE F.2

Direct costs of dog team travel, per team (nine dogs) per year

a.	Direct inputs	
	cornmeal	$220.00
	naptha gas (37.5 gals.)	46.88
	harnesses	62.50
	dog line and chains	5.00
	total	$334.38
b.	Costs by type of use	
	trapping	$233.23
	caribou hunting	22.72
	bear hunting	16.50
	seal hunting	20.64
	other	41.29
	total	$334.38
c.	Cost per mile: 1620 miles at $334.38 = $.21	

Source: Tables 7.1, F.1.

TABLE F.3

Direct input costs by commodity, per year

Item	Fox	Seal	Caribou	Bear	Goose	Duck	Ptarmingan	Owl	Fish	Hare	Total
Traps	75.00										75.00
Rifles		58.33	20.00	9.17	15.88						103.38
Scopes		6.50	4.50	2.00							13.00
Ammunition		50.00	30.00	5.00	12.00	2.00	2.50	20.00		8.00	129.50
Canoe		100.00									100.00
Outboard		142.86									142.86
Gasolene		156.25							32.00		188.25
Outboard oil		33.00							8.00		41.00
Dogs	233.23	20.64	22.72	16.50					8.00		301.09
Toboggan and sled	25.82		5.00	3.57							34.39
Tent	30.00		7.00	3.00							40.00
Other gear	30.00	10.00	7.00	3.00							50.00
Naptha	25.00	6.25	4.50	1.75							37.50
Nets									12.00		12.00
Total	419.05	583.83	100.72	43.99	27.88	2.00	2.50	20.00	60.00	8.00	1267.97

Note: Costs assigned to commodities on the basis of known or estimated proportions of time, distance or amount of total input required to obtain that commodity. All depreciation costs have been assigned to the major commodities, with the minor ones bearing only direct maintenance costs. Minor differences in calculation account for slight discrepancies which may appear between the figures presented here and in Table 7.1.

Source: Tables 7.1, F.2

TABLE F.4

Annual food production costs, by weight

Type	Number	Direct input cost per animal	Cost per lb.	Dogfeed Weight	Dogfeed Cost	Human Food Weight	Human Food Cost	Total Food Weight	Total Food Cost
Seal	80	$ 7.30	$.16	3638	$574.23	60	$ 9.60	3698	$583.83
Caribou	15	6.71	.08	30	2.40	1170	98.32	1200	100.72
Bear	1.5	29.33	.11	361	39.59	40	4.40	401	43.99
Goose	30	.93	.27	0	.00	105	27.88	105	27.88
Duck	15	.13	.05	20	1.02	19	.98	39	2.00
Ptarmigan	60	.04	.05	0	.00	54	2.50	54	2.50
Owl	20	1.00	.25	76	19.00	4	1.00	80	20.00
Fish	55	1.09	.58	0	.00	107	60.00	107	60.00
Hare	15	.53	.10	42	4.10	40	3.90	82	8.00
Fox	200	2.10	.91	460	419.05	0	.00	460	419.05
Totals or means:									
including foxes			$.20	4627	$1059.39	1599	$208.58	6226	$1267.97
excluding foxes			$.15	4167	$640.34	1599	$208.58	5766	$848.92

	including foxes	excluding foxes
Cost per lb., dogfeed	$.23	$.15
Cost per lb., human food	$.13	$.13

Source: Tables 6.8, F.3.

TABLE F.5

Total costs of dog team travel, per team (nine dogs) per year

a. Costs by type of use

	Direct inputs	Dogfeed production	Total
Trapping	$233.23	$448.24	$681.47
Caribou hunting	22.72	44.82	67.54
Bear hunting	16.50	32.02	48.52
Seal hunting	20.64	38.42	59.06
Other	41.29	76.84	118.13
Total	$334.38	$640.34	$974.72

b. Cost per mile: 1620 miles at $974.72 = $.60

Source: Tables F.2, F.4.

TABLE F.6

Production costs of seal, caribou and bear meat (adjusted)

	Seal	Caribou	Bear
Number obtained	80	15	1.5
Basic production cost (Table F.3)	$583.83	$100.72	$ 43.99
Dog feed production cost (Table F.5)	38.42	44.82	32.02
Total cost	622.25	145.54	76.01
Cost per animal	7.78	9.70	50.67
Cost per lb.	.17	.12	.19

Source: Tables F.4, F.5.

TABLE F.7

Production costs per saleable pelt

	Fox	Bear	Seal
Number obtained	200	1.5	60
Direct input costs	$419.05	$ 43.99	$536.38[a]
Dogfeed production costs	448.24	32.02	12.50
Total costs	867.29	76.01	548.88
Cost per pelt	4.34	50.67	9.15

[a]Adjusted to exclude spring sealing, when most unsaleable pelts are taken.

Source: Tables F.4, F.5.

APPENDIX G

IMPORTED FOODSTUFFS

APPENDIX G

Imported Foodstuffs

TABLE G.1

Weight of foodstuffs imported by a typical family of five, for one year, Sachs Harbour, N.W.T.

Item	Weight (lbs.)
Flour	500
Sugar	300
Dry milk	100
Evaporated milk	250
Cereal	50
Miscellaneous baking goods	100
Dehydrated foods (inc. rice, macaroni, spaghetti, potatoes, etc.)	150
Biscuits and cookies	150
Lard	100
Butter	100
Jams & spreads	50
Tea	25
Coffee	50
Soups (mostly dehydrated)	50
Tinned meat	200
Tinned vegetables	150
Tinned fruit	350
Tinned juice	100
Fresh produce (chiefly eggs, onions, cheese)	100
Miscellaneous (raisins, candy, etc.)	50

The above weights represent combinations of round, semi-evaporated and dry weights. A breakdown according to major food categories would therefore be misleading. The proportion of carbohydrates is high, but imported food is supplemented by ab out 1,600 pounds of locally obtained meat and fat, so that in fact protein foods form a considerable proportion of the whole.

The annual purchase of carbohydrates, fats and dairy produce is relatively inflexible. Breadstuffs and spreads are an important food item at home and on the trail. There is greater variation in the purchase of tinned produce according to taste and economic circumstances, as these are more of a luxury. The above "normal" amounts will certainly be reduced in times of economic stress. Tinned meat, for example, which is most heavily consumed in summer when the country meat supply is low, is relatively expensive. It is one of the first items to be foregone when money is short. Paradoxically, the poorer the family, the greater will fresh meat figure in their diet.

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