SUBSISTENCE PRODUCTION IN KIVALINA, ALASKA: A TWENTY - YEAR PERSPECTIVE

by

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ABSTRACT

Detailed records of the subsistence harvest in Kivalina, Alaska, were kept for two two-year periods, 1964-66 and 1982-84. The years between the two study periods saw tremendous changes in the village, including the construction of a high school, the shift from dog teams to snowmobiles, the introduction of electricity, and major improvements in the method of heating houses, among many others. This report presents some of the results of this research, with particular emphasis on the size, content and timing of the subsistence harvest. Harvest data were collected on a daily basis by research assistants resident in the village. Background information was compiled daily by a resident field director, and by the author during periodic visits to Kivalina.

The total subsistence harvest for the years included in the study was as follows: (1) 1964-65 - 372,144 pounds, (2) 1965-66 - 446,903 pounds, (3) 1982-83 - 442,798 pounds, and (4) 1983-84 - 500,767 pounds. The figures are for the combined whole body weights of the species harvested. The various components of the annual harvests are described and analyzed in the body of the report, and the actual harvest data are presented, on a weekly basis, in a series of appendices. On a very general level, sea mammals predominated, followed by terrestrial mammals--primarily caribou, and by fish, but this order was not without exception.

A major point is the variation in the harvest of all resource species, both seasonally and from one year to the next. The sources of this variation are the following: (1) the size of the relevant fish and game

populations; (2) the distribution of the fish and game over the landscape; (3) the accessibility of the fish or game concerned to human foragers; (4) the desirability of alternative fish or game resources; (5) the availability of alternative fish or game resources; (6) weather conditions; (7) general processing and storage conditions; (8) the possibilities for the sale or barter of by-products of or a surplus from the subsistence harvest; (9) the availability and desirability of alternative activities entirely outside the foraging realm, and (10) political factors, such as closed seasons and bag limits.

Surprisingly few changes between the two study periods were noted. Native food was just as important in 1984 as it was in 1964. The decline in dog population was offset by an increase in the human population, so the overall demands placed on the local environment remained about the same. The only important change was the renewal of spring whaling, in 1966. This resulted in an increased harvest of belukha and the capture of an occasional bowhead whale, both of which provided significant additions to the local and regional subsistence economy. Whether the reduced ringed seal harvest was the result of a change in demand, or of some other variable, could not be determined with certainty.

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CHAPTER 1

INTRODUCTION

Subsistence--who should live off the land, to what extent, and in what ways--is one of the major policy issues confronting Alaskans in the 1980s. It is a very complex issue indeed, containing a variety of ethical, political, economic and historical elements. Scientific research is intrinsically unable to answer the ethical and political questions, but it offers the only reliable way to obtain the empirical facts on which intelligent discussion of the philosophical issues depends. Unfortunately, while an enormous amount of data concerning subsistence is already in hand, many important gaps remain.

One major area of ignorance until recently was the demands that Alaska Natives make on local resources. A great deal of very recent research, sponsored by the Division of Subsistence of the Alaska Department of Fish and Game and by various Native organizations, has gone a long way to resolve this problem. Unfortunately, all of these studies have suffered from an inherent limitation, namely, lack of time depth. Therefore, they cannot shed light on the crucial matter of trends in Native subsistence activities, yet it is reasonable to assume that tremendous changes have taken place in such activities over even the past two decades, not to mention over longer periods of time.

The research reported here deals with the problem of trends by describing the subsistence activities of the inhabitants of a single community at two different times. The village is the Inupiaq community of Kivalina, and the periods are 1964-66 and 1982-84. As anyone even remotely

acquainted with the area can attest, the 16 years separating the two study periods was a time of profound social, economic and political change in village Alaska.

This report deals with two basic questions: first, what demands are placed on the local environment by the inhabitants of Kivalina? And, second, how have these demands been altered by the enormous technological and social changes that have taken place in Northwest Alaska over the past two decades? The primary focus with respect to both questions is on the content, size and timing of the subsistence harvest. Numerous other important and interesting questions, particularly those relating to the geographic location of the harvest and to its distribution and consumption, will have to be dealt with at a later date.

The methods, assumptions, and results of this study are presented in considerable detail in a series of appendices. The body of the report confines itself to the presentation of the material in summary fashion only.

Kivalina

Kivalina is a small Inupiaq village located on the shore of the Chukchi Sea, approximately 80 miles north of the Arctic Circle, and about 35 miles beyond the tree-line. Its nearest neighbors are Point Hope, some 73 miles toward the northwest; Noatak, about 45 miles to the east; and the major town and regional center of Kotzebue, about 80 miles to the southeast (see Figure 1)

Kivalina was founded in 1905, when a school was built on an island opposite the mouth of the Wulik River. A settlement grew up around the school, and that settlement developed into the modern village. The original Native population consisted of a number of survivors of aboriginal Kivalinarmiut Society (Burch 1980, 1984), as well as refugees from the Shishmaref

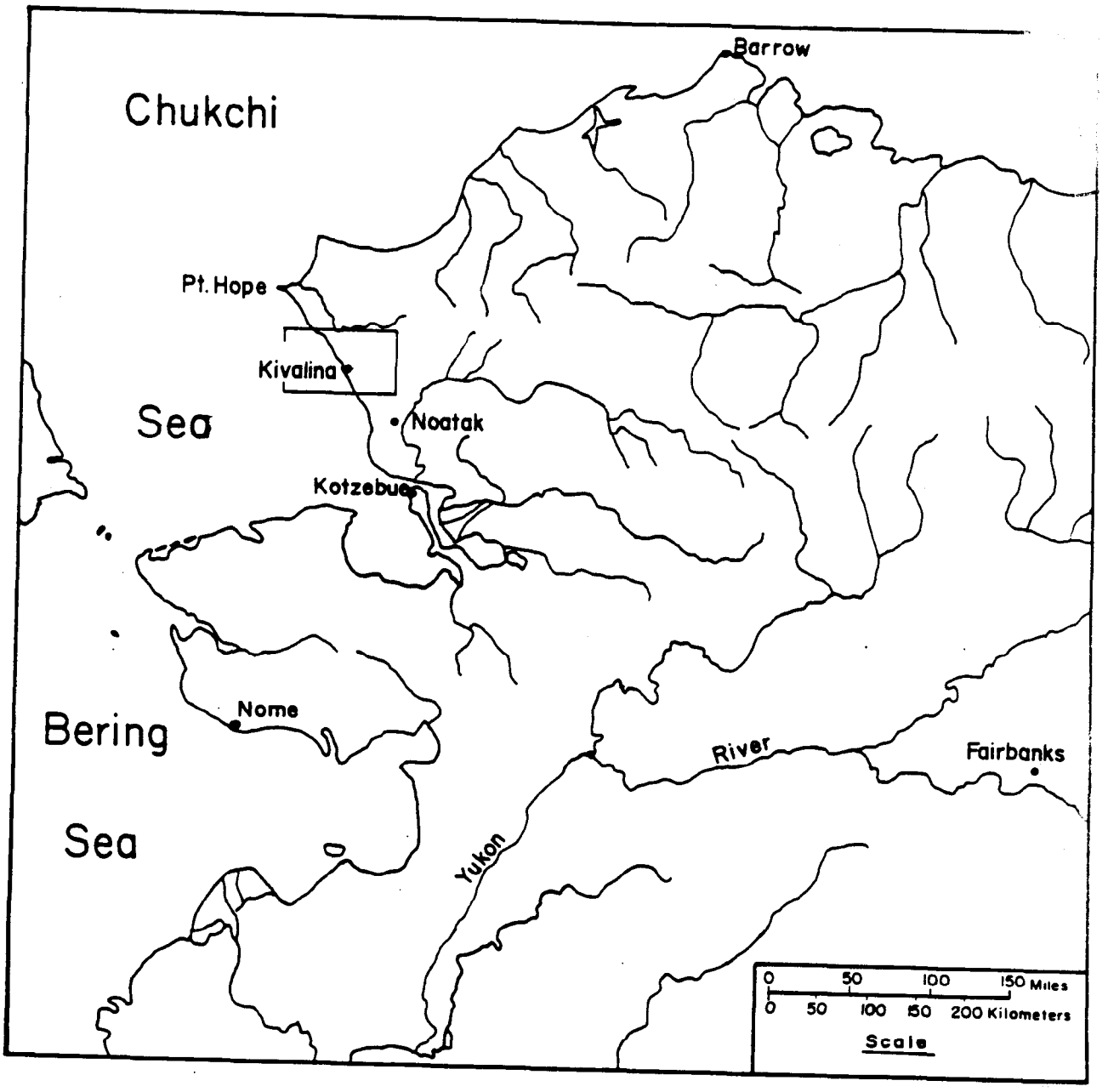

Fig. 1. Map of Northwestern Alaska, Showing Location of the Study Area.

area, the upper and lower Noatak Valley, and the Kotzebue region. A few individuals from Point Hope have married into the community since then.

The village is located on the southeastern tip of a low barrier island that separates Corwin ("Kivalina") Lagoon from the Chukchi Sea. The lagoon is fed by the waters of the Kivalina and Wulik Rivers, both of which rise in the western section of the De Long Mountains, some 50 miles to the northeast (see Figure 2). Over the millenia the rivers have carried vast quantities of silt down from the hills and mountains to form the "Kivalina Flat." The Flat is a triangular-shaped area, some 120 square miles in extent, characterized by generally low relief interrupted by pingos here and there, and by a tremendous amount of surface water in the form of lakes and ponds. The Flat is bounded on the southeast by the Mulgrave Hills, and on the east and north by several small groups of hills generally under 650 feet in altitude. The country generally is underlain by permafrost and covered by tundra vegetation. The latter ranges from dense growths of willows and other shrubs along the rivers, to nearly barren rubble on the higher slopes.

The shoreline consists of a barrier beach composed principally of unfrozen chert sand and gravel, mixed with substantial proportions of sandstone and limestone (Moore 1966:589). Beach elevation varies between roughly three and ten feet, and is usually a few feet higher than the adjoining mainland. To the south and west the beach slopes gently downward to the floor of the Chukchi Sea; to the east, it terminates abruptly at the edge of the coastal plain. Immediately behind the beach ridge is a series of lagoons. They vary in length between a few hundred yards and several miles, and in width between less than a hundred yards and two miles. The three largest, by a substantial margin, are located along the edge of the Kivalina Flat.

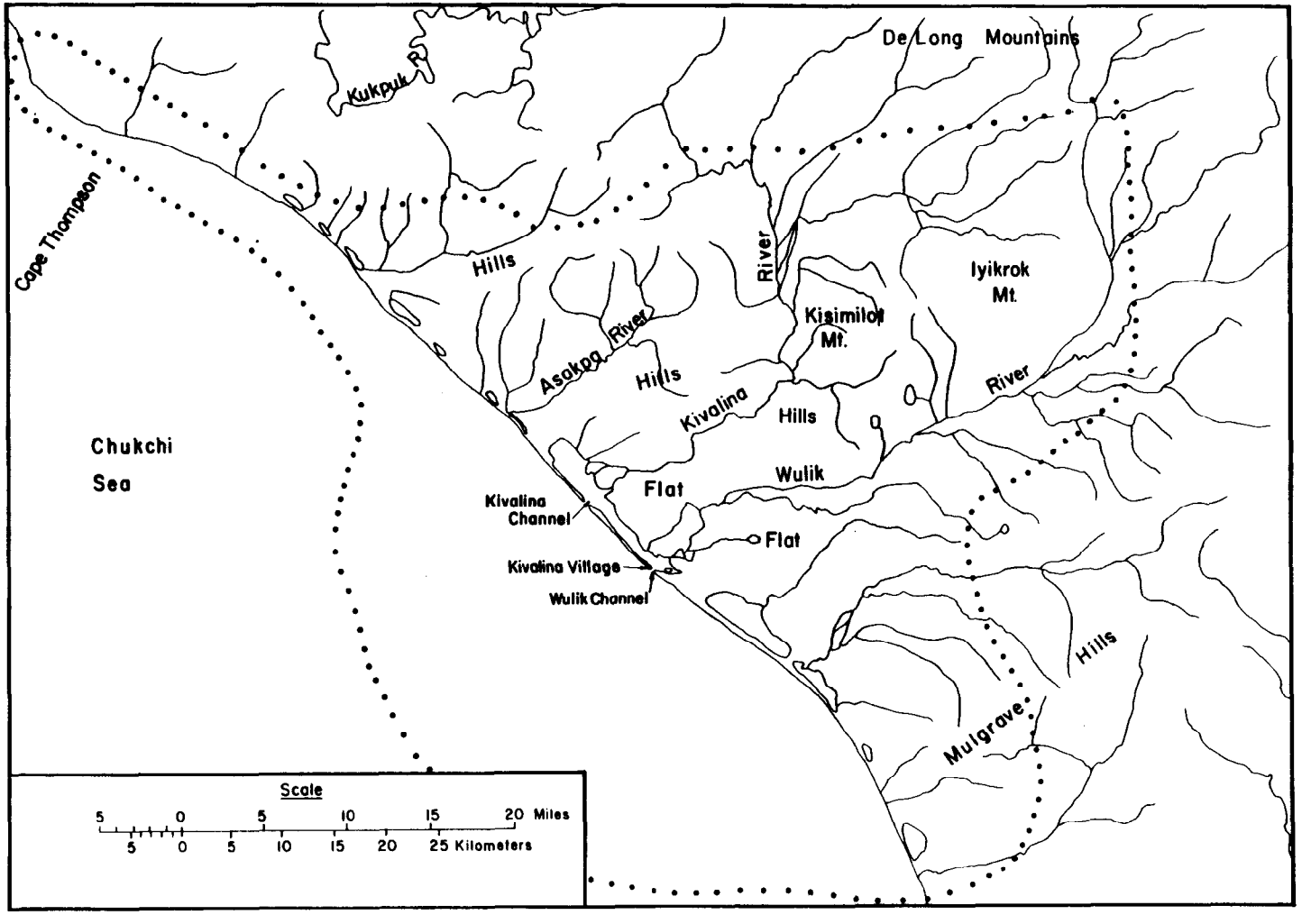

Figure 2. Map of the Kivalina Region, Showing Locations of the Geographic Features Mentioned in the Text. The Dotted Line Shows the Outer Limits of the Normal Range of Subsistence Activities, 1959-1984.

The view of the country from the village is one of immense spaciousness. This impression is only slightly disturbed by the low hills in the middle distance, the jagged ridge of Kisimilot Mountain, about 20 miles to the north, the massive dome of Iyikrok Mountain, about 26 miles to the east, and the peaks of the De Long Mountains, which are just visible on the horizon.

The Village in 1964-66

During the initial study period of 1964-66, Kivalina consisted of one log, ten sod, and fourteen frame houses strung out in two rows roughly parallel to the beach. All of the houses were home made, and they generally consisted of a single room and an unheated storm shed. Many families, particularly those who spent the winter in sod houses, spent the summer living in tents strung along the beach. The village was very much as Saario and Kessel (1966) described it for the 1959-61 period.

The one-room Bureau of Indian Affairs school building for grades one through eight stood at the southeastern end of the row of houses on the ocean side. Two churches, a Friends' church and an Episcopal church, a small village store, a National Guard armory, and a Government sponsored jewelry shop completed the list of buildings. An all-weather air strip was located at the northwestern end of town.

The basic Native population was 171 in the summer of 1965, although over the two years of the study period, it was often quite a bit lower than that because a number of families spent a considerable amount of time in Kotzebue. A school teacher and her spouse and teen-age child constituted the only resident non-Natives in the village. Two or three houses were heated with stove oil, but all of the others were heated by a combination of willows, driftwood, and seal blubber burned in homemade oil-drum stoves. Light was provided by kerosene lamps and pressure appliance lanterns.

Local winter transportation was exclusively by dog team. The crucial June-July seal hunt and the fall fishery were carried out primarily with the use of traditional skin-covered umiaqs.

In 1964-66 the villagers made their living by a combination of foraging (hunting, fishing and gathering), periodic wage employment, National Guard service, the sale of Native products, and welfare. Regular employment on the local level was limited to the janitor and cook at the school, the postmaster, the store manager and stock clerk, and a few other part-time jobs, such as welfare agent. Periodic local employment was provided by school or airport construction and maintenance, longshoring when the annual supply ship came in, and "village improvement" projects that somehow managed to get funded for a couple of weeks almost every year. More lucrative possibilities were often available, although far from home, during the summer months. Almost every year several men would spend from two weeks to four months in places like Kotzebue, Nome, Fairbanks or the Bristol Bay salmon canneries working as carpenters, miners, construction laborers, longshoremen, fire fighters, cannery workers or heavy equipment drivers. The general economic pattern for Kivalina at this time was almost identical to that described by VanStone (1960) for Point Hope several years earlier.

Kivalina in 1982-84

The Kivalina of 1982-84 was almost totally transformed, in its physical aspects, from the village of 20 years earlier. The population had grown to 270, and the number of houses occupied by Natives had risen to 47. All of the houses except one were multi-room (usually 3-4 rooms) frame structures, and almost all of them had been built under one government-sponsored program or another, always according to a standardized design. There were also another 14 houses in the village that were either being

rented to school teachers or else were empty. Most of them were old homemade houses dating from the 1950s or 1960s, or else relics of the first, largely unsuccessful government-sponsored housing program. Light was provided by electricity, and heat was provided by a combination of stove oil, propane and driftwood, this last being burned in highly efficient modern wood stoves. Many houses had furnaces. Every home had a television set.

A number of other new buildings had also been constructed by the end of 1983. They included a village store several times the size of the old one; a K-12 school with seven classrooms, a library, an arts and crafts room, a shop, a home economics room, kitchen, and a full-sized gymnasium; a clinic; a fire hall; a post office; a city hall (government) and a community hall (recreation). The old churches had been torn down and replaced by larger, more comfortable structures. And smack in the middle of the village, in a place that had been a swamp in 1966, stood a 500,000 gallon water tank used to supply the school with all of its water, and the village generally with water for washing. Water for drinking continued to be obtained manually from the Wulik River. With expansion limited on three sides by water and on the fourth by the air strip, the village had acquired a decidedly overcrowded appearance. The community profile prepared by the University of Alaska Arctic Environmental Information and Data Center (1976) shows the village about half-way through this growth process.

The Kivalina economy in 1982-84 rested on the same basic foundations as it had in the 1960s, but there were many more opportunities for permanent or part-time work right in the village, and also many more in Kotzebue. To my knowledge, no Kivalina resident had to travel further than Kotzebue to find work during the second study period. In addition, the

commercial salmon fishery had become much more developed and organized since the mid-1960s; five Kivalina men had permits for that fishery, and many other villagers worked with them as assistants.

Discussion

In 1982 the Kivalina countryside remained unchanged from the way it looked two decades earlier. The village itself, however, appeared totally different. Indeed, if one who had known it well in the early 1960s had visited it in 1984 during a fog that hid the countryside from view, one would have had a very difficult time identifying it as the same village. While much of this has been suggested the foregoing paragraphs, a few numbers, presented in Table 1, make the point more succinctly.

All of the figures in Table 1 refer to the Native population of the village only, during the two study periods. A quick glance down the "comments" column reveals in no uncertain terms that the material status of the villagers had been profoundly changed between 1966 and 1982. Similar data on other features would have confirmed this conclusion. Few, if any, villagers doubted that these changes had been for the better.

Nonmaterial changes are more difficult to describe in a succinct way, but certain general points can be made. First in the social sphere, it is of interest that all of the local families (Burch 1975:237,281 ff.) that had operated in Kivalina in the mid-1960s were still operating there twenty years later. A number of developmental changes had taken place, of course, due to births, deaths, aging and marriage, but the level of social continuity between the two study periods was extremely high.

On a somewhat more abstract plane, the general morale of the villagers improved significantly between the two periods. In 1966 Kivalina seemed on the verge of becoming a dying village; families and individuals were leaving, and the prospects for the future were poor. But by 1982, all of

Table 1. Kivalina Contrasts: 1964-66 and 1982-84

Feature	1964-66	1982-84	Comment
Basic population	171 (June, 1965)	270 (June, 1983)	58% increase
Occupied houses	25 (1965)	47 (1983)	88% increase
Living floor space	6,992 $ft.^2$ (1965)	32,428 $ft.^2$ (1983)	364% increase
Heat	3 stove oil; 22 willows, driftwood and blubber	37 stove oil; many also with propane and wood	Nearly complete change
Light	Pressure appliances, kerosene lamps	Electricity	Complete change
Electric freezers	0	47 (1,054 $ft.^3$ total)	Complete change
Winter transportation	18 working dog teams (1965-66)	51 snowmobiles, 21 three-wheelers	Complete change
Number of outboard motors	12	35	192% increase
Average power, outboard motors	20 hp.	75 hp.	275% increase
Trips out of village	242 (1965-66)	1,163 (1983-84)	381% increase
Trips into village	110 (1965-66)	516 (1983-84)	369% increase
Combined C.O.D. and money orders	$11,038 (1964)	$209,674 (1984)	1,800% increase

the families, and most of the individuals, had returned. More outsiders had married in than villagers had married out during the intervening years. A number of factors were involved in these trends, but it is possible to date the beginning of the transformation quite specifically to the spring of 1968. That was the year when a Kivalina crew took a bowhead whale for the first time in several decades. The whaling feast that year was a profoundly moving experience for all who attended it; it was a galvanizing event whose effects can still be felt to this day.

It is beyond the scope of this report to explore any further either the general social changes or the continuity experienced by the Kivalina people during the 1964-1984 period. This is a report on subsistence, and to that subject I now turn.

Previous Research

Kivalina has been the focus of several other studies dealing in one way or another with subsistence. It is appropriate before proceeding with the present study to summarize them, and to identify their similarities with and differences from the one reported here.

The first was a survey by Ray Woolford (1954), of the U. S. Fish and Wildlife Service, in the spring of 1954. He made brief visits to twelve Inupiaq villages in northern Alaska to collect basic information on their economies, and particularly their subsistence economies. Kivalina was one of the twelve. The main emphasis of his investigation was use of caribou, which were finally beginning to increase in numbers in the area after a prolonged population decline. Woolford's work was intended as a cursory survey, and he depended entirely on interviews with village council leaders, teachers and traders for his information.

At Kivalina Woolford received a hostile greeting from the teacher, and that set the tone for his entire visit. The teacher dominated his discussions with Native villagers and made it nearly impossible for him to get any substantive information. He did accurately report that Kivalina had a diverse subsistence economy in which caribou, fish, and seals were all important. He also found out that two moose and an estimated 500 caribou had been killed between May, 1953, and May, 1954. These observations are of some interest because the two moose may have been the first ever taken in Kivalina, and, until only six years previously, no caribou had been taken near Kivalina for more than half a century. Woolford also reported that Kivalina was home to 132 people and 150 dogs.

Project Chariot

The next subsistence study done in Kivalina was a major research program carried out by Doris Saario as one of the environmental studies conducted from 1959 to 1961 in connection with Project Chariot (Wilimovsky and Wolfe 1966). The results were described in a number of reports (Saario 1959, 1960, 1961, 1962) and a chapter (Saario and Kessel 1966) in the summary volume on the Project Chariot program.

The Project Chariot study was a nineteen month investigation during most of which a researcher lived in the village and kept a record of the fish and game harvest. In 1959-60, the resident investigator was Doris Saario. She managed to go on a couple of hunting expeditions and to a fish camp, but generally remained in the village and relied on interviews and on the observation of the harvest as it was brought into town for her information. I shared the work for three months in the fall of 1960, and then was in charge of data collection for the remaining five months of the project. I relied on extensive participant observation, as well as on interviews for

my information. A research assistant from the village was hired to help with the data collection for the final ten weeks of the field study.

The Project Chariot reports, and particularly the summary by Saario and Kessel (1966), provide a comprehensive and accurate description of village life and subsistence activities for the 1959-61 period. However, a bad mistake was made in not hiring Native research assistants to collect the detailed harvest data right from the beginning. When we finally did hire one, after I had been doing the work for nearly six months, the increase in the detail, accuracy and completeness of the reporting was, to put it succinctly, shocking.

In retrospect, it should not have come as such a surprise. It takes several months for a complete outsider to become familiar with the people of even a small village, not to mention with the entire countryside over which they travel and hunt. While an experienced field worker can collect accurate general information in a new village in a short period of time, the extremely detailed data we were supposedly collecting require considerable prior familiarity with both the people and the country. Furthermore, in even a small village, if the level of subsistence activity is extremely high--as it was in Kivalina--one person simply cannot keep up with the data collection unless that is literally his only activity. Natives, particularly those who are active hunters themselves, regularly monitor at least the general harvest on almost a daily basis, so all they have to do for a research project is fill in the details. Finally, since Kivalina residents were still rather hostile to outsiders in 1959-61, monitoring subsistence activities at the level required by our research objectives might easily have resulted in our being asked to leave.

In conclusion, the Project Chariot study remains, and will remain, a useful and generally accurate account of Kivalina subsistence during the

1959-61 period. However, the quantitative data contained in the various reports should be regarded as informed guesses rather than as precise estimates or counts.

NANA Surveys

The next study that dealt with subsistence at Kivalina was carried out in 1972 by representatives of the NANA Corporation as part of a general survey of the resources and development potential of the NANA region as a whole (Mauneluk Association, Inc. 1974:166 ff.) The harvest data from the study were contained in a report to the Joint Federal-State Land Use Planning Commission for Alaska on The Subsistence Harvest in Five Native Regions, by Patterson (1974).

Another broad-based survey of the NANA region was carried out in 1979 by the Alaska Public Forum and Maniilaq Association (1979). Subsistence data again were collected as part of the overall effort.

The NANA data were obtained from a sample of households in each village. The harvest figures do not claim to be actual counts, but estimates of average annual harvests over a period of years. As projected from the sample of households included in the survey, they may be regarded as relatively accurate indicators of the general order of magnitude of the normal subsistence harvest of the village, and probably as even more accurate indicators of the general order of magnitude of the subsistence harvest of the NANA region as a whole.

Average harvest figures are useful for many purposes in precisely the same way that average weather data are. However, as I note many times later on in this report, there is tremendous annual variation in subsistence harvests, as there is in weather conditions. Climatologists know this and record, in addition to measures of central tendency such as overall averages, the "normal" condition as a moving average of the past 30

years, and, particularly, the extremes. A basic flaw in the NANA studies, as in most other subsistence studies in Alaska, is the failure to record the range of variation in fish and game harvest. As with climatic data, measures of central tendency in harvest figures can be understood only when information on the extremes is available.

Environmental Baseline Studies

Over the past few years two major resource development projects have spawned environmental baseline studies that included, among other things, subsistence in Kivalina within their purview. The project that most directly affects Kivalina is the Red Dog Mine, which is set for development on the upper reaches of a Wulik River tributary during the next few years. The other development project, which is somewhat more remote, both temporally and geographically, is oil field development on the Outer Continental Shelf (OCS) of the Chukchi Sea.

The OCS study was conducted by Cultural Dynamics, Ltd. (1983). It covered the entire NANA region, and subsistence was only one of several subjects being investigated. Most of the subsistence data (pp. 254 ff.) included in the report were taken either from Patterson (1974) or Braund and Burnham (see below), hence do not need to be discussed here.

A much more detailed subsistence study of Kivalina, and the one that produced the greatest amount of original field data, was conducted in connection with the Red Dog project by Braund and Burnham (1983a, 1983b, 1984) in the fall of 1982. Field work involved direct observation of and participation in the major fall fishery, and interviews with 19 Kivalina hunters. Braund and Burnham's reports contain a detailed account of the 1982 fall fishery, and general descriptive summaries of the species emphasized, hunting procedures, and the timing and geographic scope of Kivalina subsistence activities generally for the period 1977-1982. They

present new quantitative data only in connection with the fall fishery, however.

Discussion

The study reported on here was most like the Project Chariot study of all those that have preceeded it. Indeed, in its initial 1964-66 phase, it was deliberately designed to replicate the Project Chariot study in at least its general respects. It was also designed to correct what I perceived to be the major error in the way that that study had been conducted, namely, the failure to employ villagers to collect the detailed harvest data. (See Appendix A for a detailed discussion of my field methods.) The admirable features of the Project Chariot study that I wished to emulate are the following: (1) the attempted collection of actual, not estimated harvest data, on a weekly or more frequent basis, and (2) the continuous collection of such data for two consecutive years. These features distinguish the Project Chariot and the present study from all others conducted in the region.

The present study differs from all of the others, including the Project Chariot study, in that it was fully replicated in 1982-84, nearly 20 years after the first two-year study phase. Given the dramatic changes that occurred in North Alaska during those 20 years, it was a unique opportunity to conduct "before-and-after" research in a classic manner. Also, since I had visited Kivalina several times between 1966 and 1982, and since I had kept in regular contact with several villagers, I was in a unique position to describe and analyze what had gone on in Kivalina between the two study periods. This research yielded a substantial body of information, only some of which is presented here.

Basic Concepts

Relatively few technical terms are employed in this report, and most of those that are are explained at an appropriate place in the text. Some terms are employed throughout, however, and are best explained at the outset.

Subsistence

The first is the term "subsistence," which, in Alaska, seems to require a convention or an act of the state legislature to define. Since consensus is not required in a publication of this kind, however, I simply stipulate my own version and briefly discuss some of its implications.

For purposes of this study, I define subsistence as the production of raw materials by the same individual or group intending to be the ultimate consumer(s) of those materials. In the present study I am of course interested in subsistence hunting, fishing and gathering, or, more precisely, in subsistence foraging.

Given the above definition, subsistence is a continuous variable that covers a wide range of activities. At one extreme is the sport fisherman who catches one fish, primarily for fun, but with the definite intention of eating it. At the other extreme is a family whose members get 100 percent of their material needs satisfied by their own foraging activities.

Also given this definition, specific concrete activities are not inherently either subsistence or nonsubsistence in nature, although they typically emphasize a particular orientation. For example, a person can catch forty fish in a single haul of a net, sell ten (commercial fishing), trade another ten for caribou meat (barter fishing), and eat the rest (subsistence fishing). Most of the subsistence activities described in this report were predominantly subsistence oriented, although some, particularly trapping, were not.

It is appropriate to point out that my definition of subsistence differs from two others currently in widespread use. The first defines subsistence as an entire economic system in which food production is carried out by members of domestic or other kinship groups for their own use. This version is used by some anthropologists to characterize the economies of entire societies as being different from, say, commercial or industrial economies.

The second definition of subsistence that differs from mine is the current legal one used in the State of Alaska. Phrased in terms of "subsistence uses," this definition stipulates that "subsistence uses means the customary and traditional uses in Alaska of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter or sharing for personal or family consumption, for the purposes of this paragraph; 'family' means all persons related by blood, marriage, or adoption, and any person living within the household on a permanent basis; 'barter' means the exchange or trade of fish or game, or their parts, taken for subsistence uses, for other fish or game or their parts; or for other food or for non-edible items other than money if the exchange is of a limited and noncommercial nature (see Alaska Department of Fish and Game, Division of Subsistence, 1984; and Alaska Department of Fish and Game 1979).

Other Concepts

Two other technical concepts employed in this study are "subsistence week" and "subsistence year." The first refers to a seven-day period which serves as the basic unit of temporal analysis. Since foraging normally

came to a halt on Sundays, a subsistence week was stipulated to run from Sunday through the following Saturday, hence corresponds exactly to the conventional American week. A subsistence year is a period comprised of 52 consecutive subsistence weeks, beginning on the Sunday closest to June 1 of the relevant calendar year. The four subsistence years included in the present study, their starting dates, and the serial numbers of the weeks included in each, are listed in Table 2.

Table 2. Subsistence Years and Dates

Subsistence Year	Starting Date	Week Numbers
1964-65	May 31, 1964	101-152
1965-66	May 30, 1965	201-252
1982-83	May 30, 1982	301-352
1983-84	May 29, 1983	401-452

The first subsistence year was deliberately set at the May-June boundary for two reasons. First, that is usually a time when the breakup process significantly reduces the level of hunting and fishing activity, hence it constitutes a "natural" annual pause in the subsistence cycle. Secondly, in 1964-65, the June hunting and fishing season marked the onset of systematic accumulation of food products for the following 52 weeks. Consequently, in this respect also, it was a "natural" starting point. With the resumption of whaling activities in 1966, and particularly with the widespread acquisition of freezers after electricity came to the

village in the early 1970s, this pattern became less clearly defined. The 1982-83 and 1983-84 subsistence years were initiated at the same time as the earlier ones primarily for purposes of comparability.

Weights

Finally, it is appropriate to comment here on the units of measure employed in this study, particularly on weights. The basic standards used here are the conventional English units, e.g., mile and pound, rather than metric units, such as kilometer and kilogram. My purpose here is to make this report more intelligible to the people of Northwest Alaska, who do not use the metric system, than it otherwise might be.

All references to weights in this study are to whole body weights of live animals. This is a major difference between this report and virtually every other that expresses subsistence harvest in terms of weight. The others deal with the quantities consumed, not with the amounts produced. This fact must be emphasized because any uncritical comparison of the figures presented here and the figures contained in other studies is likely to lead to erroneous conclusions; the numbers in this study will appear to be improbably high.

The reason I present live weights instead of "dressed" weights or "usable" weights is because there is tremendous variation in the quantity actually consumed of even a single species in a single village, more than I can analyze within the scope of this report. There are several sources of this variation. One is the season. Most major species of game animal in northern Alaska undergo major seasonal variations in weight, and these changes inevitably affect the amount of "consumable" meat (or whatever) that is available for human consumption. A second is the sex of the animal killed. For most of the major game species in northern Alaska, males are

much heavier than females, although in a few instances this relationship is reversed, at least for part of the year.

A third source of variation is the technique used to process the material concerned. Is it simply frozen whole? Is it cut up and dried? Is it cut up and cooked? Is it cut up in the frozen state with an axe or saw, or cut up thawed with a knife? Each procedure yields a different result in terms of what is or can be consumed; one might produce twice as much consumable meat as another.

An example will illustrate this last point. The Kivalina people obtain a large quantity of char in the fall. Most of it is stored outside, and usually ferments to some extent before it freezes. These fish are later consumed raw, while still frozen--bones, viscera and all. The only residue left at the end are the tail fin, the gills and gill plates, and the jaws. Consumption is 99% of the live body weight. Most char caught in June, however, are split, dried, and stored in seal oil. The viscera and most of the skeleton are thrown away in this case, and only the meat and ribs are consumed. Consumption is this case is about 50% of the live body weight. Between the two seasons, not only the amount consumed, but the amount even considered consumable, change significantly. At other times of year, char might be boiled or baked, which would yield still a third result. And the picture is complicated further by the fact that, between the first field study and the second, freezers were introduced into every home in Kivalina. They offered for the first time the possibility of eating frozen or cooked fish virtually all year round. Factors like these must be taken into account in careful estimates of how much food is or can be consumed in a particular village.

Finally, the amount of meat actually consumed--as opposed to being theoretically consumable--can vary significantly according to a variety of

circumstances. Thus, when a hunter kills ten caribou in a single trip, he is likely to consume less of each animal than if he kills only one. Distance from home, weather conditions, and the general state of the family larder when each kill is made also influence the outcome.

The point is that reliable estimates of consumption by weight need to be based on a substantial body of information. As a matter of fact, I have enough information on the situation in Kivalina to provide reasonable estimates of consumption by weight. But, it would take a series of appendices at least as long as those contained in the present report to present the pertinent data and assumptions. That simply is not feasible.

Other investigators may readily adapt my figures for comparison with those contained in any other subsistence study, however. This report does contain data that must precede a consumption analysis, namely, numbers of animals killed and gross production figures by weight. In order to effect a comparison, one can use these figures and the "consumable weight" assumptions of the other study in order to derive comparable units. But this must be done before any proper comparison of my results and those of any other study can be made. The problem is that both are likely to be inaccurate because the "consumable weight" assumptions are likely to be inadequate.

CHAPTER 2

FISH

The most distinctive natural resource of the Kivalina region in the minds of the villagers and of Northwest Alaskan residents generally is what is known regionally as the "Kivalina trout." The experts cannot seem to agree on whether this "trout" is really a dolly varden char or an Arctic char (Armstrong 1978; Behnke 1983; Morrow 1980:61; Alaska Department of Fish and Game, Sport Fish Division 1978). Since the biologists most actively studying this fish in recent years have referred to the species as "Arctic char" (Alt 1978, 1979; DeCicco 1983, 1984; Winslow 1970:324) that is the designation used here.

Whatever it is called, the Kivalina char is a magnificent fish, beautiful to look at, delicious and nutritious to eat, and exciting to catch with a rod and reel. Just why the Kivalina fish are so tasty is not clear, since tagging operations have demonstrated that they are part of the same population as the char in the Noatak River and intervening streams (DeCicco 1983), and probably the Kobuk and Kukpuk Rivers as well. Furthermore, it has been discovered (DeCicco 1984:21) that there is extensive movement of fish between the various river systems, especially between the Noatak River and the rivers in the Kivalina region. Nevertheless, the Kivalina char is regarded as a special delicacy in Northwestern Alaska.

Arctic char have been a mainstay of the Kivalina economy since time immemorial. While always the most important fish species in the area, it is by no means the only one. Since the harvest techniques, and particularly

the harvest results differ from one species to another, each is discussed separately.

Arctic Char

The Arctic char of the Kivalina region is an anadromous species. Most of the fish migrate from overwintering areas in rivers to the sea in spring, and return to the rivers in late summer and early fall. Spawners, however, stay in the river at least until spawning is completed in late summer or early fall. The pattern of movement is actually more complex than this in its details (DeCicco 1984:19 ff.), but the essential facts as far as modern Kivalina fishermen are concerned are these: (1) several tens of thousands of fish from the Kivalina and Wulik Rivers pass through two narrow channels on their way to the sea every June; (2) several tens of thousands of fish re-enter the rivers in late summer and early fall; and (3) several tens of thousands of fish remain in the rivers, particularly the Wulik, from October to June. There also are large schools of char in the ocean, often very close to shore, during the summer months. These fish were not harvested at any time during the four subsistence years covered in this study, but I personally participated in a few seining expeditions for them during the summer of 1961, shortly after the conclusion of the Project Chariot study.

Three basic methods are used to catch char: seine, gill net, and hook and line. Seines are used primarily in the early fall, when the cold weather freezes the large quantities of fish that are caught, greatly reducing the amount of effort required to process them. The seining procedures used during all four subsistence years covered by the present study were basically the same as described by Saario and Kessel (1966:982 ff.) for 1959-61. Seines are also employed during the char run out, but only occasionally.

Gill nets are set primarily just inside the Wulik River channel during the early stages of the run out to sea, and again during the run back in again. Occasionally they are also set under the ice in the river during the winter months. Hook and line--usually a 30-pound test hand line, but not infrequently a rod and reel--are also used at the Wulik channel during the run out. During the run back in, very few char will respond to a lure this close to the sea. Hook and line are also used extensively during the winter months for fishing through holes chopped in the river ice.

Various other methods to catch char are employed from time to time. One is a weir built in the river just before freezeup. A shallow stretch of the river is dammed with stakes and brush, with an opening left for fish to pass through. The opening is then blocked with an escape-proof box, which is removed periodically in order to remove any fish caught in it. Weirs were not used during any of the four years covered by the present study, however. Another method is a fish trap, which is a variation on a weir, as described by Saario and Kessel (1966:987). Fish traps also were not used during any of the four years covered by this study.

Harvest

The char harvest for the four subsistence years of this study are shown graphically in Figures 3 through 6. The graphs show the harvest, in pounds, for each of the 52 subsistence weeks in those years. Because of the extreme variation in the size of the weekly harvests, it was found necessary to use a semi-logarithmic scale in order to depict them.

Four features of the char harvest are readily apparent in these graphs. The first is the harvest peak that occurs right at the beginning of each subsistence year, in June, when the char are running out to sea. This is followed by a midsummer lull in which few, if any, char are caught. The third feature is a major harvest peak that begins in late summer,

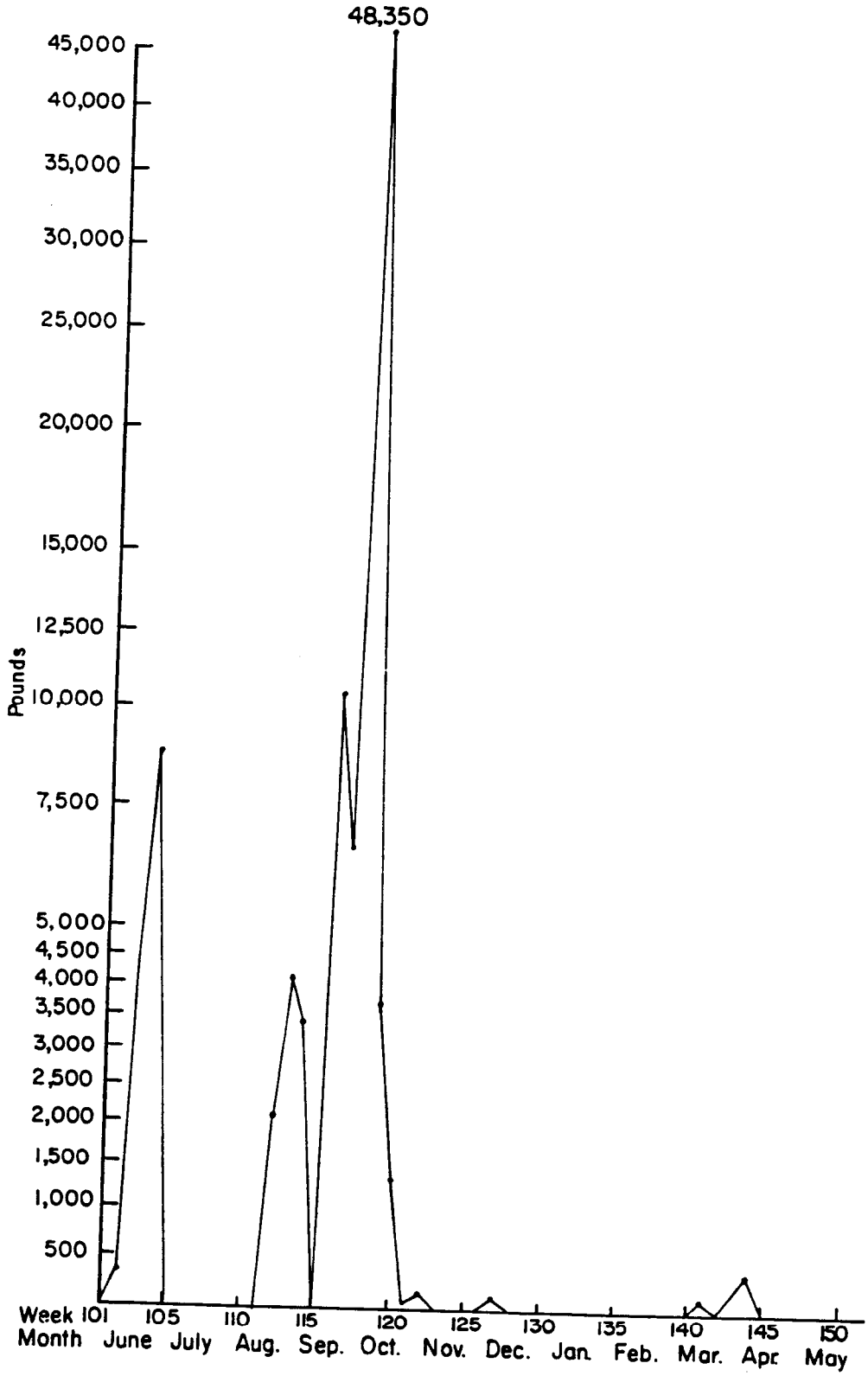

Figure 3. Weekly Char Harvest, 1964-65.

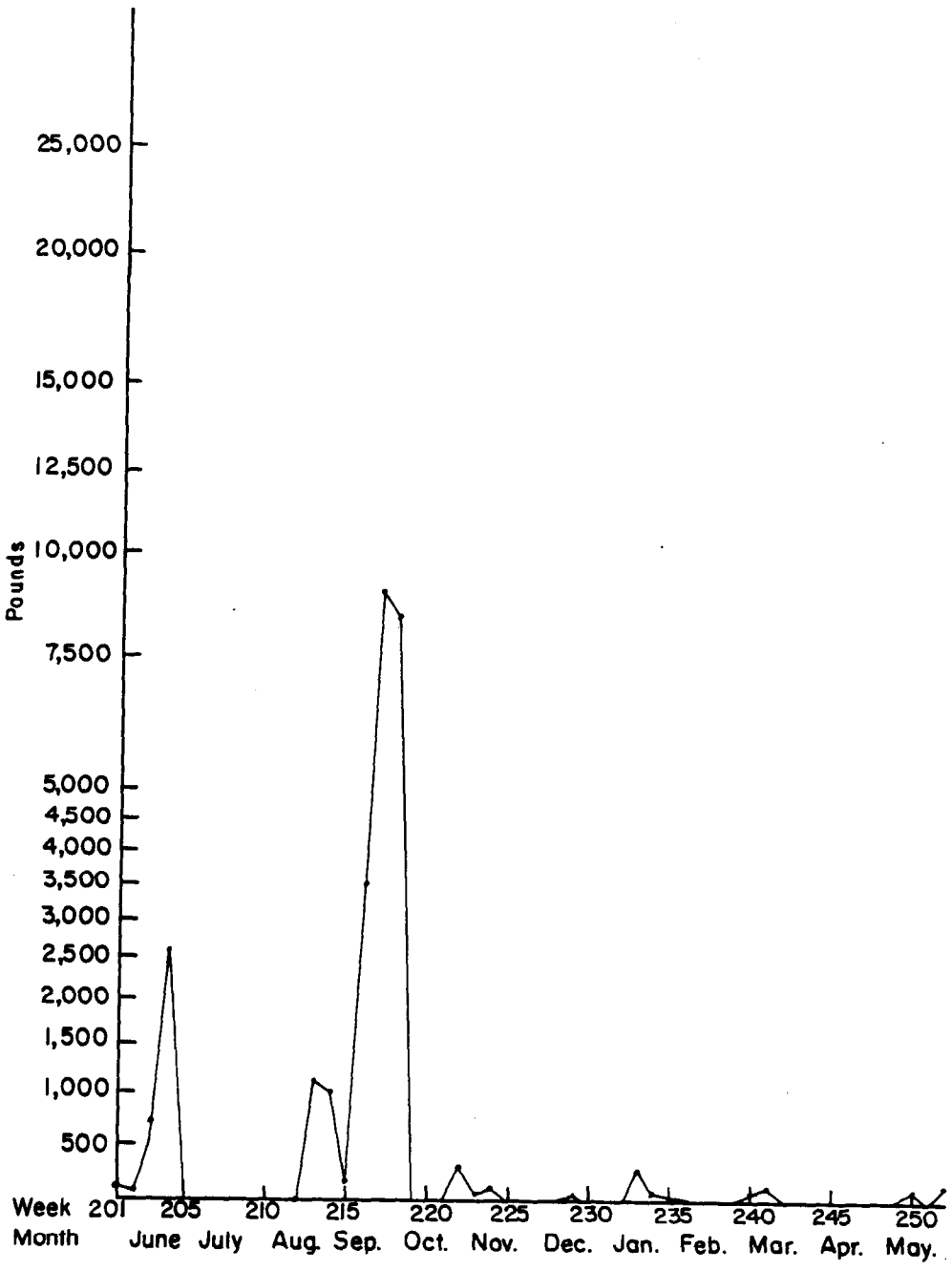

Figure 4. Weekly Char Harvest, 1965-66.

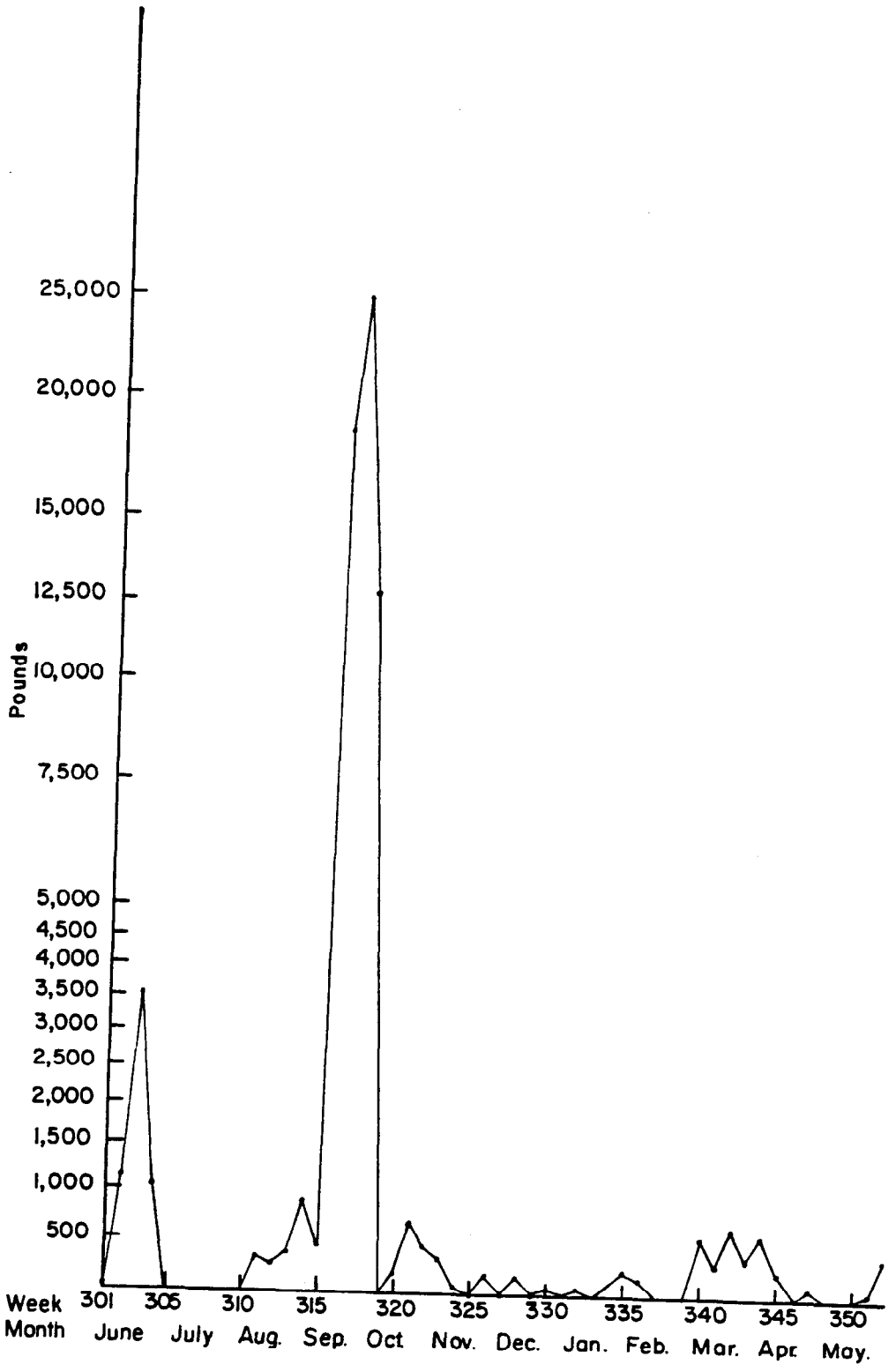

Figure 5. Weekly Char Harvest, 1982-83.

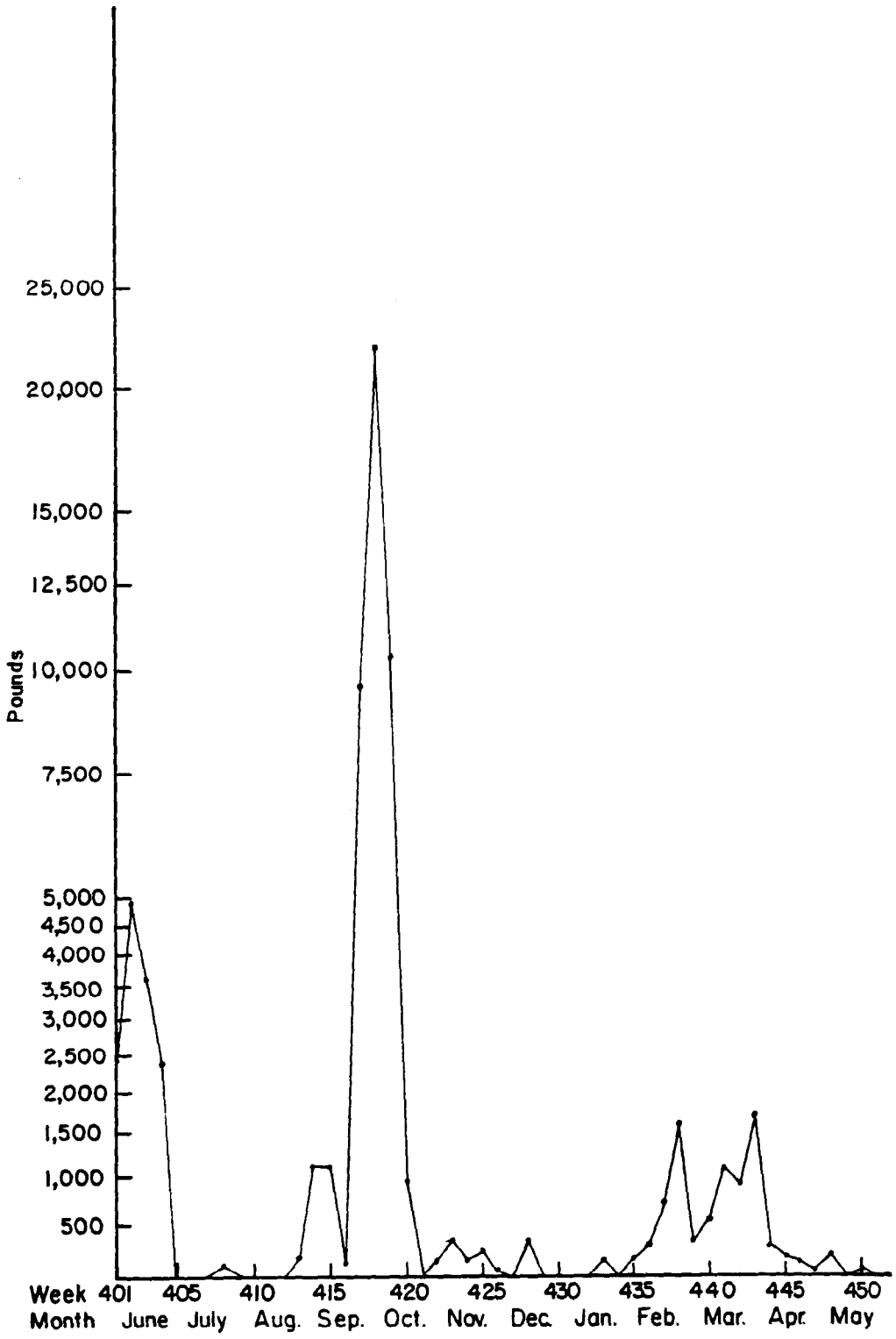

Figure 6. Weekly Char Harvest, 1983-84.

usually between weeks 11 and 13 (mid-August), and continues until freezeup in weeks 19 (1965) to 21 (1964, 1984). The fourth and final feature is the low and erratic harvest pattern that continues for the rest of the winter. The precise figures for each season in each of the four subsistence years are presented in Table 3.

Table 3. Char Harvest, by Season

Season	Subsistence Year			
	1964-65	1965-66	1982-83	1983-84
June Run Out	13,438 lbs.	3,485 lbs.	5,720 lbs.	13,375 lbs.
Midsummer	0	6 lbs.	20 lbs.	102 lbs.
Fall Run In	79,615 lbs.	23,309 lbs.	57,480 lbs.	45,415 lbs.
Winter	942 lbs.	1,340 lbs.	5,839 lbs.	9,575 lbs.
Total	93,995 lbs.	28,140 lbs.	69,059 lbs.	68,467 lbs.

June Fishery

The June fishery is limited in duration by the length of time it takes the fish to run out to sea. The run begins slowly when the river level reaches peak flood stage, and accelerates as the water level drops. This is when the first gill nets are set, and when they usually start to produce. Hooking becomes successful as soon as the water begins to clear; it is always more productive when the tide is running out than when the tide

is running in. Seining is conducted on an ad hoc basis during this season, and does not happen every year.

The figures show considerable variation in the spring char harvest, ranging from a low of 3,485 pounds in 1965 to a high of 13,483 pounds in 1964. According to Saario and Kessel (1966:982), the harvest was 10,000 pounds in June 1960. Winslow (1969:4), however, reported an all-time high of 19,000 pounds in June of 1968.

The sources of all this variation are not clear. Water conditions do not seem to be one of them, since the water level and sediment load seem to follow virtually identical patterns at this particular season from one year to the next.

No doubt the size of the run is an important factor, since the number of overwintering fish in the Wulik River does seem to undergo significant fluctuation, but no information is available on that subject for the winter preceding the first three June fisheries of present interest. The number of overwintering char in 1982-83 was reportedly very low (DeCicco 1984), yet the 1983 June fishery was a very good one.

The success in 1983 was probably due to a third factor, namely, ice conditions immediately outside the river channels. The run out in 1983 began early in week 352, the final week of the previous Subsistence Year. This was due to an exceptionally early breakup, the earliest in memory, which, in turn, was caused by unusually warm temperatures in May. However, onshore winds kept the sea ice packed against the shore, and the fish would not go beyond the edge of the ice. The result was tens of thousands of fish milling around in the lagoon and the channels for nearly a month. The possibilities for a large harvest under such conditions is obvious. It could have been much greater than it was if the people had chosen to make it so.

A fourth variable in determining the size of the spring harvest seems to be the amount of seining that goes on. During this season a seine is brought out only when an unusually large and compact school of fish is observed very close to shore in a particularly favorable area for seining. Since a really good haul can yield as much as a ton of fish, the impact of one or two hauls in a fishery peaking at 13,000 pounds can be tremendous.

A fifth variable in the size of the June fishery is the intensity of the fishing effort, apart from seining. The major factor here is the weather, particularly drying conditions. This was especially important in the mid-1960s, when virtually the entire June catch was split, sun dried, and stored in seal oil. If drying conditions were very bad, less fishing would be done. Drying weather became a less important factor after electricity came to the village. In the 1980s, much of the catch is still sun dried, but some of it is also placed in freezers, and quite a bit can be if necessary.

Summer

The June fishery is followed by the midsummer lull. During this season schools of char are occasionally seen moving along the shore, but none were harvested during the four subsistence years under study. The channel and lagoon are virtually devoid of char at this season. The fish remaining in the rivers are all spawners, and generally in the middle portions of the rivers, above the area frequented by Kivalina fishermen. However, a few gills nets are left near the Wulik channel during July and early August for the purpose of catching salmon. When they begin to produce char as well, the fall run in has begun.

Fall Fishery

The fall char fishery typically begins in Mid-August with several weeks of moderate harvest. August fishing was usually more intense in the

mid-1960s, as ad hoc seining crews would venture into the lower Wulik River in order to catch enough fish to replenish dog food supplies. This need was greatly reduced in the 1980s. During the 1982-83 and 1983-84 Subsistence Years, most of the harvest from this early phase was obtained by gill nets set near the channel. At this time of year people do not want to acquire too many fish too fast because of the difficulties of preservation and storage.

The fall fishery hits full speed in mid-September, as cold weather approaches and preservation becomes less of a problem. Also, water levels drop significantly as the feeder streams and tributaries begin to freeze, making seining much more productive. Virtually all of the fishing done at this time of year is done with seines.

As the numbers in Table 3 indicate, there is a tremendous variation in the size of the fall char harvest, ranging from a low of 23,309 pounds in 1965 to a high of 79,615 pounds in 1964. Saario and Kessel (1966:985) cite much higher figures, however: 97,600 pounds in 1959, and 124,300 pounds in 1960. Similarly, Winslow (1968, 1969, 1970) reported that 120,277 pounds of char were caught in September alone in the fall of 1968. The 1982-83 harvests were very low by that standard, but still well above the 23,309 pounds caught in the fall of 1965.

It is pertinent to note that Winslow (1968:2) used a weight estimate of 209 pounds per tub--the usual Kivalina unit for calculating the size of the harvest--of unfrozen fish. Saario and Kessel (1966:984), Braund and Burnham (1983:18) and I all use a figure of 100 pounds per tub.

Several variables affect the size of the fall char harvest. A major one is no doubt the number of fish in the river when the fishery is conducted, and this number definitely does fluctuate. What is not known at

this time is whether there is a long-term trend toward declining numbers, and, if there is, just what the cause might be.

A second variable is water level. It is just about impossible to seine effectively if the water level is high. The fish are spread out in flooded side channels of the river, all sorts of debris fouls the net, and the current is too swift to get the seine properly set. This factor usually is most significant in August and early September. As freezeup approaches its importance declines, since the water level invariably drops rapidly after the tributaries begin to freeze.

The timing of freezeup is the third variable significantly affecting the size of the fall fishery. An early freezeup, particularly if it arrives suddenly, can lead to disastrous fishing results. A late one, on the other hand, can lead to the opposite result. The reason that the 1964 harvest was so great is that the rivers almost froze, dropping the water level, but did not actually complete the process for several weeks. As a result, the fishing was spectacular in week 118 (September 27-October 3, 1964), a time when the season usually is in its terminal stages.

A final variable, at least potentially, is the intensity of the fishing effort. This apparently varies rather little from one year to the next, however. The Kivalina people regard the late September phase of the char fishery in particular as their insurance for the coming winter. If this fishery is good, times might get tough, but they probably never will get desperate, during the coming winter.

It is appropriate to note here that Braund and Burnham also made a study of the 1982 fall fishery in Kivalina and came up with significantly different results than I did. According to their estimates (Braund and Burnham 1983:34), the char harvest totalled 47,243 pounds, whereas my figure is 57,480 pounds. However, their figure for the total harvest,

which includes whitefish, is 54,960 pounds. My research assistants did not record any whitefish harvest that fall, which surely is an error since a few thousand pounds are caught virtually every year at this time. Within the range of error of our respective research methods, I regard the 2,500 pound discrepancy between our totals as trivial. However, the Braund and Burnham figure for the char harvest specifically is almost certainly more accurate than mine.

Winter

The final phase of the annual cycle of char fishing spans the period of freezeup, roughly from early to mid-October, in the fall, to the end of May, in the spring. Here again there is variation, with a low of 942 pounds in 1964-65 and a high of 9,575 pounds in 1983-84. Winslow (1969:4) estimated the 1968-69 winter catch at 2,000 pounds. Saario and Kessel (1966:986) estimated the 1960-61 harvest at 1,200 pounds, including some grayling.

The main variables in winter fishing are the number of fish in the river and the intensity of the fishing effort. The former, while it is definitely a variable, is even more difficult to measure in winter than in the fall because of the possibility that char continue to run into the river after freezeup, in which case their numbers cannot be readily estimated. For example, in the fall of 1983, DeCicco (1985b) surveyed the Wulik and calculated that a very low overwintering population had entered the river. The villagers agreed with his pre-freezeup assessment, but claimed that a large number of fish entered the river in October, right at the time of freezeup, which DeCicco's survey missed.

Fishing intensity is more easily assessed. The four harvest estimates from the 1960s, cited above, all cluster in the 940-2,000 pound range, whereas those for the 1982-83 and 1983-84 periods are in the 5,839 pound

and 9,575 pound range. This suggests that there are not only annual variations, but also a long-term trend to greater winter fishing activity.

Annual variations in winter fishing effort relate directly to the opportunities to harvest other types of game during the same period. In 1964-65, for example, ringed seals were abundant all winter and the fish reserve built-up in the fall had been very high; few people wanted or needed to fish through the ice. The intensity of winter fishing rose the next year, after a dismal fall fishing season, and during a seal hunting season that was less productive than the one the year before. The much increased winter harvest in 1982-83 reflects, in part, the fact that seal hunting was extremely poor and caribou hunting was not particularly good. A major increase took place the next year. Again, the seal hunting was extremely bad, but the caribou hunting had been so good that people wanted fish to provide some variety in their diet.

The apparent long-term trend toward increased winter fishing may be a real one for two reasons. First, snowmobiles are vastly superior to dogs as a mode of transportation for this purpose. In the 1960s, just the mechanics of hitching up the dogs and getting to the fishing holes and back could take two hours or more. Now it takes just a few minutes, and requires an absolute minimum of effort. Participation by women in the winter fishery is accordingly much greater in the 1980s than it was in the 1960s. Secondly, in the 1960s, a tremendous amount of time and effort had to be expended getting firewood, which kept many men too busy to fish. In the 1980s most people still used firewood, but only as a supplement to stove oil, and it took only a fraction of the time to collect.

Variation

Reflecting the variation in its various phases, the total annual char harvest in Kivalina is subject to substantial fluctuations. This is

acutely evident in the figures for 1964-65 and 1965-66. In the former year Kivalina fishermen caught substantially more char in one week (number 118) than they did in all of 1965-66. On the other hand, the totals for 1982-83 and 1983-84 were almost identical. The range of variation in my own figures is a low of 28,140 pounds (1965-66) and a high of 93,995 pounds (1964-65), with an overall average of 64,915 pounds. The figures provided by Saario and Kessel (1966:982, 985, 986), however, suggest an annual harvest for 1960-61 of 135,500 pounds. Winslow's (1969:4) figure for 1968-69 was 162,000 pounds, and the NANA estimate for 1971-72 was 95,950 pounds (Patterson 1974:12).

The NANA estimate is on the outer fringe of my recorded range of variation, and therefore plausible to me. Winslow's estimates strike me as completely out of line, even though the fall fishery in 1969 was reportedly a very good one. But his calculation (Winslow 1968:2) that 1 tub = 89 fish = 209 pounds also strikes me as being completely out of line, unless the tubs that he weighed were full of tiny fish. If his poundage figures (Winslow:1969:4) are recalculated on the basis of the assumption that one tub equals 100 pounds, then the harvest total would have been in the neighborhood of 76,650 pounds, which would make more sense. Finally, Saario and Kessel's huge figure is based largely on the 1960 fall fishery. No observer was in the field during that fishery, and the harvest was reconstructed after the fact. It is highly questionable in my view. Their 1959 fall figure was also large, but still 25,000 pounds less than that reported for the following year.

On the basis of the evidence and my interpretation of that evidence, I conclude that the recent historic range of variation in the annual Kivalina char harvest is probably between a low of 30,000 pounds and a high of 100,000 pounds. The average for the recent historic period is probably

about 65,000 pounds. Whether or not there is a long term trend toward a lower harvest, due either to a declining fish population, reduced demand, or both, cannot be determined from the available data.

Whitefish

At least four species of whitefish are found in Kivalina waters: the humpback whitefish (*Coregonus pidschian*), the round whitefish (*C. cylindraceum*), the Bering cisco (*C. laurettae*), and the least cisco (*C. sardinella*) (Alt 1979:75). Of these, only the Bering cisco and the humpback whitefish are harvested by Kivalina fishermen with any regularity. The two were rarely differentiated in the field reports, which referred to, simply, "whitefish."

Whitefish are caught by the same methods used to harvest char. Indeed, particularly in the fall, they are often harvested in some quantities during the char seining operations, particularly on the lower Wulik.

In general, Kivalina people exhibit a curious indifference to and ignorance of whitefish, although they do enjoy eating them. Periodically, however, usually right at the end of the fall char fishing season, but occasionally in June, an old man will say something like, "Let's go get some whitefish," take a seining crew out to a very specific spot, and with one or two hauls, catch a few hundred pounds of fish that are exclusively whitefish. Obviously they know exactly what they are doing, but I was singularly unsuccessful in getting them to articulate that knowledge for my benefit.

The total whitefish harvests recorded by my field assistants were as follows: 1964-65--2,500 pounds; 1965-66--13 pounds; 1982-83--100 pounds; and 1983-84--1,608 pounds. In contrast, Saario and Kessel (1966:985) reported a whitefish catch of 12,000 pounds in the fall of 1959. Patterson

(1974:12) reports the same figure for 1971-72, and Braund and Burnham (1983:28, 32) reported a whitefish catch of about 5,250 pounds for the fall of 1982.

As noted above in connection with the char harvest for 1982, I believe Braund and Burnham's estimate for that year is better than mine because my research assistants did not differentiate whitefish and char in mixed catches, which were probably numerous. My assistants performed better, but probably not perfectly, the following year. Saario and Kessel's number is more problematic, however, because in 1959 there was apparently an extensive seine fishery on the lower Wulik during the first week of October. That is both the time when and the place where large quantities of whitefish are likely to be caught. Conceivably, therefore, their estimate could be correct, even though way out of line with figures from other years. Patterson's figure I find altogether suspect, however, because Kivalina residents would have a very difficult time recalling accurately a whole year's whitefish harvest for the simple reason that they do not pay much attention to it. With regard to my own numbers, I am sure that they are all too low, particularly for 1965-66.

The main sources of variation in whitefish harvest are the same as those listed for char. In addition, there is the special factor of how much seining goes on in the lower Wulik in October. If there is a late freezeup, and if the seining crews fish heavily in the lower river late in the season, whitefish production could be double or triple what it is in years when these conditions do not occur.

In sum, on the basis of the admittedly slender evidence presented above, I suggest that the range of variation in annual whitefish harvest in Kivalina is between a low of 2,000 pounds and a high of 10,000 pounds. The long-term average is probably around 5,000 pounds.

Cod

The Kivalina region is visited by two species of small codfish, the Arctic cod (*Boreogadus saida*) and the saffron cod (*Eleginus gracilis*). They may appear in the lagoon at two times of year: for about four to eight weeks after freezeup (mid-October to early December), and again--rarely--in early July. The major fishery, if there is to be a significant one, takes place in late fall. At that season the fishing is done by hook and line through holes chopped in the ice. In July, the fish are caught by dip net or bucket.

The cod harvest for the four subsistence years covered by this study is shown in Table 4. As the figures show, the harvest is extremely erratic, ranging from 0 in 1964-65 and nearly that in 1982-83 to nearly 7,000 pounds in 1965-66. In contrast to the whitefish figures, I regard these as being reliable.

Table 4. Annual Cod Harvest

Species	Subsistence Year			
	1964-65	1965-66	1982-83	1983-84
Arctic cod	0 lbs.	0 lbs.	.16 lbs.	3,258.75 lbs.
Saffron cod	0 lbs.	6,955 lbs.	9.00 lbs.	1,040.00 lbs.
Total	0 lbs.	6,955 lbs.	9.16 lbs.	4,298.75 lbs.

Saario (1959:12) estimated the catch in 1959 at 1,400 pounds, whereas in 1960 it was close to 0. (Saario 1961:15). Patterson (1974:12) estimated

the Kivalina 1971-72 harvest of Arctic cod at 1,200 pounds, and of saffron cod at 0. All of these figures are reasonably consistent with one another.

The range of variation in Kivalina cod harvest can be estimated as being 0 to 7,000 pounds, with a long-term average of about 2,000 pounds. The source of the variation in cod harvest is exclusively the fluctuation in the number of fish present in the lagoon, particularly after freezeup. Each fall people chop holes in the ice immediately after freezeup, and get either nothing or else fair numbers of fish. As long as the fish are there, several people fish for them virtually every day. During the lean years, someone usually tries once or twice every week at least from mid-October until late November, so there is very little chance that fish would be missed if present. There is no subtlety in this kind of fishing: if the fish are there, they take the bait.

Salmon

Four species of salmon spawn in Kivalina waters, primarily in the Wulik or its tributaries, but none in very large numbers (Alt 1979:75). They are the chum (*Oncorhynchus keta*), coho (*O. kisutch*), pink (*O. gorbuscha*), and king (*O. tshawytscha*). Almost all of them are caught in gill nets set near the channel during July and August, although some are taken by rod and reel in the lower Wulik, and a few are picked up more or less by accident during the fall char fishery.

The salmon harvest for the four subsistence years covered by this study is presented, by species, in Table 5. Almost all the harvest in the "species not reported" category are probably chum salmon, by far the most common of the salmon in the Kivalina river systems. The table shows the modest size of the overall harvest, a major purpose of which is to maintain a small but steady supply of fresh fish for families spending the summer months in the village.

Table 5. Annual Salmon Harvest

Species	Subsistence Year			
	1964-65	1965-66	1982-83	1983-84
Chum	0	0	0	1,660 lbs.
Coho	0	0	260 lbs.	40 lbs.
King	0	0	0	0
Pink	0	0	4 lbs.	32 lbs.
Not reported	1,425 lbs.	116 lbs.	200 lbs.	375 lbs.
Total	1,425 lbs.	116 lbs.	464 lbs.	2,107 lbs.

Patterson (1974:12) estimated the chum salmon catch for 1971-72 at 600 pounds, which is within the range of variation of my own figures. Saario and Kessel (1966:986) report that "several boat loads of salmon were obtained from the Wulik in the fall of 1960." Since one (skin) boat load equals approximately a ton of fish, at least 8,000 pounds, if not more, is suggested here. Since no observer was in the field during the fall of 1960, and since most salmon are already dead or else upriver of the char fishery at this time of year, I find this observation very questionable indeed.

Setting aside the Saario and Kessel report, the general range of variation in salmon harvest seems to be about 100 pounds to 2000 pounds, with a long-term average in the neighborhood of 900 pounds. The major sources of variation probably are the number of fish in the spawning population and the intensity of the fishing effort. Little is known about the former. The latter definitely varies according to weather conditions

and according to who, quite specifically, spends the summer in the village. The reason the fishery was low in 1965 was the miserable weather that summer; persistent onshore winds kept water levels high, and the rain and wind combined to discourage the normally casual efforts involved in the Kivalina salmon fishery. Personnel is a factor because some individuals are more avid gill net fishermen than others. When the gill net fishermen are out of town during a given summer, as was the case in 1982, the harvest is much lower than when they stay home.

Miscellaneous Species

Several other fish species are harvested by Kivalina fishermen, but on a sporadic basis, and rarely in large quantities. These are the grayling, sculpin, burbot, and smelt. Each is discussed briefly below.

Grayling are caught in three different contexts: (1) by accident, during char seining operations; (2) by hooking though the ice in winter; and (3) by rod and reel during the summer. The first is the largest, by far, but also the most difficult to measure. No matter how many grayling are caught during the char fishery, they are ordinarily such a small portion of the catch as to pass virtually unnoticed. Hooking through the ice in winter is second, and fishing by rod and reel during the summer is rare. In the first of the latter two contexts we are probably talking about a few dozen fish, and in the second we are probably talking about even less.

The actual annual figures for grayling harvest that I have are the following: 1964-65--0 pounds; 1965-66--40 pounds; 1982-83--290 pounds; and 1983-84--968 pounds. I do not believe that these figures represent a long-term trend toward increased harvest, but, rather, improved reporting. The only comparative figure is Patterson's (1974:12) estimate of 1,200 pounds for 1971-72, which, I suspect, is more accurate than any of my own

figures. I would be very surprised indeed to find out that the actual grayling harvest was any greater than that during at least the last three decades.

Sculpin (various species) are caught accidentally in small numbers in gill nets set near the channel for salmon and char, and during the post-freezeup cod fishery. None at all were reported for 1964-66, although a few surely were caught during those years. Only 9 pounds were reported for 1982-83, and less than 2 pounds for 1983-84. All of the reported fish were taken during efforts to catch cod. Sculpin caught in gill nets are usually thrown away, and are never reported.

A fourth species in the miscellaneous category is the burbot, or ling cod. Traditionally of some importance in the Kivalina economy, burbot were taken during the study period only by accident during the course of fishing through the ice for char. No burbot at all were reported caught in 1964-65, and only one was caught in each of the other three subsistence years.

The final fish species harvested in Kivalina is smelt. Smelt were reported only once, in the summer of 1983. In that year 20 pounds were caught during the week of July 17-23.

Discussion

The combined annual total fish harvests for the four subsistence years under consideration here are presented in Table 6. The figures show the overwhelming dominance of char in the overall fish harvest. This conclusion would hold even if we adjusted upward some of the harvest amounts for other species, especially whitefish and grayling, that surely were under-reported by my research assistants. Some of the variations in the harvest of the species other than char--again particularly whitefish and grayling--probably reflect variations in the quality of the reporting more than they

Table 6. Annual Fish Harvest

Variety	Subsistence Year			
	1964-65	1965-66	1982-83	1983-84
Char	93,995 lbs. (96.0%)	28,140 lbs. (79.9%)	69,059 lbs. (98.76%)	68,467 lbs. (88.5%)
Whitefish	2,500 lbs. (2.5%)	13 lbs. (0%)	100 lbs. (.14%)	1,608 lbs. (2.1%)
Cod	0 (0%)	6,955 lbs. (19.7%)	9 lbs. (.01%)	4,299 lbs. (5.5%)
Salmon	1,425 lbs. (1.5%)	116 lbs. (.3%)	464 lbs. (.67%)	2,107 lbs. (2.7%)
Grayling	0	40 lbs. (.1%)	290 lbs. (.41%)	968 lbs. (1.2%)
Burbot	0	2 lbs. (0%)	2 lbs. (0%)	2 lbs. (0%)
Sculpin	0	0	9 lbs. (.01%)	1 lbs. (0%)
Smelt	0	0	0	20 lbs. (0%)
Total	97,920 lbs. (100%)	35,266 lbs. (100%)	69,933 lbs. (100%)	77,472 lbs. (100%)

do variations in the actual harvest. The only exception to this generalization concerns the two species of cod (saffron and Arctic), which tend to be either present in great abundance or not present at all.

Given the above interpretation of the numbers, I see very little change in the fishing patterns in Kivalina between the mid-1960s and the early 1980s. The only possible difference is that winter fishing occurred at a more sustained pace during the winter in the 1980s than it did previously. However, this may be a result of the fact that 1982 and 1983 were both poor seal hunting winters. If the seal hunting had been better, it is possible that the winter fish harvest would have been more erratic, i.e., more like it was in the mid-1960s.

The major fishing season comes in September, when the primary char harvest occurs. A much smaller, but nevertheless important one, takes place in June, during the char run out to sea. Beyond that, Kivalina people are likely to at least consider going fishing for one species or another almost every week of the year. There were only three weeks in which no fish were caught in all four subsistence years: week 5 (end of June and the beginning of July), just after the char run out is over and before the salmon run in begins; week 31, which is the week between Christmas and New Year's; and week 49, at the beginning of May, when sea mammals take precedence. Beyond that, there is so much variation from one year to the next as to beggar useful generalization.

CHAPTER 3

MARINE MAMMALS

Several species of marine mammal are harvested by Kivalina hunters: four species of seal, the belukha, the walrus, and two species of whale. Each is discussed separately below.

Ringed Seals

The ringed seal is a small seal, with adults ranging between about 80 pounds and 160 pounds in weight. It is a pagophilic, or "ice-loving" seal, that tends to arrive with the first sea ice, and leave with the last. Consequently, the ringed seal hunting season begins with the onset of ocean freezeup, in November, and concludes when the last sea ice drifts away the following June or July.

Ringed seals are shot with a small caliber rifle while in the water. A perfect shot to the head is a virtual necessity or else the seal will dive and escape, perhaps to die later many miles away. During the winter the seals are very fat and they float when dead. In the spring they are much leaner and sink. During the four years covered by this study, hunting techniques and the various factors that affect ringed seal hunting were virtually identical to those described by Saario and Kessel (1966:993 ff.) for 1959-61.

Ringed seal harvests for the subsistence years covered by the present study, plus 1959-60 and 1971-72, are presented in Table 7. Two conclusions are suggested by the numbers in the table. The first is that there is considerable variation in ringed seal harvest from one year to the next.

Table 7. Annual Ringed Seal Harvest

Year	Number	Weight	Source
1959-60	478	59,570 lbs.*	Saario and Kessel (1966:998)
1964-65	908	109,547 lbs.	Present study
1965-66	467	59,078 lbs.	Present study
1971-72	500	nd.	Patterson (1974:11)
1983-84	172	21,784 lbs.	Present study
1984-85	109	11,776 lbs.	Present study

*Estimated on the basis of Saario's reported kill and my "sex not reported" weight assumptions. See Appendix B.

For example, the 1964-65 harvest was nearly double that of the following year, and the 1983-84 harvest was only 63 percent of that of the preceding year. I regard these numbers as basically sound, and believe the fluctuations to be real.

The key factor underlying normal fluctuations in harvest is ice conditions, which do not affect seal numbers so much as they do human access to the seals. If there are lots of cracks and leads in the ice, many more seals will be taken than when those conditions do not occur. However, the very large harvest of 1964-65 relates primarily to the high price of seal skin at that time. Favorable ice conditions made the large harvest possible, but price was the primary factor motivating hunters to acquire it.

The second conclusion suggested by the numbers in Figure 7 is that there was a drastic decline in the ringed seal harvest between the 1960s and the 1980s. This cannot have been because of a decline in seal numbers,

because the ringed seal population in the Chukchi Sea was extremely high in 1982-84, higher than it was in the mid-1960s (Burns 1982).

A second possibility is that the reduced harvest was because of lower demand. In the 1960s ringed seals were a very important source of both dog food and human food, of fuel (in the form of blubber, for wood burning stoves), and of cash (because the skins could be sold). They were not nearly so important for either dog food or fuel in the 1980s, and a commercial market for seal skins was virtually nonexistent. Unfortunately, the hypothesis cannot be said to be confirmed by the numbers because seal hunting conditions in both 1982-83 and 1983-84 were so bad. Kivalina was full of frustrated seal hunters during both winters, and it can be said with certainty that, had hunting conditions been better, the ringed seal harvest would have been much higher than it actually was. I still believe the long-term trend to be a real one, but not as pronounced as it appears to be in Table 7.

In sum, if we discount the unusually large harvest of 1964-65 as being due primarily to the world market for seal skins, the average annual subsistence harvest in the 1959-66 period seems to have been about 60,000 pounds. Since the figures for 1959-60 and 1965-66 are virtually identical, there is no basis for estimating the extremes. A "normal" harvest in the 1980s probably would be in the 25,000-30,000 pound range, with a low of about 10,000 pounds. Since hunting conditions were very bad in both 1983-84 and 1984-85, there is no basis on which to even guess at a maximum harvest figure.

Bearded Seals

Bearded seals are much larger than ringed seals, with adults ranging between about 500 pounds and 750 pounds, according to their sex and the season. In the Kivalina region young bearded seals may be encountered

periodically during the fall, and an occasional adult may be encountered over the course of the winter. Significant numbers do not appear until late March or early April, however. Beginning about that time they are hunted while lying on top of the ice sunning themselves. However, the main hunting season is just after the sea ice has broken up, in June. The general procedures followed in this hunting during the 1980s are the same as those described by Saario and Kessel (1966:995 ff.) for the 1959-61 period, except that skin covered umiaks were no longer used as the primary mode of transportation.

The bearded seal harvest for the six years for which reliable data are available is presented in Table 8. The figures show a considerable annual range of variation between a low of 33,103 pounds in 1983-84 and a high of 85,592 pounds in 1964-65. However, there is no discernible long-term trend in the numbers, which suggests that bearded seals were just as important in

Table 8. Annual Bearded Seal Harvest

Year	Number	Weight	Source
1959-60	117	68,929 lbs.*	Saario and Kessel (1966:
1964-65	153	85,592 lbs.	Present study
1965-66	119	68,406 lbs.	Present study
1971-72	125	nd.	Patterson (1974:11)
1982-83	134	76,266 lbs.	Present study
1983-84	60	33,103 lbs.	Present study

*Based on Saario's reported kill and my "sex not reported" assumption.

the 1980s as they were two decades earlier. This conclusion is borne out by observational evidence obtained in the village. Bearded seal blubber, which quickly turns to oil, is still the medium in which all dried meat and fish are stored. The meat itself is by far the most commonly dried of all of the meats in the Kivalina economy.

Differences in demand are apparently not a source of variation in bearded seal harvest. The number of seals in the target population may be a factor, but not much is known about that possibility. Again, as with ringed seals, ice conditions seem to be the major factor, particularly to the extent that ice limits the access that hunters have to them. However, in contrast to ringed seals, which are harvested primarily before breakup, it is the state of drifting ice that has the major impact on the bearded seal harvest.

Drifting ice, in turn, is more sensitive to wind and current conditions than fast ice is. Thus, if steady onshore winds pack the ice against the shore, the hunters cannot get out in their boats to hunt. This happened in June of 1983, and was the primary cause of the poor harvest in the 1983-84 Subsistence Year. Conversely, steady offshore winds can blow the ice right out to sea, and the seals go with the ice. This happened at least once during the 1970s, and the villagers were left with almost nothing. The ideal condition is for light winds to just slightly offset the force of the ocean current, in which case the ice stays around, but remains sufficiently broken up for boats to pass among the pans.

In sum, bearded seals have been, and remain, a staple of the Kivalina diet. The average annual harvest is about 66,000 pounds, with a range of approximately 33,000 pounds to 86,000 pounds.

Other Seals

Two other seal species occur in the Kivalina region, the spotted seal and the ribbon seal. Ribbon seals are rare, and only one was taken in any of the four subsistence years covered by this study. Ribbon seals are taken as targets of opportunity primarily for their hide, which has striking markings that are very different from those of the three other seal species.

Spotted seals are more common. They appear in moderate numbers in the Kivalina region right after the sea ice has left it. In particular, they can be found in some numbers in and around the lower stretches of rivers and in lagoon outlets before summer storms close the openings. Spotted seal meat does not appeal to Kivalina residents, however. During the early 1980s, they were killed as targets of opportunity primarily for dog food. In 1964-65 spotted seal skins were selling for a fairly good price, however, and four were killed primarily for that reason. Only one seal was taken in each of the other three subsistence years since then.

Belukha

The belukha, or white whale, is a small, cream-colored, dolphin-like whale; adults range in weight between about a ton and perhaps 3,500 pounds. They are sought by Kivalina hunters primarily for their tasty and nutritious muktaaq (blubber with skin attached). They pass through the Kivalina region in two main groups: (1) in April and May, when they travel north along leads in the sea ice; and (2) in July, when they move north along the coast very close to shore just after the sea ice has left. The odd one is seen in late summer or early fall, usually heading south.

The available data on the annual Kivalina harvest of belukha are presented in Table 9. The figures suggest three general conclusions: (1) there is significant variation in belukha harvest from one year to the next; (2) there was relatively little change in harvest between 1959 and

1972; and (3) there was a substantial increase in harvest between the earlier period and the late 1980s. Other evidence obtained in the field suggests that these conclusions are correct.

Table 9. Annual Belukha Harvest

Year	Number	Weight	Source
1959	7	18,550 lbs.*	Saario and Kessel (1966:100)
1960	14	37,100 lbs.*	Saario and Kessel (1966:1001)
1964-65	6	15,250 lbs.	Present study
1965-66	12	31,150 lbs.	Present study
1971-72	10	26,500 lbs.*	Patterson (1974:11)
1982-83	27	71,750 lbs.	Present study
1983-84	28	74,850 lbs.	Present study

*Based on reported kills and my "sex not reported" weight assumptions. See Appendix B.

In the early 1960's belukhas were hunted primarily in July, during the period of open water, by ad hoc crews (composed of anyone who happened to be around) who pursued them in boats and shot them with rifles. The main variables in this type of hunting are the number of animals in a pod, and wave conditions. Very calm water is required.

Belukhas were known to be out in the leads in the spring, but men mostly hunted alone at that time of year and had no effective means of retrieving a belukha shot in a wide lead. Occasionally several men and a

pod of belukhas converged at a narrow lead, in which case quite a few animals were taken.

The change in belukha harvest took place in the spring of 1966. In 1966 the first whaling crews of modern times went out on the ice. Crews of men in boats could pursue belukhas in even the largest leads, and the spring harvest increased immediately. The variables then became ice conditions, the number of animals in the leads and the number of crews out on the ice. The number of crews has increased from two to five since 1972, and the average spring harvest of belukhas has gone up a corresponding 250%. The summer harvest, both proportionately and absolutely, has declined. In 1982-83, 23 of the 27 belukhas killed were taken in week 348 (April 24-30); in 1983-84, 27 of the 28 belukhas harvested were taken in the corresponding week, number 448 (April 22-28). Obviously scarcely any were taken during the period of open water.

Unfortunately, the data for 1982-84 do not permit estimates of the range of variation of belukha harvest since the figures for those two years are almost identical. Apparently, they are slightly above average. During the early 1960s the range was apparently between a low of about 2 animals and a high of about 15; the weights varied tremendously depending on the sex and age ratios represented in the harvest. Finally, it is appropriate to note that the dramatic increase in belukha harvest over the past 20 years is due not to improved modern technology, but to the resumption of an ancient hunting practice.

Walrus

Historically, Kivalina has been on the fringe of good walrus hunting territory. Because of that fact, walrus never have been a significant factor in the Kivalina economy on a regular basis. Periodically, however, they have made tremendous contributions to it when, for some reason, large

pods were carried into the region by the northward moving post-breakup sea ice. This was true even during the low period in the walrus population (Fay 1957) in the early decades of the 20th century.

During the period covered by this study, walrus were harvested by Kivalina hunters in three different contexts: (1) in pods associated with the loose pack ice, in June; (2) as isolated individuals during the period of open water--usually hauled out and sleeping on the beach; or (3) as headless carcasses washed up on the beach. In this last context, the animals evidently were killed by "head hunters" in the Bering Strait area earlier in the spring. Sought primarily for their ivory, their heads were cut off, and their bodies left on the ice or in the water. The current carried them toward the north. Some of them washed ashore in the Kivalina region, although the highest concentration of carcasses was usually just south of Cape Thompson, some distance toward the northwest. In July certainly, and often much later than that, these carcasses are quite suitable for dog food, and are sometimes butchered and retrieved for that purpose.

The annual walrus harvest figures for Kivalina are presented in Table 10. The figures for the four years covered by the present study include retrieved carcasses as well as animals that were actually killed. This affects only the 1965-66 figure, when only one of the three walruses listed was actually killed by Kivalina hunters.

Table 10. Annual Walrus Harvest

Year	Number	Weight	Source
1959-60	1	2,200 lbs.*	Saario and Kessel (1966:1002)
1964-65	0	0	Present study
1965-66	3	5,450 lbs.	Present study
1971-72	3	13,200 lbs.*	Patterson (1974:11)
1982-83	51	111,800 lbs.	Present study
1983-84	4	6,000 lbs.	Present study

*Based on reported kills and my "sex not reported" weight assumptions. See Appendix B.

All of the kills for three of the four years covered by the present study involved isolated individuals taken during the period of open water. The exception is 1982-83, when the entire year's harvest was made during a two week period in June of 1982.

In 1982 the walrus population was known to be much higher than it had been 20 years earlier (Burns 1982; Fay 1982:240 ff.). When I first received the report of the June 1982 harvest I was under the impression that it was this population increase that had made this huge harvest possible, in which case similarly large harvests could be anticipated on a regular basis. But not a single walrus was seen in the spring of 1983.

In retrospect, the 1982 kill appears to have been an anomaly. For some reason ice carrying several hundred walrus drifted into the Kivalina region that June, but there was nothing regular about it. The same type of thing happened even in the early decades of the present century, but only once or twice every twenty years or so. No doubt when the walrus population

is high, anomalously large kills of this type presumably occur more frequently than when the population is low. But the normal kill is very low. The "normal" Kivalina walrus harvest has probably risen to about four animals per year from about two in the mid-1960s, and perhaps only one during the decade before that. Harvests of several dozen animals are, and probably always will be, unusual.

Baleen Whales

Two species of baleen whale appear in Kivalina waters. One is the gray whale, which is present in variable numbers during the period of open water. The other is the bowhead, usually present only in April and May, while the ocean is still covered with ice.

Gray Whales

Gray whales never have been regularly pursued by Kivalina hunters. However, they have been sought as targets of opportunity when observed cruising close to shore in relatively calm seas. During the specific years covered by this study, a gray whale was pursued only once, in the summer of 1964. The animal was herded into shallow water by several boats, shot repeatedly with high powered rifles, and badly wounded. No one had a harpoon, however, and somehow the whale managed to escape, no doubt to die eventually somewhere else. The hunters were most distressed by the result, and within a week several boats were equipped with harpoons; most Kivalina boats have remained so ever since. To my knowledge this type of incident has not recurred. At least one gray whale was taken by fully equipped Kivalina hunters in the late 1970s.

The only gray whale actually harvested by Kivalina hunters during the study period was a "stinker," i.e., a dead whale found on the ice, in June, 1983. Apparently dead since the previous summer, the meat and much of the muktuk were too rotten for human consumption. Part of the muktuk was in

good condition, however, and about a thousand pounds were removed and brought back to the village.

Bowhead Whales

The Kivalina coast is just east of the major migratory route taken by bowhead whales in spring, when they head north along leads in the sea ice. It is well outside of the route taken by the whales on their return in the fall, when the animals usually stay far out at sea. Nevertheless, in the early and mid-19th. century, Kivalina hunters regularly maintained a spring whaling station at Nuvua, a projection of land located about 27 miles northwest of the modern village where productive leads form rather often. This hunt was discontinued in the early 1880's, when a terrible famine decimated the Kivalina population.

In the late 1880's it became possible for Kivalina men to hunt whales at whaling stations controlled by Whites near Point Hope, and subsequently, with Native crews at Point Hope itself. (Previously the Point Hopers had forbidden outsiders from participating in their whale hunt.) During the first six decades of the twentieth century, most Kivalina men who wanted to hunt whales went to Point Hope to do it. Prior to about 1950, when the Kivalina people spent the spring in small camps scattered up and down the coast, an occasional bowhead was taken in Kivalina waters, but this was on a very ad hoc basis.

In 1966 bowhead hunting on a regular basis was resumed by Kivalina hunters when two crews went out on the ice. They saw several whales that year, but did not get close enough to harpoon any. The first whale was taken in 1968. Between 1968 and the summer of 1982 three other bowheads were taken by Kivalina crews, and three others were struck and lost. (Since the whaling crews have taken many belukhas, however, the overall effort has been very productive despite the low bowhead harvest.)

Bowhead whale hunting, like ringed and bearded seal hunting, is profoundly affected by ice conditions. The ideal situation is for one long, narrow lead to open a few miles out to sea, with nothing but solid ice for miles beyond that. The whales cruise north along the lead, rising periodically to breathe. They can be pursued there by eight-man crews which include a helmsman, a harpooner, and six paddlers. The worst situation is to have no open water at all.

In 1966 there was a fair amount of water and quite a few whales, but the boats could not get close enough to them to make a strike. In both 1983 and 1984, however, ice conditions were extremely bad. In both years the hunters had to use aircraft even to locate open water. In 1983 they finally found some off the Mulgrave Hills, but there were no bowheads in it. Eventually the Kivalina crews gave their strike quota of one, established by the International Whaling Commission and the Alaska Eskimo Whaling Commission, to Point Hope.

In 1984 things were better. On the morning of April 25th some of the whaling captains chartered a plane to search for an open lead from the air. They managed to locate a long one about 20 miles straight out from the village. The lead gradually approached the coast toward the northwest, terminating in a series of large cracks about 25 miles northwest of the village. At that point the cracks were about five miles from the beach. The airborne surveyors returned to the village and five crews promptly set out for them, arriving at the cracks around midafternoon.

The cracks were full of both bowhead whales and belukhas. By midnight a 33-foot bowhead and several belukha had been taken. The Kivalina hunters were joined within three hours by several dozen men from Noatak and Kotzebue, and, a few hours later, by men from Noorvik and Selawik. They spent the next 24 hours butchering and hauling the meat back to the village. After a

brief rest, many hunters returned to the same area on the 27th to hunt belukhas. They were again successful. However, a strong north wind arose during the night, bringing hunting to a halt.

The total harvest from this three-day period of intense activity was one bowhead whale (157,800 pounds), and 27 belukha (71,550 pounds). The total of 228,630 pounds made it the most successful spring marine mammal season of record, and one of the best years in memory. However, since it was such a spectacular few days, and given the modern means of communication and transportation then available in Northwest Alaska, at least 60 men from other villages arrived to share in the harvest. Only about 70 percent of the meat, muktuk and blubber, and probably much less than that, remained in Kivalina. Much of what did remain was consumed at the whaling feast in early June, which also was attended by many people from other villages. What is theoretically a "Kivalina whale" is really a "NANA Region whale" taken by a Kivalina crew.

From April 28th until at least June 25th the sea ice never moved. No new cracks or leads formed, and all of the ones that had opened for the few days in late April remained closed. Consequently, one of the most productive spring hunting seasons in Kivalina history lasted a total of about 72 hours.

Discussion

The combined marine mammal harvests of the four subsistence years covered by this study are depicted graphically in Figures 7 through 10, with the harvest characterized by weight on a weekly basis. Although semi-logarithmic graphs are again employed, there were two or three occasions in three of the four years when the weekly harvest exceeded the limits of the scale, sometimes by a considerable margin.

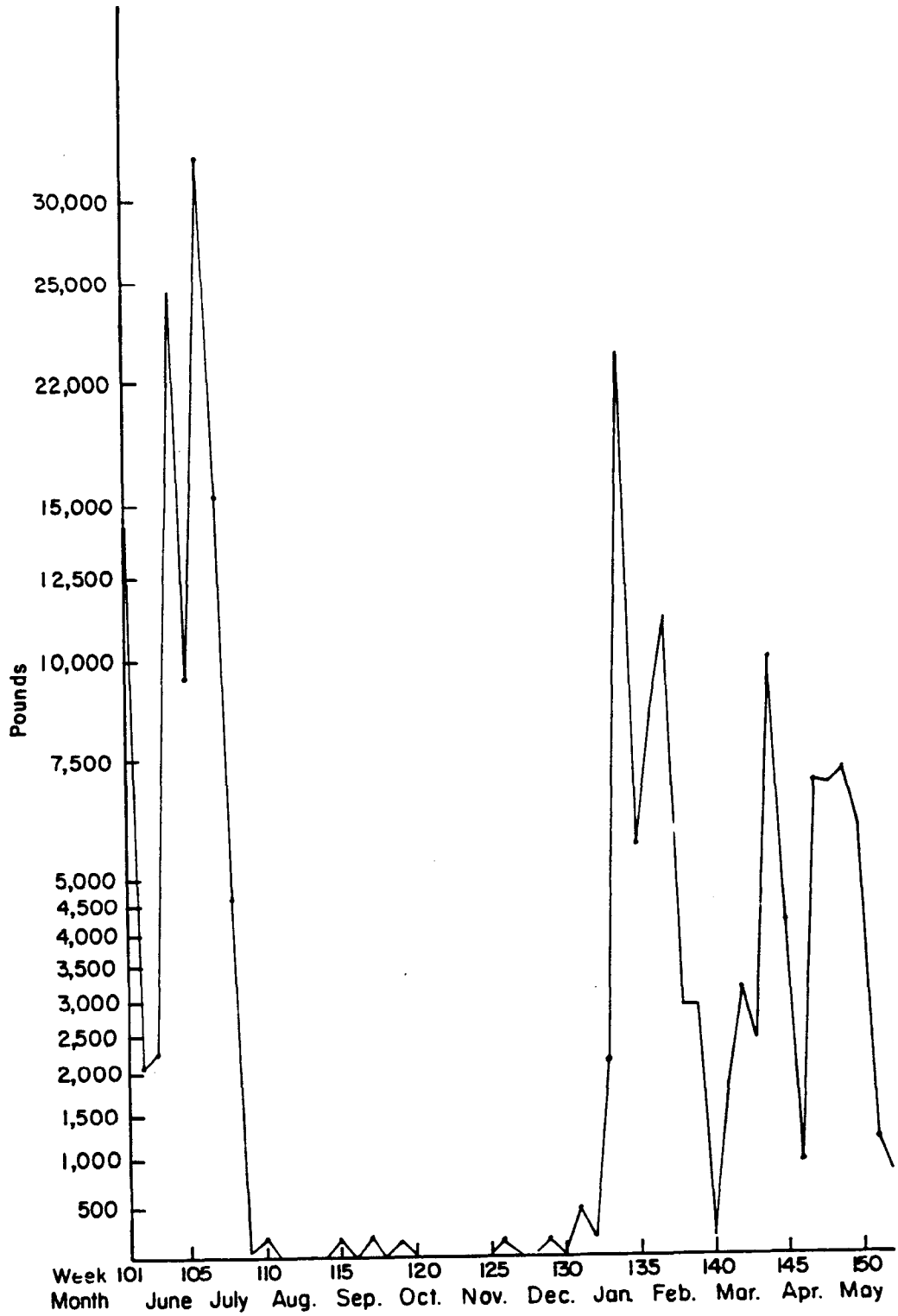

Figure 7. Weekly Marine Mammal Harvest, 1964-65.

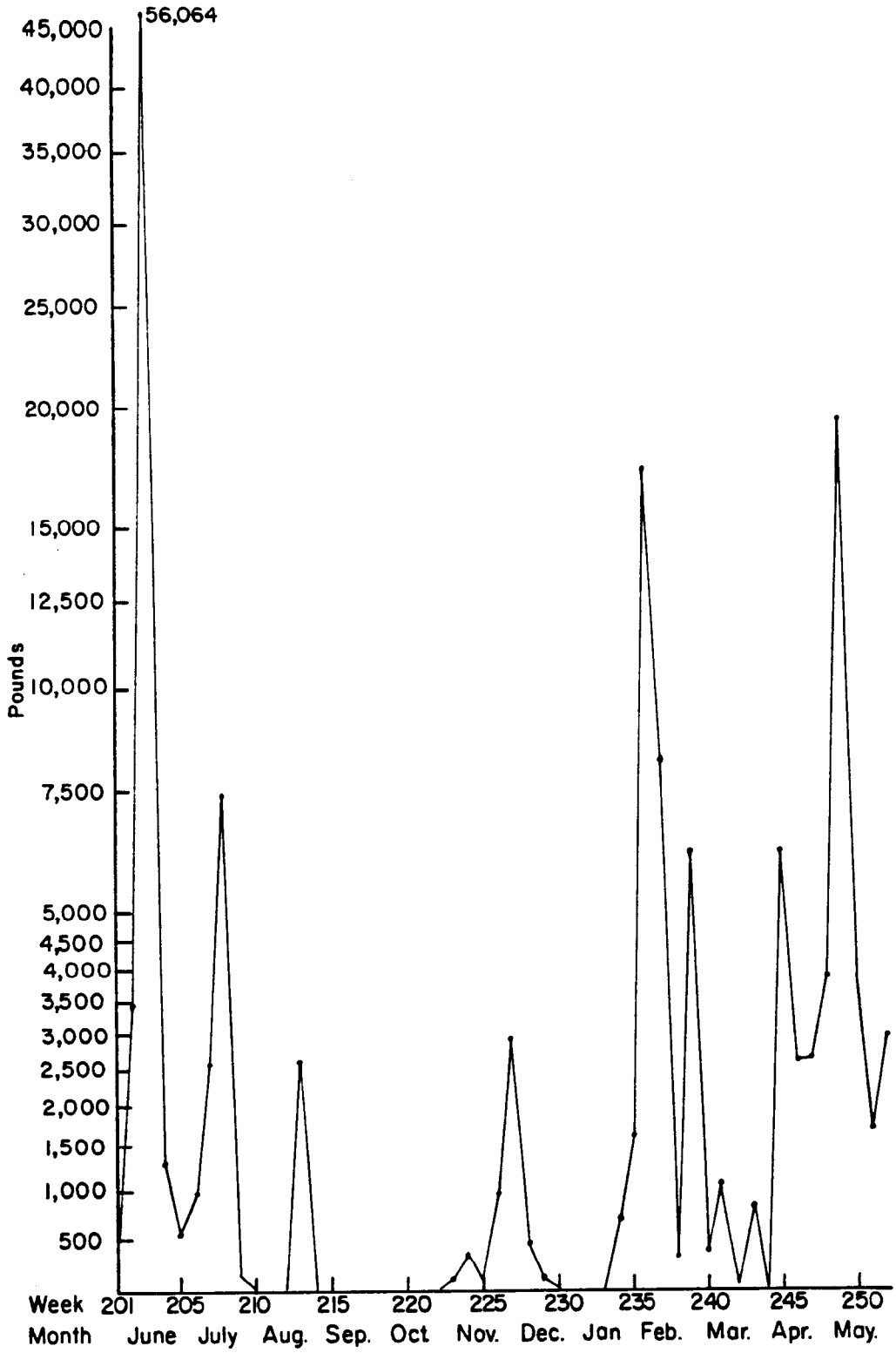

Figure 8. Weekly Marine Mammal Harvest, 1965-66.

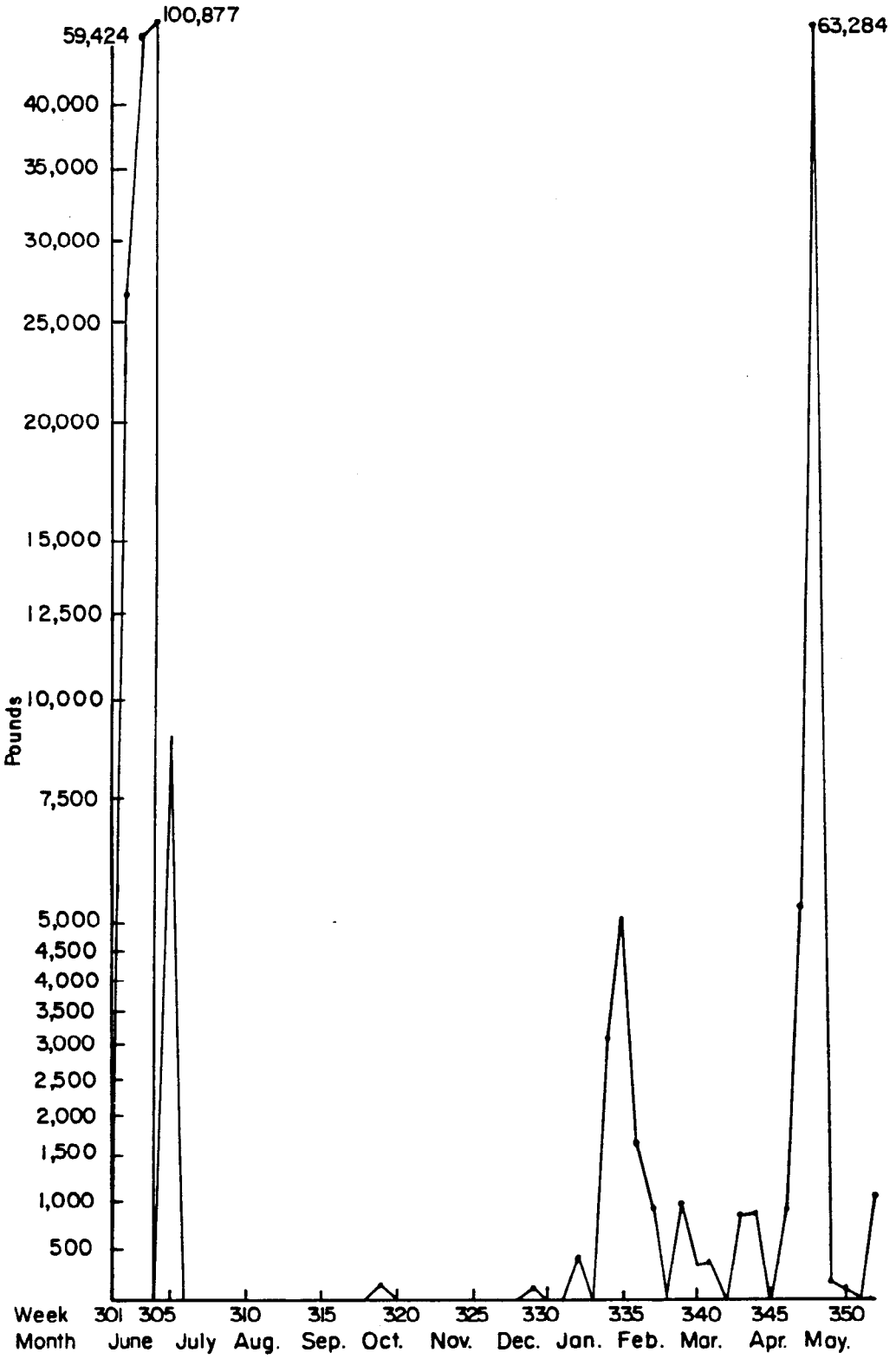

Figure 9. Weekly Marine Mammal Harvest, 1982-83.

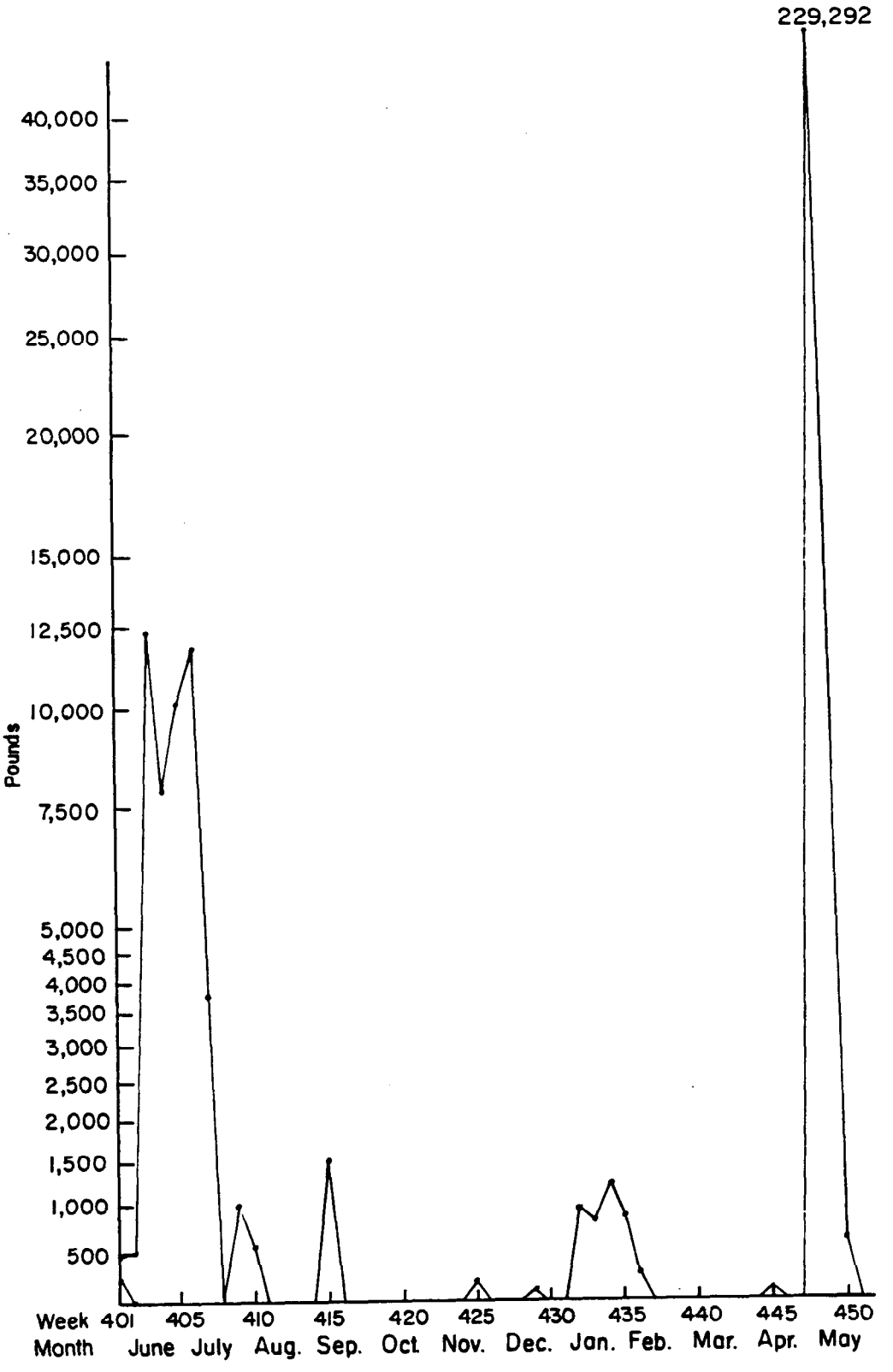

Figure 10. Weekly Marine Mammal Harvest, 1983-84.

The tremendous peaks in the graphs, separated by valleys of varying length, show clearly the variation in harvest that occurs over the course of a 12-month period. Brief comparison of the four graphs will also convey an idea of the variation that occurs between one year and another. Despite the variation in harvest, there is a sequence of seasons in the annual marine mammal hunting cycle that is very regular from one year to the next. This discussion focuses on these seasons.

The first comes immediately after the breakup of the sea ice. It begins in early June and normally continues into early July; i.e., it spans the period when the sea ice has been broken up but before it has left the region. In 1964-65 this season spanned weeks 4-6 (June 21-July 11); the next year it was limited to week 3 (June 13-19); in 1982-83 it included weeks 2-4 (June 6-26); and in 1983-84, weeks 3-6 (June 12-July 9). The primary hunting emphasis in all four subsistence years during this season was on bearded seals, but ringed seals were also hunted. Walrus, too, appeared from time to time, primarily in 1982. Belukha were sometimes taken as well, usually just as the last ice was departing.

The second season is the summer-fall interlude, which begins after the sea ice leaves the coast and continues until it begins to form again the following fall. Generally a time of rather little sea mammal hunting, it sometimes can be fairly productive if a pod of belukha passes by, or if a walrus or two is shot. A few straggling bearded seals may be killed during the first week or two, and a spotted seal may be taken at any time over the course of the summer.

The third season is the fall freezeup period, which takes place while the sea ice is beginning to form. In 1964-65 it began in week 26 (November 22-28, 1964); in 1965-66 in week 22 (October 24-30, 1965); in 1982-83 in week 28 (December 5-11, 1982); and in 1983-84 in week 25 (November 13-19,

1983). During most years the sea mammal harvest during this season is limited to ringed seals shot along a thin band of shore-fast ice, although young bearded seals are occasionally taken. In 1965-66 the harvest was substantially increased by a belukha, a walrus and a spotted seal, all shot during the same week. During most years there are at least a few weeks when no hunting can be done at all. This occurs when the ocean is completely ice covered, but not safe to venture out upon.

The winter sea mammal hunting season begins when the ocean is fully covered with a layer of ice that is strong enough to hold the weight of a hunter, either a snowmobile or a dog team, and a loaded sled. In 1965 it began in week 33 (January 10-16); in 1966 in week 34 (January 16-22); in 1983 in week 34 (January 16-22); and in 1984 in week 32 (January 1-7). This is the main hunting season for ringed seals, although an occasional bearded seal is sometimes taken as well.

The spring hunting season comes next. This is the time when bearded seals begin to haul out on the ice, and when, in most years, relatively large cracks and leads form. Ringed seals continue to be important, however, and, since 1966, belukha and bowhead whales have exceeded both species of seals in significance. Starting weeks for the spring marine mammal hunting season during the relevant subsistence years were as follows: 1964-65, in week 44 (March 28-April 3); in 1965-66 in week 45 (April 3-9); in 1982-83 in week 46 (April 10-16); and in 1983-84, in week 48 (April 22-28).

The spring hunting season is followed in most years by a sixth and final season, the pre-breakup interlude. This is an interval of some two to four weeks extending from mid-May to early June when the sea ice is too rotten for extensive travel very far from the beach, but is not broken up sufficiently to permit boat travel. Sea mammal hunting during this period

is usually limited to ringed seals, which are sought in holes and cracks near the shore, and in the channels in the ice that open up off the river mouths immediately after fresh water breakup. Except when seal skin prices were high, or when the spring hunt was a failure, most of the hunting during this period was conducted by teenage boys.

Table 11 depicts the total marine mammal harvests for five of the six hunting seasons. The sixth, the pre-breakup interlude, generally spans the boundary between subsistence years, hence does not fit the table format. In any case, it is not a major harvest period.

The variation in harvest that has been discussed throughout this presentation continues to be apparent in these figures. The specific point I wish to emphasize here is not the variation in harvest but the variation through time. Although these same seasons follow one another inexorably year after year in precisely this sequence, both the timing of their onset and their duration can vary considerably from one year to the next. Any generalized statements about either the size or the timing of a particular marine mammal hunting season must be a statistical abstraction, hence may have little relationship to the real world in any given year.

Table 11. Annual Marine Mammal Harvest, by Season

	1964-65		1965-66		1982-83		1983-84	
Season	Length	Harvest	Length	Harvest	Length	Harvest	Length	Harvest
Post-breakup	4 weeks	81,509 lbs.	1 week	56,064 lbs.	3 weeks	186,955 lbs.	4 weeks	42,066 lbs.
Summer-Fall	18 weeks	5,418 lbs.	18 weeks	15,503 lbs.	24 weeks	8,985 lbs.	18 weeks	7,062 lbs.
Freezeup	7 weeks	854 lbs.	12 weeks	10,247 lbs.	5 weeks	641 lbs.	7 weeks	323 lbs.
Winter	11 weeks	61,681 lbs.	11 weeks	35,997 lbs.	12 weeks	14,296 lbs.	16 weeks	4,306 lbs.
Spring	7 weeks	41,850 lbs.	8 weeks	42,542 lbs.	3 weeks	69,443 lbs.	2 weeks	229,904 lbs.

CHAPTER 4

TERRESTRIAL MAMMALS

Several species of terrestrial mammals are taken by Kivalina hunters. As is true with fish, however, a single species overwhelmingly dominates the harvest. Accordingly, the presentation begins with a section on that species--the caribou, then deals with the others in groups.

Caribou

Caribou have been a major resource for the native peoples of Northwest Alaska since time immemorial. However, of all of the species in the regional subsistence base, they probably undergo the most extreme fluctuations in both numbers and distribution, seasonally, annually and over longer periods of time (Burch 1972).

In the Kivalina region, caribou were altogether absent from about 1881 to 1948. During the early part of that period Kivalina hunters had to travel far to the northeast, to the Kukpowruk, Kokolik and even the Utukok Rivers to find them. In 1904 two herds of domesticated reindeer were established in Kivalina. They flourished, and soon provided the meat, fat and hides formerly supplied by their wild counterparts. Beginning in the 1930's, the reindeer, too, began to decline in numbers. By 1948 only a few hundred were left in the consolidated Kivalina herd. Fortunately, in the fall of that year, several thousand caribou passed through. They enticed the remaining reindeer to accompany them, thus terminating the reindeer era in Kivalina. However, they also turned out to be only the first of many caribou to follow. At least some caribou have visited the

Kivalina region annually since 1948, and what might be called the "modern era" of caribou hunting in Kivalina dates from that time.

Kivalina lies on the western fringe of the territory of the Western Arctic Herd (WAH) of caribou (Davis, Valkenburg and Boertje 1982; Hemming 1971:5 ff.). In general, the animals of this herd spend the winter in the northern boreal forest. The largest numbers tend to be in the Kobuk and Koyukuk Valleys, but groups of varying size are often found in other parts of the range as well. In spring, the females move north of the tree-line to the calving grounds, which are located in the area where the headwaters of the Colville, Ketik, Meade and Utukok Rivers converge; the males usually lag some distance behind. In June the scattered bands begin to converge, and by around the first of July most of the animals in the entire herd are concentrated near the northwestern end of the De Long Mountains. They then disperse over a huge area, extending from the Upper Noatak Valley to the shores of the Arctic Ocean. In late August they begin to move south to the tree-line once again.

Since 1948 caribou have appeared fairly regularly in the Kivalina at two times of year. One is in early July, at the beginning of the summer dispersal. The other is in late September or early October, around the time of freshwater freezeup. This is during the general fall movement to the south, and just prior to the rut. Both the number of animals involved in these movements and the duration of their stays vary tremendously from one year to the next.

In recent decades the size of the WAH has fluctuated dramatically. As shown by the numbers in Table 12, the population rose from an estimated 119,000 animals in 1948 to 242,000 in 1970. It crashed to a mere 75,000 in 1976, before rising to 172,000 in 1982. Curiously, despite the fluctuations

Table 12. Size of the Western Arctic Herd

Year	Number	Source
1948	119,000	Scott *et al*. (1950)
1961	156,000	Lent (1966:491)
1970	242,000	Hemming (1971:5)
1976	75,000	Davis & Valkenburg (1982:14)
1980	140,000	Davis & Valkenburg (1982:14)
1982	172,000	Anderson and James (1984)

in the size of the herd during the 1964-1984 period, it seems to have been approximately the same--ca. 172,000 animals and increasing--during the two specific periods of field research covered by this study. Any differences in caribou harvest during the four years of field research thus cannot be attributed to changes in the size of the WAH as a whole.

The total caribou harvest figures for Kivalina for various years is presented in Table 13. The figures show a high of 1010 animals killed in 1965-66, and a low of 256 the previous year. The average for the years shown is 551. Interestingly, from October 1975 through February 1976, when the WAH population crash of the mid-1970's was in progress or possibly in its advanced stages, Kivalina hunters took 896 caribou (Davis and Valkenburg 1978). That five-month figure exceeds the total annual harvest for five of the six years of record, and is well above the annual average. Unfortunately, no data are available on factors that might have contributed to that harvest, such as a poor fall char fishery, a bad winter ringed-seal hunt or an unusually high local concentration of caribou.

Table 13. Annual Caribou Harvest

Year	Number	Weight	Source
1960-61	619*	140,227 lbs.**	Saario & Kessel (1966:989)
1964-65	256	60,563 lbs.	Present Study
1965-66	1,010	240,724 lbs.	Present Study
1971-72	513	n.d.	Patterson (1974:11)
1982-83	346	80,337 lbs.	Present Study
1983-84	564	127,753 lbs.	Present Study

*Does not Include July or most of August, 1960.
**Based on reported kills and my "sex not reported" weight estimates. See Appendix B.

After the crash, tight bag limits were imposed and strictly enforced for several years. The estimated harvest for 1976-77 was only 65 animals (Ibid.), which may be the all-time low for the post-1948 period.

Comparison of the weight of the harvest from one year to the next in the absence of weekly or monthly data is problematic because of the sexual dimorphism that characterizes the species, and because of the considerable seasonal variation in weight that caribou undergo. Weight estimates must take both the sex distribution in and the timing of the harvest into account. These data are available for only the four subsistence years covered by this study.

The caribou harvest for the years covered by this study is shown graphically in Figures 11 through 14. In all four years the animals arrived in early July (weeks 5 or 6), and again in late September or early October (weeks 17-19). Beyond that there is little apparent regularity.

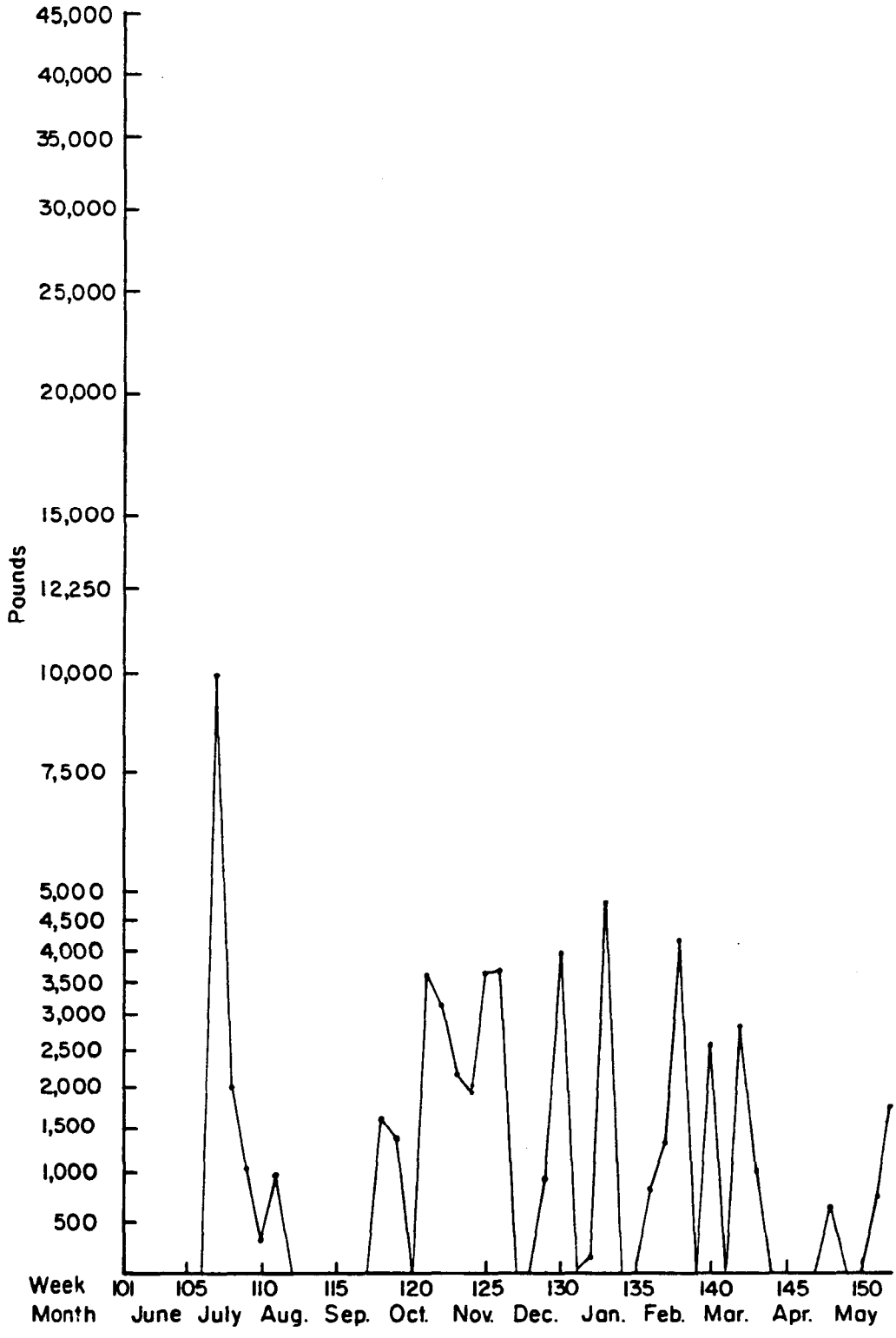

Figure 11. Weekly Caribou Harvest, 1964-65.

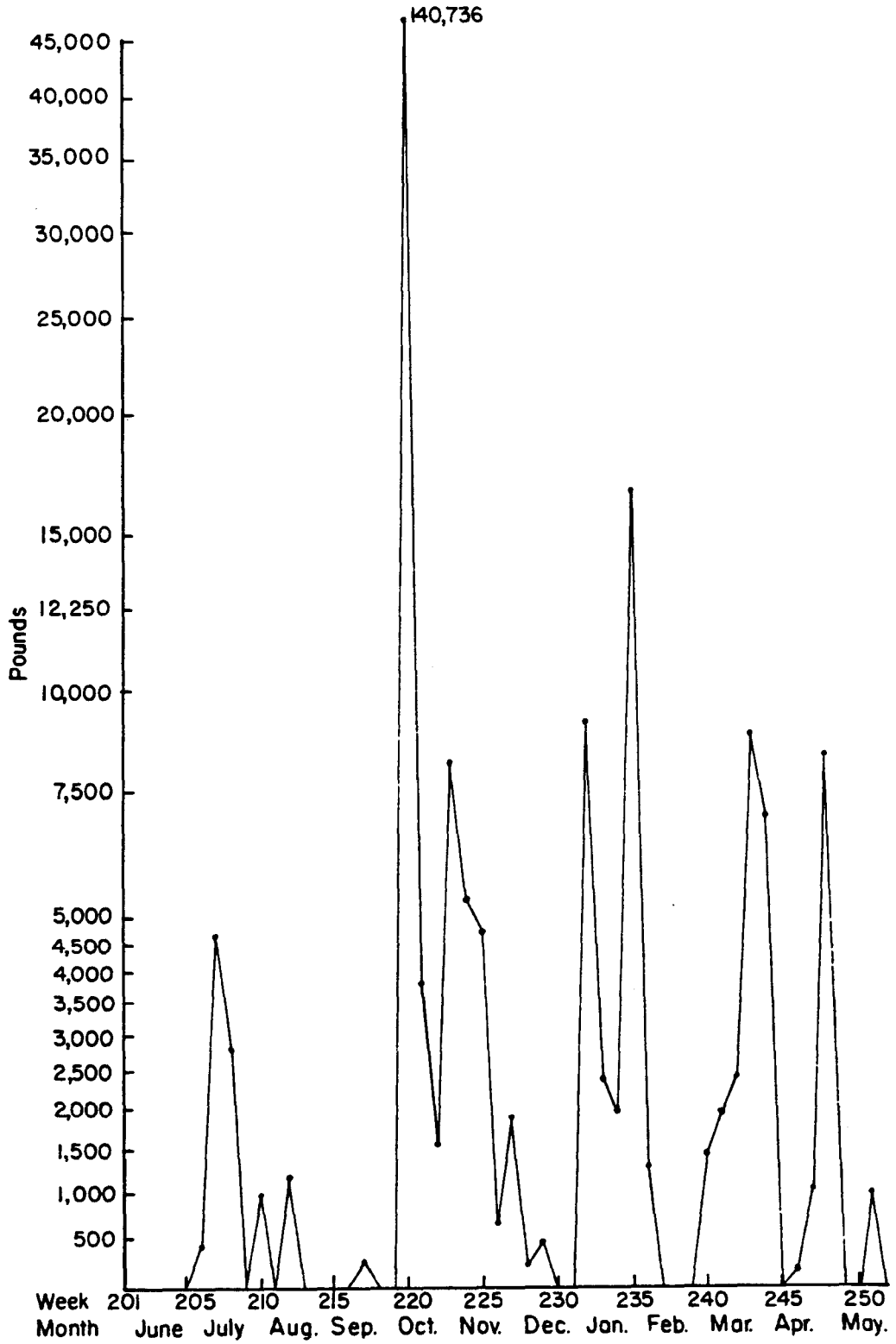

Figure 12. Weekly Caribou Harvest, 1965-66.

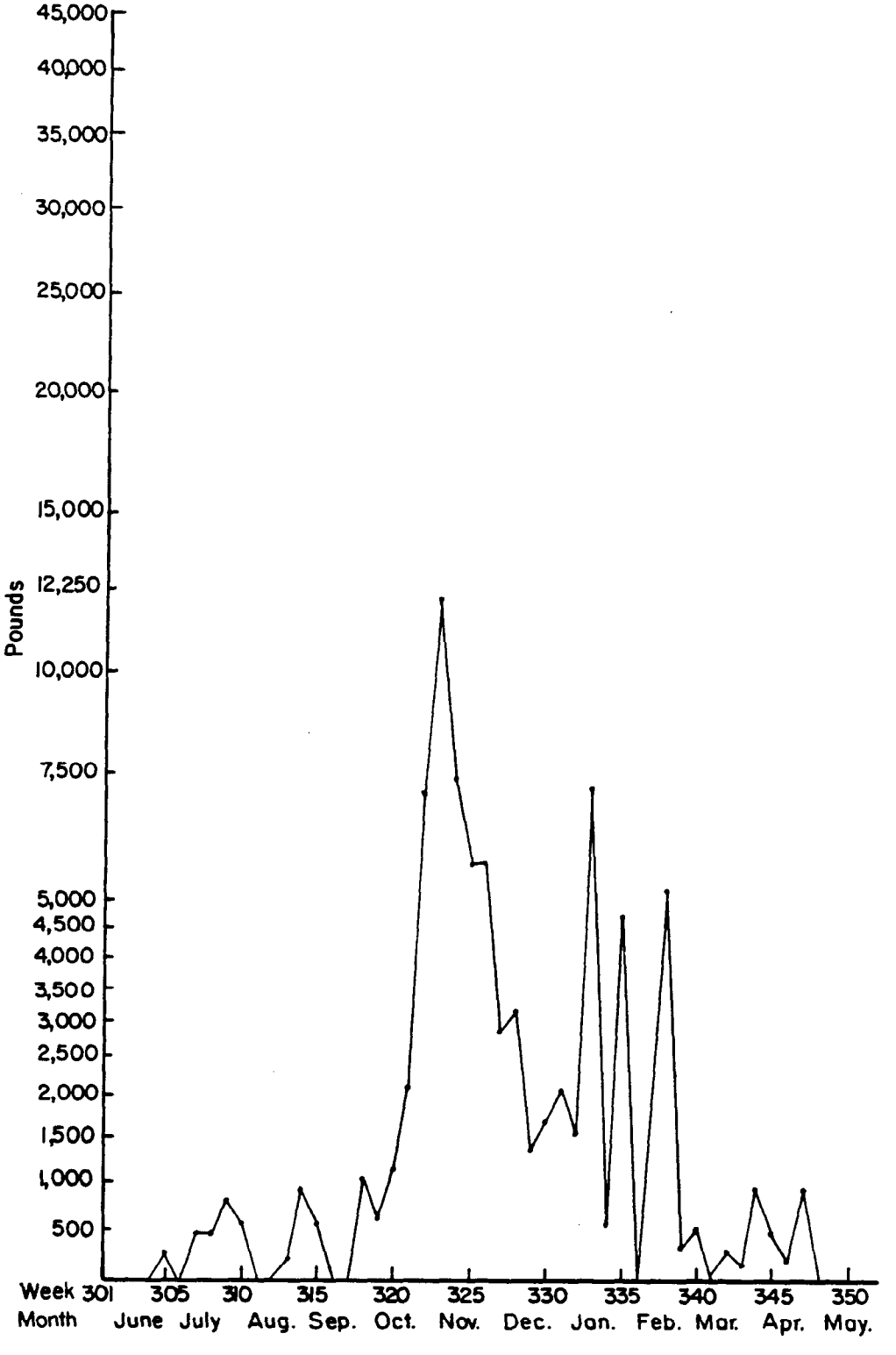

Figure 13. Weekly Caribou Harvest, 1982-83.

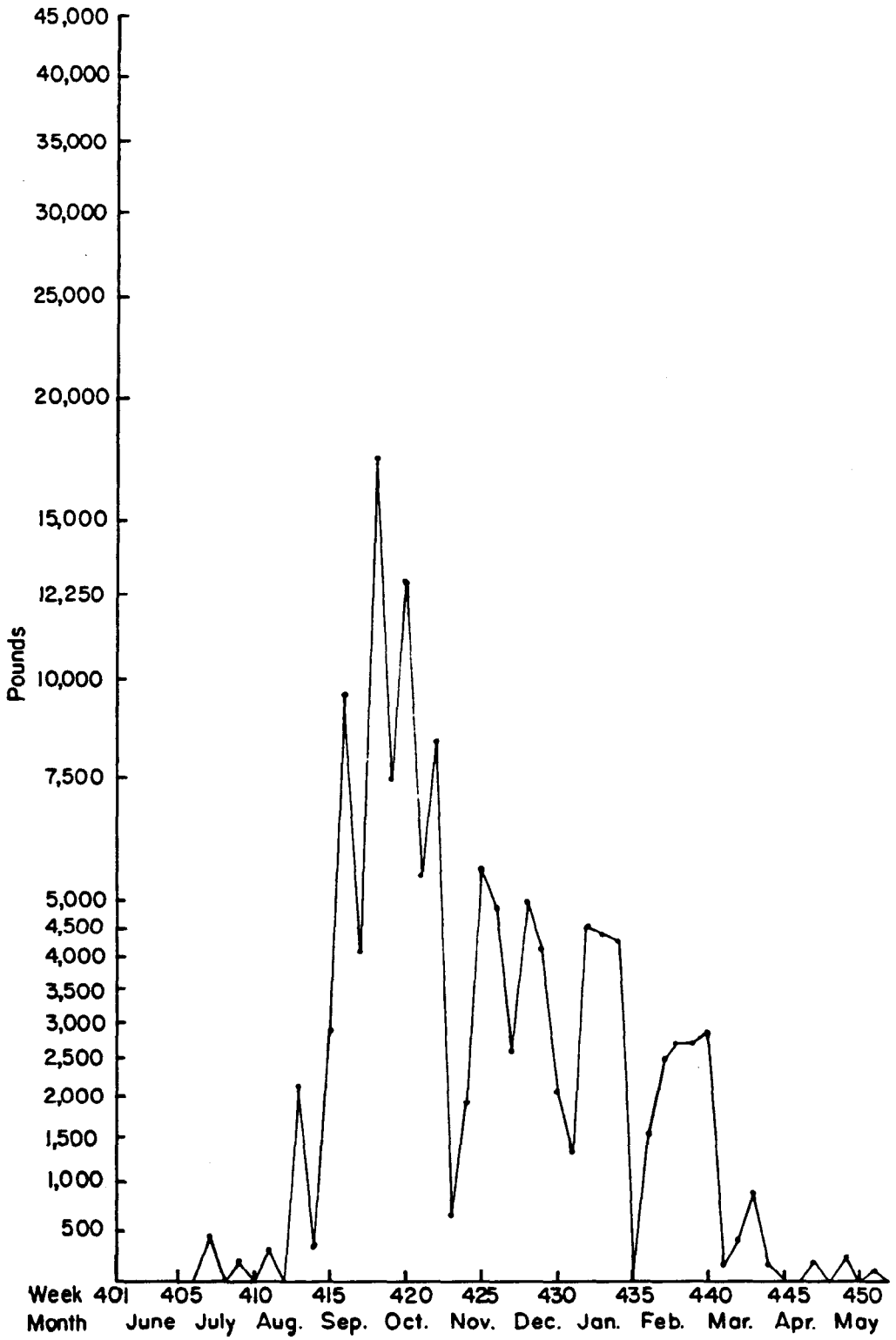

Figure 14. Weekly Caribou Harvest, 1983-84.

As Figure 11 shows, 1964-65 got off well with a good summer hunt. Several hundred animals appeared along the coast to the northwest, where they are easily seen and hunted. Several hunting parties went out by boat, and most of them were successful. Fall was another matter, however. Although caribou did appear shortly before freezeup, they were few in number and widely scattered. The low harvest was not for lack of hunting effort. Particularly in the fall, before seal hunting got underway, the search for caribou was both intensive and extensive. There simply were not many animals there to hunt.

The 1965-66 harvest, depicted in Figure 12, was very different from that the preceding year. The summer hunt was poor, but the early fall hunt was spectacular, possibly the most successful in Kivalina history. Two factors combined to produce this result. One was a very bad fall char fishery, the worst on record. The second was the arrival of tens of thousands of caribou almost immediately after the fishery closed. In the 1960's, when dog teams were the sole mode of winter transportation, the char fishery, which provided most of the dog food, was crucial to the subsistence activities over the entire October-June period. In October of 1965 the hunters knew that the fishery had been a disaster, but they could not know how long the caribou would stay around or how successful the seal hunting would be. They over-reacted as a result, killing more caribou--564--in one week than are taken in an average year. They continued to hunt caribou successfully all winter, although at a much reduced rate.

The 1982-83 caribou harvest is shown in Figure 13. Here we see a poor summer harvest. There were few caribou, and most of the hunters had gone to Kotzebue for the commercial salmon fishery and the trade fair. Neither had been a factor in the 1960's. A fair number of caribou returned in the fall, however. This was right after a pretty good char fishery, and, since

there were few working dogs left in the village, the pressure to hunt caribou in October was not all that great. However, the winter seal hunt developed into a disaster, and that increased the demand for caribou. The moderate harvest that resulted during the winter and spring months was the result of a low local caribou population, not lack of interest on the part of Kivalina hunters.

The 1983-84 caribou harvest is presented in Figure 14. Here we see another low summer harvest for the same reasons as the year before: few caribou and few hunters. In the fall, however, it was the 1965-66 pattern once again: a poor char fishery accompanied by the arrival of large numbers of caribou. The main difference between the two years was the lack of the need for dog food in 1983-84, which kept the caribou harvest much lower than it otherwise would have been. Several thousand caribou remained in the region all winter, often in sight of the village. Hunting pressure on caribou continued at a fairly high level primarily because the seal hunting was again a disaster, but it was still much lower than it could have been. In the fall and winter of 1983-84 there were so many caribou so close to the village that Kivalina hunters easily could have killed three or four times as many as they did had they chosen to do so.

Other Food Species

The only terrestrial mammal that is regularly and systematically hunted for food by Kivalina residents is the caribou. A few other species are taken from time to time, however. Each is discussed briefly below.

Moose

Moose are usually killed by men who are looking for caribou (or fishing or on berry-picking expeditions) but who accidentally come across a moose. Kivalina people are not avid moose hunters for two reasons. First,

they much prefer caribou meat over moose meat. Secondly, moose are generally considered by Kivalina hunters to be too much work to shoot and retrieve; the benefit, in their view, does not justify the cost. The cost results from the animal's large size and its general inaccessibility. Moose tend to move down to the lower Kivalina and Wulik River areas and onto the Flat in summer. At that time travel is by boat, hence limited to the rivers. Moose that are very close to the rivers are often hidden by high brush, hence difficult to see. When spotted and shot in the heavy bush, they are hard to butcher and carry to the boat. Moose that are out on the Flat are easy to locate, but not considered worth the effort to stalk, then carry a long distance over the boggy ground to a boat. Consequently, moose are shot only when encountered in extremely favorable circumstances. By the time snowmobile travel is possible, usually in mid-October, the animals have withdrawn to the middle sections of the rivers, hence are less accessible to village-based hunters. By this time caribou usually are available, and they are the preferred game. Later on, in the winter, when overland travel conditions are usually much better, moose are rather easily located and hunted along the middle sections of the rivers, but the season is closed.

The moose harvest for the years of record is indicated in Table 14. Moose were not even mentioned by Saario and Kessel (1966), so one can assume that none was taken in either 1959-60 or 1960-61. Actually, in the 1950's and early 1960's, there were scarcely any moose around Kivalina. No census data are available for the mid-1960's, but I would guess that there were not more than a dozen or so animals in the entire region. They were still something of a novelty at the time, and, once seen, were usually pursued if conditions were at all favorable. The harvest of four animals in 1965-66 probably had a significant impact on the local population.

Table 14. Annual Moose Harvest

Year	Number	Weight	Source
1964-65	0	0	Present Study
1965-66	4	3,400 lbs.	Present Study
1971-72	0	0	Patterson (1974:11)
1982-83	6	5,100 lbs.	Present Study
1983-84	6	4,950 lbs.	Present Study

The moose population has been growing since the mid-1960's. An estimate for the late winter of 1982 was 48 moose in the Kivalina-Wulik Rivers area (Quimby 1983b:139). A much more detailed survey the following winter revealed a population of 139 in the same region (James 1984). The harvest, however, was only six in both 1982-83 and 1983-84. This confirms the view that moose were not very high on the priority list of Kivalina hunters.

The major variables in the moose harvest seem to be the following: (1) the number of moose in the region, (2) the number of caribou in the region, and (3) the number of hunters in the village during the summer--especially in August, when the season is open and moose are most accessible. The higher the local moose population, the greater the chances that a hunter will encounter one along the river when hunting caribou, fishing or berry picking. The greater the number of caribou, the lower the moose harvest will be because of the preference for caribou. Whether the reverse is equally true remains an open question. Unfortunately there are no reliable harvest data for the mid-1970's, when the caribou population was

low and there were strict bag limits on that species. Finally, the more active hunters there are in the village, the greater the chances of someone encountering a moose and shooting it. During the hunting seasons of the 1982-84 period, when the moose population was relatively high, the hunter population was either low due to commercial fishing and other activities in Kotzebue, or else was involved in construction work in Kivalina itself.

Grizzly Bears

Whether or not Kivalina people like grizzly bear meat depends on what the bears themselves have been eating. Most of the bears in the Kivalina region derive a good bit of their sustenance from the carcasses of headless walruses that wash up on the beach, and their meat tastes pretty bad. Knowing this, Kivalina people have hardly hunted grizzlies for food at all during the years covered by this study. None were reported killed in either 1959-60 or 1960-61 by Saario and Kessel (1966). In 1964-65 only one was taken, and two the following year. Patterson (1974:11) indicated that no grizzlies were killed in 1971-72. The figure was also zero in 1982-83, but two in 1983-84. Headless walrus were common in all of these years, particularly on the coast toward the north (which is also where most of the bears could be found).

The numbers mentioned above are for reported kills. During the 1964-66 period, I am pretty sure that the number of reported kills and the number of actual kills was identical. The bear population was low, and most of the bears were some distance to the northwest of the village, near Cape Thompson, because more walrus carcasses were washed up there. By 1982 the population had risen considerably (Quimby 1983a). Bears had become a serious nuisance, and sometimes an outright menace, to the Kivalina people. During the 1982-84 Subsistence Years, bears robbed several fish caches, they ruined most of the carefully cached June bearded seal harvest of one

seal hunting camp, they smashed in the walls of a villager's cabin on the middle Wulik, they wandered in and out of the village on more than one occasion, and they set up camp in the village dumps. It was the people's understanding that they were not allowed to kill grizzlies even under such circumstances; they shot a few anyway without reporting the kills to me or to anyone else. Although there was a modest effort to work things out in 1983, the Kivalina people believe that the game management officials, hence the law, gives preference to bears over people, and are understandably loath to provide accurate information on what is actually happening.

Polar Bears

Kivalina is marginal polar bear habitat. There usually are not enough leads and cracks in the ice near the shore to provide good hunting grounds, so the bears remain farther out on the ice. Occasionally, old ice blows down from the north just before ocean freezeup, and it usually brings along several polar bears when it does so. This did not happen in any of the years for which harvest data are available.

The annual polar bear harvest for the years of record is shown in Table 15. The maximum figure of only two bears, taken in 1983-84, represents kills made just a few days apart during the brief but spectacular whaling season in the spring of 1984. Both the bears and the humans were hunting at the same cracks in the ice. A third bear was taken during this period by a Noatak man.

In contrast to grizzly bear meat, polar bear meat is prized by Kivalina people. In addition, polar bears are considered to be especially dangerous, hence particular prestige items for Kivalina hunters. Finally, polar bear hides sell for a substantial sum of money. For all of these reasons, the animals are vigorously hunted whenever they are present. The very low

harvest figures in Table 15 can therefore be considered a direct reflection of the size of the local bear population.

Table 15. Annual Polar Bear Harvest

Year	Number	Weight	Source
1959-60	1	775 lbs.*	Saario & Kessel (1966:1002)
1960-61	0	0	Saario & Kessel (1966:1002)
1964-65	0	0	Present Study
1965-66	1	800 lbs.	Present Study
1971-72	1	775 lbs.*	Patterson (1974:11)
1982-83	0	0	Present Study
1983-84	2	1,325 lbs.	Present Study

*Based on the number reported killed and my "sex not reported" weight assumptions. See Appendix B.

Other Species

Other species of terrestrial mammal are killed for food, but in such low numbers as to preclude a need for special treatment. They are mentioned primarily for the sake of completeness.

One species that is particularly valued as a food item is the mountain sheep. No estimates of the sheep population are available for the mid-1960's, but 135 animals were reported to be in the easternmost sector of the Kivalina region in 1983 (James and Quimby 1984). Their low numbers and remote location for most of the year raise the cost of hunting sheep to a level that is generally unacceptable to Kivalina hunters. Some sheep meat

is provided anyway from time to time by sport hunters operating out of a camp located on the middle Wulik River; they keep the heads and the hides, and give the meat to villagers. The only sheep that are ordinarily hunted by Kivalina men are those that wander down to the Cape Thompson area in early summer. Here they can be readily spotted by hunters looking for eggs on the bird cliffs or seeking the beginning of the July movement of caribou. During the specific years of record, the only kills--two in 1982-83--were made under these conditions.

Porcupines, curiously, are also reported killed from time to time. One was reported killed in each of 1964-65, 1965-66 and 1982-83. Why porcupines are even present so far beyond the tree-line is a mystery. However, they are encountered almost every summer by berry pickers in July and August, in which circumstance they are usually ignored or avoided. In late October, 1964, one was encountered by a dog team right on the coast and, after wreaking havoc among the dogs, was shot. In 1965-66 a porcupine was killed and eaten by some poorly prepared and unsuccessful caribou hunters just north of Cape Thompson, and turned out to be the only food they had for almost three days. Finally, a porcupine was killed in early December, 1982, but I did not learn the circumstances of this particular case.

Showshoe hares were not taken at all during the Subsistence Years covered by the present study, nor were they reported by Saario and Kessel (1966) for 1959-61 or by Patterson (1974:11) for 1971-72. Quimby (1983d) indicated that the hare population was low and declining in the Kivalina region, but Kivalina hunters said that it was virtually nonexistent; the nearest hares were in the lower Noatak valley. During the mid-1970's, however, hares were available in great abundance in the Kivalina region, and literally hundreds were shot for food in some years by Kivalina

hunters. The hare harvest probably is a reflection of the hare population more than it is of all other factors combined.

One other species that needs to be mentioned for the sake of completeness is the muskox. A small herd of animals from Nunivak Island was established near Cape Thompson in 1970 (Grauvogel 1984) and placed off limits to hunters. Quimby (1983c) reported that this population had grown to 64 in 1982, although Kivalina hunters believe it to have been slightly higher than that. No muskoxen were killed by Kivalina hunters in 1982-84, although at least two were poached a few years earlier. In general, Kivalina hunters seem to have respected the law and not hunted muskoxen, although they now know that they like the meat. They regard the animals with fascination and some amusement, however, and never fail to approach and study them when a herd is spotted.

Fur Bearers

The species in the "fur bearer" category are those that, in recent decades, at least, have been sought for their pelts rather than for their meat. Traditionally, the meat of all of these species was also consumed as food, but, with one exception, no longer is. Most of these species are taken specifically for commercial or barter purposes, hence, given my definition of subsistence, technically should not even be discussed in this report. Since some hides are also used domestically, however, and since the harvest records are available, it seemed more appropriate to include than to exclude them. Unfortunately, all of the years of record were considered to be poor trapping years, so the data should not be treated as representing the normal range of variation in the harvest of fur bearing animals.

Red Fox

Northwest Alaska is good red fox habitat (James and Quimby 1984), and the species is frequently in the forefront of the Kivalina trapping effort. The annual harvest figures for the years of record are shown in Table 16. The data show annual fluctuations of the same general order of magnitude

Table 16. Annual Red Fox Harvest

Year	Number	Weight	Source
1959-60	9	94.5 lbs.*	Saario & Kessel (1966:1003)
1960-61	10	105 lbs.*	Saario & Kessel (1966:1003)
1964-65	3	36 lbs.	Present Study
1965-66	19	204 lbs.	Present Study
1971-72	6	63 lbs.*	Patterson (1974:11)
1982-83	34	369 lbs.	Present Study
1983-84	54	569 lbs.	Present Study

*Based on the reported kill and my "sex not reported" weight assumption. See Appendix B.

exhibited in the harvest of most other species, but also suggest a long-term trend toward an increase. The figures for 1982-83 and 1983-84 are much higher than those for earlier years. Actually, although the numbers are probably accurate, they are misleading in this respect.

The harvest of red foxes is cyclical, being controlled by two independent factors both of which are highly variable. One is the size of

the local fox population. During the early 1960's it was apparently low, whereas in 1982-84 it was high (although declining from a few years previously). The second factor is the demand for fur, which, in the case of the red fox, is set by the worldwide fashion industry. In the 1960's the price of red fox pelts was low, whereas in the 1980's it was relatively high. It was the fortuitous combination of high population levels and good prices that accounts for the comparatively large harvests of 1982-84. But if history is any guide, the trend is short-term, not long-term, and probably will be reversed fairly soon.

White Fox

The harvest of white foxes is subject to the same factors controlling the production of red foxes, namely, population size and the price for pelts. Both undergo tremendous variation. One difference between the two species is that, whereas the size of the red fox population is determined largely by the abundance of hares and ptarmigan, that of the white fox is determined to a significant extent by sea ice conditions. If old ice blows down from the north during the freezeup period, white foxes usually come with it. When that happens, many more animals are in the region than in years when this does not occur.

The harvest of white foxes during the years of record is shown in Table 17. During each of the seven years for which data are available, the harvest was low, but particularly so in the mid-1960's. In general, it can be said that hunter interest in white foxes also was low during the 1959-1984 period. Certainly the species does not hold the place in the cash local economy that it did during the early decades of the twentieth century. It probably never will because of the growth of fur farming, but a shift in fashion could conceivably raise the price of pelts to some extent.

Table 17. Annual Artic Fox Harvest

Year	Number	Weight	Source
1959-60	15	120 lbs.*	Saario & Kessel (1966:1003)
1960-61	18	144 lbs.*	Saario & Kessel (1966:1003)
1964-65	3	24 lbs.	Present Study
1965-66	0	0	Present Study
1971-72	13	104 lbs.*	Patterson (1974:11)
1982-83	13	104 lbs.	Present Study
1983-84	5	40 lbs.	Present Study

*Based on the reported kill and my "sex not reported" weight assumption. See Appendix B.

Wolverine

Wolverines are consistently important to Kivalina hunters for two reasons. First, their fur is extensively used locally in making ruffs for parkas. Indeed, local demand is more of a factor in determining the price of a pelt than is the case for any other species except the wolf. Second, wolverines are respected as intelligent and dangerous animals, hence success in hunting them confers prestige.

Table 18 shows the wolverine harvest for the seven years for which data are available. There seems to be less variation here than is true for most other species. This is probably because demand for pelts (at the local and regional level) is consistently high, and because the wolverine population does not undergo cyclical fluctuations to the same extent as most of the other predatory fur bearers. The population must fluctuate,

Table 18. Annual Wolverine Harvest

Year	Number	Weight	Source
1959-60	10	270 lbs.*	Saario & Kessel (1966:1003)
1960-61	18	486 lbs.*	Saario & Kessel (1966:1003)
1964-65	17	469 lbs.	Present Study
1965-66	21	560 lbs.	Present Study
1971-72	9	243 lbs.*	Patterson (1974:11)
1982-83	12	304 lbs.	Present Study
1983-84	10	363 lbs.	Present Study

*Based on the reported kill and my "sex not reported" weight assumption. See Appendix B.

however, and changes in population are probably the primary factor underlying variations in annual harvest.

Wolf

Wolf pelts are not in great demand on the world market, but they are extremely important locally in Northwest Alaska in making ruffs for parkas. Also like the wolverine, the wolf is considered an intelligent and dangerous animal, thus conferring prestige upon the successful hunter.

Kivalina's harvest of wolves has been consistently low during the seven years of record, as shown in Table 19. As is the case with wolverines, the size of the harvest seems to be determined primarily by the size of the local wolf population. Demand is consistently high enough to maintain active hunter interest. In contrast to wolverines, however, which are systematically trapped as well as shot as targets of opportunity, wolves are taken almost exclusively as targets of opportunity.

Table 19. Annual Wolf Harvest

Year	Number	Weight	Source
1959-60	4	384 lbs.*	Saario & Kessel (1966:1003)
1960-61	0	0	Saario & Kessel (1966:1003)
1964-65	1	92 lbs.	Present Study
1965-66	1	96 lbs.	Present Study
1971-72	3	288 lbs.*	Patterson (1974:11)
1982-83	0	0	Present Study
1983-84	1	96 lbs.	Present Study

*Based on the reported kill and my "sex not reported" weight assumption. See Appendix B.

Lynx

The Kivalina region generally offers rather poor lynx habitat. Lynx do appear there in moderate numbers from time to time, however. Their numbers usually follow those of their major prey, the snowshoe hare, which, in turn, tend to follow a ten-year cycle of growth and decline (James and Quimby 1984). Apparently the population was high between 1976 and 1980, but began to decline in 1981 (Johnson 1983:52).

The annual lynx harvest is shown in Table 20. Certainly it has been modest in each of the years of record, scoring a zero in four of the seven. In 1971-72 the hare population was beginning to rise in the Kivalina region, which may account for the relatively high take that year. In all of the other years of record it was very low, so it is difficult to account for the relatively good lynx harvest in 1965-66.

Table 20. Annual Lynx Harvest

Year	Number	Weight	Source
1959-60	0	0	Saario & Kessel (1966:1003)
1960-61	0	0	Saario & Kessel (1966:1003)
1964-65	0	0	Present Study
1965-66	6	138 lbs.	Present Study
1971-72	6	138 lbs.*	Patterson (1974:11)
1982-83	1	23 lbs.	Present Study
1983-84	0	0	Present Study

*Based on the reported kill and my "sex not reported" weight assumption. See Appendix B.

Lynx are usually hunted as targets of opportunity; when one is observed, it is pursued. The tenacity of the pursuit may vary according to the going price for pelts, however. Curiously, it was very low in 1965-66 and 1971-72, when the harvest was high, but relatively high in the early 1980's, when the harvest was low. Presumably, then, demand has exceeded the supply in all of the years of record. Variations in the harvest were thus determined more by fluctuations in the lynx population than by any other factor.

Miscellaneous Fur Bearers

The Kivalina region is home to a variety of fur bearing animals in addition to those already mentioned. Most of them play such a minor role in the local economy, both ideally and actually, that they do not justify separate treatment. They are listed, along with the harvest for the years of record, in Table 21.

Table 21. Miscellaneous Fur Bearer Harvest

Species	1959-60[a]	1960-61[a]	1965-65[c]	1965-66[c]	1971-72[b]	1982-83[c]	1983-84[c]
Land Otter	3	1	0	0	0	1	0
Ground Squirrel	1	0	0	0	10	3	53
Mink	0	0	0	1	0	0	0
Muskrat	0	0	0	0	9	0	0
Weasel	3	0	0	0	0	0	0

(a) Saario and Kessel (1966:1003); (b) Patterson (1974:11); (c) Present Study

Mink and muskrats are not very common in the Kivalina region, and that fact alone accounts for their consistently low significance. Weasels are common enough, but there is no demand for their pelts. The same is true of the land otter, which reportedly occur in some numbers along the rivers but which, to my knowledge, are never systematically hunted.

The only species in the miscellaneous list which may be of some significance is the ground squirrel. These little creatures are snared, trapped or shot, both for their pelts, which can be made into gorgeous parkas, and for food. Indeed, squirrels are the only fur bearers that are regularly eaten by Kivalina people. The problem here is with the numbers. I simply do not believe the harvest figures, particularly for the years prior to 1982-83: they are much too low. I know that during the 1960's a few individuals were very active ground squirrel trappers, actually setting up camps along the coast some distance northwest of the village to be near the major squirrel communities. But the harvest was not reported, probably because ground squirrels are very low prestige animals that tend to be

taken in large numbers. Hunters do count them, because they need to know whether or not they have enough to make a parka. But it simply never occurred to them to report what they caught, and the field assistants did not think to inquire about them.

CHAPTER 5

OTHER SUBSISTENCE RESOURCES

Fish, marine mammals and terrestrial mammals nearly exhaust the list of Kivalina subsistence food resources, but not quite, since they also include several species of bird, berries, roots and leaves. These products provide welcome variety and, in the case of berries in particular, a valuable nutritional contribution to the diet. In addition to food resources, the Kivalina people also gather firewood, and, lacking plumbing, they also must acquire water by dint of their own efforts. This chapter summarizes the available information on these diverse resources.

Birds

Kivalina hunters harvest a number of different bird species, including several species of ducks and geese, seacliff nesting birds, cranes, swans, ptarmigan and snowy owls. My information on the harvest of all types of bird is unfortunately very poor.

Part of the inadequacy of my records was deliberate. In the spring of 1961 the Kennedy Administration, without warning, decided to enforce the Migratory Waterfowl Treaty with Canada and Mexico. This treaty prohibits the hunting of migratory waterfowl in spring which, in most Arctic regions, is the only time such birds are available. This shift in policy led to a number of unpleasant incidents all over Alaska, including the famous "duck-in" at Barrow, in which most of the hunters in the village each shot one duck and brought it to a meeting at which they challenged the game warden to arrest them. In many parts of the state game wardens found it necessary to travel armed and in pairs.

Kivalina had its own interesting incident, which I happened to observe personally. A federal game warden arrived in the village one spring day in 1961 to see if any duck or goose hunting was going on. Naturally there was, and practically every stormshed contained several ducks waiting to be processed. Recognizing the plane's markings while it was still in the air, and having heard about the trouble in other parts of the state, the President of the Village Council met the game warden at the airstrip and took him directly to the village store. The store was very poor in those days, and the shelves contained only a few cans of sauerkraut, some sugar and some flour. The President told the game warden that if he thought that the people of Kivalina could live on what was available in the store, they would stop hunting ducks and geese. If he did not think that they could get along on such meager resources, then he'd better leave and not come back. The warden wisely chose the latter course.

All of this was still fresh in everyone's mind when I initiated my own study in the spring of 1964. I feared that the collection of sensitive information such as the duck harvest might jeopardize the entire project, not to mention my chances of remaining in the village. Consequently, the field assistants were instructed to collect no information at all on the harvest of birds of any kind. The Project Chariot study also did not collect quantitative data on bird harvest, so we are entirely lacking in information on the subject from the early 1960's.

Federal policy had moderated sufficiently by 1982 for me to risk collecting bird harvest data. Here I encountered a different problem, namely, serious under-reporting. This may have related to lingering concern over the legality of waterfowl hunting, but, more likely, simply reflected the fact that birds in general are low prestige items that often are taken in large numbers and in a short amount of time. Food resources

with these characteristics were invariably under-reported by the hunters, and were not carefully checked by the field assistants. Consequently, although I have quantitative data on the bird harvest for this second period of field research, they are certainly incomplete and need to be used with caution.

It should be noted that, by "low prestige," I refer to the fact that birds require minimal skill and effort to hunt successfully. Even young boys can do it. Consequently, one's ability as a hunter cannot be determined on the basis of how many birds one has killed. I do not mean to imply that birds are unimportant in the subsistence economy, however, for that would be false. Historically and culturally, birds have always been valued because they have provided welcome variety to the diet. Sometimes, however, they have been more significant. In the old days, ptarmigan were often critically important in March, when other resources were hard to come by. The same can be said of migratory waterfowl during the breakup period, for the same reason. The dietary diversity feature has been maximized since freezers came to Kivalina village. Large numbers of birds are now frozen and stored for consumption during seasons when they would be unavailable otherwise.

Ducks and Geese

Ducks and geese begin to arrive in Northwest Alaska in late April or early May, usually remaining some distance offshore where there are open leads and cracks in the sea ice. Gradually their numbers grow and, as the ice breaks up, they come closer to the beach. After the ice has broken, but while it is still around, many species fly right along the beach, often only a few feet above it. Subsequently they disperse to breed, nest and rear their young. During and after the molt, they gather in flocks, usually some distance inland. As fall approaches they head back south again.

Each species follows a particular variation on this general theme, one that differs to some extent from all of the others.

Ducks and geese are sought by Kivalina hunters primarily just before and during the breakup process. Before breakup the birds are shot out on the ice by men taking a break from seal hunting. After breakup some are shot by seal hunters, but most are killed by hunters stationed at several different locations along the beach known to be right on the birds' customary flightpath. The same stations have been used for centuries. This is the main duck and goose hunting season. Finally, a few birds are shot during the summer, mostly as targets of opportunity by men or boys who are travelling up the rivers for some other reason, such as caribou hunting or berry picking.

The recorded harvest figures for 1982-83 and 1983-84 are presented in Table 22. The phrase "recorded . . . figures" is used to suggest that the actual harvest was probably different, namely, higher. I suspect that it may have been 25% to 50% higher despite the fact that the entire 1982-84 period was regarded as a very poor one for both ducks and geese, which simply did not appear in the customary numbers. Interestingly, Beverly Minn (1982, 1983), who also conducted a survey of the 1982-83 harvest, came up with figures for individual species that differ sharply from mine, although her total and mine are less far apart. Possibly the birds in the "species not reported" categories in my records are the source of the discrepancy, but it is impossible to know this for certain.

Table 22. Annual Duck and Goose Harvest

Species	1982-83	1983-84
Brant	110 (335 lbs.)	53 (164 lbs.)
Canada Geese	14 (81 lbs.)	120 (360 lbs.)
Duck, species not reported	69 (234 lbs.)	21 (166 lbs.)
Eiders, species not reported	37 (153 lbs.)	168 (691 lbs.)
Geese, species not reported	38 (179 lbs.)	2 (9 lbs.)
Mallards	13 (35 lbs.)	8 (21 lbs.)
Old Squaws	0 (0 lbs.)	4 (8 lbs.)
Pintails	15 (31 lbs.)	9 (19 lbs.)
Snow Geese	20 (117 lbs.)	33 (211 lbs.)
Total	316 (1,165 lbs.)	418 (1,649 lbs.)

Lacking quantitative data from the 1960's, it is difficult to state with any assurance whether or not any long-term trends have developed in the harvest of ducks and geese. The problem is compounded by the fact that 1982-83 and 1983-84 were both considered very poor years for duck and goose hunting (although conceivably that could be the manifestation of a long-term trend in the duck and goose supply). Patterson (1974:12) estimated that the 1970-71 harvest of ducks and geese was 400 pounds, which is much lower than my 1982-84 figures, but his figure is subject to even more problems than mine are. My impression is that ducks and geese were not hunted quite as vigorously in the early 1980's as they were in the early

and mid-1960's, but, in the absence of data from the earlier period, my impression can be neither challenged nor confirmed.

Seacliff Nesting Birds

Many different species of birds nest on the seacliffs of northwestern Alaska, but for Kivalina hunters, the category is entirely filled by the two species of murre that nest by the tens of thousands at Cape Thompson (Swartz 1966). Of more interest than the birds themselves are the eggs, which are collected by at least a few Kivalina hunters almost every July. Here one may say with some assurance that the trend is toward a lower harvest, although it has always been so variable from one year to the next that long-term trends are difficult to establish.

Saario and Kessel (1966:1004) report that, in 1959, three Kivalina crews visited the cliffs and collected 110 gallons of eggs. According to my weight estimates (see Appendix B), that would have weighed approximately 814 pounds. The very next year, however, no egging parties even visited the cliffs. Similarly, in 1964-65, the egg harvest was 496 pounds, but the next year there was no harvest at all. I do not know what prevented the harvest in 1960--possibly airport construction provided a compelling alternative. In 1965 there was no harvest because the men who ordinarily would have made it were either in Point Hope for a church festival or else working in canneries in Bristol Bay. In 1982 the harvest was approximately 100 pounds, and in 1983 it was down to 59 pounds. Patterson's (1974:12) estimate of 3000 pounds for 1970 seems way out of line, but certainly was possible.

Given the tremendous number of birds that nest at Cape Thompson, the source of the variation in harvest obviously is human demand. That seems to be affected primarily by whether or not other, more important, activities are available at the season when the eggs are ready to be collected.

Murres themselves are hunted only sporadically by Kivalina hunters. Occasionally some are shot in the spring by seal hunters as they fly along leads in the sea ice. Some, probably more, are taken by people who participate in the egging. Saario and Kessel (1966:1004) report that the egging crews took 60 birds in 1959. The harvest since that time probably has been lower since fewer men usually have been involved.

Other Bird Resources

Certain other bird species are harvested by Kivalina hunters, usually on a small but variable scale. The most commonly harvested in most years is the ptarmigan, probably primarily the rock ptarmigan. Saario and Kessel (1966) do not mention ptarmigan in their report for 1959-61. The birds were not very abundant at the time, however, and probably not many were taken. The same remarks can be made of my own study for 1964-66 and for the Mauneluk study (Patterson 1974:12) of 1970-71. In 1982-83 they were somewhat more common, and a minimum of 46 birds was shot in February and March of 1983. The following year they were more abundant still, although the population was not high by historical standards. In that year 242 birds were reported taken, with the harvest being spread over the fall and winter months.

Snowy owls are taken by traps set along the beach ridge during October and November and made into an excellent soup. Data on the owl harvest were not collected in 1964-66, but Saario and Kessel (1966:1005) reported a catch of 98 birds in the fall of 1959. Patterson's (1974:12) figure for 1970-71 was also 98--one of many that is suspiciously close to the Saario and Kessel figures. My own count for 1982-83 was only 15 birds, with 26 reported for the following year. Both were considered to be poor years for owls. The normal range of variation in owl harvest may be as wide as 15 to 100 birds per year.

Another bird species in the Kivalina subsistence economy is the gull, probably the glaucous gull. Actually, it is not the birds themselves but their eggs that are harvested. Late every May or early June one or two young men go to a nesting area a few miles up the Wulik River to collect them. Saario and Kessel (1966:1004) report that 150 eggs were collected in the spring of 1959, but did not report on the harvest in 1960. No data were collected on the egg harvest in 1964-66. In 1982 38 eggs were taken, and in 1983 the number was 20. Presumably the harvest is declining, possibly because of the greatly increased availability of chicken eggs in the village.

The final bird species taken by Kivalina hunters are the whistling swan and the lesser sandhill crane. Both are shot as targets of opportunity, and the annual kill probably never exceeds five birds. No swans were reported killed in 1983-84, and only one was listed for the previous year. Four cranes were reported taken in 1982-83, and one was reported in 1983-84. No harvest data are available for the other years covered by the study, although I personally observed two swans being taken in the summer of 1964.

Plant Products

Kivalina residents harvest a modest variety of plant products, including berries, leaves and roots for food, and driftwood and willows for fuel. In general, the number and variety of plant resources they use seems to be declining, as older women who are experts in such matters pass away, and as people become increasingly oriented to other activities during the harvest season. For example, Saario and Kessel (1966:1006 ff.) reported the harvest of wild celery and wild chives, neither of which was collected during the four years of the present study. On the other hand, the present account is surely incomplete, because I know that individuals occasionally still collect tiny quantities of leaves of one kind of plant or another for

nutritional or medicinal purposes, and bark is sometimes used as a coloring agent. None of these resources appeared in the subsistence reports, and the presentation below is focussed on just a few of the most important items.

Berries

Berry picking is a major summer activity of the women and children, one that is engaged in almost as much for the variety it adds to their lives as it is for the variety the berries add to their diet. The most important berry in most years is the blackberry, which is similar in size and shape to a blueberry, but more bitter to the taste, and much tougher, hence more easily stored. Blueberries and salmonberries are important in some years, and cranberries are collected from time to time.

The annual berry harvest for the years of record is presented in Table 23. The figures show the usual variation, both in the total amount collected and in the percentage each species contributes to the total. Unfortunately, in 1964 and 1965 I did not instruct my field assistants to be very careful about identifying the species, which makes comparison difficult. In 1964, for example, I know that a fair quantity of blueberries was picked, but the specific amount is lost somewhere in the "mixed berries" and "mixed berries and sourdock" categories.

Weather seems to be the major factor controlling both the overall berry supply and the relative abundance of the different species in any given year. Since summer weather conditions vary considerably from one year to the next, so also does the berry supply. The demand seems to be consistently greater than the supply, which makes weather the key factor underlying the variation in harvest. In 1964, for example, the weather was beautiful almost all summer, but very dry. If some fairly heavy rain had not fallen in August, rejuvenating the desiccated berries, the harvest

Table 23. Annual Berry Harvest

Species	1959[a]	1964	1965	1970[b]	1982	1983
Blackberries	1050 lbs.	550 lbs.	181 lbs.	1200 lbs.	457 lbs.	591 lbs.
Blueberries	105 lbs.	0	0	90 lbs.	461 lbs.	488 lbs.
Cranberries	70 lbs.	0	0	60 lbs.	0	0
Mixed berries	0	30 lbs.	283 lbs.	0	0	0
Berries & Sourdock	0	340 lbs.	0	0	0	0
Salmonberries	0	0	0	130 lbs.	1721 lbs.	14 lbs.
Total	1225 lbs.	920 lbs.	464 lbs.	1480 lbs.	2639 lbs.	1093 lbs.

(a) Saario and Kessel (1966:1005-1006), with my weight assumptions (See Appendix B).
(b) Patterson (1974:13).

would have been much lower than it actually was. In 1965 the weather was exactly the opposite: wet, cold and overcast almost without a break. Lacking any sun, the berries did not grow, and the harvest was negligible.

The figures hint that there may be a long-term trend toward an increase in berry harvest. I believe the trend to be a real one. The harvest for 1982 was the highest on record by a considerable margin. The harvest for 1983 was much lower, but it was still more than 1000 pounds in a summer in which the berry crop was considered very poor; it was so bad that some people went the whole way to Kotzebue just looking for a productive berry patch. If the trend is a real one, it is probably because of two factors: the increase population of the village, and the much easier storage made possible by freezers and plastic bags. A third factor may also be involved. The oldest person in the village told me in 1983 that the reindeer herds had practically destroyed the major berry patches in the area, and that only now do they seem to be recovering their former productivity.

Leaves

The primary type of leaf collected by Kivalina residents is that of the sourdock, or "Eskimo spinach." The leaves are cooked and either consumed directly, often with berries, or stored--again, often with berries--for later consumption.

The annual sourdock harvest for the years of record is shown in Table 24. I find it difficult to interpret the numbers, however, because the four years for which I collected the data are so much lower than the two years for which I did not. I am also bothered by the fact that the figures for the latter coincide exactly. On the other hand, three of the four years of my own research were considered poor ones for sourdock, with 1983 being a complete disaster. The exception was 1964, which was a fairly

Table 24. Annual Sourdock Harvest

Year	Cooked Weight	Source
1959	780 lbs.[a]	Saario and Kessel (1966:1006)
1964	260 lbs.[b]	Present Study
1965	213 lbs.	Present Study
1970	780 lbs.	Patterson (1974:13)
1982	85 lbs.	Present Study
1983	0	Present Study

(a) Reported as 130 gallons. My assumption is that 1 gallon of cooked sourdock weighs about six pounds. It is interesting that the result coincided with Patterson's estimate for 1970.
(b) An additional 340 lbs. was reported as "mixed" berries and sourdock," but there is no way to know the proportion of each in the total.

good one. Unfortunately the sourdock harvest for that year was combined in the field reports with the berry harvest, since both are so frequently stored in the same containers.

Weather conditions seem to be the primary factor controlling the sourdock supply. It is difficult to gauge demand as a factor in the harvest, however. A few individuals are particularly avid sourdock collectors. In poor years, they are often the only ones who go out. When they discover a productive bed, others follow. I suspect that demand declined somewhat between 1966 and 1984, but have no evidence to support my suspicion.

Roots

The only root that is collected in any quantity is the "Eskimo potato," or masu. My own records on the masu harvest are very poor; indeed, the

only record I have is 40 pounds collected in 1982. Saario and Kessel (1966:1006) report that three "large burlap sacks" full were collected in 1959, which probably means a harvest of about 300 pounds. Interestingly, Patterson (1974:13) also reports a masu harvest of 300 pounds, but in 1970. Once again, his figure seems suspiciously close to that of Saario and Kessel.

My harvest records are definitely low. As Saario and Kessel (Ibid.) correctly noted, much of the masu collecting is done by women at the fish camps while the men are away. I did not alert my assistants to check on this, and it seems not to have occurred to them because of the emphasis on fish.

Firewood

The manner in which Kivalina houses are heated has undergone one of the more dramatic changes since the early 1960's. At that time the only oil stoves belonged to the postmaster, the school janitor, and the Anglican priest. Everyone else had to collect firewood which, in Kivalina, means driftwood and willows. Over the half-century of Kivalina's existence the beach had been picked clean for 25 miles on either side of the village, and the last dead willow within a day's dog-team travel had long since disappeared. This meant that green willows were the primary fuel, augmented by ringed seal blubber when possible. It was burned, for the most part, in inefficient stoves made out of oil drums. The final problem was that the fuel had to be sought and transported by dog team for almost the entire heating season. The combination of cold weather, poor stoves, poor fuel and slow transportation meant that every able-bodied man had to spend two or three days a week just getting firewood.

Between 1966 and the early 1970's, most Kivalina households acquired oil stoves. This had the immediate effects of keeping the houses warmer

and of freeing a tremendous amount of hunters' time. Over a somewhat longer term, but actually in a surprisingly short amount of time, the switch to oil also had the effect of replenishing the supply of driftwood on the beach.

As the cost of oil rose dramatically during the 1970's, the new stoves placed an increasingly heavy burden on the pocketbooks of Kivalina householders. The same period saw the development of new, highly efficient and commercially available wood stoves and the complete replacement of dog teams by snowmobiles. So the people installed the new wood stoves in their houses, but only as a supplement to oil stoves, which were used at night particularly. By this time there was so much driftwood on the beach that, with the help of snowmobiles, the time required to collect it was substantially reduced.

In January, 1965, a Kivalina man had to go out before dawn, hitch up his team, spend the whole day looking for low quality firewood, and return well after dark. A day or two later he would have to do it all over again. In January, 1982, a Kivalina man could sleep late, linger over breakfast, watch one of the morning news shows on television, fire up the snowmobile, spend an hour or so collecting a sled load of reasonably substantial firewood and looking around the country, and be back home in time for lunch. Despite the fact that his house was five times the size of his 1965 dwelling, he would not have to do it again for several days, and he would never have to worry about his children freezing.

Water

Kivalina did not have any plumbing in the 1960's, and it still did not in the 1980's. Consequently, all water for drinking and household use had to be obtained by the householders themselves from the nearest freshwater source, which, in summer, is about two miles away up the Wulik River. In

summer the process involved taking a boat to a point above the reach of salt water, filling a drum or two, returning to the village, and carrying the water, two buckets at a time, to a storage tank in the house. In winter the process was essentially the same, except that they had to chop ice out of the river, and they did not have to go so far to find fresh water. In these general respects there was no change between the 1960's and the 1980's.

Two aspects of the water situation did change, however. One was the construction of an immense water storage tank in the center of town. It is refilled every summer through a pipe that runs some distance up the Wulik. Unfortunately, water from this tank is not potable without further treatment. However, it can be used for most household purposes. It still has to be hauled to the houses, but the distance is only a fraction of what it would be without the tank. The other significant change in the water situation results from the replacement of dog teams by snowmobiles. Hitching and unhitching times are no longer factors, and it takes only a minute or so to get to the right part of the river. Accordingly the time spent getting water in winter in 1984 was probably less than 20% of what it was two decades earlier. However, the situation in summer remained unchanged from the 1960's as far as drinking water was concerned.

CHAPTER 6

CONCLUSIONS

This report had two objectives: first, to determine the demands that were placed on the local environment by the inhabitants of Kivalina, and, second, to ascertain how those demands have been altered by the enormous technological and social changes that have taken place in Northwest Alaska during the past two decades. The primary focus with respect to both questions was on the content, size and timing of the subsistence harvest. Previous chapters have dealt with these issues with respect to specific resource groups: fish, marine mammals, terrestrial mammals and miscellaneous resources. Here we focus on the same phenomena, but from a more general perspective.

It is important to keep in mind the fact that this report deals with production only, and that all weights represent whole body weights. Such interesting and important matters as consumption, distribution and "usable" portions of the harvest must await analysis at a later date.

Harvest Size

The simplest way to begin a discussion of the size of the harvest is with a consideration of the total harvests for the four years covered by this study. These are presented, in adjusted form, in Table 25. "Adjusted" means that the bird and plant harvests are not included. The adjusted figures are used to make the totals for the different years directly comparable. Bird harvest data were not collected at all in 1964-66, and plant harvest data were collected differently in 1964-65 than in the other three years. The missing quantities are negligible in the overall totals, however.

Table 25. Total Adjusted Annual Harvests

Year	Amount
1964-65	370,468 lbs.
1965-66	445,186 lbs.
1982-83	438,581 lbs.
1983-84	497,364 lbs.

The figures in Table 25 suggest that there was relatively little change in the general order of magnitude of the subsistence harvest in Kivalina between the mid-1960's and the early 1980's. To the extent that there has been a change, it appears to have been toward an increase.

Per Capita Production

Another way to look at the size of the harvest is through production per person. This is particularly useful in the present case since the population of the village fluctuated from one year to the next, and it grew considerably between 1966 and 1982.

The per capita production of major food resources is shown in Table 26. The figures show production declining from the 2520-2543-pounds per person range in the mid-1960's to the 1680-1958-pound range in the early 1980's. On a daily basis, production fell from the 6.90-6.97 pound range to 4.60-5.33 pound range. Thus, it appears that unit production declined by a bit more than 25% over the twenty year period.

Table 26. Per Capita Food Production[a]

Year	Number of People[b]	Pounds/Person	Pounds/ Person/Day
1964-65	147	2520	6.90
1965-66	175	2543	6.97
1982-83	261	1680	4.60
1983-84	254	1958	5.36

(a) Does not include birds, plant products or fur-bearing animals other than ground squirrels. See Table 29.
(b) Includes all age groups.

The foregoing analysis omits one key factor, however, namely, dogs. According to Bane (1966:VII-9), working dogs in Wainwright consumed less than .5 pounds of meat per day in summer, but as much as six pounds per day in winter. Nelson's (1969:179) estimate for the same village a few years earlier is 4-5 pounds per working dog per day in severe winter weather. My observations support Bane's higher figure. Obviously, if these amounts were consumed, that much or more had to be produced. In any case, it is clear that sled-dogs were major consumers, and they ate the same fish and game species consumed by humans. They thus need to be taken into account in any assessment of "per capita" production if that production is to be properly understood.

Table 27 shows the results when the number of people is added to the number of dogs to derive the total number of consumers in the village. The result is exactly the opposite of the one suggested by the previous table: per capita production is shown to be rising, not declining, when dogs are

Table 27. Per Capita Food Production, People and Dogs Combined[a]

Year	People[b]	+	Dogs[c]	=	Consumers	Lbs/Consumer	Lbs/ Consumer/Day
1965-66	175	+	207	=	382	1165	3.19
1982-83	261	+	40	=	301	1457	3.99
1983-84	254	+	34	=	288	1726	4.73

(a) Does not include birds, plant products or fur-bearing animals other than ground squirrels. See Table 29.
(b) Includes all age groups.
(c) 1 working sled dog = 1 "dog"; 1 sled dog pup = .25 "dog"; 1 non-working sled dog = .5 "dog"; 1 non-sled dog = .25 "dog."

taken into account. (Unfortunately I did not make a dog count in 1964-65, which is why no calculation for that year is included in the table).

To go a bit beyond the limitations of the numbers, one can recognize that much of the walrus harvest of 1982, which inflated the production figures for 1982-83, was not consumed at all. Also, much of the whale and beluga harvest of 1984, which inflated the production figures for 1983-84, was consumed by residents of other villages. I suspect that when a comprehensive analysis of per capita consumption (as opposed to production) has been completed, very little change between the mid-1960's and the early 1980's will be apparent. Certainly the impression I got during my several visits to the village in 1982-84 was that individuals consumed about the same quantities of Native food in 1984 as they did twenty years earlier.

Anomalies

The matter of the walrus in 1982 and the whale in 1984 raises the issue of anomalous harvests. If Kivalina had not taken a whale in 1984, the adjusted harvest for 1983-84 would have been only 340,284 pounds

instead of 497,364 pounds. If we discount the huge walrus harvest in June of 1982, the adjusted harvest for 1982-83 would have been only 326,781 pounds instead of 438,581 pounds. To be consistent, however, we would also have to discount at least half of the huge caribou kill in week 220 (October 10-17, 1965), which would reduce the adjusted harvest of 1965-66 to 375,818 pounds from 446,186 pounds. For the same reason, we would have to discount at least half of the anomalous fish harvest of the fall of 1964, which would similarly reduce the harvest figure for 1964-65.

These machinations with the numbers raise some interesting issues. First, on what grounds can I claim that a harvest is "anomalous?" The answer is that, for purposes of this discussion, I have made the assessment on the simplistic but straightforward basis that any harvest that, for a given week and species, was far in excess of the norm--as determined by the pattern for the other three years--was anomalous. A second and more important point is the fact that something "anomalous" happened every year. Only the species changed: in 1964 it involved fish, in 1965 it involved caribou, in 1982 it involved walrus, and in 1984 it involved a whale. Third, the discussion has been limited to anomalously high harvests, but there have been anomalously low ones every year as well: caribou in 1964, fish in 1965, and ringed seals in 1983 and 1984.

Anomalies, in short, are part of the normal annual cycle of Kivalina hunters. Or, to make the same point another way, extreme variation, both high and low, is commonplace in subsistence foraging. It is something that must be reckoned with, for better or for worse, by every hunter every week of every year. Knowing this, hunters must take full advantage of windfalls, because they cannot know what disasters might lie only a short distance ahead.

Variation

Throughout the chapters on the various resource groups the point was made that there was tremendous variation in the harvest of each species, not only from week to week, but from year to year. To the extent that it was possible to do so, the sources of this variation were identified. A more general perspective is provided by Figure 15, which shows the aggregate variation in weekly harvest for the four subsistence years covered by this study. This graph shows the maximum and minimum harvests for each of the four sets of corresponding weeks in the years concerned. The graph illustrates the fluctuations in harvest over the course of the entire yearly cycle, as well as the variation in harvest that actually occurred in every week in that cycle. These variations are so great that a semi-logarithmic scale had to be used once again, and even that was insufficient to record the extreme maxima, which are written above the graph proper, and which are not drawn to scale.

As a matter of interest, I noted the distribution of the extreme weekly harvests among the four subsistence years of record. The results are presented in Table 28. The highest number of extremes was in 1965-66,

Table 28. Distribution of Extreme Weekly Harvests by Subsistence Year

Extreme	1964-65	1965-66	1982-83	1983-84
Maxima	14	16	10	12
Minima	13	16	15	8
Totals	27	32	25	20

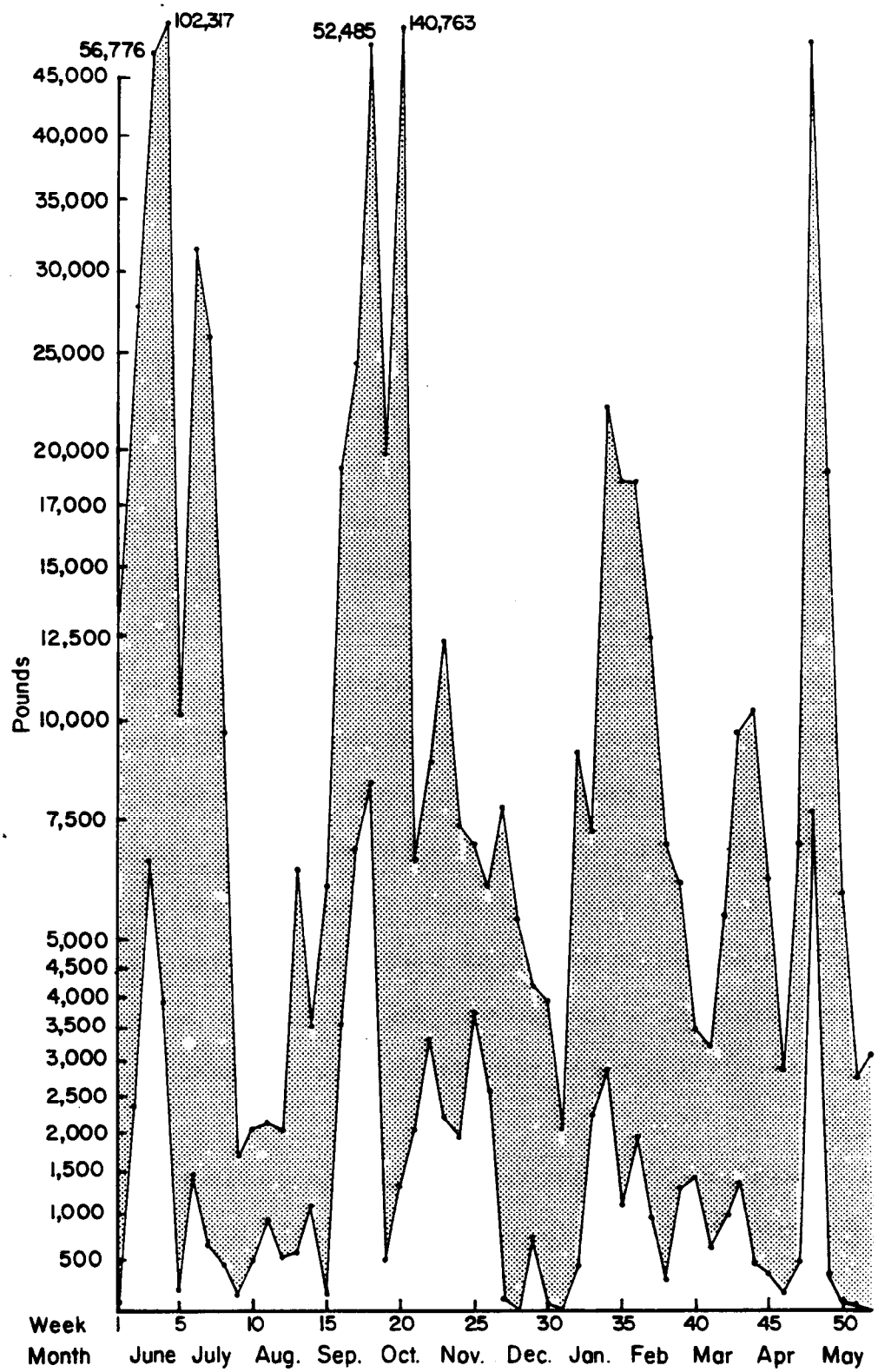

Figure 15. Maximum and Minimum Weekly Harvests, 1964-66 and 1982-84

a year in which "feast or famine" seemed to be the rule. The lowest number was in 1983-84, a year in which there were relatively few surprises.

The hypothetical maximum year--that is, a year made up of weeks in which each weekly harvest was the maximum on record for that week, would have yielded a total harvest of 1,037,706 pounds, more than twice the largest actual harvest of record. The hypothetical minimum year would have yielded a harvest of a mere 82,003 pounds, an amount only 22% of the lowest actual harvest of the four subsistence years under consideration.

There is another interesting asymmetry involved here. The hypothetical maximum year could never actually occur in fact, not only because the chances of the supply of fish and game being that great are virtually zero, but also because people would stop hunting long before such a huge harvest was realized. The hypothetical minimum harvest, however, could occur in fact--because of a deterioration in the fish and game supply, if for no other reason. Indeed, something of the kind, or even worse, actually did occur, not only once, but two years in succession. During the years 1881-83 all food resources failed in the Kivalina region. About sixty percent of the population starved to death the first year, and about half of the survivors died in the second. The rest fled to surrounding areas as refugees, and only a few ever returned to their homeland.

Discussion

The production of subsistence resources is similar to the production of other commodities in that it is highly variable in nature. In contrast to agriculture, where people exercise considerable control over the basic supply, in foraging, humans have no control whatsoever over the supply, at least at the village level. It does not follow from that fact, however, that Native hunters kill everything they can get their hands on, as at

least some wildlife biologists in Alaska seem to think. As a generalization, that view is utter nonsense.

The overwhelming amount of the foraging in Kivalina is to obtain the raw material for traditional Native food. Given this fact, there obviously is a harvest level below which the people do not want to fall. In other words, there is a fixed minimum level of demand that changes only with the size of the consumer population. If the supply of fish or game is low, then the activities of the foragers may indeed be very aggressive. When the supply is high, however, people may spend more time loafing or working at something else than hunting or fishing. Hunting effort is a variable, not a constant.

In addition to supply--which, in this case, means the basic size of the fish or game population concerned, several variables affect the size of the subsistence harvest. Among them are the following: (1) the distribution of fish or game animals over the landscape; (2) the accessibility of the members of the fish or game concerned to human foragers; (3) the desirability of alternative fish or game resources; (4) the availability to the foragers of alternative fish or game rsources; (5) weather conditions; (6) general processing and storage conditions; (7) the possibilities for the sale or barter of by-products of or surplus from the subsistence harvest; (8) the availability and desirability of alternative activities entirely outside the foraging realm; and (9) political factors, such as closed seasons and bag limits. All of these factors must be taken into account for a proper understanding of the size of the subsistence harvest made by the inhabitants of any Alaska Native village.

Harvest Content

The content of the Kivalina subsistence harvest of major food resources is shown in Table 29. With three minor exceptions, the focus in the table

is on individual species. The figures confirm Woolford's (1954:21 ff.) impression of nearly thirty years ago that Kivalina has a diversified subsistence economy based on a combination of marine mammals, terrestrial mammals and fish. Not included in the table are figures for birds, plant products, and a number of mammal species. They add further diversity, but constitute relatively little in terms of quantity.

The numbers in Table 29 also confirm the view expressed throughout this report that there were, and continue to be, dramatic fluctuations in the harvest of major food species from one year to the next. Here we can see that the variation exists not only in the absolute size of the harvest of the different species, but also to the proportion a given species contributes to the total. Thus, on a percentage basis, the largest contribution during the four study years changed from ringed seals, to caribou, to walrus, to bowhead whales. Caribou ranked second in two of the four years, but char and bearded seal held second place in the other two.

The annual fluctuations remain when the several species are grouped into more general categories, as is done in Table 30. A bit more of a pattern is apparent, however. Marine mammal production ranked first in three of the subsistence years of record, with terrestrial mammals (meaning caribou) holding that position in the fourth.

Harvest Timing

Kivalina foragers do not perceive of the subsistence year as a set of discrete segments, with different seasons for different species. Rather, they see it as a continuous flow of activities in which there is a sequence of foci that is determined by the migratory habits of the fish and game species they seek to harvest. In an attempt to show this, I have prepared a graph of the average weekly harvests of the four subsistence years

Table 29. Total Harvest of Major Food Resources, by Species[a]

Species	1964-65	1965-66	1982-83	1983-84
Bear, grizzly	280 (0.1%)	730 (0.2%)	0 (0%)	862 (0.2%)
Bear, polar	0 (0%)	800 (0.2%)	0 (0%)	1,325 (0.3%)
Belukha	15,250 (4.1%)	31,150 (7.0%)	71,750 (16.4%)	74,850 (15.1%)
Caribou	60,563 (16.4%)	240,724 (54.1%)	80,337 (18.4%)	127,753 (25.9%)
Char	93,995 (25.5%)	28,140 (6.3%)	69,059 (15.8%)	68,467 (13.9%)
Cod[b]	0 (0%)	6,955 (1.6%)	9 (--)	4,299 (0.9%)
Moose	0 (0%)	3,400 (0.8%)	5,100 (1.2%)	4,950 (1.0%)
Salmon[b]	1,425 (0.4%)	116 (--)	464 (0.1%)	2,107 (0.4%)
Seal, bearded	85,592 (23.2%)	68,406 (15.4%)	76,266 (17.5%)	33,103 (6.7%)
Seal, ringed	109,547 (29.6%)	59,078 (13.2%)	21,784 (5%)	11,776 (2.4%)
Walrus	0 (0%)	5,450 (1.2%)	111,800 (25.6%)	6,000 (1.2%)
Whale, bowhead	0 (0%)	0 (0%)	0 (0%)	157,080 (31.7%)
Whitefish[b]	2,500 (0.7%)	13 (--)	100 (--)	1,608 (0.3%)
Totals	369,152 (100%)	444,962 (100%)	436,669 (100%)	494,180 (100%)

(a) Figures are for estimated pounds, whole body weights.
(b) All species included.

Table 30. Total Harvest of Major Food Resources by Species Group[a]

Group	1964-65	1965-66	1982-83	1983-84
Sea Mammals	211,069 (57.1%)	164,249 (36.9%)	281,939 (64.4%)	283,954 (57.2%)
Land Mammals[b]	60,843 (16.4%)	245,654 (55.2%)	85,867 (19.6%)	134,970 (27.2%)
Fish	97,920 (26.5%)	35,266 (7.9%)	69,933 (16.0%)	77,472 (15.6%)
Totals	369,832 (100%)	445,169 (100%)	437,739 (100%)	496,393 (100%)

(a) Figures are for estimated pounds, whole body weight.
(b) Does not include plant products, birds or any fur-bearers except ground squirrels.

covered by this study, as shown in Figure 16. The graph was constructed by determining the average harvest for the corresponding weeks in each of the four years (e.g., weeks 101, 201, 301, 401) and plotting that number on the graph. The result is a hypothetical subsistence year comprised of fifty-two consecutive average weeks in which the total harvest would have been 435,337 pounds. The capital letters on the graph refer to the different phases in the cycle.

The first phase, marked by A in Figure 16, is the June hunting and fishing season. In principal, the primary resource produced during this period is bearded seal, followed by char. The char run out to sea is probably the single most dependable event in the entire calendar: they "always" make it, and they are usually easy to catch except in extraordinarily foul weather. The bearded seal harvest is more variable because it is so heavily affected by ice conditions. When ice conditions are bad, hunters devote more attention to char, ringed seals, and migratory waterfowl. Occasionally there is a windfall of belukha or walrus.

The second phase, indicated by B on the graph, comes a week or two after the sea ice leaves the area. The harvest during this period can be comprised of various elements, but belukha and caribou are the primary ones. In assessing the overall significance of this phase, it is helpful to recall the logarithmic nature of the scale: the harvest represented by the peak at B is actually only half that indicated by the peak at A.

Phase C is the mid-summer lull. It includes salmon and a few char, the odd moose or caribou, perhaps a belukha or two, some murre eggs, berries and greens, and possibly some waterfowl. The fact that the mid-summer season is a lull in subsistence activities results from both the relative paucity of game resources along the coast, and the people's interest in other matters, such as wage employment or the commercial salmon

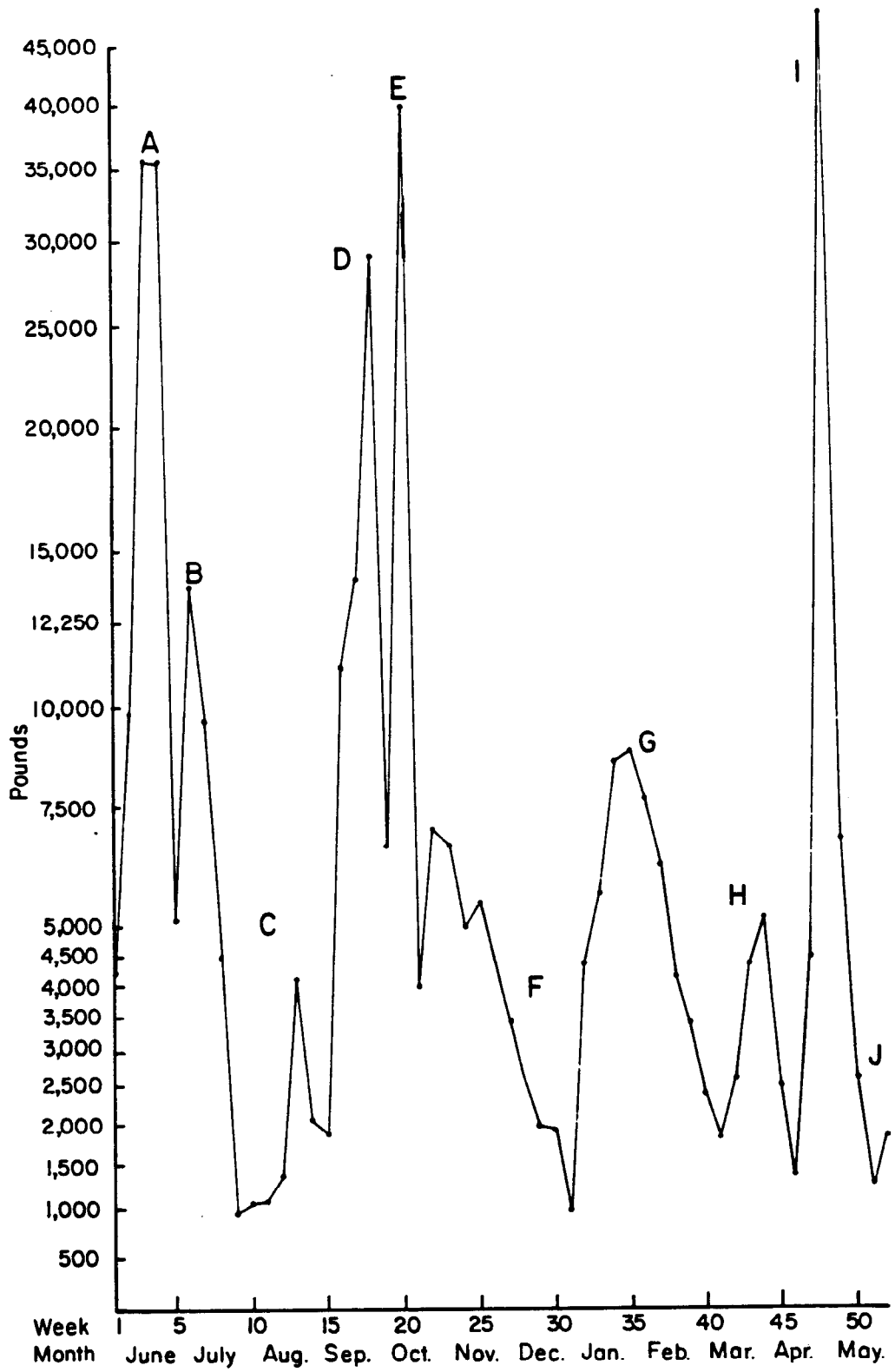

Figure 16. Average Weekly Harvests, 1964-66 and 1982-84.

fishery, in Kotzebue. It is a recent phenomenon. Traditionally, summer was an important subsistence period, but one that required a considerable dispersal of people over the interior sectors of the region.

Phase D is the fall char fishery, followed promptly by E, the post-freezeup caribou hunting season. These are highly variable periods. In the four years covered by this study, every time D has been a failure, E has been a great success, and vice versa. There is no known reason why this has been the case, however. If both were failures, the hunting and fishing effort during phase F--the autumn maintenance period--would be exceptionally intense, with the actual results depending on the availability of fish and game that fall. In an "average" year, as depicted by the graph, there is usually a gradual decline in activity, hence in harvest, into the short days and the Thanksgiving-New Year's holiday season.

Phase G is the winter hunting season, in which, theoretically, the harvest of ringed seals receives primary emphasis. However, if poor ice conditions prevent a successful seal hunt, attention shifts to caribou and char. That season typically is followed by a lull in early March, indicated by H, during which hunters wait for warmer weather and for bearded seals to begin sunning themselves on the ice. Frequently at this time there is a special effort, represented by the peak at Week 43, to hunt caribou before they head north in their spring migration. Productivity during this period can also be affected by such events as the Quarterly Meeting of the Friends' Church, Easter, and the National Guard encampment.

The whale hunting season is represented by I on the graph. While this brief period of late April has always been an important sea mammal hunting season for Kivalina hunters, the reinstitution of whaling in 1966 made it more productive than it had been for several decades previously. The big harvests in 1983 and especially in 1984 have distorted the averages for

the specific years of record, hence the pattern is more typical of the 1980's than it is of the 1959-60 era.

The final phase, represented by J on the graph, is the pre-breakup lull. During this period caribou are usually either scarce in or altogether absent from the Kivalina region; soft snow makes overland travel difficult, and the increasingly rotten sea ice makes sea mammal hunting progressively more dangerous. This is the season when migratory waterfowl usually go through in large numbers; they are eagerly hunted both to add diversity to the diet and because there is little else to hunt.

Despite my distrust of averages as indicators of events and processes in the real world, my guess is that Figure 16 represents not only the arithmetic averages of the weeks in four specific subsistence years, but also an accurate reflection of the expectations of Kivalina hunters, at least in the 1980's. In the mid-1960's the winter seal hunting season (G in Figure 16) would have been more important, and the spring sea mammal season (I on the graph) much less so.

I also believe, although I cannot confirm, that the expectations of Native hunters reflect a reasonably accurate assessment of perhaps a moving ten-odd year average of actual results. The only way to know this for certain, of course, would be actually to measure the subsistence harvest continuously over a period of several years in order to derive a measure of statistical normalcy in a sense similar to that employed by meteorologists with respect to the weather. The difference is that meteorologists cannot affect the weather in any way at all, whereas foragers can affect the harvest at least to the extent that they decide whether or not to hunt or fish.

The climatic metaphor can be extended a bit further. In nature, spring follows winter, which follows autumn, and so on, in a never changing

cycle. Occasionally, a summer is so cold that people say, with some justification, that "Summer never came this year." Similarly, the fall fishing season follows the summer lull--always. But in some years relatively few fish are caught. In that case, people speak of fishing season as having passed, but without many fish. Caribou are extremely variable, but for virtually all of the other species harvested by Kivalina foragers, if they do not appear according to the schedule represented by Figure 16, they probably will not appear at all until the following year.

Concluding Observations

The people of Kivalina hunt and fish primarily for food. Commercial elements are minuscule. Barter figures more significantly, but only when there is a surplus of a particular commodity as the result of a windfall harvest (including any successful bowhead whale hunt as a windfall.)

Two hunting and fishing periods are crucial to the production of the staple Native foods. One is early summer, when most of the dried fish (early to mid-June) and all of the dried bearded seal meat and oil (mid-June to early July) are produced. The second is early fall (mid-September to early October). It is during this period that most of the fish later consumed frozen as quaq are caught. These periods form the foundation of the Kivalina subsistence economy. If they are failures, the people consider themselves to be in dire straits regardless of how much other food is available.

Other species and other hunting periods certainly are important. Caribou is chief among them, and early fall is ordinarily--but by no means invariably--the time when the major harvest occurs. Beyond that, the several resources form a sort of residual category; it is here that flexibility most clearly enters the system: if one resource is not available, the people harvest another. The complete priority list is as

follows: (1) bearded seal oil; (2) dried bearded seal meat; (3) dried char; (4) frozen char; (5) fresh or frozen caribou meat; and (6) everything else. Despite the many changes that came to Kivalina in the intervening years, the people remained every bit as dependent on Native foods in the early 1980's, hence on fish and game, as they were in the early 1960's.

APPENDIX A

RESEARCH METHODS

The basic approach employed in collecting the data used in this study was relatively straightforward: harvest records for specific households were kept by Native research assistants, while I collected contextual information and monitored the work of the research assistants. Over the four years of field-data collection, however, there were a number of variations in just how this basic approach worked.

1964-65

The plan for 1964-65 was for my wife and me to live in the village as participant observers for a year. I was to hunt, fish, and generally try to live like the village men, while keeping weather records, and noting the movement of people into and out of the village. Three experienced and productive hunters were hired to collect the raw harvest data. Each was given several households to monitor, his own and a number in the immediate vicinity. The instructions were to visit each household once or twice a week to find out who had killed what,and where and how they had done it. The results were recorded on notepads, with separate columns drawn on the pages to separate the different classes of information. Every couple of weeks I visited each assistant to see how his work was progressing, and I occasionally did a spot check to assess the accuracy of his records. From time to time I had to fill in for a given assistant, or else get someone else to do so, if he was going to be away from the village for more than a few days.

Each assistant was to try to record every mammal and fish that was taken by members of the households in his section of the village. The harvest of migratory waterfowl was specifically not to be recorded, however. In 1964 the disastrous effects of the Kennedy administration's 1961 decision to enforce the Migratory Waterfowl Treaty with Canada and Mexico was fresh in everyone's mind, and I felt that any attempt to collect information on that topic might jeopardize the entire project.

The project went fairly smoothly from the end of May to the beginning of December. At that point I was severely injured in a fire, and had to leave the village suddenly, without making any provision for the conduct of the research in my absence. This had several unfortunate consequences. First, it brought the collection of data on weather and travel to an abrupt halt. Second, all the research assistants stopped collecting information, assuming, with good reason, that the project was over. Fortunately, I managed to get word back that they should continue to collect harvest data, and three of the four resumed their work within a week. The fourth never did, and I was not in a position to hire a replacement. This means that a good bit of information was not recorded from December, 1964, through May, 1965.

Examination of the records for the June-November, 1964, period indicated that there was a relatively constant relationship in the harvest of the three sectors of the village covered by the different research assistants. On the basis of this relationship, I developed a ratio, which I call the "fudge factor," in order to estimate the harvest of the entire village on the basis of the records kept by the two research assistants who were still working. In 1964-65 the figure was 1.46. The known harvest is multiplied by that number to estimate the total harvest. Both sets of

numbers are presented in Appendices D and E, although only the whole village estimates are presented in the body of the report.

1965-66

I returned to Kivalina in May, 1965, and, on May 30th, resumed recording the data that I had been responsible for the summer before. The two research assistants who had worked all winter agreed to continue for another year, and a third was recruited to fill the gap that had existed since November.

The same procedures were followed in 1965-66 as in 1964-65, with two exceptions. First, weekly data on the production of plant foods was kept, whereas, in the first year, only the amount stored for winter was recorded. (Unfortunately, 1964 was a very good year for berries, and 1965 was a very bad one.) Second, for a small sample of households, data were collected on what was called "subsistence effort," in addition to harvest. For the people in this sample, departure and return times were to be recorded, along with what they originally intended to do when they set out, as well as what they actually ended up doing. Their harvest was also recorded, even if they got nothing. For the households in this sample, it was also possible to collect information on how much firewood and water they obtained during the course of the year. This is a demanding form of record keeping for active hunters. My initial judgement was that reliable reporting at this level could be expected from only a few people who were committed to the project, and that judgement was confirmed by subsequent experience.

In 1965 I knew in advance that I could stay in Kivalina for only a few months. Therefore, I arranged for one of the research assistants to keep weather and travel records during my absence. I left the village in September, and the research assistants worked through the end of May, with one exception. The exception was one assistant who simply stopped working

during January and February of 1966. By the time I found out about it and was beginning to make preparations to replace him, he had resumed working on his own. In any case, for those two months, it was necessary to calculate another fudge factor. This time, because of some changes in assignments and general population movement within the village, the fudge factor was 1.5. This experience, plus that of the year before, convinced me that, when daily records are an essential part of a study, it is necessary to have a dependable research director in the field at all times, whether or not that person is the senior investigator of the project.

1982-84

The 1982-84 study was designed to replicate the 1964-66 research. However, this second study was properly funded, whereas the first had operated on a financial shoestring. Consequently, it was possible to introduce some improvements in the record keeping, as well as in the overall organization of the research program. This time I hired a field director to be in day-to-day charge of the project, and four research assistants. For various reasons, research assistants came and went several times over the course of the two-year period, which confirmed the wisdom, as well as the good fortune, of having a reliable research director in place who had the authority to hire and fire subordinate personnel.

The basic records kept in 1982-83 were the same as those kept in the 1960's, except that it was possible to get proper data recording forms prepared, and it was possible to provide each assistant with a looseleaf notebook in which to keep them. Since the migratory waterfowl treaty was no longer being enforced, field assistants were directed to record data on all species harvested. Another innovation was for the field director to keep a daily journal in which he was briefly to record the factors that had affected hunters and hunting. This was particularly helpful to a

senior investigator who was supervising the research from a place several thousand miles away. A final innovation was to record, for a sample of families, the use they made of native products. The specific forms on which data were recorded, and some information about each of them, are presented below.

In 1982-84 it was known from the beginning that I would not be able to spend much time in the village. This was not expected to be a particular problem, since a field director of proven responsibility and experience was in place, and since telephone communication now linked Kivalina with the outside world. Most problems could be handled locally. Whenever a problem or question arose, we could deal with it by phone.

The field staff were paid semi-monthly. The checks were sent to the field director, who distributed them to the research assistants after being satisfied that the work had been accomplished. At the end of each month, the records were collected by the director and forwarded to me. During my four two-week visits to Kivalina during this period, I collected background information not revealed by the raw harvest data, spot-checked the accuracy of the daily reporting, and dealt with any unresolved problems in the management of the project.

Data Recording Forms

The basic data recording form in both 1964-66 and 1982-84 was the "Subsistence Record" form. It is presented in its 1982-84 shape, although physically reduced in size, as Figure 17. Most aspects of the form are obvious. "Who?" refers to the name of the hunter in question. "What did they get?" concerns the species of plant or animal. "How much/how many?" refers to the quantity obtained, as expressed in units of measurement ordinarily employed in the village. (The weight assumptions presented in

Subsistence Record

_____ Village: Kivalina Recorder: _____

Month, Year

Who?	Date	What did they get?	How much/how many?	Where?	Remarks

Figure 17. Subsistence Record Form.

Appendix B, and the information presented in Appendices D-G, indicate what these units are.) The sex of the animals killed, where known, was to be indicated in this column. The "Where?" column was supposed to contain the native name of the place where the harvest occurred. This worked fine when land hunting was involved, but I failed to employ a very precise method for hunters to indicate where they had made a kill out on the ocean. The "remarks" column was for any other information that might be pertinent, such as whether fish were caught by seine, gill net, or hook, or whether the catch was divided into shares.

Figure 18 shows the "Subsistence Effort Record" form. This was used in place of the Subsistence Record form for a small sample of households in an attempt to get some idea of the amount of effort that went into the harvest. Failure, as well as success, was to be recorded here. The "For what?" and "What did they get?" columns were to find out whether the hunter actually did what he originally had set out to do. The Subsistence Record and Subsistence Effort Record forms, together, were to record the entire harvest of the village.

The "Use of Native Products" form, presented as Figure 19, was introduced in 1982 to try to get an idea of how the specific harvest of a specific household was processed and consumed. The households sampled in this regard were the same as those sampled for subsistence effort. These forms provided a good deal of useful information, but were only partially satisfactory in the analysis of consumption because of the frequently long period of time that elapsed between the primary production and the ultimate consumption of a given product. People often lost track of the specific meat or fish acquired on a given hunting or fishing expedition, since it was stored with the harvest of many other expeditions, and since only parts of it would be consumed at any one time.

Subsistence Effort Record

Household head:_____ _____ Recorder:_____

Month, Year

Person or Persons	Left		To where?	For What?	What did they get?	Returned		Remarks
	Date	Time				Date	Time	

Figure 18. Subsistence Effort Record Form.

USE OF NATIVE PRODUCTS

Household:_____ Village: Kivalina Month, Year Recorder:_____

Product	No./Amt	Date acq.	How acquired	Intended Use	Actual Use	Date all gone

Figure 19. Use of Native Products Form.

Figure 20 shows the weather record form that was used in both 1964-66 and 1982-84. Observations were made daily, usually around 7:00 P.M. Unfortunately, the instruments that I was able to obtain on the general market were not durable enough to handle Kivalina weather conditions. The minimum temperature on the thermometer was only -40° F., and anemometers worked for less than two months before wearing out and falling apart. After several tries we gave up and used a hand-held wind gauge instead. The results were satisfactory for purposes of this project, but are not nearly good enough to constitute a proper weather record. For that one would need the same type of equipment as that used by the U.S. Weather Bureau.

The final type of information that was recorded on a daily basis was travel into and out of the village. The relevant forms are presented as Figures 21 and 22, respectively. Initially, I wanted this information for three reasons. First, it would serve as a measure of village isolation. Second, to the extent that I could find out who stayed with whom, it would provide information on kinship and friendship networks--which is what I was primarily studying in 1964-66. Finally, I assumed that the number of people in the village at any given time would affect the demand for food, as well as the number of available hunters. This information might help explain variations in harvest.

In practice, travel information was very useful indeed in measuring village isolation and in studying kinship networks between villages. However, it was of very limited utility in understanding hunting intensity. This was for two reasons. First, so much food is stored for later consumption that the number of people in the village at any given time has almost no effect on overall hunting pressure. Second, even if half the hunters in the village are out of town for some reason, the remaining half

Weather Record

Village: Kivalina

_____
Month, Year

Date	Time	Temperature			Precipitation		Wind		Remarks
		Max	Min	Current	Type	Amount	Direction	Speed	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									

Figure 20. Weather Record Form.

TRAVEL: OUTSIDERS COMING IN

Village: Kivalina _____ _____ Recorder: _____

Month, Year

Name	Came From	Stayed with	Purpose	Transportation	Arr.	Left	Remarks

Figure 21. Travel: Outsiders Coming In Form.

TRAVEL: VILLAGERS GOING OUT

Village: Kivalina _____ Recorder: _____

_____
Month, Year

Name	Destination	Stayed with	Purpose	Transportation	Left	Ret.	Remarks

Figure 22. Travel: Villagers Going Out Form.

often manages to fill the gap through extra effort, if the situation requires. Finally, I should note that, in 1964-66, travel information was fairly easy to get because of the small size of the village and its high degree of isolation. In 1982-84 the village had grown quite a bit, and the amount of travel had increased enormously. Collecting travel information proved to be the most difficult and time-consuming work that the field director had to do.

Discussion

The completeness and accuracy of the data in a study like this one depend on the cooperation of all of the hunters in the village, the accuracy and completeness of their recall, and on the diligence of the research assistants in obtaining data from them on a timely basis. Obviously both hunters and research assistants vary in the necessary characteristics.

In general, I was not aware of any outright refusal to cooperate by Kivalina hunters in either the mid-1960's or the early 1980's. I presume that this was partly because of the villagers' prior (1960-61) acquaintance with me, and partly because fellow villagers were the ones actually collecting most of the data. Some were reluctant, nevertheless, and several became annoyed from time to time at being pestered two or three times a week for information. By the end of both two-year periods of continuous research the villagers as a group suffered from informant fatigue, and the research assistants were burned out. Until the political climate in Alaska with regard to subsistence has improved, and until the purposes and procedures of wildlife management have been explained to and understood by Native villagers, I doubt that more in the way of cooperation than I received could reasonably be expected.

Inupiat generally are not statistically minded, and are not given to counting things of their own accord. There is a fair amount of pride in being a successful hunter, however, and one measure of success is the number of animals that one harvests. Thus a fair amount of counting does occur in this specific area even in the absence of anthropological researchers. Fairly early in each of the two study periods, the need to count (and sex) the harvest was impressed on people. The resulting accuracy and completeness of recall seemed to vary directly with the size and importance of the species concerned, the larger (e.g., moose) or more important (e.g., wolverine), the more likely a hunter was to have accurate recall. On the other hand, accuracy and completeness varies inversely with the number of animals killed on a given occasion, the more that are killed, the lower the chances of a hunter making a count at all, not to mention an accurate one.

The diligence of the research assistants varied according to how comfortable the person felt in asking questions of the other people in his sector of the village. That depended, in turn, on the specific personalities and social relationships involved. Hunter annoyance at being asked was the other side of the same coin. There is no question, however, that villagers in general do not enjoy this type of work. It was the need for cash, not the quest for knowledge, that motivated the research assistants to do their jobs.

While I was in Kivalina during both two-year study periods, I made frequent spot-checks of harvest records by comparing information that I collected independently (and surreptitiously) with data contained in the reporting forms turned in. For the sample involved in the "subsistence effort" and "product use" studies in 1982-84, I also compared the two sets of figures. The result of these checks was always the same: either the

reports were exactly right, or they were low. In the case of migratory waterfowl harvest, they were often so low as to be nearly worthless. I do not believe that this was deliberate, but simply reflects the fact that birds are low prestige items that are often acquired in large numbers. Although I frequently urged both assistants and hunters generally to try to be more accurate in their figures, I was afraid that too much pressure might lead them to "cook the books." At least this way the bias is clear: the figures presented here are minimum estimates, not necessarily exact counts.

APPENDIX B

WEIGHT ASSUMPTIONS

The quantitative data included in this report are of two basic types: (1) actual counts of natural resources harvested by the people of Kivalina, and (2) estimates of the weight of the natural resources that were produced. The latter, in turn, were based on a large number of assumptions about the individual and/or harvest unit weights of the resources involved. This appendix presents those assumptions, and indicates the sources on which they were based. All figures are for total live body weights unless otherwise indicated. All figures for "sex not reported" are the means of the relevant male and female weights.

A particular effort was made to obtain average weights for the specific faunal populations found in northwestern Alaska, since different populations of large game species particularly are known to vary in size. Extrapolations of these weight assumptions even to other parts of Alaska should be made with caution. Also, for large game animals known to undergo large seasonal fluctuations in weight, the assumptions vary on a monthly basis.

Each species is identified by a variety of names. The format is as follows: English name [alternative English names] (*Latin*, or scientific name); *Inuit* name.

Birds

(1) Brant (*Branta bernicla*); *nigliq*

Adult male: 3.19 lbs.

Adult female: 2.88 lbs.

Sex not reported: 3.03 lbs.

Source: Bellrose (1980:172)

(2) Canada Goose (Branta canadensis taverneri); niglivik

Adult male: 5.9 lbs.

Adult female: 4.7 lbs.

Sex not reported: 5.3 lbs.

Sources: Armstrong and the Editors of Alaska Magazine (1983:42), Bellrose (1980:141, 153), Timm (1978)

(3) Crane, lesser sandhill (Grus canadensis); tatizigaq

Adult male: 9.8 lbs.

Adult female: 8.8 lbs.

Sex not reported: 9.3 lbs.

Source: Walkinshaw (1949)

(4) Duck, species not reported

Sex not reported: 3.16 lbs.

Basis: Average of the six duck species in this list

(5) Ducks and geese mixed, species not reported

Sex not reported: 3.93 lbs.

Basis: Average of duck and goose "species not reported" figures

(6) Eider, Common (Somateria mollissima nigra); amauligaaluk

Adult male: 5.76 lbs.

Adult female: 5.30 lbs.

Sex not reported: 5.33 lbs.

Source: Bellrose (1980:355)

(7) Eider, King (Somateria spectabilis), kigaligaaluk

Adult male: 3.68 lbs.

Adult female: 3.45 lbs.

Sex not reported: 3.57 lbs.

Source: Bellrose (1980:365)

(8) Eider, Spectacled (Somateria fischeri); qavaasuk

Adult male: 3.25 lbs.

Adult female: 3.22 lbs.

Sex not reported: 3.24 lbs.

Source: Bellrose (1980:372)

(9) Eider, species not reported

Adult male: 4.23 lbs.

Adult female: 3.99 lbs.

Sex not reported: 4.11 lbs.

(10) Goose, species not reported

Sex not reported: 4.70 lbs.

Basis: Means of brant, Canada goose, and lesser snow goose

(11) Gull eggs (species not reported); nuyaq: 1 egg = 2.5 oz. (ESB estimate)

(12) Mallard (Anas platyrhynchos); ugiuguk

Adult male: 2.75 lbs.

Adult female: 2.44 lbs.

Sex not reported: 2.60 lbs.

Source: Bellrose (1980:229)

(13) Murres

(a) Birds

Field assistants did not differentiate in their reports between the thick-billed murre (Uria lomvia), or aakpaluuzaq, and the common murre (Uria aalge), or aakpaliq, whose weights have been averaged to form this assumption.

Sex not reported: 2.15 lbs.

Source: Swartz (1966:617)

(b) Eggs

- Individual egg: 1 egg = 3.7 oz.
(Source: Tuck (1960)

- 1 gallon bucket = 32 eggs = 7.4 lbs.
(Source: ESB estimate)

- 1 keg = 640 eggs = 148 lbs.
(Source: ESB estimate)

- 1 box = 216 eggs = 50 lbs.

(14) Old Squaw (Clangula hyemalis); ahaaliq

Adult male: 2.11 lbs.

Adult female: 1.73 lbs.

Sex not reported: 1.92 lbs.

Source: Bellrose (1980:385)

(15) Pintail (Anas acuta); kuluraq

Adult male: 2.26 lbs.

Adult female: 1.91 lbs.

Sex not reported: 2.09 lbs.

Source: Bellrose (1980:262)

(16) Ptarmigan

Both the rock ptarmigan (Lagupus mutus) and the willow ptarmigan (Lagopus lagopus) are found in the Kivalina region. They are the same size, and the weight estimate applies to both. Both are called aqazigiq in Kivalina.

Sex not reported: 1.12 lbs.

Source: Roberts (1963:45), Weeden (1978), West, et al. 1970;246)

(17) Snow Goose, lesser (Chen caerulescens), quyuk

Adult male: 6.06 lbs.

Adult female: 5.50 lbs.

Sex not reported: 5.78 lbs.

Source: Bellrose (1980:112)

(18) Snowy Owl (Nyctea scandiaca); ukpik: 4 lbs.
(ESB estimate)

(19) Swan, Whistling (Cygnus columbianus); kukzuk

Adult male: 16.0 lbs.

Adult female: 13.9 lbs.

Sex not reported: 14.95 lbs.

Sources: Bellrose (1980:94); Sellers, Timm and Tankersley (1982)

Fish

(1) Aggregate figures

(a) Baskets: 150 lbs.

(b) Boatloads (skin umiaq) 2,000 lbs.

(c) Burlap sack of wet fish: 125 lbs.

(d) Burlap sack of frozen fish (except cod): 75 lbs.

(e) Garbage can: 200 lbs.

(f) Plastic sack of wet fish: 60 lbs.

(g) Plastic sack of frozen fish: 60 lbs.

(h) Tub: 100 lbs.; for grayling = 135 lbs.

Source: field measurements

(2) Burbot (ling cod) (Lota lota); titaaliq: 1.65 lbs.
(Morrow 1980:182)

(3) Arctic Char (Salvelinus alpinus); aqaluqpik, aqalupiaq

(a) Size not reported: 2 lbs.

(b) "Little": .5 lbs.

(c) "Small": 2.0 lbs.

(d) "Medium": 5.0 lbs.

(e) "Big": 10.0 lbs.

(f) "Giant": 14.0 lbs.

Basis: Interviews conducted with Kivalina fishermen by E. S. Burch, Jr. (with fish scales)

(4) Cod, Arctic [blue cod, grunion] (Boreogadus saida); aqaluaq

(a) Individual: 2.5 oz. (Morrow 1980:184)

(b) Bucket (frozen): 10 lbs.

(c) Plastic sack: 60 lbs.

(d) Shopping bag (frozen): 15 lbs.

(e) Tub (frozen): 50 lbs.

(f) Burlap sack: 125 lbs.

(g) Box (frozen): 30 lbs.

(h) Garbage can (frozen): 100 lbs.

(5) Cod, Saffron [tomcod] (Eleginus gracilis); ugak

(a) Individual: 1.0 lbs. (Morrow 1980:187)

(b) Box (frozen): 25 lbs.

(c) Bucket (frozen): 10 lbs.

(d) Bucket (thawed): 20 lbs.

(e) Sack, burlap: 100 lbs.

(f) Sack, plastic: 60 lbs.

(6) Grayling Arctic (Thymallus arcticus); sulukpauraq: 1.25 lbs. (McPhail and Lindsey 1970:125; Morrow 1980:145)

(7) Salmon, Chum [dog] (Oncorhynchus keta); aqalugzuaq: 10.5 lbs. (E. S. Burch, Jr. measurements of Wulik River chum, August, 1964; Geiger, quoted by Winslow 1970:322; Morrow 1980:70)

(8) Salmon, Coho [silver] (Oncorhynchus kisutch); sikaiyurlak: 10 lbs. (Marriott and Logan 1978; Morrow 1980:72)

(9) Salmon, King [chinook] (Oncorhynchus tshawytscha): tariaqpak 30 lbs. (Morrow 1980:679; Regnart and Kubik 1978)

(10) Salmon, Pink [humpback] (Oncorhynchus gorbuscha); amaaqtuq: 4 lbs.(Kingsbury 1978; Morrow 1980:65)

(11) Salmon, species not reported (= average of chum and pink salmon): 7.25 lbs.

(12) Sculpin, (family Cottidae); kanayuq; species not reported (several represented in the area): 9 oz. (Morrow 1980:207)

(13) Smelt, rainbow (Osmerus mordax): 1 fish = 4 oz. (Morrow 1980:155)

(14) Whitefish, species not reported: The field assistant reports did not specify species of Whitefish; indeed, Kivalina people do not often differentiate among whitefish species. When they do, it is between the Bering cisco (Coregonus laurettae), or tipuk, and the humpback whitefish (Coregonus pidschian), or qaalriq. In the Kivalina area, fish of these species average about 1.25 lbs. (DeCicco 1985a).

Land Mammals

(1) Bear, barren-ground grizzly (Ursus horribilis); aglaq

Month	Males	Females	Sex Not Reported
April	300 lbs.	210 lbs.	255 lbs.
May	275 lbs.	200 lbs.	237 lbs.
June	300 lbs.	210 lbs.	255 lbs.
July	350 lbs.	230 lbs.	290 lbs.
August	400 lbs.	250 lbs.	325 lbs.
September	450 lbs.	280 lbs.	365 lbs.
October	475 lbs.	300 lbs.	387 lbs.

Sources: H. V. Reynolds (1985), Reynolds & Hechtel (1984:20-23)

(2) Bear, Polar (Thalarctos maritimus); nanuq

Adult male: 1,000 lbs.

Adult female: 550 lbs.

Sex not reported: 775 lbs.

Source: Lentfer (1978)

(3) Caribou (Rangifer tarandus); tuttu

Month	Males	Females	Sex Not Reported
June	265 lbs.	155 lbs.	210 lbs.
July	285 lbs.	165 lbs.	225 lbs.
August	310 lbs.	175 lbs.	242 lbs.
September	340 lbs.	185 lbs.	262 lbs.
October	310 lbs.	195 lbs.	252 lbs.
November	290 lbs.	190 lbs.	240 lbs.
December	280 lbs.	185 lbs.	232 lbs.
January	270 lbs.	180 lbs.	225 lbs.
February	260 lbs.	175 lbs.	217 lbs.
March	250 lbs.	170 lbs.	210 lbs.
April	240 lbs.	165 lbs.	202 lbs.
May	250 lbs.	150 lbs.	200 lbs.

Sources: James Davis (1985), Skoog (1968:25)

(4) Fox, Red (Vulpes vulva); qayuqtuq

Male: 12 lbs.

Female: 9 lbs.

Sex not reported: 10.5 lbs.

Source: Jennings (1978)

(5) Fox, White (Alopex lagopus); pisukkaaq: 8 lbs. (Stephenson 1978a)

(6) Hare, Arctic [tundra hare] (Lepus othus), uqaliatsiaq: 9 lbs. (Ernest 1978)

(7) Lynx (Lynx canadensis); nituyaq: 23 lbs. (Berrie and Ernest 1978)

(8) Mink (Mustela vison); tiriaqpak

Male: 4.5 lbs.

Female: 3.5 lbs.

Sex not reported: 4 lbs.

(Burns 1978)

(9) Moose (Alces alces); tuttuvak

Month	Males	Females	Sex Not Reported
August	900 lbs.	700 lbs.	800 lbs.
September	950 lbs.	750 lbs.	850 lbs.
October	1,000 lbs.	775 lbs.	887 lbs.
November	900 lbs.	800 lbs.	850 lbs.
December	850 lbs.	775 lbs.	812 lbs.

Sources: Franzmann, et al. (1978), Rausch (1978). I have assumed that moose in Northwest Alaska are toward the low end of the range of variation for Alaska moose generally.

(10) Otter, land (Lutra canadensis); pamiuqtuq

Male: 30 lbs.

Female: 23 lbs.

Sex not reported: 26.5 lbs.

Source: Solf (1978)

(11) Porcupine (Erethizon dorsatum); iluqutaq: 15 lbs. (Bromley 1978)

(12) Sheep, Dall (Ovis dalli); imnaiq

Adult male: 275 lbs.

Adult female: 150 lbs.

Sex not reported: 212 lbs.

Source: Heimer (1984)

(13) Squirrel, Arctic Ground (Spermophilus undulatus); sigzik: 1.5 lbs. (Bee and Hall 1956:55; Rausch 1951:180)

(14) Wolf (Canis lupus); amaruq

Male: 100 lbs.

Female: 92 lbs.

Sex not reported: 96 lbs.

Source: Stephenson (1978b)

(15) Wolverine (Gulo luscus); qavvik

Male: 32 lbs.

Female: 22 lbs.

Sex not reported: 27 lbs.

Source: Taylor (1978)

Plant Products

(1) Aggregate assumptions for berries

(a) "Buckets" are assumed to be 2 gallons in size unless reported otherwise.

(b) Barrel = 60 lbs. unless reported otherwise.

(c) An unspecified quantity of berries is assumed to be one bucket.

(d) Poke: 100 lbs.

(e) "Ziplock bag" = 1 gallon bag

(2) Berry, species not specified: 1 gallon = 6.5 lbs.

(3) Blackberry (Empetrum nigrum); asiaq: 1 gallon = 5.25 lbs. Source: field data

(4) Blueberry (Vaccinium uligunosum); asiavik: 1 gallon = 7 lbs. Source: field data

(5) Cranberry lowbush (Vaccinium vitis-idaea); kiminnaq: 1 gallon = 7 lbs. Source: field data

(6) Salmonberry (Rubus chamaemorus); aqpik: 1 gallon = 7 lbs. Source: field data

(7) Eskimo Potato (Hedysarum alpinum); masu: 1 pan = 10 lbs. (Source: ESB estimate)

(8) Sourdock (Eskimo Spinach) (Rumex arcticus); quaraq: 1 sack (dry) = 17 lbs. (cooked).

Sea Mammals

(1) Belukha [beluga] (*Delphinapterus leucas*); *sisuaq*

Adult males: 3,300 lbs.

Adult females: 2,000 lbs.

Young (midsummer): 800 lbs.

Sex not reported, adult: 2,650 lbs.

Sources: Fay (1971:29), Klinkhart (1978)

(2) Seal, bearded (*Erignathus barbatus*); *ugzuk*

Month	Males	Females	Sex Not Reported
January	725 lbs.	750 lbs.	737 lbs.
February	725 lbs.	750 lbs.	737 lbs.
March	700 lbs.	725 lbs.	712 lbs.
April	650 lbs.	675 lbs.	662 lbs.
May	600 lbs.	625 lbs.	612 lbs.
June	550 lbs.	575 lbs.	562 lbs.
July	525 lbs.	550 lbs.	537 lbs.
August	500 lbs.	525 lbs.	513 lbs.
October*			250 lbs.
November*			300 lbs.
December*			350 lbs.

*Assumed to be young of the year only

Sources: Burns (1977; 1981:151)

(3) Seal, Ribbon (*Phoca fasciata*); *qairulik*: 154 lbs. (Burns 1984)

(4) Seal, Ringed (Phoca hispida); natsiq

Month	Males	Females	Sex Not Reported
October	108 lbs.	101 lbs.	105 lbs.
November	114 lbs.	103 lbs.	108 lbs.
December	123 lbs.	117 lbs.	120 lbs.
January	153 lbs.	127 lbs.	140 lbs.
February	143 lbs.	135 lbs.	139 lbs.
March	123 lbs.	128 lbs.	125 lbs.
April	116 lbs.	128 lbs.	122 lbs.
May	115 lbs.	108 lbs.	111 lbs.
June	92 lbs.	101 lbs.	96 lbs.
July	88 lbs.	95 lbs.	91 lbs.

Sources: Johnson, et al. (1966:890)

(5) Seal, Spotted [harbor] (Phoca vitulina); kasigiaq

Adult male: 185 lbs.

Adult female: 145 lbs.

Sex not reported: 165 lbs.

Source: Bigg (1981:3)

(6) Walrus (Odobenus rosmarus); aiviq

Adult male: 2,600 lbs.

Adult female: 1,800 lbs.

Sex not reported: 2,200 lbs.

Source: Burns (1978b), Fay (1981:3; 1982:34)

(7) Whale, Bowhead (Balaena mysticetus); arviq: 2.38 tons per foot of length

(Note: No one has ever weighed a bowhead whale. The assumption is that one bowhead = 1.4 gray whales. Burns (1985) cf. Reeves and Leatherwood (1985:305-306.)

(8) Whale, Gray (Eschrichtius robustus); arvigluaq: 1.7 tons per foot of length (Frost, 1982)

APPENDIX C

INTRODUCTION TO APPENDICES D THROUGH G

Appendices D through F present the core data on which this report is based for the Subsistence Years 1964-65, 1965-66, 1982-83, and 1983-84, respectively. The information is organized in terms of subsistence weeks, which are identified both by serial number and by beginning and end dates. Each weekly section, in turn, is divided into four main parts: environment, village, subsistence, and harvest.

The purpose of the environment section is to describe the basic non-human factors that significantly affected hunting during the week concerned. The weather was always among these factors, and weather data are presented for every week for which they are available. Other factors varied from week to week, but included such things as water, ice and snow conditions, and the presence or absence of major game species. Such information is much more complete for 1982-84 than it is for 1964-66.

The village section summarizes social factors that affected hunting during the week concerned. Among such factors were the movement of people into and out of the village, holidays, construction projects, and the like. Again, the relevant data are generally much more complete for the 1980's than for the 1960's.

The section on subsistence is a descriptive summary of the major subsistence developments during the week. The specifics, of course, vary. Sometimes they include an interpretation of how the environmental or social factors affected hunting during the week concerned. On other occasions, specific developments that might be guessed at, but not necessarily known

with certainty, on the basis of the harvest figures alone, are stated here. An example is the setting of gill nets in the channel. For the weeks where a fudge factor is involved (as explained in Appendix A), this is where that factor is stated.

The fourth and final section presents the raw harvest figures for the week, along with the total weight of that harvest as computed on the basis of the weight assumptions presented in Appendix B. These data form the raw material of all of the quantitative figures presented in the body of the report.

The weight calculations, for the most part, were determined mechanically as a simple product of the number of animals of a given species and sex, on the one hand, and the weight assumptions for that species/sex category during the month concerned, on the other. Occasionally, however, some interpretation is hidden in the figures. This happens only where large animals which generally are taken in small numbers are concerned, moose, beluga, walrus and bears being the primary examples. Thus, if a "small" walrus was reported by the field assistants, the harvest figure would indicate a smaller weight than the relevant assumption would if applied mechanically. The abbreviation nd. stands for "sex not reported," i.e., no data on sex.

Each harvest section concludes with a total of that week's harvest, expressed in pounds. Here a distinction is made between "reported total" and "adjusted total" harvest. The former is the simple sum of all of the weights listed for that week. The adjusted total consists of the reported total minus any bird and plant harvest figures. Since bird harvest data were deliberately not collected during 1964-66, and since plant harvest figures were not collected on a weekly basis in 1964-65, the adjustment was necessary in order to obtain comparability among the harvest figures

for the four subsistence years. Fortunately, only a small fraction of the total harvest is involved in the adjustment. For most weeks in the 1964-66 period, "total" = "reported total." For the 1982-84 period, both reported total and adjusted total harvest figures are given for each week, even when they happen to be identical.

Each of the following appendices concludes with a summary, by species, of the harvest for the entire subsistence year. Except for birds--on which no data were collected in 1964-66, a harvest figure is given for each species, even if it happens to be a zero. This is to facilitate year-to-year comparisons, and also to indicate the fact that the species was not omitted inadvertently.

APPENDIX D

THE SUBSISTENCE YEAR 1964-65

Week 101 (May 31 - June 6, 1964)

A. Environment: Reasonably good weather this week, with temperatures in the 30°-50° F. range, and moderate breezes. On Sunday the river ice was covered by water, and by the next day the lagoon was flooded. The water was flowing down a crack in the sea ice about 200 yards beyond the channel. By Saturday the water level was dropping at the rate of about 3 feet a day, as the water melted an ever larger hole in the sea ice. The hills were bare of snow except in areas of heavy drift.

B. Village: Quiet week. Three villagers went to Kotzebue, one to work, two for medical reasons. One Noataker came to Kivalina to hunt seals.

C. Subsistence: Hunters found good seal hunting in cracks and patches of open water in the sea ice at scattered locations along the shore. The first gill nets were set in the channel before week's end.

D. Harvest:

(1)	Seals, bearded:	2 males	[= 1,100 lbs.]
(2)	Seals, ringed:	66 males	[= 6,072 lbs.]
		50 females	[= 5,050 lbs.]
		12 nd.	[= 1,152 lbs.]
		128 total	[= 12,274 lbs.]

(3) Total: 13,374 lbs.

Week 102 (June 7-13, 1964)

A. Environment: Temperatures ranged between 30° and 60° F this week, with moderate onshore breezes being punctuated by stiff northerly winds on Tuesday and Saturday. On Wednesday there was still considerable water on the ice, which had melted for several square miles off the mouths of both the Wulik and Kivalina Rivers. A lead about a mile offshore stretched from just south of the village out of sight toward the northwest. By week's end the ice was completely gone from the river, which was running normally with rapidly dropping water levels. Still some ice in the lagoon. The land was essentially snow-free except for major winter drifts.

Week 102 - Continued

B. Village: Activities this week were oriented primarily to subsistence matters. Five villagers went to Kotzebue, four for medical reasons. Two outsiders came in for visits.

C. Subsistence: Just about all the gill nets were set near the channel by Tuesday and the first char were caught. Seal hunting continued along the coast, but at a greatly reduced rate because of dangerous ice conditions.

D. Harvest:

(1)	Char:	3 fish	[= 6 lbs.]
		2.5 sacks	[= 312 lbs.]
		Total	[= 318 lbs.]
(2)	Seals, bearded:	1 male	[= 550 lbs.]
(3)	Seals, ringed:	7 males	[= 644 lbs.]
		4 females	[= 404 lbs.]
		5 nd.	[= 480 lbs.]
		16 total	[= 1,528 lbs.]

(4) Total: 2,396 lbs.

Week 103 (June 14-20, 1964)

A. Environment: Moderate onshore breezes most of the week. Clear skies were replaced by clouds and ground fog on Tuesday, Friday and Saturday. Temperatures rose into the 50°'s and 60°'s F. on the clear days, but remained in the 25°-40° F. range on the others. The river was still muddy on Sunday, but most of the sediment had settled out by week's end and the river was running clear.

B. Village: On Wednesday, the ordination of Milton Swan, a native Kivalina man, into the Episcopal Church priesthood brought several church dignitaries to town. The ceremony was followed by a feast. Otherwise, no outsiders came in. One villager went to Kotzebue to look for work.

C. Subsistence: The increasingly rotten sea ice kept seal hunters close to home; hunting was largely restricted to the open area in front of the channel. The char fishery rose to peak levels, with gill nets, seines and hooks all being brought to bear. A sealskin buyer was in town on Monday.

Week 103 - Continued

D. Harvest:

(1)	Char:	32 fish	[= 64 lbs.]
		7.25 sacks	[= 906 lbs.]
		34 tubs	[= 3,400 lbs.]
		Total	[= 4,370 lbs.]
(2)	Seals, bearded:	1 male	[= 550 lbs.]
(3)	Seals, ringed:	10 males	[= 920 lbs.]
		7 females	[= 707 lbs.]
		1 nd.	[= 96 lbs.]
		18 total	[= 1,723 lbs.]

(4) Total: 6,643 lbs.

Week 104 (June 21-27, 1964)

A. Environment: Moderate onshore breezes, cloudy skies, rain and temperatures in the 30's began the week, but shifted to clear skies, temperatures in the 50's and stiff northerly winds on Tuesday. The ice pack was pretty well broken up and open all week.

B. Village: This week was oriented primarily to subsistence activities. An arts and crafts buyer was in town on Friday. No villagers went out; two outsiders came in, one to visit, the other to inspect the village in his capacity of Sanitation Aide.

C. Subsistence: Fishing and seal hunting were in high gear all week. Water, weather and ice conditions were excellent.

D. Harvest:

(1)	Char:	14 sacks	[= 1,750 lbs.]
		70 tubs	[= 7,000 lbs.]
		Total	[= 8,750 lbs.]
(2)	Seals, bearded:	24 males	[= 13,200 lbs.]
		14 females	[= 8,050 lbs.]
		38 total	[= 21,250 lbs.]

Week 104 - Continued

(3) Seals, ringed: 26 males [= 2,392 lbs.]

11 females [= 1,111 lbs.]

37 total [= 3,503 lbs.]

(4) Total: 33,503 lbs.

Week 105 (June 28 - July 4, 1964)

A. Environment: Light offshore breezes gave way to a stiff (25-35 mph) north wind on Wednesday, and it did not decline in intensity until Saturday. Skies were partly cloudy most of the week, and temperatures were in the 35°-60° F. range. On Sunday and Monday the ice was packed so tightly against the beach that boat travel was impossible. On Wednesday the wind pushed the ice back out, and by week's end the pack was scarcely visible on the horizon.

B. Village: This was another week devoted primarily to subsistence activities, although more to the processing than to the primary production aspects. Saturday, July 4th, was celebrated with games and festivities, although two large crews took advantage of the reduced wind to hunt seals on what appeared to be the last ice of the season. Two villagers went to Kotzebue to shop; no outsiders came in.

C. Subsistence: The char run concluded last week, and most of the subsistence effort was devoted to butchering and storing the harvest of the past two weeks. Seal hunting continued, but was hindered by the strong winds.

D. Harvest:

(1) Seals, bearded: 10 males [= 5,500 lbs.]

5 females [= 2,875 lbs.]

15 total [= 8,375 lbs.]

(2) Seals, ringed: 9 males [= 828 lbs.]

3 females [= 303 lbs.]

12 total [= 1,131 lbs.]

(3) Total: 9,506 lbs.

Week 106 (July 5-11, 1964)

A. Environment: Last week's northerly winds shifted clockwise around to the west on Tuesday and Wednesday, then to the northwest for the rest of the week. Temperatures were in the 50°'s F. almost every day, and skies were mostly clear. Early in the week

Week 106 - Continued

the current and wind pushed the sea ice toward the coast, but the stiff northwesterly winds pushed it back out again on Thursday and kept it there.

B. Village: Six villagers went to Kotzebue, three to shop, three to the Quarterly Meeting of the Friends' Church. One outsider came in for a visit. One of the Noatak families who had come to Kivalina for seal hunting moved permanently to Kotzebue.

C. Subsistence: Ice and weather conditions offered excellent hunting conditions early in the week, but the ice was too far out after Thursday for safe hunting.

D. Harvest:

(1)	Seals, bearded:	34 males	[= 17,850 lbs.]
		10 females	[= 5,500 lbs.]
		13 nd.	[= 6,981 lbs.]
		57 total	[= 30,331 lbs.]
(2)	Seals, ringed:	13 males	[= 1,144 lbs.]

(3) Total: 31,475 lbs.

Week 107 (July 12-18, 1964)

A. Environment: This week saw a steady light westerly breeze, cloudy skies, and temperatures fluctuating between 39° F. and 55° F. The ocean current brought the ice back toward the coast on Sunday, and it was two miles out on Wednesday morning. On Thursday the wind dropped to almost nothing, and the ice went back out for the last time, taking the seals with it. Also of note: (a) on Monday the first belukhas of the season went past; (b) on Wednesday two moose swam across the channel and walked to the edge of the village. They left by the same route about an hour later; (c) lots of caribou appeared along the coast toward the northwest; (d) murre eggs appeared at Cape Thompson.

B. Village: This week marked the shift from the spring fish-seal hunting season to the relatively quiet summer regime of activities. Six people went to Kotzebue looking for work; no outsiders came in. Another family of the Noatakers who had come for seal hunting left for Kotzebue.

C. Subsistence: Seal hunting early in the week was followed by caribou hunting later on. One party also managed to get to the bird cliffs at Cape Thompson, although they were interested primarily in caribou.

Week 107 - Continued

D. Harvest:

(1)	Belukhas:	2 males	[= 6,600 lbs.]
		2 females	[= 4,000 lbs.]
		4 total	[= 10,600 lbs.]
(2)	Birds:	Murre eggs: 2 kegs	[= 296 lbs.]
		4 boxes	[= 200 lbs.]
		Total	[= 496 lbs.]
(3)	Caribou:	22 males	[= 6,270 lbs.]
		10 females	[= 1,650 lbs.]
		9 nd.	[= 2,025 lbs.]
		41 total	[= 9,945 lbs.]
(4)	Seals, bearded:	8 males	[= 4,200 lbs.]
(5)	Seals, ringed:	10 males	[= 880 lbs.]
		1 female	[= 95 lbs.]
		11 total	[= 975 lbs.]

(6) Total: 26,216 lbs.; adjusted total: 25,720 lbs.

Week 108 (July 19-25, 1964)

A. Environment: This week winds were light, and varied all over the compass. Cloudy skies were accompanied by temperatures in the 40°-66° F. range. Light rain fell on four of the seven days. The main pack ice was gone by Sunday, but lots of loose, current driven ice passed toward the northwest along the coast all week. A big group of large pans went past on Saturday. No ice appeared after that.

B. Village: This was an unusually quiet week even for Kivalina. Two villagers went to Pt. Hope for a funeral, and three others went to Kotzebue looking for work. Three outsiders came in on church business.

C. Subsistence: Very little subsistence activity this week. A belukha watch and a caribou watch were maintained, but there was little to see.

Week 108 - Continued

D. Harvest:

(1)	Belukha:	1 female	[= 2,000 lbs.]
		1 nd.	[= 2,650 lbs.]
		2 total	[= 4,650 lbs.]
(2)	Caribou:	7 males	[= 1,995 lbs.]

(3) Total: 6,645 lbs.

Week 109 (July 26 - August 1, 1964)

A. Environment: Predominantly northwest winds brought cloudy skies all week, and light rain and fog on Monday and Friday. Temperatures ranged between 40° and 60° F. Few animals of any kind were seen.

B. Village: Another quiet week. One family of Kivalina people moved to Kotzebue on a more or less permanent basis. Five villagers went to Kotzebue seeking work. No outsiders visited Kivalina.

C. Subsistence: Hunters remained on standby for belukha and caribou, but saw almost nothing in the way of game.

D. Harvest:

(1)	Caribou:	2 males	[= 570 lbs.]
		2 nd.	[= 450 lbs.]
		1 calf	[= 50 lbs.]
		5 total	[= 1,070 lbs.]
(2)	Seals, ringed:	1 male	[= 88 lbs.]

(3) Total: 1,158 lbs.

Week 110 (August 2-8, 1964)

A. Environment: Two days of mild westerly breezes interrupted an otherwise constant flow of stiff north winds. Skies were clear all week, and temperatures fluctuated between 38° and 66° F. It was a beautiful week in Kivalina. Berries began to ripen.

B. Village: Still another quiet week. Two villagers went to Kotzebue for medical reasons; no outsiders came in.

C. Subsistence: Aside from some berry picking, there was almost no subsistence effort this week.

Week 110 - Continued

D. Harvest:

(1) Caribou: 1 male [= 310 lbs.]

(2) Seals, spotted: 1 male [= 185 lbs.]

(3) Total: 495 lbs.

Week 111 (August 9-15, 1964)

A. Environment: This was a week of variable but gentle breezes and clear skies. Temperatures ranged upward from the mid forties and reached a high of 75° F. on Thursday. Another beautiful week.

B. Village: A third family of Noatakers, in Kivalina for spring seal hunting, moved to Kotzebue. Five villagers went to Kotzebue for diverse purposes. No outsiders came in.

C. Subsistence: The primary and almost sole subsistence activity this week was berry picking.

D. Harvest:

(1) Berries: see week 115

(2) Caribou: 3 males [= 930 lbs.]

(3) Total: 930 lbs.

Week 112 (August 16-22, 1964)

A. Environment: Monday, Tuesday and Wednesday were characterized by stiff northerly winds in the 15-25 mph range. During the rest of the week, winds were light and variable. Skies were generally clear, and temperatures ranged from the 30°'s to 40°'s F. at night to 60° F. during the day. The char run into the rivers was well underway this week.

B. Village: One family moved to Point Lay so that the husband could hunt spotted seals, whose skins were bringing a good price. On Saturday the plane came to take four youngsters out to go to boarding school at Mt. Edgecumbe (Alaska) and Chemawa (Oregon). Four other villagers made trips out to visit and shop in Kotzebue. No outsiders came in.

C. Subsistence: Gill nets were set near the channel this week and they began to produce immediately. One ad hoc crew went a few miles up river to seine for char. Otherwise, the only subsistence activity was berry picking.

Week 112 - Continued

D. Harvest:

(1) Berries: see week 115

(2) Fish (char and salmon mixed, at an estimated ratio of 4:1)

1 sack		[= 125 lbs.]
19 tubs		[= 1,900 lbs.]
	Total	[= 2,025 lbs.]

[1,620 lbs. char; 405 lbs. salmon]

(3) Total: 2,025 lbs.

Week 113 (August 23-29, 1964)

A. Environment: Almost continuous onshore winds this week brought cloudy skies and drizzle. Temperatures ranged between the mid-30°'s and the low 50°'s F. The char and salmon runs intensified.

B. Village: A very quiet week. One villager went out for medical reasons; no outsiders came in.

C. Subsistence: Three *ad hoc* crews seined for dog food (char) in the lower Wulik. Berry picking continued.

D. Harvest:

(1) Berries: see week 115

(2) Fish (char and salmon mixed, at an estimated ratio of 4:1)

20 sacks	[= 2,500 lbs.]
26 tubs	[= 2,600 lbs.]
Total	[= 5,100 lbs.]

[= 4,080 lbs. char, 1,020 lbs. salmon]

(3) Total: 5,100 lbs.

Week 114 (August 30 - September 5, 1964)

A. Environment: Winds were variable and generally light except for Sunday (10-20 mph) and Friday (20-30 mph). Skies were cloudy, and it drizzled every day of the week. The rain had a marvelous effect on the berries, which more than doubled in size and became unusually sweet. The fish run continued at a steady rate.

Week 114 - Continued

B. Village: Two youngsters headed for Wrangel Institute were the only villagers to leave this week. No outsiders came in.

C. Subsistence: Village based fishing both by seine and gill net continued. The major part of the salmon run is apparently over; the char run is gaining momentum. Berry picking continued.

D. Harvest:

(1) Berries: see week 115

(2) Char: 83 fish [= 166 lbs.]

5.5 sacks [= 686 lbs.]

15 tubs [= 1,500 lbs.]

Total [= 3,352 lbs.]

(3) Seals, spotted: 1 nd. [= 165 lbs.]

(4) Total: 3,517 lbs.

Week 115 (September 6-12, 1964)

A. Environment: Easterly and southerly winds brought cloudy skies and drizzle all week. Temperatures ranged between 40° F and 60° F.

B. Village: An x-ray team visited Kivalina on Tuesday, so everyone in the village had a chest x-ray. Three villagers went to Pt. Hope to visit; seven outsiders came in to fish and hunt caribou.

C. Subsistence: The rain raised water levels in the rivers and made fishing all but impossible. Berry picking pretty much concluded this week.

D. Harvest:

(1) Bear, grizzly: 1 female [= 280 lbs.]

(2) Berries and "spinach": In 1964 the field assistants were instructed to record the accumulated total, rather than the weekly production. The results, which do not include anything that was consumed over the summer, are as follows:

(a) Blackberries: 1 poke [= 100 lbs.]

7.5 60-lb. barrels [= 450 lbs.]

Total [= 550 lbs.]

Week 115 - Continued

(b) Blackberries and sourdock mixed:

.5 60-lb. barrels [= 30 lbs.]

(c) Blackberries and salmon berries mixed:

.5 60-lb. barrels [= 30 lbs.]

(d) Salmon berries and sourdock mixed:

.5 60-lb. barrels [= 30 lbs.]

(e) Sourdock: 3 60-lb. barrels [= 180 lbs.]

2 40-lb. barrels [= 80 lbs.]

Total [= 260 lbs.]

(f) Mixed barrels: 4 60-lb. barrels [= 280 lbs.]

(3) Total - excluding berries: 280 lbs.

Week 116 (September 13-19, 1964)

A. Environment: Sunday's gentle northeasterly breeze was followed by 30-35 mph north winds on Monday. They moderated somewhat over the next few days, but stiffened again on Saturday. Temperatures began to drop into the 20's at night rising to the 38°-48° F. range during the day.

B. Village: One family moved to Point Lay to hunt spotted seals for their valuable pelts. Nine villagers made trips out to Kotzebue, five of them for medical reasons. Two outsiders came to Kivalina for visits.

C. Subsistence: One fish crew went camping up the Wulik this week.

D. Harvest:

(1) Char: 106.5 tubs [= 10,650 lbs.]

(2) Total: 10,650 lbs.

Week 117 (September 20-26, 1964)

A. Environment: Last week's north winds persisted until Tuesday, then shifted to moderate easterly breezes for the rest of the week. Temperatures were in the 20's and 30's F. prior to the wind shift; after it they rose about ten degrees.

B. Village: This week was oriented to fishing. Three villagers made trips out. Two of them were young men going to the William

Week 117 - Continued

Beltz School in Nome; the other made a medical trip to Kotzebue. Five outsiders came to Kivalina. Two of them came to fish; the other three were en route to Point Hope and were forced to stop by bad weather.

C. Subsistence: All of the fish crews were at work this week. Most went camping up the Wulik River. They returned during week 118, which is where the harvest is reported.

D. Harvest:

(1) Char: 66 tubs [= 6,600 lbs.]

(2) Seals, spotted: 1 male [= 185 lbs.]

(3) Total: 6,785 lbs.

Week 118 (September 27-October 3, 1964)

A. Environment: The winds blew at a steady 10-15 mph clip most of the week from variable offshore directions through Wednesday, then from the west for the rest of the week. Temperatures were in the 20's and 30's F. It rained on Monday and Tuesday; Friday and Saturday saw rain and snow mixed.

B. Village: This was another week in which fishing dominated the agenda. One more villager left for the Beltz School during the week. No outsiders came in.

C. Subsistence: The crews returned from fish camp early in the week having been very successful. They continued to fish from the village. The first caribou of the season were killed.

D. Harvest:

(1) Caribou: 1 male [= 340 lbs.]

7 female [= 1,295 lbs.]

8 total [= 1,635 lbs.]

(2) Fish:

(a) Char: 313.5 tubs [= 31,350 lbs.]

8.5 boatloads [= 17,000 lbs.]

Total [= 48,350 lbs.]

(b) Whitefish: 25 tubs [= 2,500 lbs.]

(3) Total: 52,485 lbs.

Week 119 (October 4-10, 1964)

A. Environment: Stiff southerly and southeasterly winds alternated until Thursday. The wind then dropped and shifted to the east, and finally the north for the rest of the week. Temperatures fluctuated in a very narrow range in the upper 30's until the wind shift, at which point they dropped to the 20's F. It was cloudy and drizzly every day except Saturday.

B. Village: This was a pretty quiet week, as people cleaned up from last week's fishing. One villager went to Kotzebue for medical reasons; no outsiders came in.

C. Subsistence: There was a pause in the fishing this week, although it did not stop altogether. All fishing and caribou hunting were conducted from the village.

D. Harvest:

(1)	Caribou:	3 males	[= 930 lbs.]
		2 females	[= 390 lbs.]
		5 total	[= 1,320 lbs.]
(2)	Char:	19 sacks	[= 2,375 lbs.]
		13 tubs	[= 1,300 lbs.]
		Total	[= 3,675 lbs.]
(3)	Seals, spotted:	1 female	[= 145 lbs.]
(4)	Total:	5,140 lbs.	

Week 120 (October 11-17, 1964)

A. Environment: The wind blew steadily at 15-20 mph from the north and northeast all week, although on Thursday it rose to the 30-40 mph range. Temperatures dropped into the low teens at night and never rose above freezing during the day. Fresh water freezeup took place on Tuesday.

B. Village: Three villagers went to Pt. Hope to sell fish. Two others went to Kotzebue on church business. No outsiders came in.

C. Subsistence: Seining concluded for the year on Monday. By week's end the ice on the river had gotten thick enough to permit hooking through holes chopped in the ice.

Week 120 - Continued

D. Harvest:

(1) Char: 44 fish [= 88 lbs.]

12 tubs [= 1,200 lbs.]

Total [= 1,288 lbs.]

(2) Total: 1,288 lbs.

Week 121 (October 18-24, 1964)

A. Environment: The week began with stiff (30-35 mph) winds from the southeast. They moderated considerably and became quite variable in direction on Tuesday, and the trend lasted through Saturday. Temperature was in the 20's and low 30's F. all week. Very light snow fell on six of the seven days, just enough to dust the ground.

B. Village: One family moved to Nome to be near the husband/father who was attending the Beltz School. No other villagers left town. Three outsiders came in to buy fish.

C. Subsistence: Quite a few men hunted for caribou, but with little success. Only a couple of small bands were seen just north of the lower Kivalina River. A few people went ice fishing, also with little success.

D. Harvest:

(1) Caribou: 7 males [= 2,170 lbs.]

7 females [= 1,365 lbs.]

14 total [= 3,535 lbs.]

(2) Char: 20 fish [= 40 lbs.]

(3) Total: 3,575 lbs.

Week 122 (October 25-31, 1964)

A. Environment: The light, variable winds of late last week persisted through Monday, then shifted to the north and increased to 30-40 mph on Tuesday and Wednesday. They blew out of the east at 10-15 mph for the balance of the week. Nighttime temperatures began to approach zero F. During the day temperatures were mostly in the teens.

B. Village: Two villagers went to Kotzebue for medical purposes. No outsiders came in.

Week 122 - Continued

C. Subsistence: The men were still looking for caribou this week but, except for a few along the lower Kivalina River, weren't finding any. One or two people did some ice fishing.

D. Harvest:

(1) Caribou:	2 males	[= 620 lbs.]
	4 females	[= 780 lbs.]
	7 nd.	[= 1,764 lbs.]
	13 total	[= 3,164 lbs.]
(2) Char:	1.5 sacks	[= 113 lbs.]
(3) Porcupine:	1 nd.	[= 15 lbs.]

(4) Total: 3,292 lbs.

Week 123 (November 1-7, 1964)

A. Environment: The wind was out of the northeast almost all week, generally in the 10-15 mph range. Light snow fell daily, beginning Wednesday. Temperatures ranged between -1° F. and 23° F. Still hardly any caribou around.

B. Village: Very little activity again this week, although the churches began to get organized for Thanksgiving. One villager went to Kotzebue for medical reasons. No outsiders came in.

C. Subsistence: This was another frustrating week for caribou hunters. They simply could not find many animals to hunt. Trapping season opened, and a few men set traps.

D. Harvest:

(1) Caribou:	5 males	[= 1,450 lbs.]
	4 females	[= 760 lbs.]
	9 total	[= 2,210 lbs.]

(2) Total: 2,210 lbs.

Week 124 (November 8-14, 1964)

A. Environment: Variable offshore winds at a steady 15 mph brought temperatures down to the -10° to +10° F. range. A trace of snow fell on Thursday, and again on Saturday. Still very few caribou in the area.

Week 124 - Continued

B. Village: One villager went to Kotzebue for medical reasons. No outsiders came in. The village was unusually quiet.

C. Subsistence: The caribou hunting is a disaster, but not for lack of trying. There are only a few small bands of caribou in the whole country.

D. Harvest:

(1) Caribou:	2 males	[= 580 lbs.]
	7 females	[= 1,330 lbs.]
	9 total	[= 1,910 lbs.]

(2) Total: 1,190 lbs.

Week 125 (November 15-21, 1964)

A. Environment: The wind blew at 10-20 mph from the southeast on Sunday, Tuesday, Thursday and Saturday, and mostly from the west in between. Small amounts of snow fell on five out of the seven days. Temperatures were mostly in the +20's.

B. Village: No villagers left Kivalina this week. One outsider came in for a visit, and the Sanitation Aide from Pt. Hope made an inspection trip.

C. Subsistence: There was little improvement in the caribou situation, but traps began to produce for the first time.

D. Harvest:

(1) Caribou:	8 males	[= 2,320 lbs.]
	7 females	[= 1,330 lbs.]
	15 total	[= 3,650 lbs.]
(2) Wolverines:	1 male	[= 32 lbs.]
	2 females	[= 44 lbs.]
	2 nd.	[= 54 lbs.]
	5 total	[= 130 lbs.]

(3) Total: 3,780 lbs.

Week 126 (November 22-28, 1964)

A. Environment: Light breezes blew from a different part of the compass every day this week. Temperatures fluctuated accordingly,

Week 126 - Continued

but remained within an overall range of -5° to +25° F. A trace of snow fell on Tuesday.

B. Village: Thursday was Thanksgiving, and everyone in town gathered in the armory for the customary feast, followed by some games. No villagers left this week, and no outsiders came in.

C. Subsistence: The caribou situation remained unchanged this week. However, the first seal of the season was taken by a hunter working along the sea ice forming along the shoreline.

D. Harvest:

(1)	Caribou:	2 males	[= 580 lbs.]
		13 nd.	[= 3,120 lbs.]
		15 total	[= 3,700 lbs.]
(2)	Seal, ringed:	1 male	[= 114 lbs.]
(3)	Wolverine:	1 female	[= 22 lbs.]

(4) Total: 3,836 lbs.

Week 127 (November 29 - December 5, 1964)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1)	Char:	1 sack	[= 75 lbs. x 1.45 = 109 lbs.]
(2)	Wolverines:	1 female	[= 22 lbs.]
		1 nd.	[= 27 lbs.]
		2 total	[= 49 lbs.]

(3) Total: 158 lbs.

Week 128 (December 6-12, 1964)

A. Environment: No data

B. Village: No data

Week 128 - Continued

C. Subsistence: No data

D. Harvest: No data

Week 129 (December 13-19, 1964)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou: 1 male [x 1.45]=1 male [= 280 lbs.]

4 fawns [x 1.45]=6 fawns [= 660 lbs.]

5 total =7 total [= 940 lbs.]

(2) Furs:

(a) White fox: 2 nd. [x 1.45]=3 nd. [= 24 lbs.]

(b) Wolverines: 3 males [x 1.45]=4 males [= 128 lbs.]

(3) Seals, ringed: 1 nd. [= 120 lbs.]

(4) Total: 1,212 lbs.

Week 130 (December 20-26, 1964)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou:

2 males [x 1.45]= 3 males [= 840 lbs.]

9 nd. [x 1.45]= 13 nd. [= 3,016 lbs.]

11 total 16 total [= 3,856 lbs.]

(2) Fox, red: 2 males [x 1.45]=3 males [= 36 lbs.]

(3) Total: 3,892 lbs.

Week 131 (December 27, 1964 - January 2, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Seal, bearded: 1 young male [= 350 lbs.]

(2) Seal, ringed: 1 female [= 117 lbs.]

(3) Wolverine: 1 female [= 22 lbs.]

(4) Total: 489 lbs.

Week 132 (January 3-9, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou: 1 male [= 270 lbs.]

(2) Seal, ringed: 1 male [= 153 lbs.]

(3) Wolverine: 1 male [= 32 lbs.]

(4) Total: 455 lbs.

Week 133 (January 10-16, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou:

9 males	[x 1.45]=	13 males	[= 3,510 lbs.]
5 females	[x 1.45]=	7 females	[= 1,260 lbs.]
14 total		20 total	[= 4,770 lbs.]

Week 133 - Continued

(2) Seals, ringed:

3 males	[x 1.45]=	4 males	[= 612 lbs.]
1 female	[x 1.45]=	1 female	[= 127 lbs.]
10 nd.	[x 1.45]=	15 nd.	[= 1,400 lbs.]
14 total		20 total	[= 2,139 lbs.]

(3) Total: 6,909 lbs.

Week 134 (January 17-23, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: Caribou remained few in number and widely scattered. Seal hunting conditions, however, were excellent on both the north and south sides of the village. Fudge factor=1.45.

D. Harvest:

(1) Seals, bearded:

1 female	[= 750 lbs.]
1 nd.	[= 737 lbs.]
2 total	[= 1,487 lbs.]

(2) Seals, ringed:

41 males	[x 1.45]=	60 males	[= 9,180 lbs.]
22 females	[x 1.45]=	32 females	[= 4,064 lbs.]
36 nd.	[x 1.45]=	52 nd.	[= 7,280 lbs.]
99 total		144 total	[= 20,524 lbs.]

(3) Total: 22,011 lbs.

Week 135 (January 24-30, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: There was no hunting the first part of the week. Towards week's end, the seal hunting became pretty good ca. 6-10 miles west and northwest of the village. Fudge factor=1.45.

Week 135 - Continued

D. Harvest:

(1) Seals, ringed:

3 males	[x 1.45]=	4 males	[= 612 lbs.]
1 female	[x 1.45]=	1 female	[= 127 lbs.]
24 nd.	[x 1.45]=	35 nd.	[= 4,900 lbs.]
28 total		40 total	[= 5,639 lbs.]

(2) Total: 5,639 lbs.

Week 136 (January 31 - February 6, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: The seal hunting was focused on an area 5-10 miles west and northwest of the village early in the week. Later on, it was better toward the southwest. The odd caribou appeared on the flat during the week. Fudge factor=1.45.

D. Harvest:

(1) Caribou: 2 males [x 1.45]=3 males [= 780 lbs.]

(2) Seals, ringed:

15 males	[x 1.45]=	22 males	[= 2,145 lbs.]
26 females	[x 1.45]=	38 females	[= 5,130 lbs.]
2 nd.	[x 1.45]=	3 nd.	[= 417 lbs.]
43 total		63 total	[= 7,692 lbs.]

(3) Total: 8,472 lbs.

Week 137 (February 7-13, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: The seal hunting was focused on an area a few miles offshore and from a point straight out from the village about ten miles toward the northwest. The few caribou in the area moved to the northwest of the lower Kivalina River. Fudge factor=1.45.

Week 137 - Continued

D. Harvest:

(1) Caribou:

2 males	[x 1.45]=	3 males	[= 780 lbs.]
2 females	[x 1.45]=	3 females	[= 525 lbs.]
4 total		6 total	[= 1,305 lbs.]

(2) Seals, bearded: 1 young male [= 400 lbs.]

(3) Seals, ringed:

21 males	[x 1.45]=	30 males	[= 4,290 lbs.]
17 females	[x 1.45]=	25 females	[= 3,375 lbs.]
15 nd.	[x 1.45]=	22 nd.	[= 3,058 lbs.]
53 total		77 total	[= 10,723 lbs.]

(4) Total: 12,428 lbs.

Week 138 (February 14-20, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: Hunting conditions and the game supply were about the same as last week. Fudge factor=1.45.

D. Harvest:

(1) Caribou: 11 males [x 1.45]=16 males [= 4,160 lbs.]

(2) Seals, ringed:

11 males	[x 1.45]=	16 males	[= 2,288 lbs.]
2 females	[x 1.45]=	3 females	[= 405 lbs.]
1 nd.	[x 1.45]=	1 nd.	[= 139 lbs.]
14 total		20 total	[= 2,832 lbs.]

(3) Total: 6,992 lbs.

Week 139 (February 21-27, 1965)

A. Environment: No data

Week 139 - Continued

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Seals, ringed:

12 males	[x 1.45]=	17 males	[= 2,431 lbs.]
2 females	[x 1.45]=	3 females	[= 405 lbs.]
14 total		20 total	[= 2,836 lbs.]

(2) Total: 2,836 lbs.

Week 140 (February 28 - March 6, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou:

4 males	[x 1.45]=	6 males	[= 1,500 lbs.]
4 females	[x 1.45]=	6 females	[= 1,020 lbs.]
8 total		12 total	[= 2,520 lbs.]

(2) Seals, ringed: 1 female [= 128 lbs.]

(3) Wolverine: 1 male [= 32 lbs.]

(4) Total: 2,680 lbs.

Week 141 (March 7-13, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Char: 1.5 sacks [= 113 lbs. x 1.45 = 164 lbs.]

Week 141 - Continued

(2) Seals, ringed:

3 males	[x 1.45]=	4 males	[= 492 lbs.]
7 females	[x 1.45]=	10 females	[= 1,280 lbs.]
10 total		14 total	[= 1,772 lbs.]

(3) Total: 1,936 lbs.

Week 142 (March 14-20, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou:

2 males	[x 1.45]=	3 males	[= 750 lbs.]
6 females	[x 1.45]=	9 females	[= 1,530 lbs.]
8 total		12 total	[= 2,280 lbs.]

(2) Seals, ringed:

8 males	[x 1.45]=	12 males	[= 1,476 lbs.]
9 females	[x 1.45]=	13 females	[= 1,664 lbs.]
17 total		25 total	[= 3,140 lbs.]

(3) Wolverines:

1 male	[= 32 lbs.]
1 female	[= 22 lbs.]
2 total	[= 54 lbs.]

(4) Total: 5,474 lbs.

Week 143 (March 21-27, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: Seal hunting was good a few miles straight out from the village. A few caribou appeared near the eastern edge

Week 143 - Continued

of the East Flat. The char started moving around in the river. Fudge factor=1.45.

D. Harvest:

(1) Caribou: 3 males [x 1.45]= 4 males [= 1,000 lbs.]

(2) Char: 9 fish [= 18 lbs.]

1.5 sacks [= 113 lbs.]

Total [= 131 lbs. x 1.45 = 190 lbs.]

(3) Seals, ringed:

8 males	[x 1.45]=	12 males	[= 1,476 lbs.]
4 females	[x 1.45]=	6 females	[= 768 lbs.]
1 nd.	[x 1.45]=	1 nd.	[= 125 lbs.]
13 total		19 total	[= 2,369 lbs.]

(4) Total: 3,559 lbs.

Week 144 (March 28 - April 3, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: There still were no caribou around, but lots of seals. Only two people went fishing, but they were quite successful. Fudge factor=1.45.

D. Harvest:

(1) Char: 3 sacks [= 225 lbs. x 1.45 = 326 lbs.]

(2) Seals, bearded: 1 male [= 700 lbs.]

(3) Seals, ringed:

37 males	[x 1.45]=	54 males	[= 6,642 lbs.]
14 females	[x 1.45]=	20 females	[= 2,560 lbs.]
51 total		74 total	[= 9,202 lbs.]

(4) Total: 10,228 lbs.

Week 145 (April 4-10, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Seals, bearded: 2 males [x 1.45]= 3 males [= 1,950 lbs.]

(2) Seals, ringed:

10 males	[x 1.45]=	15 males	[= 1,740 lbs.]
3 females	[x 1.45]=	4 females	[= 512 lbs.]
13 total		19 total	[= 2,252 lbs.]

(3) Total: 4,202 lbs.

Week 146 (April 11-17, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Seals, ringed:

3 males	[x 1.45]=	4 males	[= 464 lbs.]
2 females	[x 1.45]=	3 females	[= 384 lbs.]
5 total		7 total	[= 848 lbs.]

(2) Wolf: 1 female [= 92 lbs.]

(3) Total: 940 lbs.

Week 147 (April 18-24, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: This week the cracks in the sea ice, hence the seals, extended from a few miles out directly in front of the village southeast to a point in front of the Mulgrave Hills. Fudge factor=1.45.

Week 147 - Continued

D. Harvest:

(1) Seals, ringed:

27 males	[x 1.45]=	39 males	[= 4,524 lbs.]
13 females	[x 1.45]=	19 females	[= 2,432 lbs.]
40 total		58 total	[= 6,956 lbs.]

(2) Total: 6,956 lbs.

Week 148 (April 25 - May 1, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: This week seal hunting operations were directly in front of the village, a few miles out. Bearded seals began to appear in larger numbers. Seven men from Noatak passed through on a caribou hunting expedition. They managed to take 39 animals a few miles inland, about 30 miles northwest of Kivalina. These are not included in the Kivalina harvest figures, although at least some of the 39 must have found their way into the village economy. Fudge factor=1.45.

D. Harvest:

(1) Caribou: 3 nd. [x 1.45]=4 nd. [= 808 lbs.]

(2) Seals, bearded:

5 males	[x 1.45]=	7 males	[= 4,550 lbs.]
1 female	[x 1.45]=	1 female	[= 675 lbs.]
6 total		8 total	[= 5,225 lbs.]

(3) Seals, ringed:

9 males	[x 1.45]=	13 males	[= 1,508 lbs.]
1 female	[x 1.45]=	1 female	[= 128 lbs.]
10 total		14 total	[= 1,636 lbs.]

(4) Total: 7,669 lbs.

Week 149 (May 2-8, 1965)

A. Environment: No data

Week 149 - Continued

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Seals, bearded:

4 males	[x 1.45]=	6 males	[= 3,600 lbs.]
2 females	[x 1.45]=	3 females	[= 1,875 lbs.]
1 nd.	[x 1.45]=	1 nd.	[= 612 lbs.]
7 total		10 total	[= 6,087 lbs.]

(2) Seals, ringed: 6 males [x 1.45]= 9 males [= 1,035 lbs.]

(3) Total: 7,122 lbs.

Week 150 (May 9-15, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Seals, bearded:

2 males	[x 1.45]=	3 males	[= 1,800 lbs.]
1 female	[x 1.45]=	1 female	[= 625 lbs.]
1 nd.	[x 1.45]=	1 nd.	[= 612 lbs.]
4 total		5 total	[= 3,037 lbs.]

(2) Seals, ringed:

12 males	[x 1.45]=	17 males	[= 1,955 lbs.]
5 females	[x 1.45]=	7 females	[= 756 lbs.]
1 nd.	[x 1.45]=	1 nd.	[= 111 lbs.]
18 total		25 total	[= 2,822 lbs.]

(3) Total: 5,859 lbs.

Week 151 (May 16-22, 1965)

A. Environment: No data

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou: 2 males [x 1.45]= 3 males [= 750 lbs.]

(2) Seals, ringed:

5 males	[x 1.45]=	7 males	[= 805 lbs.]
3 females	[x 1.45]=	4 females	[= 432 lbs.]
8 total		11 total	[= 1,237 lbs.]

(3) Total: 1,987 lbs.

Week 152 (May 22-28, 1965)

A. Environment: The rivers broke up on Thursday, May 27.

B. Village: No data

C. Subsistence: No data. Fudge factor=1.45

D. Harvest:

(1) Caribou: 5 males [x 1.45]= 7 males [= 1,750 lbs.]

(2) Seals, ringed:

3 males	[x 1.45]=	4 males	[= 460 lbs.]
2 females	[x 1.45]=	3 females	[= 324 lbs.]
1 nd.	[x 1.45]=	1 nd.	[= 111 lbs.]
6 total		8 total	[= 895 lbs.]

(3) Total: 2,645 lbs.

1964 - 1965 Harvest Summary

A. Birds:

(1) Cranes: Data not collected

(2) Ducks: Data not collected

(3) Geese: Data not collected

(4) Gull eggs: Data not collected

(5) Murre eggs: 496 lbs.

(6) Ptarmigan: Data not collected

(7) Snowy owls: Data not collected

(8) Swans: Data not collected

B. Fish:

(1) Burbot: None reported

(2) Char: 93,995 lbs.

(3) Cod, arctic: None reported

(4) Cod, saffron: None reported

(5) Grayling: None reported

(6) Salmon, species not indicated: 1,425 lbs.

(7) Whitefish, species not indicated: 2,500 lbs.

TOTAL FISH: 97,920 lbs.

C. Land Mammals:

(1) Bear, grizzly: 1 female = 280 lbs.

(2) Bear, polar: None reported

(3) Caribou:

128 males	=	35,435 lbs.
73 females	=	13,235 lbs.
55 nd.	=	11,893 lbs.
256 total	=	60,563 lbs.

(4) Fox, colored: 3 males = 36 lbs.

(5) Fox, white: 3 nd. = 24 lbs.

(6) Hare, arctic: None reported

(7) Lynx: None reported

(8) Mink: None reported

(9) Moose: None reported

(10) Otter: None reported

(11) Porcupine: 1 nd. = 15 lbs.

(12) Sheep: None reported

(13) Squirrel: None reported

(14) Wolf: 1 female = 92 lbs.

(15) Wolverines:

8 males	=	256 lbs.
6 females	=	132 lbs.
3 nd.	=	81 lbs.
17 total	=	469 lbs.

TOTAL LAND MAMMALS: 61,479 lbs.

D. Plant Products:

(1) Blackberries: 550 lbs.

(2) Blackberries and sourdock mixed: 30 lbs.

(3) Blackberries and salmonberries mixed: 30 lbs.

(4) Salmonberries and sourdock mixed: 30 lbs.

(5) Sourdock: 260 lbs.

(6) Mixed berries and sourdock: 280 lbs.

TOTAL PLANT PRODUCTS: 1,180 lbs.

E. Sea Mammals:

(1) Belukha:

2 males	=	6,600 lbs.
3 females	=	6,000 lbs.
1 nd.	=	2,650 lbs.
6 total	=	15,250 lbs.

(2) Seal, bearded:

102 males = 56,300 lbs.

35 females = 20,350 lbs.

16 nd. = 8,942 lbs.

153 total = 85,592 lbs.

(3) Seal, ribbon: None reported

(4) Seal, ringed:

487 males = 57,370 lbs.

271 females = 32,788 lbs.

150 nd. = 19,389 lbs.

908 total = 109,547 lbs.

(5) Seal, spotted:

2 males = 370 lbs.

1 female = 145 lbs.

1 nd. = 165 lbs.

4 total = 680 lbs.

(6) Walrus: None taken

(7) Whale, bowhead: None taken

(8) Whale, gray: None taken

TOTAL SEA MAMMALS: 211,069 lbs.

F. Total:

(1) Recorded total: 372,144 lbs.

(2) Adjusted total: 370,468 lbs.

APPENDIX E

THE SUBSISTENCE YEAR 1965-66

Week 201 (May 30 - June 5, 1965)

A. Environment: Winds this week were light (5-10 mph) and from various points of the compass. Temperatures ranged between the low 30°'s at night and the low 50°'s F. during the day. It rained on Saturday. The char began to run out this week.

B. Village: A quiet week as villagers waited for the fishing and seal hunting seasons to open. One villager went to Kotzebue on church business. No outsiders came in.

C. Subsistence: Some people who had their gill nets set near the channel began to catch fish. One group went seining in the lower Wulik. Seal hunting was restricted to the open area in front of the channel.

D. Harvest:

(1) Fish:

(a) Char: 2 fish [= 6 lbs.]

1 sack [= 125 lbs.]

Total [= 131 lbs.]

(b) Whitefish: 4 fish [= 5 lbs.]

(2) Seals, ringed: 2 males [= 184 lbs.]

3 females [= 303 lbs.]

5 total [= 487 lbs.]

(3) Total: 623 lbs.

Week 202 (June 6-12, 1965)

A. Environment: Winds were light and highly variable this week. Temperatures ranged between the low 30's and the high 50's. A light drizzle fell on four out of the seven days.

B. Village: Three villagers went to Pt. Hope for the whaling feast, and three others went to Kotzebue for diverse purposes.

C. Subsistence: The char run picked up a bit this week, and the gill nets began to produce. Seal hunting also improved, but was

Week 202 - Continued

still restricted to a small area of open water and rotten ice just beyond the channel.

D. Harvest:

(1) Char: .5 sacks [= 63 lbs.]

18 fish [= 36 lbs.]

Total [= 99 lbs.]

(2) Seals, bearded: 1 female [= 575 lbs.]

2 nd. [= 1,124 lbs.]

3 total [= 1,699 lbs.]

(3) Seals, ringed: 12 males [= 1,104 lbs.]

6 females [= 606 lbs.]

18 total [= 1,710 lbs.]

(4) Total: 3,508 lbs.

Week 203 (June 13-19, 1965)

A. Environment: Still another week of highly variable winds, although the speed picked up to the 10-15 mph range. Temperatures were in the 30's at night and the 50's during the day. The sea ice broke up quite a bit early in the week.

B. Village: Five villagers went to Kotzebue, three to seek work, two for medical reasons. Five outsiders came in, all of them to visit.

C. Subsistence: Fishing continued at a moderate rate. Ice and weather conditions were perfect for seal hunting, however, which was the activity most emphasized this week.

D. Harvest:

(1) Char: 4.75 sacks [= 594 lbs.]

1 tub [= 100 lbs.]

9 fish [= 18 lbs.]

Total [= 712 lbs.]

Week 203 - Continued

(2) Seals, bearded: 31 males [= 17,050 lbs.]

37 females [= 21,275 lbs.]

28 nd. [= 15,736 lbs.]

96 total [= 54,061 lbs.]

(3) Seals, ringed: 12 males [= 1,104 lbs.]

7 females [= 707 lbs.]

2 nd. [= 192 lbs.]

21 total [= 2,003 lbs.]

(4) Total: 56,776 lbs.

Week 204 (June 20-26, 1965)

A. Environment: This week was marked by continuous light onshore winds, which brought cloudy skies, fog and drizzle. Temperatures were in the 30's and 40's.

B. Village: One villager went to Kotzebue to visit, and one outsider came in for the same purpose. The women were extremely busy processing last week's seal harvest.

C. Subsistence: Enough seals were on hand for a while, so attention turned to fishing, mostly with hand lines and rod and reel.

D. Harvest:

(1) Char: 7 sacks [= 875 lbs.]

16 tubs [= 1,600 lbs.]

34 fish [= 68 lbs.]

Total [= 2,543 lbs.]

(2) Seals, bearded: 1 male [= 550 lbs.]

(3) Seals, ringed: 2 males [= 184 lbs.]

1 female [= 101 lbs.]

2 nd. [= 192 lbs.]

5 total [= 477 lbs.]

Week 204 - Continued

(4) Walrus: portion of washed up carcass - 250 lbs.

(5) Total: 3,820 lbs.

Week 205 (June 27 - July 3, 1965)

A. Environment: Variable onshore winds continued all week, but did not bring any rain. Temperatures rose to the 40°'s and 50°'s F.

B. Village: One family of Kivalina people that had been living in Kotzebue moved back to the village. Lots of people left, however. Seven men headed to Naknek to work in a cannery. Forty-four others went to Pt. Hope to participate in the 75th anniversary celebration of the Episcopal Church there. One other person went to Kotzebue for medical reasons. No outsiders came in.

C. Subsistence: With the sea ice nearly gone, the char run completed, and half the people away, subsistence activities came to a virtual halt this week.

D. Harvest:

(1) Seals, bearded: 1 male [= 550 lbs.]

(2) Total: 550 lbs.

Week 206 - (July 4-10, 1965)

A. Environment: Another week of light onshore winds, rain, and generally miserable weather. Temperatures were in the forties. The first caribou of the summer appeared along the coast to the northwest.

B. Village: So many people were out of town that there was no Independence Day celebration. It was probably one of the quietest weeks in the history of the village. No villagers left during the week, and no outsiders came in.

C. Subsistence: The few hunters left in town managed to locate some caribou, but, in general, there was almost no subsistence activity this week.

D. Harvest:

(1) Caribou: 2 nd. [= 450 lbs.]

(2) Seals, bearded: 1 female [= 550 lbs.]

(3) Walrus: from a washed up carcass on the beach, 400 lbs.

(4) Total: 1,400 lbs.

Week 207 (July 11-17, 1965)

A. Environment: Another week of miserable weather. Steady (10 mph) onshore winds brought clouds and fog most of the week, and rain from Wednesday on. On Saturday the wind shifted to the north and rose to 25 mph. Temperatures were in the 40°'s until Saturday, when they rose to the low 50°'s F. Some caribou were still near the coast toward the north.

B. Village: Most of the people who had gone to Pt. Hope returned on Sunday. Nine villagers promptly left for Kotzebue, four seeking work, the others for various purposes. No outsiders came in this week.

C. Subsistence: The major focus this week was on caribou. The first effort to harvest "Eskimo spinach" also occurred this week.

D. Harvest:

(1) Caribou: 16 males [= 4,560 lbs.]

1 female [= 165 lbs.]

17 total [= 4,725 lbs.]

(2) Plants: .5 sacks sourdock [= 8.5 lbs.]

(3) Walrus: 1 male [= 2,600 lbs.]

(4) Total: 7,333.5 lbs.; adjusted total: 7,325 lbs.

Week 208 (July 18-24, 1965)

A. Environment: Onshore winds, accompanied by rain and clouds dominated the first and last parts of the week, with temperatures in the 40's. A brief interlude of offshore winds Tuesday through Thursday brought some respite and temperatures in the 50°'s F. The first belukha of the season passed through.

B. Village: One family of Kivalina people moved back to the village from Kotzebue, where it had been living for a couple of years. One villager went to Kotzebue seeking work. Two outsiders came in to hunt caribou.

C. Subsistence: Quite a few people spent some time picking "Eskimo spinach". A belukha watch was maintained during the three days of offshore winds, which calmed the surf for the first time in weeks, and produced some results. Caribou hunting along the coast to the northwest continued.

Week 208 - Continued

D. Harvest:

(1) Belukha: 1 female [= 2,000 lbs.]

2 nd. [= 5,300 lbs.]

3 total [= 7,300 lbs.]

(2) Caribou: 8 males [= 2,280 lbs.]

(3) Sourdock 10 sacks [= 170 lbs.]

(4) Total: 9,750 lbs.; adjusted total: 9,580 lbs.

Week 209 (July 25-31, 1965)

A. Environment: For a change the winds blew mostly offshore this week, and temperatures managed to get up into the low 60°'s F. On Friday the wind shifted back to the west, bringing cloudy weather once again and driving temperatures down into the 40's.

B. Village: It was a quiet week in Kivalina, as fifteen villagers made trips out, mostly to Kotzebue to seek work, visit and shop. Six outsiders came in to visit.

C. Subsistence: There was little subsistence activity of any kind this week.

D. Harvest:

(1) Seals, ringed: 2 males [= 176 lbs.]

(2) Total: 176 lbs.

Week 210 (August 1-7, 1965)

A. Environment: Onshore winds, cloudy skies, and rain predominated this week. Temperatures were in the 40°'s and low 50°'s F.

B. Village: A quiet week. No villagers made trips out, and no outsiders came in.

C. Subsistence: The few hunters still in the village made a determined effort to locate caribou this week, but they did not have much luck. A few people managed to harvest some "Eskimo spinach".

Week 210 - Continued

D. Harvest:

(1) Caribou: 1 male [= 310 lbs.]

2 females [= 350 lbs.]

1 nd. [= 242 lbs.]

4 total [= 902 lbs.]

(2) Sourdock: 2 sacks [= 34 lbs.]

(3) Porcupine: 1 nd. [= 15 lbs.]

(4) Total: 951 lbs.; adjusted total: 917 lbs.

Week 211 (August 8-14, 1965)

A. Environment: The miserable weather continued again this week, with the now familiar pattern of steady (10-20 mph) onshore winds, cloudy skies, rain and temperatures in the 40's. The first salmon and char appeared in the channel.

B. Village: The cannery workers returned from Naknek this week. Two villagers made trips to Kotzebue, one to work, the other to shop. No outsiders came in.

C. Subsistence: An old lady had a gill net near the channel, and she was one of only two people to produce anything other than firewood or water this week. The other was a man who went caribou hunting, but managed to bag a moose instead.

D. Harvest:

(1) Fish:

(a) Char: 3 fish [= 6 lbs.]

(b) Salmon (unidentified): 11 fish [= 80 lbs.]

(2) Moose: 1 nd. [= 800 lbs.]

(3) total: 886 lbs.

Week 212 (August 15-21, 1965)

A. Environment: The miserable weather deteriorated this week as the onshore wind increased to 20-25 mph on Tuesday and stayed there, building a tremendous surf, and bringing cloudy skies and rain. Temperatures were in the 40°'s F all week.

Week 212 - Continued

B. Village: Two villagers went to Kotzebue to look for work. Everyone else stayed inside and tried to forget the weather. No outsiders came in.

C. Subsistence: It was too rough most of the week for boat travel in the ocean. However, one party of intrepid hunters went up the Wulik River and managed to kill a few caribou.

D. Harvest:

(1) Caribou: 3 males [= 930 lbs.]

1 nd. [= 242 lbs.]

4 total [= 1,172 lbs.]

(2) Total: 1,172 lbs.

Week 213 (August 22-28, 1965)

A. Environment: The miserable weather continued, although the wind finally moderated on Monday. It was cloudy all week, and it rained from Monday through Thursday, concluding eleven days of continuous precipitation. Temperatures were in the 30°'s and 40°'s F.

B. Village: Another family who had been living in Kotzebue for the past few years returned to Kivalina. Eighteen villagers made trips out, six to boarding school at Mt. Edgecumbe (Alaska) and Chemawa (Oregon), eight to shop in Kotzebue, and four for medical reasons. No outsiders came in.

C. Subsistence: Gill nets near the channel became more productive this week. A couple of crews made attempts at seining in the lower Wulik, although it is extremely difficult with such high water levels in the river. Finally, several of the women gave up waiting for good weather and went berry picking.

D. Harvest:

(1) Belukha: 1 nd. [= 2,650 lbs.]

(2) Char: 43 fish [= 86 lbs.]

.5 sacks [= 63 lbs.]

10.5 tubs [= 1,050 lbs.]

Total [= 1,199 lbs.]

Week 213 - Continued

(3) Moose: 2 males [= 1,800 lbs.]

1 nd. [= 800 lbs.]

3 total [= 2,600 lbs.]

(4) Plants:

Mixed berries: 11.5 buckets [= 150 lbs.]

(5) Total: 6,599 lbs.; adjusted total: 6,449 lbs.

Week 214 (August 29 - September 4, 1965)

A. Environment: The poor weather continued all week despite a wind shift from variably onshore to easterly on Thursday. Rain fell on six of the seven days. It was cloudy all week, and temperatures stayed in the 30's and 40's F.

B. Village: Four villagers went out this week, one to art school in Sante Fe, N.M., one to seek work in Kotzebue, and two to shop there. Seven outsiders came in, four to pick berries, the rest for diverse purposes.

C. Subsistence: The gill nets in the channel continued to produce char this week, but several attempts at seining were rendered relatively unproductive by the high water. A few women went berry picking, although the crop was very poor.

D. Harvest:

(1) Fish:

(a) Char: 118 fish [= 236 lbs.]

1 sack [= 125 lbs.]

6.5 tubs [= 650 lbs.]

Total [= 1,011 lbs.]

(b) Salmon (unspecified): 4 fish [= 29 lbs.]

(2) Plants:

Mixed berries: 5.5 buckets [= 72 lbs.]

(3) Total: 1,112 lbs.; adjusted total: 1,040 lbs.

Week 215 (September 5-11, 1965)

A. Environment: The winds, in the 8-15 mph range, were from the east and southeast almost all week. This did not stop the rain

Week 215 - Continued

(six out of the seven days), but it did push temperatures a bit higher - into the 50's and even low 60's (F) on Friday. The sun was visible for a few hours a day toward week's end.

B. Village: Four villagers went to Kotzebue on medical trips. Nine outsiders came in to visit, an unusually large number.

C. Subsistence: The high water made seining next to impossible, but gill nets near the channel and in the lower Wulik River managed to catch a few fish. A few intrepid individuals managed to locate some berries.

D. Harvest:

(1) Fish:

(a)	Char:	6 fish	[= 12 lbs.]
		1.5 tubs	[= 150 lbs.]
		Total	[= 162 lbs.]
(b)	Whitefish:	6 fish	[= 8 lbs.]

(2) Plants:

Mixed berries:	1 small barrel	[= 40 lbs.]
	3 buckets	[= 21 lbs.]
	Total	[= 61 lbs.]

(3) Total: 231 lbs.; adjusted total: 170 lbs.

Week 216 (September 12-18, 1965)

A. Environment: The wind blew at rather moderate (4-12 mph) velocity from all points of the compass this week. Rain fell on only three of the seven days; on three of the others, the sun actually shone. Temperatures ranged from 40° to 64° F.

B. Village: A buyer of native products spent some time in the village this week. Six villagers went to Kotzebue, three to visit, three for medical reasons. One outsider came in to visit.

C. Subsistence: When the rain stopped, the water level in the river dropped, and one crew took advantage of the situation to do some seining. Another crew went up river for fish camp on Friday. A few stubborn people managed to harvest some more berries.

Week 216 - Continued

D. Harvest:

(1) Char: 6 fish [= 12 lbs.]

35 tubs [= 3,500 lbs.]

Total [= 3,512 lbs.]

(2) Plants:

Blackberries: 1 poke [= 100 lbs.]

2 pails [= 21 lbs.]

Total [= 121 lbs.]

(3) Total: 3,633 lbs.; adjusted total: 3,512 lbs.

Week 217 (September 19-25, 1965)

A. Environment: This week saw primarily offshore winds, beginning with stiff northerly breezes in the 15-20 mph range, then shifting clockwise to southeasterly. Temperatures were in the 20's and 30's most of the week, but warmed up to the 50's (F) on Friday. Rain fell Thursday through Saturday.

B. Village: No villagers made trips out. One outsider came in to visit.

C. Subsistence: One crew returned from fish camp, and another went up the river to camp. The fishing was very poor, apparently due to high water.

D. Harvest:

(1) Caribou: 1 nd. [= 262 lbs.]

(2) Char: 90 tubs [= 9,000 lbs.]

(3) Plants:

Blackberries: 1 barrel [= 60 lbs.]

(4) Total: 9,322 lbs.; adjusted total: 9,262 lbs.

Week 218 (September 26 - October 2, 1965)

A. Environment: The winds were onshore early in the week, bringing rain and temperatures in the 30's and 40's (F). On Wednesday the wind shifted to the north, bringing clearer skies and temperatures in the 20's.

Week 218 - Continued

B. Village: There was no travel in or out of Kivalina this week.

C. Subsistence: Two crews were in fish camp this week, and others fished out of the village. The results continued to be very poor.

D. Harvest:

(1) Char: 21 sacks [= 2,625 lbs.]

58 tubs [= 5,800 lbs.]

Total [= 8,425 lbs.]

(2) Total: 8,425 lbs.

Week 219 (October 3-9, 1965)

A. Environment: Offshore winds (10-20 mph) began the week, bringing clear skies and temperatures ranging from the mid-teens to the mid-twenties. The rivers froze up over the weekend, and the lagoon ice was thick enough to cross by mid-week. On Saturday the river flooded and washed all of the ice out again. Very light snow fell on Friday and Saturday.

B. Village: One villager went to Kotzebue for a visit. Three outsiders came to Kivalina for the same purpose.

C. Subsistence: Freezeup brought a disastrous fishing season to a close. The week concluded with everyone worried about dog food for the coming year.

D. Harvest:

(1) Bear, grizzly: 1 male [= 475 lbs.]

(2) Fish:

(a) Char: 3 fish [= 6 lbs.]

(b) Grayling: 14 fish [= 18 lbs.]

(c) Burbot: 1 fish [= 1.65 lbs.]

(3) Total: 501 lbs.

Week 220 (October 10-16, 1965)

A. Environment: This week was characterized by dead calm alternating with light northeasterly winds. Temperatures were in the 20's early in the week, but dropped to zero on Friday. The river

Week 220 - Continued

and lagoon froze up again on Sunday, and the ice was thick enough for dog team travel by Tuesday. Very light snow fell on Sunday, Tuesday and Saturday. The most notable event this week was the arrival, in the hills north of the lower Kivalina River, of tens of thousands of caribou.

B. Village: One villager went to Kotzebue to visit. One outsider made a trip in for the same purpose.

C. Subsistence: The arrival of so many caribou so soon after such a bad fishing season seemed like a miracle. Two people went hooking, but every ablebodied man in the village spent at least part of the week hunting caribou.

D. Harvest:

(1) Caribou:

147 males	[= 45,570 lbs.]
174 females	[= 33,930 lbs.]
243 nd.	[= 61,236 lbs.]
564 total	[= 140,736 lbs.]

(2) Fish:

(a) Char:	6 fish	[= 12 lbs.]
(b) Grayling:	6 fish	[= 8 lbs.]
(c) Salmon:	1 fish	[= 7.25 lbs.]

(3) Total: 140,763 lbs.

Week 221 (October 17-23, 1965)

A. Environment: The week began with four days of variable winds, cloudy skies and light snow. On Thursday a gale (30-45 mph) blew up, but it moderated after only one day. Toward the end of the week skies cleared, and winds were from the southwest. Temperatures were in the high teens and 20's (F) all week. There was some overflow on the lower Wulik River.

B. Village: There was no travel into or out of Kivalina this week.

C. Subsistence: This week was primarily spent retrieving and butchering the caribou killed last week.

Week 221 - Continued

D. Harvest:

(1) Caribou: 3 males [= 930 lbs.]

3 females [= 585 lbs.]

9 nd. [= 2,268 lbs.]

15 total [= 3,783 lbs.]

(2) Total: 3,783 lbs.

Week 222 (October 24-30, 1965)

A. Environment: It was generally clear and cold this week. The ice on both rivers had become solid, and ice was beginning to build up along the shore. Winds were calm almost all week, and temperatures were in the 0-20° F range. The year's first tomcod appeared in the lagoon, and the first ringed seals appeared along the coast.

B. Village: An X-ray team arrived on Friday to examine the villagers. Four people made trips to Kotzebue, one to visit, three for medical reasons. Two outsiders came in to visit.

C. Subsistence: It was a week of unusually diverse subsistence activities. Many men continued to work on the caribou they killed during Week 220. Quite a few people went hooking, however, while others investigated conditions along the coast.

D. Harvest:

(1) Belukha: 1 nd. [= 2,650 lbs.]

(2) Caribou: 6 nd. [= 1,512 lbs.]

(3) Fish:

(a) Char: 13 fish [= 26 lbs.]

3.5 sacks [= 263 lbs.]

Total [= 289 lbs.]

(b) Grayling: 10 fish [= 13 lbs.]

(c) Tomcod: 9.25 sacks [= 925 lbs.]

(4) Seals, ringed: 2 nd. [= 210 lbs.]

(5) Seals, spotted: 1 nd. [= 165 lbs.]

Week 222 - Continued

(6) Walrus: carcass washed up on the beach [= 2,200 lbs.]

(7) Total: 7,964 lbs.

Week 223 (October 31 - November 6, 1965)

A. Environment: Last week's weather persisted through Monday. On Tuesday the wind began to shift clockwise toward the south, whence it blew for the rest of the week. On Friday, there was a regular gale, with 30-45 mph winds and blowing snow. The week began with temperatures in the 0-18° F range, but they rose into the 20's on Thursday and stayed there. There was slush ice all along the beach on Friday.

B. Village: One villager went to Kotzebue on a medical trip. Five outsiders came in to visit.

C. Subsistence: Trapping season began on Monday, and quite a few men set out traps. A few men continued to process carcasses from Week 220, although that work was pretty well in hand by this time and caribou hunting began to increase. Ice fishing in both the lagoon and the river continued to be productive.

D. Harvest:

(1) Caribou: 4 males [= 1,160 lbs.]

11 females [= 2,090 lbs.]

20 nd. [= 4,800 lbs.]

35 total [= 8,050 lbs.]

(2) Fish:

(a) Char: 30 fish [= 60 lbs.]

(b) Tomcod: 6 sacks [= 600 lbs.]

1 bucket [= 10 lbs.]

Total [= 610 lbs.]

(3) Seals, ringed: 1 nd. [= 108 lbs.]

(4) Total: 8,828 lbs.

Week 224 (November 7-13, 1965)

A. Environment: The winds this week were from the south and southeast, which brought light snow, and rain and snow mixed, and temperatures in the 20's (F). The wind was in the 25-30 mph

range on Thursday and Friday, which produced blowing snow. The thin ice which had covered the sea on Sunday was quickly blown out on Monday.

B. Village: One villager went to Kotzebue for medical purposes. One outsider visited Kivalina.

C. Subsistence: It was a busy week. Both hunting and fishing continued at an active rate. Also, several men worked at retrieving fish from their fall fish camps, and others retrieved caribou killed over the past few weeks.

D. Harvest:

(1) Caribou:

3 males	[=	870 lbs.]
4 females	[=	760 lbs.]
16 nd.	[=	3,840 lbs.]
1 fawn	[=	100 lbs.]
24 total	[=	5,570 lbs.]

(2) Fish:

(a) Char: 56 fish	[=	112 lbs.]
(b) Tomcod: 3 buckets	[=	30 lbs.]
11.5 sacks	[=	1,150 lbs.]
Total	[=	1,180 lbs.]

(3) Furs:

(a) Fox, red: 1 male	[=	12 lbs.]
(b) Wolverines: 2 males	[=	64 lbs.]
1 female	[=	22 lbs.]
3 total	[=	86 lbs.]

(4) Seals, ringed:

1 male	[=	114 lbs.]
2 nd.	[=	216 lbs.]
3 total	[=	330 lbs.]

(5) Total: 7,290 lbs.

Week 225 (November 14-20, 1965)

A. Environment: Winds were fairly stiff (10-25 mph) most of the week, and generally onshore. Temperatures were in the 20's and 30's (F). Slush ice was building up along the beach.

B. Village: One family of Kivalina people moved to Barrow this week. Two villagers made trips to Kotzebue, one to look for work, the other for medical reasons. No outsiders came in.

C. Subsistence: This was something of a consolidation week, as people continued to retrieve and process the harvest of previous weeks. Caribou continued to be unusually abundant, however, and they were still actively hunted. The tomcod fishery also continued to attract several enthusiasts on an almost daily basis.

D. Harvest:

(1) Caribou:

	3 males	[= 870 lbs.]
	14 females	[= 2,660 lbs.]
	5 nd.	[= 1,200 lbs.]
	22 total	[= 4,730 lbs.]

(2) Fish:

(a) Char: 1 fish [= 2 lbs.]

(b) Grayling: 2 fish [= 1.25 lbs.]

(c) Tomcod: 7.5 sacks [= 750 lbs.]

(3) Seals, ringed: 1 female [= 103 lbs.]

(4) Total: 5,586 lbs.

Week 226 (November 21-27, 1965)

A. Environment: The week began with no wind at all, but quickly changed to stormy weather from the east. The wind blew 15-25 mph on Monday and 35-45 mph on Tuesday, with blowing snow. It moderated to 15 mph on Wednesday, as it shifted south and then north. Temperatures were in the -8° to +12° F range except on Wednesday, when the wind was from the south. On Friday the ocean was covered with a thin layer of ice, but it blew out on Saturday.

B. Village: The Thanksgiving feast was the major event of the week. Four villagers made trips to Kotzebue for medical reasons, and one outsider came in to visit.

Week 226 - Continued

C. Subsistence: The Thanksgiving holiday and the continuing need to retrieve and process the scattered fall harvest acted to reduce (but not stop) hunting this week. The tomcod fishing in the lagoon continued to be very productive, and seal hunting along the shore ice began to improve.

D. Harvest:

(1) Caribou: 1 male [= 290 lbs.]

2 nd. [= 380 lbs.]

3 total [= 670 lbs.]

(2) Fish:

Tomcod: 2.5 buckets [= 25 lbs.]

8.5 sacks [= 850 lbs.]

Total [= 875 lbs.]

(3) Furs:

Lynx: 2 nd. [= 46 lbs.]

(4) Seals, ringed: 4 males [= 456 lbs.]

5 females [= 515 lbs.]

9 total [= 971 lbs.]

(5) Total: 2,562 lbs.

Week 227 (November 28 - December 4, 1965)

A. Environment: Variable, but generally light offshore winds this week were interrupted by two days of dead calm in mid-week. Temperatures began in the 8°-16° F. range, but dropped to -10° F. on Friday. On Saturday the sea ice was about 3-4 inches thick in a band about 400 yards wide off the beach.

B. Village: Four villagers went to Kotzebue for visits this week, while two others went to Noatak for the same purpose. No outsiders came to Kivalina.

C. Subsistence: It was a week of diverse and generally productive subsistence activities. Tomcod fishing continued to be excellent, ringed seal hunting improved with the sea ice buildup, and the traps finally produced some results. There were still plenty of caribou around, but they were no longer in much demand.

Week 227 - Continued

D. Harvest:

(1) Bear, polar: 1 seven-foot male [= 800 lbs.]

(2) Caribou: 1 male [= 280 lbs.]

1 female [= 185 lbs.]

6 nd. [= 1,392 lbs.]

8 total [= 1,857 lbs.]

(3) Fish:

Tomcod: 1.5 buckets [= 15 lbs.]

20.75 sacks [= 2,075 lbs.]

Total [= 2,090 lbs.]

(4) Furs:

(a) Fox, red: 2 males [= 24 lbs.]

1 nd. [= 10.5 lbs.]

3 total [= 34.5 lbs.]

(b) Lynx: 1 male [= 23 lbs.]

1 female [= 23 lbs.]

2 total [= 46 lbs.]

(c) Wolverine: 1 female [= 22 lbs.]

(5) Seals, ringed: 15 males [= 1,845 lbs.]

9 females [= 1,053 lbs.]

24 total [= 2,898 lbs.]

(6) Total: 7,748 lbs.

Week 228 - (December 5-11, 1965)

A. Environment: The week began with four straight days of dead calm air and temperatures ranging from around 0° F. down to the -20's (F.). Sea ice accumulated rapidly during this period. On Thursday a stiff (10-15 mph) northeasterly breeze blew up, intensifying to 30 mph by Saturday, with blowing snow. By week's end daytime temperatures had risen to the mid-teens.

Week 228 - Continued

B. Village: A quiet week. There was no travel into or out of the village.

C. Subsistence: Traps continued to produce this week, but tomcod fishing began to taper off. Ice conditions made seal hunting difficult, and caribou, while still abundant, were not on anyone's priority list.

D. Harvest:

(1) Caribou: 1 nd. [= 232 lbs.]

(2) Fish:

Tomcod:	.5 buckets	[= 5 lbs.]
	5 sacks	[= 500 lbs.]
	Total	[= 505 lbs.]

(3) Furs:

(a) Fox, red: 5 nd. [= 52.5 lbs.]

(b) Lynx: 2 males [= 46 lbs.]

(c) Mink: 1 nd. [= 4 lbs.]

(4) Seals, ringed:

	3 males	[= 369 lbs.]
	1 nd.	[= 120 lbs.]
	4 total	[= 489 lbs.]

(5) Total: 1,329 lbs.

Week 229 (December 12-18, 1965)

A. Environment: Last week's stiff northeasterly wind continued through Tuesday of this week. The wind shifted to the southeast at 25 mph on Wednesday, then died out altogether for the remainder of the week. Temperatures dropped from the +2° to +10° F range before the wind shift to the -20's and eventually the -30's with ice fog afterward. On Wednesday new ice was piling up against the older ice, which was packed along the shore. By week's end scarcely any open water could be seen.

B. Village: 1 villager went to Kotzebue for medical reasons. Four Point Hopers came to Kivalina to visit.

C. Subsistence: The excellent fall tomcod fishery concluded this week, and a few fishermen turned their attention to char.

Week 229 - Continued

Otherwise there was little subsistence activity, as everyone made preparations for the various Christmas festivities. No one bothered to hunt caribou.

D. Harvest:

(1) Caribou: 2 nd. [= 464 lbs.]

(2) Fish:

(a) Char: 25 fish [= 50 lbs.]

(b) Tomcod: 2 buckets [= 20 lbs.]

(3) Furs:

(a) Fox, red: 4 nd. [= 42 lbs.]

(b) Wolverine: 1 male [= 32 lbs.]

(4) Seal, ringed: 1 male [= 123 lbs.]

(5) Total: 731 lbs.

Week 230 (December 19-25, 1965)

A. Environment: Strong (30-45 mph) northeasterly winds and blowing snow on Sunday was followed by two days of light northwesterly breezes, then two days of dead calm, and finally, on Friday, by southwest winds that rose to 40 mph, with blowing snow on Saturday. Temperatures in the -24° to -16° F range early in the week dropped to the -30's in mid-week, then rose to the 0 to +18° F range at week's end.

B. Village: This week was devoted to Christmas preparations. No villagers left town this week, while nine outsiders -- all of them former villagers -- came in for the holidays.

C. Subsistence: Supplies were pretty good and the weather generally bad, so most hunters stayed home this week.

D. Harvest:

(1) Red fox: 1 nd. [= 10.5 lbs.]

(2) Total: 11 lbs.

Week 231 (December 26, 1965 - January 1, 1966)

A. Environment: Strong (25-45 mph) onshore winds and fog occurred every day except Thursday and Friday, when there were clear skies and no wind at all. Temperatures were up into the +20's until Thursday, when they began their fall to the -30's on Friday and

Week 231 - Continued

Saturday. On Sunday the ocean was covered with ice, which was piling up under the force of the wind. By the 31st, the ocean was completely covered with ice, which was extremely rough for about 800 yards offshore.

B. Village: The Christmas games had to be held inside this week, although the races took place on Thursday and Friday. One villager went to Kotzebue for medical reasons. No outsiders came in.

C. Subsistence: The poor weather and Christmas week festivities combined to bring hunting to a complete halt this week.

D. Harvest: None.

Week 232 (January 2-8, 1966)

A. Environment: Last Saturday's wind moderated on Sunday and Monday, then disappeared altogether for the balance of the week. Temperatures fell from the 0 to +10° F. range early in the week to the -20° to +4° F. range on Thursday, where they stayed. Skies were generally clear.

B. Village: Two villagers went to Kotzebue for medical reasons, and two outsiders came in to visit.

C. Subsistence: Hunting resumed after a two-week break. Sea ice conditions were not yet suitable for hunting, so attention returned to caribou. Fudge factor=1.5.

D. Harvest:

(1) Caribou:	14 males	[x 1.5]=	21 males	[= 5,670 lbs.]
	6 females	[x 1.5]=	9 females	[= 1,620 lbs.]
	5 nd.	[x 1.5]=	8 nd.	[= 1,800 lbs.]
	25 total		38 total	[= 9,090 lbs.]

(2) Wolverines: 1 female [x 1.5]=2 females [= 44 lbs.]

(3) Total: 9,134 lbs.

Week 233 (January 9-15, 1966)

A. Environment: Except for a slight southeasterly breeze on Friday, there was no measurable wind all week. Skies were generally clear. In view of those facts, temperatures were surprisingly warm -- in the -24° to -6° F range.

Week 233 - Continued

B. Village: The week was uneventful. Two villagers went to Anchorage for medical reasons. No outsiders came in.

C. Subsistence: There was no open water this week, hence no seal hunting. For a change, there also weren't very many caribou around. Several people went ice fishing, however, which proved to be fairly productive. Fudge factor=1.5.

D. Harvest:

(1) Caribou:

2 males	[x 1.5]=	3 males	[= 810 lbs.]
4 females	[x 1.5]=	6 females	[= 1,080 lbs.]
1 nd.	[x1.5]=	2 nd.	[= 450 lbs.]
7 total		11 total	[= 2,340 lbs.]

(2) Char:

66 fish	[= 132 lbs.]
.5 sacks	[= 38 lbs.]
Total	[= 170 lbs. x 1.5 = 255 lbs.]

(3) Furs:

(a) Fox, red: 1 nd. [x 1.5]=2 nd. [= 21 lbs.]

(b) Wolverines:

1 male	[x 1.5]=	2 males	[= 64 lbs.]
1 nd.	[x 1.5]=	2 nd.	[= 54 lbs.]
2 total		4 total	[= 118 lbs.]

(4) Total: 2,734 lbs.

Week 234 (January 16-22, 1966)

A. Environment: Calm air and clear skies continued until Thursday, when an easterly wind began to rise, reaching the 15-20 mph range on Saturday. Temperatures were in the -28° to -18° F. range early in the week, but rose to the +8° to +18° F. range by Saturday. The easterly wind opened a crack in the ice about four miles out from the village; to the northwest it was about two to three miles out. However, the ice between the shore and the water was extremely rough, making it difficult to reach by dog team.

B. Village: Two villagers went to Kotzebue on church business. One outsider came in to visit.

Week 234 - Continued

C. Subsistence: Seal hunting was all but impossible early in the week because of the lack of water. The easterly wind that opened a crack was also too dangerous for sea-ice hunting. For these reasons, most subsistence activity was inland. Fudge factor=1.5.

D. Harvest:

(1) Caribou: 1 male [x 1.5]= 2 males [= 540 lbs.]

5 females [x 1.5]= 8 females [= 1,440 lbs.]

6 total 10 total [= 1,980 lbs.]

(2) Char: 20 fish [= 40 lbs. x 1.5 = 60 lbs.]

(3) Furs:

(a) Fox, red: 1 nd. [x 1.5]=2 nd. [= 21 lbs.]

(b) Wolverines: 1 female [x 1.5]=2 females [= 44 lbs.]

(4) Seals, ringed: 3 nd. [x 1.5]=5 nd. [= 700 lbs.]

(5) Total: 2,805 lbs.

Week 235 - (January 23-29, 1966)

A. Environment: The week began with strong (20-40 mph) easterly winds and temperatures in the +20's F. The winds then declined to almost nothing on Thursday and Friday, and temperatures dropped about ten degrees. The strong east wind opened a number of new cracks in the otherwise solid sea ice.

B. Village: One villager went to Kotzebue for medical purposes. No outsiders came in.

C. Subsistence: The sea ice for about 1,000 yards offshore was so rough that seal hunters had a difficult time finding their way across it. Beyond the rough ice, however, were numerous cracks and lots of seals. Nevertheless, most of the effort was still concentrated inland. Fudge factor=1.5.

D. Harvest:

(1) Caribou: 2 males [x 1.5]= 3 males [= 810 lbs.]

6 females [x 1.5]= 9 females [= 1,620 lbs.]

42 nd. [x 1.5]=63 nd. [= 14,175 lbs.]

50 total 75 total [= 16,605 lbs.]

Week 235 - Continued

(2) Char: 13 fish [= 2.6 lbs. x 1.5 = 39 lbs.]

(3) Seals, ringed:

5 males	[x 1.5]=	8 males	[= 1,224 lbs.]
2 females	[x 1.5]=	3 females	[= 381 lbs.]
7 total		11 total	[= 1,605 lbs.]

(4) Total: 18,249 lbs.

Week 236 - (January 30 - February 5, 1966)

A. Environment: A strong (30 mph) north wind on Sunday was followed by six days of variable, generally light breezes and partly cloudy to cloudy skies. Temperatures ranged from 0° F down to -28° F early in the week, but rose into the +20's on Wednesday. There was open water about three to four miles out all along the coast. The main pack ice was about four feet thick, but some of the ice piles between the shore and the water were as much as seventy feet high. The water was full of seals.

B. Village: One villager went to Point Hope on church business. No outsiders came in.

C. Subsistence: A couple of stubborn hunters managed to develop a path through the rough ice to the level ice and open leads beyond. Many followed. The major effort this week, therefore, shifted to seal hunting. Fudge factor=1.5.

D. Harvest:

(1) Caribou:

2 males	[x 1.5]=	3 males	[= 780 lbs.]
2 females	[x 1.5]=	3 females	[= 525 lbs.]
4 total		6 total	[= 1,305 lbs.]

(2) Char: 12 fish [= 24 lbs. x 1.5 = 36 lbs.]

(3) Seals, ringed:

33 males	[x 1.5]=	50 males	[= 7,150 lbs.]
48 females	[x 1.5]=	72 females	[= 9,720 lbs.]
81 total		122 total	[= 16,870 lbs.]

(4) Wolverines: 1 male [x 1.5]=2 males [= 32 lbs.]

(5) Total: 18,243 lbs.

Week 237 - (February 6-12, 1966)

A. Environment: The wind was very light or nonexistent every day this week except Tuesday and Friday, when stiff (25-35 mph) winds blew out of the north. Temperatures dropped from the -18° to +4° F range on Sunday to the -30° to -20° F range on Thursday. Skies were generally clear.

B. Village: On Wednesday fourteen men from the Kivalina National Guard detachment left for Anchorage for training maneuvers. One other villager went to Kotzebue for medical reasons. No outsiders came in.

C. Subsistence: Seal hunting conditions were pretty good for most of the week. The National Guard encampment removed many of the hunters from the action, however, so the harvest was much less than it might have been. Fudge factor=1.5.

D. Harvest:

(1) Seals, ringed:

16 males	[x 1.5]=	24 males	[= 3,432 lbs.]
17 females	[x 1.5]=	26 females	[= 3,510 lbs.]
6 nd.	[x 1.5]=	9 nd.	[= 1,251 lbs.]
39 total		59 total	[= 8,193 lbs.]

(2) Total: 8,193 lbs.

Week 238 - (February 13-19, 1966)

A. Environment: Light offshore breezes alternated with periods of dead calm all week, the latter condition prevailing on four of the seven days. Sunday's cold (-34° F) temperature was followed by several days in the +20's, finally sinking back to -24° F on Saturday. A small amount of snow fell on Sunday.

B. Village: The men remained away at the National Guard encampment this week. Three other villagers went to Kotzebue for medical reasons, while one outsider came in to visit. On Friday, sealskin buyers from Anchorage and Nome were in town.

C. Subsistence: There was almost no hunting this week despite the fact that several expert seal hunters remained in the village. Evidently everyone had enough supplies on hand for awhile. Fudge factor=1.5.

D. Harvest:

(1) Seals, ringed: 1 male [x 1.5]=2 males [= 286 lbs.]

(2) Total: 286 lbs.

Week 239 - (February 20-26, 1966)

A. Environment: The week began with several days of generally light offshore breezes punctuated by periods of calm. On Wednesday, the pattern was broken by a stiff (15-20 mph) wind out of the northeast, which brought the temperature up into the -12° F to +18° F range from its previous levels in the -30's. On Friday, the wind shifted to the northwest, and temperatures dropped back into the -20's again.

B. Village: The National Guard men remained away all week. Two other villagers made trips to Kotzebue for medical reasons. No outsiders came in.

C. Subsistence: Seal hunting picked up a bit this week, but most of the cracks had closed up, greatly reducing the harvest. Fudge factor=1.5.

D. Harvest:

(1) Seals, ringed:

14 males	[x 1.5]=21 males	[= 3,003 lbs.]
13 females	[x 1.5]=20 females	[= 2,700 lbs.]
2 nd.	[x 1.5]= 3 nd.	[= 417 lbs.]
29 total	44 total	[= 6,120 lbs.]

(2) Total: 6,120 lbs.

Week 240 - (February 27 - March 5, 1966)

A. Environment: The northwesterly wind blew itself out with a 15-20 mph blast on Sunday. Four days of calm air and temperatures in the -20°'s F followed. On Friday a light onshore wind developed, and temperatures rose to the -8° to +18° F range. There were hardly any cracks in the sea ice all week.

B. Village: The men returned from National Guard encampment on Monday. No one else entered or left the village during the week.

C. Subsistence: The lack of open water seriously hampered seal hunting, and few caribou remained around to hunt.

D. Harvest:

(1) Caribou:

3 males	[= 750 lbs.]
4 females	[= 680 lbs.]
7 total	[= 1,430 lbs.]

(2) Char: 34 fish [= 68 lbs.]

Week 240 - Continued

(3) Seals, ringed: 3 males [= 369 lbs.]

(4) Wolverines: 4 males [= 128 lbs.]

(5) Total: 1,995 lbs.

Week 241 - (March 6-12, 1966)

A. Environment: A stiff (15-20 mph) breeze blew from the northwest on Sunday, but shifted to the north and picked up speed on Monday and Tuesday. It dropped on Wednesday, disappeared on Thursday, and resumed on Friday. On Saturday the wind shifted to the northwest and rose to 20 mph. Temperatures fluctuated in a narrow range between -4° and +6° F. on Sunday and Monday, but dropped into the -20's for the rest of the week.

B. Village: Seventeen villagers went to Noatak this week for the Quarterly Meeting of the Friends' Church. Two others went to Kotzebue for medical reasons, and three outsiders came in for visits.

C. Subsistence: The lack of cracks in the ice continued to restrict seal hunting this week. The departure of many hunters for Noatak in mid-week reduced the harvest still further.

D. Harvest:

(1) Caribou:

2 males	[=	340 lbs.]
4 females	[=	680 lbs.]
4 nd.	[=	840 lbs.]
1 yearling	[=	130 lbs.]
11 total	[=	1,990 lbs.]

(2) Char: 51 fish [= 102 lbs.]

(3) Ptarmigan: 16 birds [= 18 lbs.]

(4) Seals, ringed:

1 male	[=	123 lbs.]
7 females	[=	896 lbs.]
8 total	[=	1,109 lbs.]

(5) Wolverines: 1 nd. [= 27 lbs.]

(6) Total: 3,246 lbs.; adjusted total: 3,228 lbs.

Week 242 - (March 13-19, 1966)

A. Environment: The stiff northwest wind continued through Sunday, then dropped to dead calm Monday through Thursday. The temperature followed, dropping into the -30°'s and -40°'s F. for most of the rest of the week. A light northwest wind on Friday stiffened to 30 mph on Saturday, creating blowing snow conditions. There were hardly any cracks in the sea ice.

B. Village: There were lots of comings and goings this week. People returned from Quarterly meeting in mid-week. Ten other villagers made trips out, most of them to Kotzebue for various purposes. Five outsiders came in for visits.

C. Subsistence: The travel, cold temperatures and lack of open water reduced hunting and fishing to a minimum.

D. Harvest:

(1)	Caribou:	7 males	[= 1,750 lbs.]
		4 females	[= 680 lbs.]
		11 total	[= 2,430 lbs.]

(2) Total: 2,430 lbs.

Week 243 (March 20-26, 1966)

A. Environment: Saturday's stormy weather continued through Wednesday, with the exception that the wind shifted to the north from the northwest. The wind gusted to 40 mph on Sunday and Monday, hit 50 on Tuesday and dropped back to 40 on Wednesday before moderating to a modest but still northerly breeze for the rest of the week. Temperatures gradually rose from -24° F on Sunday to the +2 to +8° F. range on Saturday. Skies were clear all week, but vision was obscured by blowing snow until the wind finally let up. When it did, there were no cracks in the sea ice at all directly in front of the village, although there were a few about 10-15 miles toward the northwest. Lots of caribou appeared in the Mulgrave hills after the storm let up.

B. Village: Three villagers went out to Kotzebue this week, all for medical reasons. No outsiders came in. A seal-skin buyer visited the village on Monday.

C. Subsistence: Weather conditions were not conducive to any kind of hunting early in the week. Later on things improved, but the lack of open water made seal hunting virtually impossible. The caribou in the Mulgrave Hills offered an alternative, however, so that is where the action was.

Week 243 - Continued

D. Harvest:

(1) Caribou: 11 males [= 2,750 lbs.]

36 females [= 6,120 lbs.]

47 total [= 8,870 lbs.]

(2) Char: 6 fish [= 12 lbs.]

(3) Seals, bearded: 1 nd. [= 712 lbs.]

(4) Seals, ringed: 1 male [= 123 lbs.]

(5) Wolverine: 1 nd. [= 27 lbs.]

(6) Total: 9,744 lbs.

Week 244 (March 27 - April 2, 1966)

A. Environment: The weather this week was extraordinary in the fact that the wind did not blow at all for six days straight, Monday through Saturday. Besides that, the air was warm -- temperatures were in the 0 to +15° F range almost all week. Small amounts of snow fell on Wednesday, Thursday and Saturday. The sea ice remained closed; caribou remained in the Mulgrave Hills.

B. Village: Three villagers made trips to Kotzebue, all of them for medical reasons. One outsider came in to visit.

C. Subsistence: Several men went camping in the Mulgrave Hills for four nights this week so as to be nearer to the caribou. The sea ice was entirely closed up, which prevented seal hunting, and the men wanted to get some caribou before they made their spring move to the north.

D. Harvest:

(1) Caribou: 8 males [= 2,000 lbs.]

5 females [= 850 lbs.]

22 nd. [= 4,620 lbs.]

35 total [= 7,470 lbs.]

(2) Char: 6 fish [= 12 lbs.]

(3) Wolf: 1 nd. [= 96 lbs.]

(4) Total: 7,578 lbs.

Week 245 (April 3-9, 1966)

A. Environment: The wind was variously blowing moderately (6-12 mph) from the south, strongly (15-25 mph) from the east, or not at all this week. Temperatures warmed up considerably, reaching the high 20's or low 30's F. almost every day. At midweek a narrow lead opened about six miles offshore, extending from about twelve miles northwest of the village toward Cape Thompson. Bearded seals began to appear in significant numbers.

B. Village: Fifteen Noatakers came to Kivalina toward the end of the week to participate in the village's Easter celebrations. Two villagers made trips out, both to Kotzebue for medical reasons.

C. Subsistence: With the formation of the lead, seal hunting resumed after a hiatus of several weeks. When the visitors from Noatak arrived, however, hunting pretty well came to a halt.

D. Harvest:

(1) Char: 8 fish [= 16 lbs.]

(2) Seals, bearded:	1 male	[= 650 lbs.]
	2 females	[= 1,350 lbs.]
	2 nd.	[= 1,324 lbs.]
	5 total	[= 3,324 lbs.]
(3) Seals, ringed:	8 males	[= 928 lbs.]
	13 females	[= 1,664 lbs.]
	2 nd.	[= 244 lbs.]
	23 total	[= 2,836 lbs.]

(4) Total: 6,176 lbs.

Week 246 (April 10-16, 1966)

A. Environment: A stiff northeasterly wind on Sunday shifted to the north on Monday, and blew a gale (35-40 mph), with blowing snow, on Tuesday and Wednesday. It dropped to a gentle breeze on Thursday, and ceased altogether on Friday and Saturday. There was a lead in the sea ice about four miles offshore, beginning in front of the village and extending toward the northwest.

B. Village: Sunday was Easter, which was celebrated with church services and a feast. The visitors from Noatak left gradually over the course of the week, although a few were still in town at week's end. Three villagers made trips out: one went to Juneau

Week 246 - Continued

on church business, while two went to Kotzebue to look for work. One outsider came in to visit.

C. Subsistence: This week was devoted more to socializing than to hunting. However, a few men managed to get out toward week's end, after most of the Noatakers left.

D. Harvest:

(1) Caribou: 1 nd. [= 202 lbs.]

(2) Char: 2 fish [= 4 lbs.]

(3) Seal, bearded: 1 female [= 675 lbs.]

(4) Seal, ringed:	8 males	[= 928 lbs.]
	8 females	[= 1,024 lbs.]
	16 total	[= 1,952 lbs.]

(5) Total: 2,833 lbs.

Week 247 (April 17-23, 1966)

A. Environment: This week was characterized by light (7-12 mph) winds that blew from the northwest from Monday through Thursday, but otherwise were variable in direction. Temperatures dropped back down to the -10° to -20° F. range at night, but managed to reach 6° to 8° above zero during the day. Skies were clear almost all week.

B. Village: Two villagers made trips out for various reasons. Five outsiders came in to visit.

C. Subsistence: This was a week of diverse subsistence activities -- a little of everything, but no intensive effort in any particular area.

D. Harvest:

(1) Bear, grizzly: 1 nd. [= 255 lbs.]

(2) Caribou:	2 males	[= 480 lbs.]
	2 females	[= 330 lbs.]
	1 nd.	[= 202 lbs.]
	5 total	[= 1,012 lbs.]

Week 247 - Continued

(3) Char: 7 fish [= 14 lbs.]

1 big fish [= 10 lbs.]

Total [= 24 lbs.]

(4) Fox, red: 1 nd. [= 10.5 lbs.]

(5) Seal, bearded: 2 males [= 1,300 lbs.]

(6) Seal, ringed: 2 males [= 232 lbs.]

4 females [= 512 lbs.]

5 n.d. [= 610 lbs.]

11 total [= 1,354 lbs.]

(7) Total: 3,956 lbs.

Week 248 (April 24-30, 1966)

A. Environment: Moderate (10 mph) easterly winds, alternating with periods of dead calm, pushed temperatures from well below zero at the first of the week to the middle and upper +30's at week's end. There were no leads in the sea ice, but there were some cracks a few miles straight out from the village.

B. Village: Seven villagers made trips to Kotzebue this week, five for medical purposes, the others to shop. One outsider came in.

C. Subsistence: This was a busy week. On Monday several men left on a four-day caribou hunting expedition to the Cape Thompson area. Those left behind focused their attention on seals; many men were getting into the spring pattern of hunting at night, sleeping by day. On Wednesday the first whaling crew went out on the ice. They saw lots of bowheads, but never had a chance to throw the harpoon.

D. Harvest:

(1) Caribou: 31 males [= 7,440 lbs.]

1 female [= 165 lbs.]

32 total [= 7,605 lbs.]

(2) Seals, bearded: 2 nd. [= 1,324 lbs.]

Week 248 - Continued

(3) Seals, ringed:

15 males	[= 1,740 lbs.]
5 females	[= 640 lbs.]
1 nd.	[= 122 lbs.]
21 total	[= 2,502 lbs.]

(4) Total: 11,431 lbs.

Week 249 (May 1-7, 1966)

A. Environment: There was very little wind from any direction this week, and on five of the seven days there was none at all. Temperatures were in the 20's at night, and the 30's during the day. Skies were clear almost the entire week.

B. Village: Two villagers went to Noatak to visit this week. Five outsiders came to Kivalina, all of them to hunt seals, and possibly to participate in the whaling.

C. Subsistence: Two whaling crews were out this week. Neither got any bowheads, but they did manage to take several belukha. Individual crew members also got some seals.

D. Harvest:

(1) Belukha: 6 nd. [= 15,900 lbs.]

(2) Seals, bearded: 1 female [= 625 lbs.]

(3) Seals, ringed:

7 males	[= 805 lbs.]
3 females	[= 324 lbs.]
10 nd.	[= 1,110 lbs.]
20 total	[= 2,239 lbs.]

(4) Total: 18,764 lbs.

Week 250 (May 8-14, 1966)

A. Environment: Temperatures were mostly in the teens and 20°'s F. this week as the wind blew from various sectors of the compass, but mostly offshore. Friday saw 30-45 mph winds and blowing snow; by Saturday the wind shifted to the northwest and dropped to the 15-25 mph range.

B. Village: Five villagers went to Pt. Hope this week to acquire some bowhead muktuk. Four outsiders came to Kivalina to visit.

Week 250 - Continued

C. Subsistence: There was not much activity in the subsistence sector this week. The whaling crews abandoned their effort.

D. Harvest:

(1) Belukha: 1 nd. [= 2,650 lbs.]

(2) Char: 41 fish [= 82 lbs.]

(3) Seals, bearded: 1 male [= 600 lbs.]

(4) Seals, ringed: 4 males [= 460 lbs.]

1 female [= 108 lbs.]

5 total [= 568 lbs.]

(5) Total: 3,900 lbs.

Week 251 - (May 15-21, 1966)

A. Environment: Moderate to northwest winds predominated this week, although the winds were calm on Monday and Tuesday. On Saturday, a 15-27 mph wind blew up from the north. Skies were clear all week, as temperatures rose from the 4°-26° F. range on Sunday to the 30's Wednesday through Saturday.

B. Village: Two villagers went to Kotzebue for medical purposes this week, and one outsider came in for a visit. The youngsters returned home from Wrangel Institute on Saturday.

C. Subsistence: There was very little activity again this week, as hunting slipped into the "pre-breakup interlude."

D. Harvest:

(1) Caribou: 5 nd. [= 1,000 lbs.]

(2) Murres: 10 birds [= 22 lbs.]

(3) Seals, bearded: 1 nd. [= 612 lbs.]

(4) Seals, ringed: 7 males [= 805 lbs.]

1 female [= 108 lbs.]

2 nd. [= 222 lbs.]

10 total [= 1,135 lbs.]

(5) Total: 2,769 lbs.; adjusted total: 2,747 lbs.

Week 252 - (May 22-28, 1966)

A. Environment: Variable, but mostly light northerly winds this week brought temperatures in the 20's and 30's and mostly clear skies. As of Saturday, the river still had not started to run [it began on June 2], so the breakup process was not yet underway.

B. Village: Ten villagers made trips to Point Hope to get bowhead muktuk. Two others went to Kotzebue for medical reasons. Seven outsiders came in to visit.

C. Subsistence: The char started moving under the rapidly melting river ice, and a few people took advantage of that fact. Otherwise, there was relatively little activity in the subsistence sector this week.

D. Harvest:

(1) Char: 18 fish [= 36 lbs.]

.5 sacks [= 62.5 lbs.]

Total [= 98.5 lbs.]

(2) Seals, bearded: 1 male [= 600 lbs.]

2 nd. [= 1,224 lbs.]

3 total [= 1,824 lbs.]

(3) Seals, ringed: 6 males [= 690 lbs.]

4 females [= 432 lbs.]

10 total [= 1,122 lbs.]

(4) Total: 3,045 lbs.

1965-66 Harvest Summary

A. Birds:

(1) Cranes: data not collected

(2) Ducks: data not collected

(3) Geese: data not collected

(4) Gull eggs: none reported

(5) Murres:

(a) Eggs: none reported

(b) Birds: 10 = 22 lbs.

(6) Ptarmigan: 16 birds = 18 lbs.

(7) Snowy owls: data not collected

(8) Swans: data not collected

B. Fish:

(1) Burbot: 2.0 lbs.

(2) Char: 28,140 lbs.

(3) Cod, arctic: none reported

(4) Cod, saffron: 6,955 lbs.

(5) Grayling: 40 lbs.

(6) Salmon, species not identified: 116 lbs.

(7) Whitefish, species not identified: 13 lbs.

TOTAL FISH: 35,266 lbs.

C. Land mammals:

(1) Bear, grizzly: 1 male = 475 lbs.
1 nd. = 255 lbs.
2 total = 730 lbs.

(2) Bear, polar: 1 male = 800 lbs.

(3) Caribou: 286 males = 82,170 lbs.
301 females = 56,515 lbs.
423 nd. = 102,039 lbs.
1,010 total = 240,724 lbs.

(4) Fox, colored: 3 males = 36 lbs.
0 females = 0 lbs.
16 nd. = 168 lbs.
19 total = 204 lbs.

(5) Fox, white: none reported

(6) Hare, arctic: none reported

(7) Lynx: 3 males = 69 lbs.

1 female = 23 lbs.

2 nd. = 46 lbs.

6 total = 138 lbs.

(8) Mink: 1 nd. = 4 lbs.

(9) Moose: 2 males = 1,800 lbs.

2 nd. = 1,600 lbs.

4 total = 3,400 lbs.

(10) Otter: none reported

(11) Porcupine: 1 nd. = 15 lbs.

(12) Sheep: none reported

(13) Squirrels: none reported

(14) Wolf: 1 nd. = 96 lbs.

(15) Wolverines: 11 males = 320 lbs.

6 females = 132 lbs.

4 nd. = 108 lbs.

21 total = 560 lbs.

TOTAL LAND MAMMALS: 246,671 lbs.

D. Plant products:

(1) Blackberries: 181 lbs.

(2) Mixed berries: 283 lbs.

(3) Sourdock: 213 lbs.

TOTAL PLANT PRODUCTS: 677 lbs.

E. Sea mammals:

(1) Belukha: 0 males = 0 lbs.

1 female = 2,000 lbs.

11 nd. = 29,150 lbs.

12 total = 31,150 lbs.

(2) Seal, bearded: 38 males = 21,300 lbs.

43 females = 25,050 lbs.

38 nd. = 25,056 lbs.

119 total = 68,406 lbs.

(3) Seal, ribbon: none reported

(4) Seal, ringed: 221 males = 27,957 lbs.

199 females = 25,407 lbs.

47 nd. = 5,714 lbs.

467 total = 59,078 lbs.

(5) Seal, spotted: 1 nd. = 165 lbs.

(6) Walrus: 1 male = 2,600 lbs.

2 washed up carcasses = 2,850 lbs.

3 total = 5,450 lbs.

(7) Whale, bowhead: none taken

(8) Whale, gray: none taken

TOTAL MARINE MAMMALS: 164,249 lbs.

F. Total:

(1) Recorded total: 446,903 lbs.

(2) Adjusted total: 446,186 lbs.

APPENDIX F

THE SUBSISTENCE YEAR 1982-83

Week 301 (May 30 - June 5, 1982)

A. Environment: Mixed rain and snow for most of the week, mostly under the influence of southerly winds. Temperatures hovering around the freezing mark. Fog. Hardly any ice left in the rivers by beginning of the week. Sea ice rotten, too much so for snowmobile travel. Channel open; open water for about 400 yards beyond. Lots of ice still in the lagoon. First char in channel on June 4th. Brant and Canada geese heading north. Seagull eggs already laid.

B. Village: Monday was Memorial Day. Nineteen trips out, mostly to Kotzebue, for various purposes. Six trips in, mostly for visits.

C. Subsistence: Weather and ice conditions made hunting nearly impossible this week.

D. Harvest:

(1) Birds:

(a) Brant: 5 nd. [= 15 lbs.]

(b) Cranes: 2 nd. [= 19 lbs.]

(c) Ducks: species not identified: 11 nd. [= 35 lbs.]

(d) Eiders: species not identified: 3 [= 12 lbs.]

(e) Geese: species not identified: 8 nd. [= 38 lbs.]

(f) Gull eggs: 8 [= 1.25 lbs.]

(g) Mallards:

2 male	[= 5.5 lbs.]
6 nd.	[= 15.6 lbs.]
8 total	[= 21.1 lbs.]

(2) Fish:

Char: 7 medium-sized fish [= 35 lbs.]

(3) Total: 176 lbs.; adjusted total = 35 lbs.

Week 302 (June 6-12, 1982)

A. Environment: Fairly stiff offshore winds much of the week. Temperatures hovering around freezing. Sea ice started to move out on Thursday, and was 5 to 7 miles out on Saturday. Ducks and geese flying; bearded seals plentiful. Char run out to sea growing stronger every day.

B. Village: Twenty four people flew to Point Hope on Sunday and Monday for the Whaling Feast, most returning the following weekend. Two men left to work at Red Dog camp. There were 9 trips in, mostly visitors.

C. Subsistence: A good week for hunting and fishing. One extended family moved to a sealing camp located about 13 miles southeast along the coast.

D. Harvest:

(1) Birds:

(a) Brant: 5 [= 15 lbs.]

(b) Ducks: unidentified: 9 [= 28 lbs.]

(c) Eiders: unidentified: 5 nd. [= 21 lbs.]

(d) Geese: unidentified: 2 nd. [= 9 lbs.]

(e) Pintails: 1 male [= 2.26 lbs.]

(2) Fish:

Char:

3 medium-sized fish	[= 15 lbs.]
11 tubs	[= 1,100 lbs.]
Total	[= 1,115 lbs.]

(3) Seals, bearded:

16 males	[= 8,800 lbs.]
17 females	[= 9,775 lbs.]
13 nd.	[= 7,306 lbs.]
46 total	[= 25,881 lbs.]

Week 302 - Continued

(4) Seals, ringed:

1 female	[= 101 lbs.]
7 nd.	[= 672 lbs.]
8 total	[= 773 lbs.]

(5) Total: 27,844 lbs.; adjusted total: 27,769 lbs.

Week 303 (June 13-19, 1982)

A. Environment: Onshore winds all week; temperatures in the 30's (F.). Lots of fog. Sea ice almost 15 miles out Thursday through Saturday. Fish, ducks and walrus running.

B. Village: Uneventful week. There were 22 trips out, mostly to Noatak and Kotzebue. Only one visitor came in.

C. Subsistence: This week was a major sea mammal hunting and char fishing period. A second extended family went camping, about 2 miles southeast of the village.

D. Harvest:

(1) Birds:

(a) Brant:

2 male	[= 6 lbs.]
83 nd.	[= 251 lbs.]
85 total	[= 257 lbs.]

(b) Canada geese: 2 nd. [= 11 lbs.]

(c) Ducks, unidentified: 4 nd. [= 13 lbs.]

(d) Geese, unidentified: 4 nd. [= 19 lbs.]

(2) Fish:

Char:	29 tubs	[= 2,900 lbs.]
	2.5 sacks	[= 150 lbs.]
	99 medium-sized fish	[= 495 lbs.]
	1 big fish	[= 10 lbs.]
	Total	[= 3,555 lbs.]

Week 303 - Continued

(3) Seals, bearded:

8 males	[= 4,400 lbs.]
6 females	[= 3,450 lbs.]
33 nd.	[= 18,546 lbs.]
47 total	[= 26,396 lbs.]

(4) Seals, ringed:

3 males	[= 276 lbs.]
12 nd.	[= 1,152 lbs.]
15 total	[= 1,428 lbs.]

(5) Walrus:

7 males	[= 18,200 lbs.]
5 females	[= 9,000 lbs.]
2 nd.	[= 4,400 lbs.]
14 total	[= 31,600 lbs.]

(6) Total: 63,279 lbs.; adjusted total 62,979 lbs.

Week 304 (June 20-26, 1982)

A. Environment: Warm weather; winds variable in both direction and speed. Sea ice too far out for convenient hunting at the beginning of the week, but the winds calmed and the current brought it to within about 5 miles by mid-week. Char run almost over; lots of walrus; first summer belukha.

B. Village: Twelve villagers made trips out, mostly shopping and visiting in Kotzebue. First people departed for commercial salmon fishery in Kotzebue. Eight trips in, all visitors.

C. Subsistence: Fishing tapering off, but good conditions to hunt walrus and bearded seals. Hunters boating up and down the coast.

D. Harvest:

(1) Belukha: 1 twelve-foot female [= 2,000 lbs.]

Week 304 - Continued

(2) Fish:

Char:

5 tubs	[= 500 lbs.]
103 medium-sized fish	[= 515 lbs.]
Total	[= 1,015 lbs.]

(3) Mountain sheep:

1 male	[= 275 lbs.]
1 female	[= 150 lbs.]
2 total	[= 425 lbs.]

(4) Seals, bearded:

6 males	[= 3,300 lbs.]
10 females	[= 5,750 lbs.]
16 nd.	[= 8,992 lbs.]
32 total	[= 18,042 lbs.]

(5) Seal, ribbon: 1 female [= 154 lbs.]

(6) Seal, ringed:

1 male	[= 92 lbs.]
1 female	[= 101 lbs.]
3 nd.	[= 288 lbs.]
5 total	[= 481 lbs.]

(7) Walrus:

4 males	[= 10,400 lbs.]
7 females	[= 12,600 lbs.]
26 nd.	[= 57,200 lbs.]
37 total	[= 80,200 lbs.]

(8) Total: 102,317 lbs.; adjusted total: 102,317 lbs.

Week 305 (June 27 - July 3)

A. Environment: Predominantly offshore winds produced warm weather with partly cloudy skies; a bit of rain late in the week. The sea ice left the coast, and some chop developed in the water just off the beach. Murre eggs already laid at Cape Thompson. First caribou of the summer appeared along the coast northwest of the village.

B. Village: Twenty-five trips out of town, 7 for work, the rest for July 4th celebrations in Kotzebue. Five outsiders in town to visit.

C. Subsistence: Sealing camps closed for summer. Several expeditions to Cape Thompson for eggs. First berries of the season. First caribou of the season.

D. Harvest:

(1) Birds

Murre eggs:

4 buckets	[= 30 lbs.]
5 dozen	[= 18.5 lbs.]
9 total	[= 48.5 lbs.]

(2) Caribou: 1 nd. [= 225 lbs.]

(3) Plants:

Salmon berries: 3 buckets [= 42 lbs.]

(4) Total: 316 lbs.; adjusted total 225 lbs.

Week 306 (July 4-11, 1982)

A. Environment: Onshore winds all week, but warm weather and clear skies nevertheless. First salmon appear in channel.

B. Village: Games all day on Sunday, Independence Day; many villagers in Kotzebue for the occasion. Fifty-seven trips out, all to Kotzebue, about half for commercial fishery, the rest for the Trade Fair. Nine outsiders arrive during the week to visit.

C. Subsistence: Some berry picking. First salmon caught. The aggregate harvest was small because so many people were out of town.

Week 306 - Continued

D. Harvest:

(1) Belukha:

2 males, both about 14 feet long	[= 6,800 lbs.]
1 female	[= 2,000 lbs.]
3 total	[= 8,800 lbs.]

(2) Birds:

Murre eggs:

3 buckets	[= 44 lbs.]
30 eggs	[= 7 lbs.]
Total	[= 51 lbs.]

(3) Fish:

Coho salmon: 3 fish [= 30 lbs.]

(4) Plants:

Salmon berries: 12 buckets [= 168 lbs.]

(5) Total: 9,049 lbs.; adjusted total: 8,830 lbs.

Week 307 (July 11-17, 1982)

A. Environment: Warm (50°-75° F.), clear weather despite prevailing onshore winds. Salmon run picking up steam; a few caribou around.

B. Village: Very quiet. Thirty-one trips to Kotzebue for visiting, shopping and commercial fishing. Village half empty. Four outsiders came in during the week for a visit.

C. Subsistence: Very little activity because so few people were in the village.

D. Harvest:

(1) Caribou: 2 nd. [= 450 lbs.]

(2) Fish: coho salmon: 19 fish [= 190 lbs.]

(3) Total: 640 lbs.; adjusted total: 640 lbs.

Week 308 (July 18-24, 1982)

A. Environment: Continuing onshore winds produced considerable fog, a trace of precipitation and noticeably cooler temperatures. First pink salmon in the river.

B. Village: Another quiet week. People still heading to Kotzebue for visits, shopping and commercial fishing. Some returned, but not as many as left. Thirty-six trips out; zero trips in.

C. Subsistence: Some men hunting up the rivers, but with little to show for it.

D. Harvest:

(1) Caribou: 2 nd. [= 450 lbs.]

(2) Fish:

(a) Coho salmon: 4 fish [= 40 lbs.]

(b) Pink salmon: 1 fish [= 4 lbs.]

(3) Plants:

Sourdock: 5 sacks [= 85 lbs.]

(4) Total: 579 lbs.; adjusted total: 494 lbs.

Week 309 (July 25-31, 1982)

A. Environment: Variable light winds and partly cloudy to cloudy skies most of the week. Temperatures ranging from 30's (F.) to 60's (F.).

B. Village: Still quiet; many people in Kotzebue. 14 more trips out this week, mostly visiting and shopping in Kotzebue, some to dentist. 7 outsiders arrived in Kivalina to visit.

C. Subsistence: Relatively few people hunting, but salmonberry season was in full swing.

D. Harvest:

(1) Caribou:

1 male	[= 285 lbs.]
2 nd.	[= 500 lbs.]
3 total	[= 785 lbs.]

(2) Plants:

Salmon berries: 21.5 buckets [= 301 lbs.]

Week 309 - Continued

(3) Total: 1,086 lbs.; adjusted total 785 lbs.

Week 310 (August 1-7, 1982)

A. Environment: Clear and warm most of the week despite a persistent onshore breeze. Some char in the lagoon.

B. Village: Nineteen trips to Kotzebue for visiting and shopping; twelve outsiders arrived for visits in Kivalina. Another quiet week.

C. Subsistence: Some hunting up the rivers, but most activity was focused on berry picking.

D. Harvest:

(1) Caribou:

1 male	[= 310 lbs.]
1 nd.	[= 242 lbs.]
2 total	[= 552 lbs.]

(2) Moose:

1 medium-sized female	[= 700 lbs.]
1 nd.	[= 800 lbs.]
2 total	[= 1,500 lbs.]

(3) Fish:

Char: 4 medium-sized fish [= 20 lbs.]

(4) Plants:

Salmon berries

22.5 buckets	[= 315 lbs.]
32.5 gallons	[= 228 lbs.]
Total	[= 543 lbs.]

(5) Total: 2,615 lbs.; adjusted total 2,072 lbs.

Week 311 (August 8-14, 1982)

A. Environment: Variable winds and warm (50's and 60's, F.) all week; cloudy toward week's end. Char becoming plentiful in the river. First blueberries.

Week 311 - Continued

B. Village: On Friday a barge from Kotzebue arrived with fuel for the Native Store and building materials for the school. Travel back and forth between Kivalina and Kotzebue continued at an active rate. Twenty-two trips out; 15 visitors came in.

C. Subsistence:

(1) Fish:

Char:

1 tub	[= 100 lbs.]
40 medium-sized fish	[= 200 lbs.]
Total	[= 300 lbs.]

(2) Moose: 1 nd. [= 800 lbs.]

(3) Plants:

(a) Blueberries: 2.5 buckets [= 35 lbs.]

(b) Salmon berries:

3 five-gallon buckets	[= 105 lbs.]
7.5 two gallon buckets	[= 105 lbs.]
4 gallons	[= 28 lbs.]
Total	[= 238 lbs.]

(4) Total: 1,373 lbs.; adjusted total 1,100 lbs.

Week 312 (August 15-21, 1982)

A. Environment: This week the onshore winds brought cloudy skies, rain, and temperatures in the 40's and 50's (F.). The rivers got quite high during the week. First blackberries ripened.

B. Village: The summer pattern of visiting and shopping in Kotzebue continued. Commercial salmon fishermen and their families were still in Kotzebue. Eighteen trips out; 6 outsiders visited Kivalina.

C. Subsistence: Berry picking remained the major subsistence activity, although gill nets set in the channel were becoming productive as the char run into the river developed.

Week 312 - Continued

D. Harvest:

(1) Birds:

(a) Canada goose: 1 male [= 5.9 lbs.]

(b) Mallard: 1 male [= 2.75 lbs.]

(2) Fish:

Char:

1 - 100 lb. sack	[= 100 lbs.]
1 tub	[= 100 lbs.]
12 medium-sized fish	[= 60 lbs.]
Total	[= 260 lbs.]

(3) Moose: 1 male [= 900 lbs.]

(4) Plants:

(a) Blackberries

4.75 buckets	[= 50 lbs.]
1 barrel	[= 60 lbs.]
Total	[= 110 lbs.]

(b) Blueberries

4.75 buckets	[= 66.5 lbs.]
.50 barrels	[= 30 lbs.]
6.5 gallons	[= 45.5 lbs.]
Total	[= 142 lbs.]

(c) Salmon berries

6 buckets	[= 84 lbs.]
3 barrels	[= 180 lbs.]
6.5 gallons	[= 45.5 lbs.]
Total	[= 309.5 lbs.]

(5) Total: 1,730 lbs.; adjusted total: 1,160 lbs.

Week 313 (August 22-28, 1982)

A. Environment: Variable winds; mostly clear days with temperatures in the 50's (F.). Lots of char in the river.

B. Village: Commercial fishermen were returning from Kotzebue all week. The pace of village life picked up again. No villagers went away; four outsiders came in to visit.

C. Subsistence: Another week in which berry picking held center stage. Some hooking for char in the channel and lower Wulik.

D. Harvest:

(1) Caribou: 1 nd. [= 242 lbs.]

(2) Birds:

Canada Goose: 1 male [= 5.9 lbs.]

(3) Fish:

Char:

1 bucket	[= 15 lbs.]
38 medium-sized fish	[= 190 lbs.]
10 large fish	[= 100 lbs.]
Total	[= 305 lbs.]

(4) Plants:

(a) Blackberries

4.5 buckets	[= 47 lbs.]
10 gallons	[= 53 lbs.]
Total	[= 100 lbs.]

(b) Blueberries

8 buckets	[= 112 lbs.]
3 gallons	[= 21 lbs.]
Total	[= 133 lbs.]

(c) Salmon berries: 1 bucket [= 7 lbs.]

(5) Total: 793 lbs.; adjusted total: 547 lbs.

Week 314 (August 29 - September 4, 1982)

A. Environment: Fairly windy all week, but wind direction varied from one day to the next. The warm temperatures Sunday and Monday gave way to temperatures in the 40's (F.) for most of the rest of the week.

B. Village: Many people organizing their affairs after absences of several weeks. Six trips out for visits; 11 visitors in.

C. Subsistence: Still a fair amount of berry picking, but some shift in emphasis to fish.

D. Harvest:

(1) Birds:

(a) Canada geese: 2 males [= 11.8 lbs.]

(b) Cranes: 1 nd. [= 9.31 lbs.]

(c) Pintails: 5 nd. [= 10 lbs.]

(2) Caribou:

2 males	[= 680 lbs.]
1 female	[= 185 lbs.]
3 total	[= 865 lbs.]

(3) Fish:

(a) Char:

8 tubs	[= 800 lbs.]
7 medium-sized fish	[= 35 lbs.]
Total	[= 835 lbs.]

(b) Salmon, species not identified: 2 tubs [= 200 lbs.]

(4) Plants:

(a) Blackberries: 6 buckets [= 63 lbs.]

(b) Blueberries: 8.5 buckets [= 119 lbs.]

(5) Total: 2,113 lbs.; adjusted total: 1,900 lbs.

Week 315 (September 5-11, 1982)

A. Environment: Very strong (25-50 m.p.h.) northerly winds for several days early in the week, followed by mild onshore breezes toward week's end. Very low water in the lagoon because of the strong winds. Temperatures mostly in the 40's and upper 30's (F.). 12 muskoxen were observed in the Mulgrave Hills on Friday (Sept. 10).

B. Village: Quite a bit of coming and going this week, as villagers went to Kotzebue to shop and visit, and outsiders came to Kivalina for the latter purpose. 17 trips out; 16 trips in by outsiders.

C. Subsistence: Very little activity during the first part of the week because of the strong winds. Toward week's end berry picking resumed.

D. Harvest:

(1) Caribou:

1 male	[= 340 lbs.]
1 nd.	[= 262 lbs.]
2 total	[= 602 lbs.]

(2) Fish:

Char

4 sacks	[= 400 lbs.]
2 medium-sized fish	[= 10 lbs.]
Total	[= 410 lbs.]

(3) Plants:

(a) Blackberries: 17 buckets [= 179 lbs.]

(b) Blueberries: 4 buckets [= 32 lbs.]

(c) Salmon berries: 8 buckets [= 112 lbs.]

(4) Total: 1,335 lbs.; adjusted total: 1,012 lbs.

Week 316 (September 12-18, 1982)

A. Environment: Very strong (20-50 m.p.h.) north winds for most of the week brought temperatures into the high 20's (F.) at night, 30's and 40's (F.) by day. The wind and the lack of rain combined to produce very low water levels in the lagoon and rivers.

Week 316 - Continued

B. Village: Most people engaged in subsistence pursuits this week, although 14 people went to Kotzebue, 7 for medical problems, the rest for visits or shopping.

C. Subsistence: This week saw the end of berry picking and the beginning of the major fall char fishery. Four crews out camping late in the week.

D. Harvest:

(1) Fish:

(a) Char: 9 sacks [= 540 lbs.]

177 tubs [= 17,700 lbs.]

Total [= 18,240 lbs.]

(b) Grayling: 2 fish [= 2.5 lbs.]

(2) Moose: 1 male [= 950 lbs.]

(3) Plants:

Blackberries: 1 bucket [= 5.25 lbs.]

(4) Total: 19,198 lbs.; adjusted total: 19,193 lbs.

Week 317 (September 19-25, 1982)

A. Environment: Brisk easterly breezes for most of the week, but not as bad as last week. Temperatures in the 30's and 40's (F.). Cloudy for most of the week, with a bit of rain.

B. Village: The major focus was on fishing this week. Nevertheless, 24 people went to Kotzebue for various purposes; 3 visitors came in from outside.

C. Subsistence: A major fishing week. Six crews were active at various times; most spent a night or two camping upriver.

D. Harvest:

(1) Fish:

Char: 8 sacks [= 480 lbs.]

239.5 tubs [= 23,950 lbs.]

Total [= 24,430 lbs.]

(2) Total: 24,430 lbs.; adjusted total: 24,430 lbs.

Week 318 (September 26 - October 2, 1982)

A. Environment: Cold, clear, calm weather prevailed for most of the week. Nighttime temperatures dropped from 30's to the 20's by Tuesday, and into the teens by week's end. The lagoon was pretty well frozen over by Friday.

B. Village: This week marked the end of the fall fishery and the shift to fall subsistence pursuits. People spent the time storing fish and preparing their winter equipment. Nevertheless, 19 people found the time to visit Kotzebue for various purposes.

C. Subsistence: The final fishing effort came early in the week, after which people became more or less marooned on the island as the freezeup process began.

D. Harvest:

(1) Birds:

Snowy owls: 1 male [= 4 lbs.]

(2) Caribou: 3 males [= 1,020 lbs.]

(3) Fish:

Char: 127 tubs [= 12,700 lbs.]

(4) Moose: 1 male [= 950 lbs.]

(5) Plants:

Masu (Eskimo potato): 4 pans [= 40 lbs.]

(6) Total: 14,714 lbs.; adjusted total: 14,670 lbs.

Week 319 (October 3-9, 1982)

A. Environment: Moderate winds from the north every day of the week produced clear to partly cloudy skies and temperatures dipping to the single digits (F.) at night by week's end. The river and lagoon, which were covered with thin ice on Sunday, had about a three inch covering by Thursday. The first trips upriver by snowmobile were made on Friday.

B. Village: A quiet week. There were 20 trips out of the village, half youngsters on a school sponsored venture, most of the rest, on visits to Kotzebue. 5 outsiders made visits to the village.

C. Subsistence: Not much activity this week because of restricted travel due to freezeup. Some people attempted to fish through the ice near week's end, without much success.

Week 319 - Continued

D. Harvest:

(1) Caribou: 2 males [= 620 lbs.]

(2) Fish:

(a) Char: 1 medium-sized fish [= 5 lbs.]

(b) Sculpin: 4 fish [= 2 lbs.]

(3) Seal, spotted: 1 male [= 185 lbs.]

(4) Total: 812 lbs.; adjusted total: 812 lbs.

Week 320 (October 10-16, 1982)

A. Environment: Light and variable winds until Friday, when a northeast gale of 40 m.p.h. blew up and lasted through the weekend. Temperatures ranged from about 6° F. to 30° F. About half an inch of snow fell. River and lagoon ice good for travel.

B. Village: Activity this week emphasized subsistence pursuits. 12 trips out, mostly for medical checkups in Kotzebue. 2 outsiders visited Kivalina.

C. Subsistence: The major activity this week was collecting driftwood for fuel. There was also some hooking in the lagoon and the river, and several people set traps for snowy owls. A big group went camping at one of the fall fish camps to chop out the frozen fish and to fish through the ice.

D. Harvest:

(1) Birds:

Snowy owls:

2 males	[= 8 lbs.]
1 female	[= 4 lbs.]
2 nd.	[= 8 lbs.]
5 total	[= 20 lbs.]

(2) Caribou:

3 males	[= 930 lbs.]
1 female	[= 195 lbs.]
4 total	[= 1,125 lbs.]

Week 320 - Continued

(3) Fish:

(a) Char:

10 small fish	[= 20 lbs.]
40 medium-sized fish	[= 200 lbs.]
Total	[= 220 lbs.]

(b) Grayling: 10 fish [= 12.5 lbs.]

(c) Burbot: 1 [= 1.65 lbs.]

(d) Sculpin: 6 [= 3 lbs.]

(4) Total: 1,382 lbs.; adjusted total: 1,362 lbs.

Week 321 (October 17-23, 1982)

A. Environment: Last week's storm continued the first 3 days of the week, but the wind shifted to the southeast, bringing nearly an inch of snow and a storm surge on the ocean that broke up the lagoon ice. Calm weather on Wednesday and Thursday was followed by stiff easterly winds and blowing snow on Friday and Saturday. Temperatures in the 20's and 30's (F.) during the first part of the week fell to the single digits on Thursday, and below zero (F.) temperatures on Saturday. The lagoon froze again as a result.

B. Village: The weather kept everyone inside during the first part of the week, although the large group up the Wulik River remained in camp. Several people went to a funeral in Noatak, several others went to Anchorage for Alaska Federation of Natives Convention, and a few went shopping or visiting in Kotzebue. There were 41 trips out altogether, and only 2 in (for visits).

C. Subsistence: Stormy weather pretty well shut down subsistence activity for the first part of the week, but the fishing was pretty good toward week's end. Caribou hunting increased slightly, but was difficult because the lack of snow hindered overland travel.

D. Harvest:

(1) Caribou:

5 males	[= 1,550 lbs.]
3 females	[= 585 lbs.]
8 total	[= 2,135 lbs.]

Week 321 - Continued

(2) Fish:

(a) Char:

18 small fish	[= 36 lbs.]
41 medium-sized fish	[= 205 lbs.]
3 giant fish	[= 42 lbs.]
6.75 sacks	[= 405 lbs.]
Total	[= 688 lbs.]

(b) Grayling:

32 fish	[= 40 lbs.]
3 sacks	[= 180 lbs.]
Total	[= 220 lbs.]

(3) Total: 3,043 lbs.; adjusted total: 3,043 lbs.

Week 322 (October 24-30, 1982)

A. Environment: Clear and calm most of the week, with temperatures between about -10° F. and +25° F. Caribou arriving in increasing numbers.

B. Village: A National Guard encampment at Point Hope took 15 young men out of the village; a few others went to Kotzebue, for a total of 21 trips out. 9 outsiders visited Kivalina.

C. Subsistence: Ice fishing was pretty good this week, and caribou hunting picked up. Collecting driftwood for fuel remains a major activity.

D. Harvest:

(1) Birds:

Snowy owls: 3 nd. [= 12 lbs.]

(2) Caribou:

17 males	[= 5,270 lbs.]
9 females	[= 1,755 lbs.]
26 total	[= 7,025 lbs.]

Week 322 - Continued

(3) Fish:

(a) Char:

7 sacks		[= 420 lbs.]
12 medium-sized fish		[= 60 lbs.]
	Total	[= 480 lbs.]

(b) Grayling:

.5 sacks		[= 30 lbs.]
10 fish		[= 12.5 lbs.]
	Total	[= 42.5 lbs.]

(4) Total: 7,560 lbs.; adjusted total: 7,548 lbs.

Week 323 (October 31 - November 6, 1982)

A. Environment: Generally clear, cool and relatively calm weather. Temperatures hovering around 0°F. Not too many caribou around; some of those remaining in the area were too thin for human consumption.

B. Village: This was a quiet fall week devoted primarily to subsistence activities. However, 16 people went to Noatak for a basketball game, and 13 others headed to various other destinations, for a total of 29 trips; 6 outsiders visited Kivalina.

C. Subsistence: Mixture of caribou hunting, fishing, and trapping. The trapping season opened this week. Some people retrieving fish from their fall caches.

D. Harvest:

(1) Birds:

Snowy owls: 3 nd. [= 12 lbs.]

(2) Caribou:

21 males	[= 6,090 lbs.]
30 females	[= 5,700 lbs.]
51 total	[= 11,790 lbs.]

Week 323 - Continued

(3) Fish:

(a) Char: 66 medium fish [= 330 lbs.]

(b) Sculpin: 1 fish [= .5 lbs.]

(c) Saffron cod: 3 fish [= 3 lbs.]

(4) Furs:

(a) Fox, red:

1 male [= 12 lbs.]

2 nd. [= 21 lbs.]

3 total [= 33 lbs.]

(b) Otter (land): 1 nd. [= 26.5 lbs.]

(c) Wolverine:

2 males [= 64 lbs.]

1 female [= 22 lbs.]

3 total [= 86 lbs.]

Total: 12,281 lbs.; adjusted total: 12,269 lbs.

Week 324 (November 7-13, 1982)

A. Environment: Strong (15-40 m.p.h.) east winds and blowing snow almost all week. Temperatures generally above zero. Still some caribou around, but many are thin. The greatest number was seen about 25 miles to the northwest, near the coast.

B. Village: Quiet week. 10 trips out, 2 trips in.

C. Subsistence: Caribou hunting, ice fishing and trapping continued at a moderate rate. Lots of people collecting driftwood. Lagoon ice fishing continues to be poor.

D. Harvest:

(1) Birds:

Snowy owls: 3 nd. [= 12 lbs.]

Week 324 - Continued

(2) Caribou:

16 males	[= 4,640 lbs.]
14 females	[= 2,660 lbs.]
30 total	[= 7,300 lbs.]

(3) Fish:

(a) Char: 1 sack [= 60 lbs.]

(b) Saffron cod: 1 fish [= 1 lbs.]

(c) Arctic cod: 1 fish [= .16 lbs.]

(d) Sculpin: 1 fish [= .56 lbs.]

(4) Total: 7,374 lbs.; adjusted total 7,362 lbs.

Week 325 (November 14-20, 1982)

A. Environment: Relatively calm weather, warm (20° F.) and cloudy during the first part of the week; clearer and cooler toward the end.

B. Village: Several people flew to Shungnak for a basketball game, a few others went to Point Hope, and still others went to Kotzebue, for a total of 41 trips out. 5 outsiders visited the village, mostly NANA officials on business.

C. Subsistence: Some caribou hunting and trapping, but very little fishing for a change.

D. Harvest:

(1) Caribou:

11 males	[= 3,190 lbs.]
13 females	[= 2,470 lbs.]
24 total	[= 5,660 lbs.]

(2) Fish:

(a) Char: 9 fish [= 18 lbs.]

(b) Grayling: 10 fish [= 12.5 lbs.]

Week 325 - Continued

(3) Furs:

(a) Fox, red:

2 males	[= 24 lbs.]
2 females	[= 21 lbs.]
4 total	[= 45 lbs.]

(b) Fox, white: 3 nd. [= 24 lbs.]

(c) Wolverines: 3 nd. [= 81 lbs.]

(4) Total: 5,841 lbs.; adjusted total: 5,841 lbs.

Week 326 (November 21-27, 1982)

A. Environment: Not too cold this week -- temperatures well above 0° F., and not too windy, but a fair amount of ice fog hindered outside activities. On Saturday a stiff breeze from the northwest caused blowing snow.

B. Village: The highlight of the week was the Thanksgiving Feast, attended by all of the villagers, plus 10 people who came over from other villages. Only 5 trips out this week.

C. Subsistence: Subsistence activities came to a halt on Thanksgiving, but otherwise proceeded at a moderate pace. Ice fishing was more successful in the river than it was last week, although it continues unproductive in the lagoon.

D. Harvest:

(1) Caribou:

8 males	[= 2,320 lbs.]
18 females	[= 3,420 lbs.]
26 total	[= 5,740 lbs.]

(2) Fish:

(a) Char:

7 small fish	[= 14 lbs.]
25 medium-sized fish	[= 125 lbs.]
1 sack	[= 60 lbs.]
Total	[= 199 lbs.]

Week 326 - Continued

(b) Sculpin: 5 fish [= 3 lbs.]

(c) Saffron cod: 5 fish [= 5 lbs.]

(3) Furs:

(a) Fox, red:

2 males	[= 24 lbs.]
1 nd.	[= 10.5 lbs.]
3 total	[= 34.5 lbs.]

(b) Fox, white: 1 female [= 8 lbs.]

(c) Wolverines: 1 female [= 22 lbs.]

(4) Total: 6,012 lbs.; adjusted total: 6,012 lbs.

Week 327 - (November 28 - December 4, 1982)

A. Environment: The first part of the week was stormy, with strong northwesterly winds and blowing snow. The rest of the week it was cool, with almost dead calm. Neither type of weather is good for hunting.

B. Village: There were two major events this week. One was a basketball game with another village, which brought 20 outsiders to Kivalina. The other was a funeral for one of the village elders, which brought in another 91 people, for a total of 114 trips in. Only 8 villagers left during the week, mostly for Kotzebue.

C. Subsistence: Bad weather, the funeral, and grave digging brought subsistence activities nearly to a halt. The traps continued to work, and were moderately productive.

D. Harvest:

(1) Caribou:

4 males	[= 1,120 lbs.]
9 females	[= 1,665 lbs.]
13 total	[= 2,785 lbs.]

Week 327 - Continued

(2) Furs:

(a) Fox, red:

2 males	[= 24 lbs.]
1 female	[= 9 lbs.]
3 nd.	[= 31.5 lbs.]
6 total	[= 64.5 lbs.]

(b) Fox, white: 2 nd. [= 16 lbs.]

(c) Lynx: 1 female [= 23 lbs.]

(d) Wolverine: 1 nd. [= 27 lbs.]

(3) Porcupine: 1 nd. [= 15 lbs.]

(4) Total: 2,931 lbs.; adjusted total: 2,931 lbs.

Week 328 - (December 5-11, 1982)

A. Environment: This was a week of erratic weather, with days of strong winds and blowing snow alternating with days of calm, clear weather. Temperatures generally above zero (F.).

B. Village: 27 people left the village this week, some for a basketball game in Deering, the rest for visits and shopping in Kotzebue. 12 outsiders came in, mostly from Kotzebue for a basketball game with Kivalina.

C. Subsistence: Stormy weather hindered hunting on Monday, Wednesday and Saturday, although conditions were good on the other days. Caribou hunting, ice fishing and trapping continued at a steady pace.

D. Harvest:

(1) Caribou:

5 males	[= 1,400 lbs.]
2 females	[= 370 lbs.]
6 nd.	[= 1,392 lbs.]
13 total	[= 3,162 lbs.]

Week 328 - Continued

(2) Fish:

Char:

2 sacks	[= 120 lbs.]
8 medium-sized fish	[= 40 lbs.]
Total	[= 160 lbs.]

(3) Furs:

(a) Fox, red:

2 males	[= 24 lbs.]
4 nd.	[= 42 lbs.]
6 total	[= 66 lbs.]

(b) Fox, white: 2 nd. [= 16 lbs.]

(c) Wolverines: 1 female [= 22 lbs.]

(4) Total: 3,426 lbs.; adjusted total: 3,426 lbs.

Week 329 (December 12-18, 1982)

A. Environment: Generally good weather this week, once Sunday's strong northeast winds died down. Temperatures for the most part hovering just above zero (F.). First ringed seals of the season appeared. A fair number of caribou remained in the area.

B. Village: This week there was considerable activity, as 17 people went Christmas shopping in Kotzebue, and ten others left to spend Christmas in Noatak, for a total of 27 trips out. 12 outsiders also came to Kivalina, almost all of them for a basketball game.

C. Subsistence: This was one of the quietest weeks of the year as far as subsistence activities are concerned. Evidently food supplies were good, and people were more interested in preparing for the Christmas festivities than they were in hunting and fishing. First seals of the season were killed.

D. Harvest:

(1) Caribou:

4 males	[= 1,120 lbs.]
1 female	[= 185 lbs.]
5 total	[= 1,305 lbs.]

Week 329 - Continued

(2) Furs:

(a) Fox, white:

1 male	[= 8 lbs.]
1 nd.	[= 8 lbs.]
2 total	[= 16 lbs.]

(b) Wolverine: 1 female [= 22 lbs.]

(3) Seal, ringed: 2 females [= 234 lbs.]

(4) Total: 1,577 lbs.; adjusted total 1,577 lbs.

Week 330 (December 19-25, 1982)

A. Environment: Shortest days of the year this week, sun below the horizon the entire time. Brisk easterly breezes failed to push the temperature much below zero. Cloudless skies all week. The ice on the Wulik River is still relatively thin, ranging from 6 to 18 inches. Ocean still unfrozen except along the beach.

B. Village: Everyone preparing for Christmas. Ten people made brief trips out for various purposes; four outsiders visited Kivalina. Saturday was Christmas day.

C. Subsistence: The combination of short days, strong wind and the approach of Christmas brought almost all subsistence activities to a halt. The major effort was devoted to obtaining enough firewood and water to last through Christmas week.

D. Harvest:

(1) Caribou:

2 males	[= 560 lbs.]
6 females	[= 1,110 lbs.]
8 total	[= 1,670 lbs.]

(2) Fish:

Char:

9 medium-sized fish	[= 45 lbs.]
1 small fish	[= 2 lbs.]
Total	[= 47 lbs.]

Week 330 - Continued

(3) Furs:

(a) Fox, red:

1 male	[= 12 lbs.]
2 nd.	[= 18 lbs.]
3 total	[= 30 lbs.]

(b) Fox, white: 1 nd. [= 8 lbs.]

(4) Total: 1,755 lbs.; adjusted total 1,755 lbs.

Week 331 (December 26, 1982 - January 1, 1983)

A. Environment: Bad weather, with strong winds and blowing snow all week. Temperatures still mostly above zero (F.). There was a bit of rain mixed with snow on Wednesday.

B. Village: Christmas week is a holiday in Kivalina, with feasts, church services, races and games, both indoors and out. This year they were mostly indoors because of the bad weather. Nineteen people went to Kotzebue for all or part of the week, while 15 outsiders came to Kivalina.

C. Subsistence: Fun and games took priority over hunting and fishing this week. The weather also was not conducive to hunting.

D. Harvest:

(1) Caribou:

2 males	[= 560 lbs.]
8 females	[= 1,480 lbs.]
10 total	[= 2,040 lbs.]

(2) Total: 2,040 lbs.; adjusted total: 2,040 lbs.

Week 332 (January 2-8, 1983)

A. Environment: Temperatures dropped precipitously this week, to the minus 20's and 30's (F.) every night, and well below zero during the day. The previously open ocean was almost completely covered with a thin layer of ice by week's end. Thursday and Friday brought strong northerly winds and blowing snow.

B. Village: Fifteen Point Hopers spent much of the week in Kivalina for National Guard exercises with the Kivalina detachment. Twelve Kivalina people left the village, mostly for visits to Kotzebue.

Week 332 - Continued

C. Subsistence: The cold weather and National Guard activities kept subsistence activities to a minimum. A few experienced men hunted seals at a small crack in the sea ice about a mile offshore, and 12 miles northwest of the village, with modest success.

D. Harvest:

(1) Caribou:

3 males	[= 810 lbs.]
4 females	[= 720 lbs.]
7 total	[= 1,530 lbs.]

(2) Fish:

Char: .5 sacks [= 30 lbs.]

(3) Furs:

Fox, red: 1 female [= 9 lbs.]

(4) Seals, ringed:

1 male	[= 153 lbs.]
2 females	[= 254 lbs.]
3 total	[= 407 lbs.]

(5) Total: 1,976 lbs.; adjusted total: 1,976 lbs.

Week 333 (January 9-15, 1983)

A. Environment: Bitter cold weather this week, with minimum temperatures below -40° F. for 6 out of the seven days. No wind, clear skies: a classic "cold sink." On Tuesday, however, it was quite a bit warmer, with a light breeze from the south and some fog. Quite a few caribou were in the area.

B. Village: The Friends' Church held a meeting this week which brought 12 outsiders to the village for a few days. Eleven villagers made trips out, mostly to Kotzebue, but for diverse purposes.

C. Subsistence: There was not very much hunting this week because of the cold. Caribou were close to the village, however, and several were taken.

Week 333 - Continued

D. Harvest:

(1) Caribou:

12 males	[= 3,240 lbs.]
22 females	[= 3,960 lbs.]
34 total	[= 7,200 lbs.]

(2) Furs:

Fox, red: 1 male [= 12 lbs.]

(3) Total: 7,212 lbs.; adjusted total: 7,212 lbs.

Week 334 (January 16-22, 1983)

A. Environment: It was very stormy during the first 3 days of the week. North winds gusting to 55 m.p.h. After a calm day Wednesday, the wind resumed, first from the east, then from the south, before dying down on Saturday. The permanent winter drifts were formed in the village this week.

B. Village: An exciting week in Kivalina, as 74 outsiders came to the village, mostly participants and fans from other villages for a basketball tournament. Nineteen villagers made trips out, most of them National Guardsmen going to an encampment.

C. Subsistence: Stormy weather kept hunting to a minimum for most of the week. It also broke up the sea ice in a few places, making seal hunting possible during the brief periods of calm weather.

D. Harvest:

(1) Caribou: 3 females [= 540 lbs.]

(2) Furs:

Fox, white: 1 nd. [= 8 lbs.]

(3) Seals, ringed

10 males	[= 1,530 lbs.]
9 females	[= 1,143 lbs.]
3 nd.	[= 420 lbs.]
22 total	[= 3,093 lbs.]

(4) Total: 3,641; adjusted total: 3,641 lbs.

Week 335 (January 23-29, 1983)

A. Environment: A light easterly breeze prevailed for most of the week, bringing partly cloudy skies and moderate temperatures in the 0° to -22° F. range. It was an excellent week for hunting and fishing inland. There were only a few cracks in the sea ice, however, which greatly restricted seal hunting.

B. Village: The National Guardsmen were still at encampment this week. Fifteen other villagers made trips out, mostly to a basketball tournament. Fourteen outsiders came to Kivalina, including one Noataker hoping to hunt seals.

C. Subsistence: Excellent hunting conditions prevailed this week, and a fairly substantial and diverse harvest was the result.

D. Harvest:

(1) Caribou:

6 males	[= 1,620 lbs.]
12 females	[= 2,160 lbs.]
4 nd.	[= 900 lbs.]
22 total	[= 4,680 lbs.]

(2) Fish:

Char:	3 small fish	[= 6 lbs.]
	4 sacks	[= 240 lbs.]
	Total	[= 246 lbs.]

(3) Furs:

(1)	Fox, red:	1 male	[= 12 lbs.]
		2 nd.	[= 21 lbs.]
		3 total	[= 33 lbs.]
(2)	Fox, white:	1 nd.	[= 8 lbs.]

(4) Seals, ringed:

16 males	[= 2,448 lbs.]
9 females	[= 1,143 lbs.]
11 nd.	[= 1,540 lbs.]
36 total	[= 5,131 lbs.]

Week 335 - Continued

(5) Total: 10,098 lbs.; adjusted total: 10,098 lbs.

Week 336 (January 30 - February 5, 1983)

A. Environment: Light easterly breezes and warm temperatures (mostly above 0° F.) characterized the weather this week.

B. Village: The National Guardsmen returned home from the winter encampment this week. Fourteen villagers left, mostly to visit people in Kotzebue. Eight outsiders came to town, primarily to visit relatives.

C. Subsistence: The week was marked by excellent hunting weather, but relatively little production. This is because the most active hunters were looking for seals, but there were relatively few cracks or holes in the ice to provide them with an opportunity to find any. If the seal harvest was low this week it was not for lack of trying.

D. Harvest:

(1) Birds:

Ptarmigan: 1 nd. [= 1.12 lbs.]

(2) Fish:

Char:

26 medium-sized fish	[= 52 lbs.]
2 sacks	[= 120 lbs.]
Total	[= 172 lbs.]

(3) Furs:

Wolverine: 1 female [= 22 lbs.]

(4) Seals, ringed:

8 males	[= 1,144 lbs.]
4 females	[= 540 lbs.]
12 total	[= 1,684 lbs.]

(5) Total: 1,879 lbs.; adjusted total: 1,878 lbs.

Week 337 (February 6-12, 1983)

A. Environment: The week began with ice, fog, snow, and temperatures hovering around zero (F.). On Thursday the temperature

Week 337 - Continued

dropped to the -20's and -30's F. Skies were partly cloudy early in the week, and clear from Wednesday on. The caribou moved toward the northeast, away from Kivalina. Most of the cracks in the sea ice closed up again.

B. Village: Thirty-three villagers left town this week, 9 to a meeting of whaling captains in Barrow, 11 to a wrestling match in Kotzebue, 6 to a basketball game in Noatak, and the balance for visits to Kotzebue. Five outsiders paid visits to Kivalina.

C. Subsistence: Despite the good weather, it was a bad week for hunting. The caribou left the area, and seals were inaccessible to hunters because of the solid ice cover on the Chukchi Sea.

D. Harvest:

(1)	Seals, ringed:	1 male	[= 143 lbs.]
		3 females	[= 405 lbs.]
		3 nd.	[= 417 lbs.]
		7 total	[= 965 lbs.]

(2) Total: 965 lbs.; adjusted total: 965 lbs.

Week 338 (February 13-19, 1983)

A. Environment: The fine weather of last week continued into this one, although it became much colder; night-time temperatures reached the -40° F. level or below. On Friday the temperature moderated a bit, but 40-50 m.p.h. winds from the north and blowing snow made the windchill even worse. There were few caribou in the area. The Chukchi sea was frozen solid.

B. Village: A quiet week. Ten villagers made trips out, mostly visits to Kotzebue; only one outsider visited Kivalina.

C. Subsistence: Seal hunting came to an abrupt halt because the last of the cracks froze up. Consequently, hunters ranged farther inland than they had previously to look for caribou.

D. Harvest:

(1)	Caribou:	2 males	[= 520 lbs.]
		3 females	[= 525 lbs.]
		19 nd.	[= 4,123 lbs.]
		24 total	[= 5,168 lbs.]

Week 338 - Continued

(2) Fish:

Char: 2 small fish [= 4 lbs.]

(3) Furs:

(a) Fox, red: 1 nd. [= 10.5 lbs.]

(b) Wolverine: 1 female [= 22 lbs.]

(4) Total: 5,205 lbs.; adjusted total: 5,205 lbs.

Week 339 (February 20-26, 1983)

A. Environment: Excellent weather all week, with light winds, clear skies, and moderate temperatures (ca. -25° to +10° F.). Few caribou around; scarcely any cracks in the sea ice. Travel, hence hunting, was difficult because last week's storm packed the snow into extremely hard drifts characterized by abundant sastrugi.

B. Village: A fairly exciting week took 18 people to Wainwright for gospel singing, and 11 to Noatak for a wrestling match. A few others made visits to Kotzebue, for a total of 32 trips out of the village. Four outsiders came in, mostly NANA officials in for a meeting.

C. Subsistence: Poor travel conditions, the lack of caribou, and the inaccessibility of seals resulted in a meager harvest this week.

D. Harvest:

(1) Birds:

Ptarmigan: 20 nd. [= 24 lbs.]

(2) Caribou: 1 male [= 260 lbs.]

(3) Seals, ringed: 7 nd. [= 973 lbs.]

(4) Total: 1,257 lbs.; adjusted total: 1,233 lbs.

Week 340 (February 27 - March 5)

A. Environment: Good weather all week. Clear skies, light winds, and moderate temperatures ranging from -20° F. to +16° F. Hardly any caribou around; only one small crack in the sea ice.

B. Village: Seventeen people left the village this week, of whom 8 went to Noatak for a wrestling match; the others went to diverse locations mostly to visit friends. The most exciting event of the week was a basketball game between Kivalina and Noatak, which brought 28 Noatakers to the village for a few days.

Week 340 - Continued

C. Subsistence: Ice conditions spoiled seal hunting, and the few caribou in the country did not provide much of an alternative. The char seemed to be biting in the river, however, so ice fishing picked up again.

D. Harvest:

(1) Caribou: 2 males [= 500 lbs.]

(2) Fish:

Char:

55 small fish	[= 110 lbs.]
74 medium-sized fish	[= 370 lbs.]
.9 sacks	[= 54 lbs.]
Total	[= 534 lbs.]

(3) Seals, ringed:

2 males	[= 246 lbs.]
1 nd.	[= 125 lbs.]
3 total	[= 371 lbs.]

(4) Total: 1,405 lbs.; adjusted total: 1,405 lbs.

Week 341 (March 6-12, 1983)

A. Environment: Last week's good weather continued into this week, but stormy weather brought it to a halt on Tuesday. North winds gusted to 35 m.p.h. on Tuesday, and blew pretty steadily in the 48-55 m.p.h. range on Wednesday, accompanied by blowing snow. On Thursday the wind dropped to a light breeze, and by Saturday it had ceased altogether. Temperatures in the -20° F. to +10° F. range most of the week. No caribou again, and scarcely any cracks in the sea ice.

B. Village: An uneventful week in town, but 6 people went to an Alaska Federation of Natives meeting in Anchorage, and several others went visiting and shopping in Anchorage, for a total of 18 trips out of town. Six outsiders came to Kivalina to visit.

C. Subsistence: No caribou and no cracks in the ice meant little harvest. The stormy weather of mid-week meant no hunting at all.

Week 341 - Continued

D. Harvest:

(1) Fish:

Char: 56 medium-sized fish [= 280 lbs.]

(2) Seals, ringed: 3 females [= 375 lbs.]

(3) Total: 655 lbs.; adjusted total: 655 lbs.

Week 342 (March 13-19, 1983)

A. Environment: Good weather all week; with light winds, moderate temperatures (-20° to 0° F. range), and clear skies. Few caribou to hunt; no cracks in the sea ice.

B. Village: An exciting week for Northwest Alaska because it was time for the Quarterly Meeting of the Friends' Church, held this year in Kotzebue. Forty-one people from Kivalina went to Kotzebue for the occasion. Six youngsters went to Selawik on some kind of a school trip, and ten others left town for various destinations and for diverse reasons. Total trips out for the week: 57. Three outsiders came to Kivalina for a meeting about the village store.

C. Subsistence: Fish remained about the only resource available to those left in town. Seal hunting is a disaster.

D. Harvest:

(1) Caribou: 2 females [= 256 lbs.]

(2) Fish:

Char:

3 small fish	[= 6 lbs.]
130 medium-sized fish	[= 650 lbs.]
.5 sacks	[= 30 lbs.]
Total	[= 686 lbs.]

(3) Furs:

Fox, red: 2 nd. [= 21 lbs.]

(4) Total: 963 lbs.; adjusted total: 963 lbs.

Week 343 (March 20-26, 1983)

A. Environment: Continued good weather all week. Light winds, clear skies, and temperatures in the 0° to -20° F. range. Few caribou around; one small crack in the ice. The first bearded seals of the year were seen this week.

B. Village: People did not get back from Quarterly Meeting until Monday and Tuesday. Twenty-one others left during the week, most on visits to Kotzebue. Ten outsiders paid visits to friends and relatives in Kivalina. The store ran out of stove oil on Saturday.

C. Subsistence: Few caribou and no cracks in the ice meant a continuation of the poor hunting. People were mostly getting wood for fuel, ice for water, and fish from their fall caches.

D. Harvest:

(1) Birds:

Ptarmigan: 10 [= 11.2 lbs.]

(2) Caribou: 1 female [= 170 lbs.]

(3) Fish:

Char: 64 medium-sized fish [= 320 lbs.]

(4) Furs:

Fox, white: 1 nd. [= 8 lbs.]

(5) Seals, bearded: 1 male [= 700 lbs.]

(6) Seals, ringed: 1 female [= 128 lbs.]

(7) Total: 1,337 lbs.; adjusted total: 1,326 lbs.

Week 344 (March 27 - April 2)

A. Environment: Still another week of excellent weather, almost identical in all respects to last week. Also no change in the caribou or sea ice situations.

B. Village: This week the village was preoccupied with preparations for the Easter celebrations, which are Kivalina's major contribution to the regional festival calendar. Only six villagers left town this week, but 77 outsiders -- mostly from Point Hope, Noatak and Kotzebue -- came in for Easter.

C. Subsistence: People mostly getting wood and ice, and retrieving fish from their fall caches. The pursuit and harvest of fish and game continued at a slow pace.

Week 344 - Continued

D. Harvest:

(1) Birds:

Ptarmigan: 15 [= 17 lbs.]

(2) Caribou:

1 male	[= 250 lbs.]
3 nd.	[= 630 lbs.]
4 total	[= 880 lbs.]

(3) Fish:

Char:

10 small fish	[= 20 lbs.]
111 medium-sized fish	[= 555 lbs.]
Total	[= 575 lbs.]

(4) Furs:

Fox, red: 1 nd. [= 10.5 lbs.]

(5) Seals, ringed:

4 males	[= 492 lbs.]
3 females	[= 384 lbs.]
7 total	[= 876 lbs.]

(6) Total: 2,359 lbs.; adjusted total: 2,342 lbs.

Week 345 (April 3-9, 1983)

A. Environment: There was a stiff breeze from the north on Tuesday, and a light snow on Friday, but otherwise almost no change in the weather conditions of the past two weeks. The last crack in the sea ice froze up; the local caribou population remained low.

B. Village: The week began with the Easter celebration and associated activities, with lots of visitors in town. They dispersed early in the week, but 9 people arrived later in the week from Noatak for a basketball game. Eighteen villagers left, mostly for combined shopping expeditions and visits to Kotzebue.

C. Subsistence: A very poor week on the subsistence side; a little searching, less finding.

Week 345 - Continued

D. Harvest:

(1) Caribou:

1 male	[= 240 lbs.]
1 female	[= 165 lbs.]
2 total	[= 405 lbs.]

(2) Fish:

Char:

22 medium-sized fish	[= 110 lbs.]
2 big fish	[= 20 lbs.]
Total	[= 230 lbs.]

(3) Total: 635 lbs.; adjusted total: 635 lbs.

Week 346 (April 10-16, 1983)

A. Environment: The weather continued virtually unchanged from the last few weeks except on Thursday, when 35 m.p.h. southeast winds and cold temperatures altered the pattern. No change in the sea ice or caribou situations.

B. Village: Nine people went to Point Hope to participate in their whaling season, and 12 people, mostly former Kivalina residents, came from other villages to participate in Kivalina's whaling season.

C. Subsistence: Early in the week several people went fishing, but the fish wouldn't bite. Toward week's end active preparations for whaling were under way in the hope that Thursday's strong southeast winds might have produced some cracks or leads in the sea ice.

D. Harvest:

(1) Caribou: 1 male [= 240 lbs.]

(2) Fish:

Char: 9 medium-sized fish [= 45 lbs.]

(3) Seal, bearded: 1 female [= 675 lbs.]

(4) Seal, ringed: 2 males [= 232 lbs.]

(5) Total: 1,192 lbs.; adjusted total: 1,192 lbs.

Week 347 (April 17-23)

A. Environment: A strong east wind on Monday opened a long crack in the sea ice. On Tuesday the wind died down, and the current kept it narrow or closed all week. On Friday and Saturday there was mixed rain and snow, and strong southeasterly winds. Temperatures ranging from the teens to the mid- thirties (F.). First belukha of the season went through.

B. Village: This week most of the attention was focussed on whaling. Eleven people left the village, 6 for medical checkups. Five outsiders came to Kivalina for whaling.

C. Subsistence: Four whaling crews were out at the crack in the sea ice as soon as the wind dropped on Monday. A fifth crew went out on Tuesday. They managed to harvest some bearded and ringed seals. One beluka was shot but lost. Four crews came in Saturday night; the fifth remained on the ice.

D. Harvest:

(1) Caribou: 4 males [= 960 lbs.]

(2) Fish:

Char: 17 medium-sized fish [= 85 lbs.]

(3) Seals, bearded: 5 nd. [= 3,310 lbs.]

(4) Seals, ringed:

4 males	[= 464 lbs.]
2 females	[= 256 lbs.]
10 nd.	[= 1,222 lbs.]
16 total	[= 1,942 lbs.]

(5) Total: 6,297 lbs.; adjusted total: 6,297 lbs.

Week 348 (April 24-30, 1983)

A. Environment: It was windy on Sunday and Thursday, and there was a bit of mixed snow and rain on both days. Otherwise, light breezes and clear skies prevailed. Temperatures ranging from the low teens to the upper 30's (F.). Caribou heading out of the country toward the northeast; hundreds of belukha heading northwest along the lead in the sea ice. First ground squirrels appear.

B. Village: Attention was again focussed on whaling. Twelve more outsiders came in for whaling; 11 villagers went out for various purposes.

Week 348 - Continued

C. Subsistence: On Monday the weather was fine, the lead was open, and all five crews were out on the ice. On Tuesday a tremendous number of belukhas went through, but as is the custom, the hunters let the first pod pass unmolested so as not to disrupt the migration. Hunting was successful that evening and on Wednesday. On Thursday the lead closed and all crews came in. On Friday the lead re-opened. The crews went back out on the ice, but were unsuccessful.

D. Harvest:

(1) Belukha: 23 nd. [= 60,950 lbs.]

(2) Birds:

Eiders:	1 male	[= 4.23 lbs.]
	1 female	[= 3.99 lbs.]
	8 nd.	[= 32.88 lbs.]
	10 total	[= 41.1 lbs.]

(3) Fish:

Char: 4 medium-sized fish [= 20 lbs.]

(4) Seals, bearded: 1 male [= 650 lbs.]

(5) Seals, ringed:

4 males	[= 464 lbs.]
10 nd.	[= 1,220 lbs.]
14 total	[= 1,684 lbs.]

(6) Ground squirrels: 3 nd. [= 4.5 lbs.]

(7) Total: 63,350 lbs.; adjusted total: 63,309 lbs.

Week 349 (May 1-7, 1983)

A. Environment: Fine weather all week. Light offshore winds, clear skies, and temperatures in the 20's and 30's (F.). There was at least some open water all week, and a substantial lead on Saturday, but no bowhead whales or belukha were observed.

B. Village: Another week of whaling. Eleven outsiders visited the village, some to go whaling, most to get some belukha maktaaq. Ten villagers made trips out, mostly visits to Kotzebue.

Week 349 - Continued

C. Subsistence: The 5 whaling crews spent the entire week on the ice with very little to show for it because no whales or belukha appeared. Two crews came in Saturday night for Sunday church; the rest remained on the ice.

D. Harvest:

(1) Birds:

(a) Brant: 2 nd. [= 6 lbs.]

(b) Canada geese: 4 males [= 23.6 lbs.]

(c) Eiders: 3 males [= 12.7 lbs.]

(2) Seals, ringed:

1 male	[= 115 lbs.]
2 females	[= 216 lbs.]
3 total	[= 331 lbs.]

(3) Total: 373 lbs.; adjusted total: 331 lbs.

Week 350 (May 8-14, 1983)

A. Environment: Superb weather all week, with light winds, clear skies, and temperatures ranging from the mid- 20's at night to the 50's (F.) during the day. A big lead remained open all week, but no belukha or bowheads were seen. Freshwater breakup (or meltdown) proceeding very rapidly.

B. Village: Another whaling week. Twelve villagers left for various purposes, and 15 outsiders came in, mostly to visit, a few in connection with housing construction or store work.

C. Subsistence: Four whaling crews remained on standby all week, with mounting frustration as their intended quarry failed to appear. All boats came in on Saturday night.

D. Harvest:

(1) Birds:

(a) Brant: 6 nd. [= 18.2 lbs.]

(b) Cranes: 1 nd. [= 9.3 lbs.]

(c) Unidentified ducks: 5 nd. [= 19.8 lbs.]

Week 350 - Continued

(d) Eiders

5 males	[= 21.2 lbs.]
1 nd.	[= 4.1 lbs.]
6 total	[= 25.3 lbs.]

(e) Unidentified geese: 3 nd. [= 14.1 lbs.]

(f) Mallards: 1 nd. [= 2.6 lbs.]

(g) Snow geese: 4 nd. [= 23.12 lbs.]

(h) Swan: 1 nd. [= 14.95 lbs.]

(2) Seals, ringed: 2 males [= 230 lbs.]

(3) Total: 357 lbs.; adjusted total: 230 lbs.

Week 351 (May 15-21, 1983)

A. Environment: Another week of magnificent weather, excepting only Thursday, when the north wind gusted to nearly 40 m.p.h. Cloudless skies were accompanied by continued very warm temperatures ranging from the teens to the 50's (F.). The river and channel were pretty well melted by mid-week; the first char in the channel were caught this week. Waterfowl were arriving daily, but in smaller numbers than usual. Gulls laying their eggs on the tundra.

B. Village: This was a transition week; whaling was abandoned, attention was shifted to spring seal hunting. Sixteen villagers went to Kotzebue during the week, most for visits, some for a funeral. Six outsiders visited Kivalina, all on visits.

C. Subsistence: The whaling crews never went out this week. On Tuesday, Kivalina's bowhead quota of one strike on one whale was turned over to Point Hope. Duck hunting was in full swing, although there weren't many ducks. At midweek some people were moving out to spring sealing camps. Spring fishing at the channel began.

D. Harvest:

(1) Birds:

(a) Brant: 6 nd. [= 18.2 lbs.]

Week 351 - Continued

(b)	Canada geese:	3 males	[= 17.7 lbs.]
		1 female	[= 4.7 lbs.]
		4 total	[= 22.4 lbs.]

(c) Cranes: 1 nd. [= 9.3 lbs.]

(d) Ducks, unidentified: 25 nd. [= 79 lbs.]

(e) Eggs, gull: 20 [= 3.13 lbs.]

(f) Eiders: 7 nd. [= 28.8 lbs.]

(g) Geese, unidentified: 6 nd. [= 28.2 lbs.]

(h) Mallards: 3 males [= 8.25 lbs.]

(i)	Snow geese:	5 males	[= 30.3 lbs.]
		4 females	[= 22 lbs.]
		2 nd.	[= 11.56 lbs.]
		11 total	[= 63.9 lbs.]

(2) Fish:

Char: .5 sacks [= 30 lbs.]

(3) Total: 291 lbs.; adjusted total: 30 lbs.

Week 352 (May 22-28, 1983)

A. Environment: Another fine week except for Wednesday, when it was cloudy and a trace of snow fell. Generally, it was a week of gentle breezes and clear skies. Due to prevailing westerly winds, temperatures dropped to the 20's and 30's (F.). The rivers, lagoon and channels were entirely open and the char were running out to sea. The sea ice was rotten, but packed tight against the shore by the current and wind.

B. Village: This was an unusually quiet week; one devoted to getting boats, motors and other equipment ready for summer. Only 2 villagers left town, and only 3 outsiders came in - all visits.

C. Subsistence: Duck hunting continued, but was not particularly productive because there were so few birds. Gill nets set at the channel became more productive each day, but seal hunting was all but impossible because of the poor ice conditions.

Week 352 - Continued

D. Harvest:

(1) Birds:

(a) Brants: 2 nd. [= 6 lbs.]

(b) Ducks, unidentified: 15 nd. [= 59 lbs.]

(c) Eggs, gull: 10 [= 1.56 lbs.]

(d) Eiders: 3 nd. [= 12.3 lbs.]

(e) Geese, unidentified: 15 nd. [= 70.5 lbs.]

(f) Pintails: 9 nd. [= 18.8 lbs.]

(g) Snow geese: 5 nd. [= 30 lbs.]

(2) Fish:

(a) Char:	31 medium-sized fish	[= 155 lbs.]
	2 sacks	[= 120 lbs.]
	1 tub	[= 100 lbs.]
	Total	[= 375 lbs.]

(b) Whitefish: 1 tub [= 100 lbs.]

(3) Seals, bearded: 1 nd. [= 612 lbs.]

(4) Seals, ringed:

2 males	[= 230 lbs.]
2 females	[= 216 lbs.]
4 total	[= 446 lbs.]

(5) Total: 1,731 lbs.; adjusted total: 1,533 lbs.

1982-83 Harvest Summary

A. Birds:

(1) Brant:

2 males	=	6 lbs.
109 nd.	=	329 lbs.
110 total	=	335 lbs.

(2) Canada geese: 11 males = 65 lbs.

1 female = 5 lbs.

2 nd. = 11 lbs.

14 total = 81 lbs.

(3) Cranes: 4 nd. = 38 lbs.

(4) Ducks, species not identified: 69 nd. = 234 lbs.

(5) Eiders, species not identified:

9 males = 38 lbs.

1 female = 4 lbs.

27 nd. = 111 lbs.

37 total = 153 lbs.

(6) Geese, species not specified: 38 nd. = 179 lbs.

(7) Gull eggs: 38 eggs = 6 lbs.

(8) Mallards: 6 males = 17 lbs.

7 nd. = 18 lbs.

13 total = 35 lbs.

(9) Murre eggs: 100 lbs.

(10) Pintails:

1 male = 2.3 lbs.

14 nd. = 28.8 lbs.

15 total = 31.1 lbs.

(11) Ptarmigan: 46 nd. = 53 lbs.

(12) Snow geese:

5 males = 30 lbs.

4 females = 22 lbs.

11 nd. = 65 lbs.

20 total = 117 lbs.

(13) Snowy owls:

3 males	=	12 lbs.
1 female	=	4 lbs.
11 nd.	=	60 lbs.
15 total	=	76 lbs.

(14) Swans: 1 nd. = 15 lbs.

TOTAL BIRD HARVEST: 1,453 lbs.

B. Fish:

(1) Burbot: 2 lbs.

(2) Char: 69,059 lbs.

(3) Cod, arctic: 1 fish reported (= .16 lbs.)

(4) Cod, saffron: 9 lbs.

(5) Grayling: 290 lbs.

(6) Salmon, species not identified: 200 lbs.

(7) Salmon, pink: 4 lbs.

(8) Salmon, coho: 260 lbs.

(9) Sculpin: 9 lbs.

(10) Whitefish: 100 lbs.

TOTAL FISH HARVEST: 69,933 lbs.

C. Land Mammals:

(1) Bears, grizzly: none reported

(2) Bears, polar: none reported

(3) Caribou:

143 males	=	40,901 lbs.
161 females	=	30,020 lbs.
42 nd.	=	9,416 lbs.
346 total	=	80,337 lbs.

(4) Fox, colored:

12 males	=	144 lbs.
4 females	=	39 lbs.
18 nd.	=	186 lbs.
34 total	=	369 lbs.

(5) Fox, white:

1 male	=	8 lbs.
0 female	=	0 lbs.
12 nd.	=	96 lbs.
13 total	=	104 lbs.

(6) Hare, arctic: none reported

(7) Lynx: 1 female = 23 lbs.

(8) Mink: none reported

(9) Moose:

3 males	=	2,800 lbs.
1 female	=	700 lbs.
2 nd.	=	1,600 lbs.
6 total	=	5,100 lbs.

(10) Otter: 1 nd. = 27 lbs.

(11) Porcupine: 1 nd. = 15 lbs.

(12) Sheep, mountain:

1 male	=	275 lbs.
1 female	=	150 lbs.
2 total	=	425 lbs.

(13) Squirrels, ground: 3 nd. = 5 lbs.

(14) Wolf: none reported

(15) Wolverines:

2 males	=	64 lbs.
6 females	=	132 lbs.
4 nd.	=	108 lbs.
12 total	=	304 lbs.

TOTAL LAND MAMMAL HARVEST: 86,709 lbs.

D. Plant products:

(1) Blackberries: 457 lbs.

(2) Blueberries: 461 lbs.

(3) Salmonberries: 1,721 lbs.

(4) Eskimo potato: 40 lbs.

(5) Sourdock: 85 lbs.

TOTAL PLANT HARVEST: 2,764 lbs.

E. Sea mammals:

(1) Belukha:

2 males	=	6,800 lbs.
2 females	=	4,000 lbs.
23 nd.	=	60,950 lbs.
27 total		71,750 lbs.

(2) Seal, bearded:

32 males	=	17,850 lbs.
34 females	=	19,650 lbs.
68 nd.	=	38,766 lbs.
134 total	=	76,266 lbs.

(3) Seals, ribbon: 1 female = 154 lbs.

(4) Seals, ringed:

61 males	=	8,259 lbs.
44 females	=	5,496 lbs.
67 nd.	=	8,029 lbs.
172 total	=	21,784 lbs.

(5) Seal, spotted: 1 male = 185 lbs.

(6) Walrus:

11 males	=	28,600 lbs.
12 females	=	21,600 lbs.
28 nd.	=	61,600 lbs.
51 total	=	111,800 lbs.

(7) Whale, bowhead: none taken

(8) Whale, gray: none taken

TOTAL MARINE MAMMAL HARVEST: 281,939 lbs.

F. Total:

(1) Recorded total: 442,798 lbs.

(2) Adjusted total: 438,581 lbs.

APPENDIX G

THE SUBSISTENCE YEAR 1983-84

Week 401 (May 29 - June 4, 1983)

A. Environment: Moderate (5-10 m.p.h.) onshore breezes all week were accompanied by some rain, on Tuesday, and by thick fog from Thursday through Saturday. Temperatures ranged from the 20's to the 50's (F.). Water levels in the river and lagoon were very high on Wednesday, following the rain and onshore winds. The sea ice remains packed tight against the shore.

B. Village: An uneventful week. Fourteen villagers paid visits to people in Kotzebue; 4 outsiders visited in Kivalina.

C. Subsistence: Seal hunting was next to impossible because of the ice conditions. Hooking and netting for char at the channel, however, were quite productive. Duck hunting continues to be poor because there are so few birds.

D. Harvest:

(1) Birds:

(a) Canada geese: 20 nd. [= 106 lbs.]

(b) Eggs, gull: 20 [= 3.13 lbs.]

(c) Eiders: 1 nd. [= 4.11 lbs.]

(d) Old squaws: 2 nd. [= 3.84 lbs.]

(2) Fish:

Char:

(a) Sacks: 1.5 [= 90 lbs.]

(b) Tubs: 15.5 [= 1,550 lbs.]

(c) Individual fish:

Medium:	109	[= 545 lbs.]
Big:	20	[= 200 lbs.]

(d) Other: 100 lbs. [= 100 lbs.]

Total [= 2,485 lbs.]

Week 401 - Continued

(3) Seals, ringed:

1 female	[= 101 lbs.]
2 nd.	[= 192 lbs.]
3 total	[= 293 lbs.]

(4) Total: 2,895 lbs.; adjusted total: 2,778 lbs.

Week 402 (June 5-11, 1983)

A. Environment: Onshore winds persisted all week. Temperatures were in the 20's and 30's, and skies were clear. The sea ice finally moved offshore on Wednesday, and by Friday there was quite a bit of open water. The char run continued unabated.

B. Village: Twenty-three villagers went to Point Hope for the whaling feast and some church ceremonies. Five other people went to Kotzebue, for a total of 28 trips out. Eighteen outsiders came to Kivalina, most for some meetings, the rest just to visit.

C. Subsistence: Fishing continued active at the channel, although by week's end some people were pulling their nets because they had enough. Seal hunting finally became possible by Thursday, although only a few hunters went out. Duck hunting continues to be poor.

D. Harvest:

(1) Birds:

(a) Brant: 2 nd. [= 6 lbs.]

(b) Eiders: 9 nd. [= 37 lbs.]

(c) Old squaws: 2 nd. [= 3.84 lbs.]

(2) Fish:

Char:

Tubs: 32.75 [= 3,275 lbs.]

Individual fish:	278 medium	[= 1,390 lbs.]
	15 large	[= 150 lbs.]
Other:	100 lbs.	[= 100 lbs.]
	Total	[= 4,915 lbs.]

(3) Total: 4,962 lbs.; adjusted total: 4,915 lbs.

Week 403 (June 12-18, 1983)

A. Environment: Onshore winds continued this week, and were fairly strong on Monday and Thursday, and a trace of snow fell on both of those days. Temperatures were in the 20's and 30's (F.). The west wind pushed the sea ice back against the beach on Monday. The ice opened up a bit on Wednesday, and the main pack was about 6 miles offshore on Friday. Southeast of the village a large mass of ice remained packed against the shore.

B. Village: Attention was divided between subsistence activities and the annual spring cleanup in the village. Seven villagers went to Kotzebue for various purposes, and 4 outsiders made visits to Kivalina.

C. Subsistence: Fishing continued, and seal hunting finally got under way late in the week. On Friday a small dead gray whale was discovered in the ice about 7 miles west of Kivalina. Practically all the men in the village went out to help haul the carcass out on the ice. The meat was too rotten for human consumption, but much of the muktuk was considered good and several slabs were brought back to the village.

D. Harvest:

(1) Birds:

(a) Brant: 26 nd. [= 78.8 lbs.]

(b) Ducks, unspecified: 2 nd. [= 6.3 lbs.]

(c) Eiders: 5 nd. [= 20.6 lbs.]

(d) Murres: 18 nd. [= 38.7 lbs.]

(2) Fish:

(a) Char:	32 tubs		[= 3,200 lbs.]
	1 sack		[= 60 lbs.]
	81 medium-sized fish		[= 405 lbs.]
		Total	[= 3,665 lbs.]

(b) Whitefish: 10 [= 12.5 lbs.]

(3) Seals, bearded:	7 males	[= 3,850 lbs.]
	2 females	[= 1,150 lbs.]
	7 nd.	[= 3,934 lbs.]
	16 total	[= 8,934 lbs.]

Week 403 - Continued

(4) Seals, ringed:

5 males	[= 460 lbs.]
3 females	[= 303 lbs.]
16 nd.	[= 1,536 lbs.]
24 total	[= 2,299 lbs.]

(5) Gray whale muktuk: 1,000 lbs.

(6) Total: 16,055 lbs.; adjusted total: 15,911 lbs.

Week 404 (June 19-25, 1983)

A. Environment: On Sunday and Monday the winds were calm, but the current held the sea ice firmly against the shore. On Tuesday, brisk northerly winds drove the pack offshore, and by Thursday it was so far out that it was dangerous for hunting. A shift to westerly winds on Friday and Saturday brought the ice back in again and packed it against the beach. 25° to 45° F. temperatures on Sunday gave way by mid-week to temperatures about 10° warmer. Skies were clear all week. The last char was caught on Saturday; the six-week run was considered to have been the longest in memory.

B. Village: Eighteen villagers left town this week, most to visit or shop in Kotzebue. Five outsiders came to Kivalina, primarily to visit.

C. Subsistence: Seal hunting made some progress this week despite the bad ice conditions. The char run yielded its last harvest of the season, an excellent one by any standard.

D. Harvest:

(1) Char:

22 tubs	[= 2,200 lbs.]
1 sack	[= 60 lbs.]
10 medium-sized fish	[= 50 lbs.]
Total	[= 2,310 lbs.]

(2) Seals, bearded:

5 males	[= 2,750 lbs.]
4 females	[= 2,300 lbs.]
4 nd.	[= 2,248 lbs.]
13 total	[= 7,298 lbs.]

Week 404 - Continued

(3) Seals, ringed: 1 female [= 101 lbs.]

4 nd. [= 384 lbs.]

5 total [= 485 lbs.]

(4) Total: 10,093 lbs.; adjusted total: 10,093 lbs.

Week 405 (June 26 - July 2, 1983)

A. Environment: Onshore winds continued, albeit at very moderate speeds, but the current kept the sea ice against the shore almost all week. Monday was the only day the boats could get out. Temperatures ranged from the 20's to the 50's (F.) during the week.

B. Village: Not much activity in the village this week. Six people left town for various places, and 8 outsiders came in, four for a meeting, four to visit.

C. Subsistence: Bearded seal hunters remained frustrated most of the week, although they were fairly productive on Monday, the one day they could get out. For the rest of the week they were limited to hunting ringed seals in the small area of open water just outside the channel.

D. Harvest:

(1) Belukha: 1 male [= 3,300 lbs.]

(2) Birds:

(a) Brant: 7 nd. [= 21.2 lbs.]

(b) Ducks, unspecified: 7 nd. [= 21.1 lbs.]

(c) Eiders: 7 nd. [= 27.9 lbs.]

(3) Seals, bearded: 2 males [= 1,100 lbs.]

4 nd. [= 2,248 lbs.]

6 total [= 3,348 lbs.]

(4) Seals, ringed: 18 males [= 1,656 lbs.]

8 females [= 808 lbs.]

10 nd. [= 960 lbs.]

36 total [= 3,424 lbs.]

(5) Total: 10,142 lbs.; adjusted total: 10,072 lbs.

Week 406 (July 3-9, 1983)

A. Environment: The week began with the sea ice packed against the shore, but it drifted about 6 miles out on Monday. Old, dirty ice appeared on Tuesday, but few seals were in it. Most of the ice was gone by Thursday. Winds were onshore and generally light all week, but there was a particularly violent (and rare) thunderstorm on Tuesday, and a tornado just missed the village Wednesday evening, on an otherwise calm day. Skies were mostly clear, and temperatures ranged from near freezing into the high 50's or low 60's (F.). The first salmon were caught in the channel on July 6th. Murre eggs already laid at Cape Thompson. Saffron cod in the lagoon.

B. Village: Thirty-six villagers went to Kotzebue for the annual trade fair. Independence Day celebrations were marred because seal hunting conditions were particularly good that day, and many of the men decided to avail themselves of that fact. Nine outsiders paid visits to Kivalina.

C. Subsistence: This week was devoted to salvaging what was left of a frustrating seal hunting season, and with some success. Gill nets caught the first salmon of the year, and a few men went to Cape Thompson to collect murre eggs.

D. Harvest:

(1) Birds:

(a) Eiders: 7 nd. [= 28.8 lbs.]

(b) Murre eggs: 90 [= 20.8 lbs.]

(2) Fish:

(a) Chum salmon: 10 fish [= 105 lbs.]

(b) Saffron cod: 1 bucket [= 20 lbs.]

(3)	Seals, bearded:	14 males	[= 7,350 lbs.]
		6 females	[= 3,300 lbs.]
		1 nd.	[= 537 lbs.]
		21 total	[= 11,187 lbs.]
(4)	Seals, ringed:	1 male	[= 88 lbs.]
		3 females	[= 285 lbs.]
		3 nd.	[= 273 lbs.]
		7 total	[= 646 lbs.]

Week 406 - Continued

(5) Seal, spotted: 1 female [= 145 lbs.]

(6) Total: 12,153 lbs.; adjusted total = 12,103 lbs.

Week 407 (July 10-16, 1983)

A. Environment: Steady onshore breezes and cool temperatures (30's and 40's F.) all week. It was clear except on Friday, when an inch of rain fell, an unusual amount for Kivalina. The sea ice was entirely gone by Monday, but the west wind created a heavy surf that made ocean travel dangerous until Thursday. The first caribou of the summer arrived, and a variety of fish appeared in the lagoon.

B. Village: Fifty-one villagers headed for Kotzebue this week, most for the commercial salmon fishery. Four outsiders came to Kivalina on visits to relatives.

C. Subsistence: This week marked the shift from spring to summer subsistence activities and was pretty quiet. Many of the most active hunters were in Kotzebue. The store ran out of outboard motor gas late last week, which limited boat travel.

D. Harvest:

(1) Caribou:

1 male	[= 285 lbs.]
1 female	[= 165 lbs.]
2 total	[= 450 lbs.]

(2) Fish:

(a) Saffron cod: 1 bucket [= 20 lbs.]

(b) Salmon, chum: 39 fish [= 410 lbs.]

(3) Seals, bearded: 1 edible dead seal (nd.) was found washed up on the beach and was retrieved. [= 537 lbs.]

(4) Walrus:

(a) 1 small walrus, nd. [= 1,000 lbs.]

(b) 1 edible dead walrus (nd.) was found on the beach and was retrieved. [= 2,200 lbs.]

Total [= 3,200 lbs.]

(5) Total: 4,617 lbs.; adjusted total = 4,617 lbs.

Week 408 (July 17-23, 1984)

A. Environment: The wind was from the west most of the week, but at moderate strength. Monday was the only day when the surf was too rough for ocean travel. Temperatures in the 40's and 50's (F.) were associated with generally clear skies. Lots of fish of various kinds in the channel, lagoon and lower river.

B. Village: More villagers headed for visits or the commercial fishery in Kotzebue, although several others went visiting in Point Hope, for a total of 36 trips out. One family of 5 moved "permanently" to Kotzebue. Twelve outsiders, mostly from Point Hope, visited Kivalina. Altogether, it was a typically quiet summer week in the village.

C. Subsistence: The few fishermen left in the village had a good week fishing, with an unusually diverse array of species to choose from. Two boats went to collect Murre eggs at Cape Thompson. The store's supply of outboard motor gas ran out again, inhibiting extensive travel upriver and along the coast.

D. Harvest:

(1) Birds:

(a) Canada geese: 6 nd. [= 31.8 lbs.]

(b) Murre eggs:

1 bucket	[= 14.8 lbs.]
100 eggs	[= 23.1 lbs.]
Total	[= 37.9 lbs.]

(2) Fish:

(a) Char: 1 tub [= 100 lbs.]

(b) Salmon, chum: 67 fish [= 704 lbs.]

(c) Salmon, pink: 8 fish [= 32 lbs.]

(d) Smelt: 20 lbs. [= 20 lbs.]

(e) Whitefish:

10 fish	[= 12.5 lbs.]
.5 sacks	[= 30 lbs.]
Total	[= 42.5 lbs.]

(3) Total: 968 lbs.; adjusted total = 899 lbs.

Week 409 (July 24-30, 1983)

A. Environment: Variable light longshore and onshore winds brought partly cloudy skies to Kivalina this week, accompanied by temperatures ranging from the 50's to the mid. 60's (F.). The salmon run continued, and a few caribou were spotted in the Mulgrave Hills.

B. Village: On Monday construction began on a new community building, employing most of the men left in the village. Seven more people went to Kotzebue for the commercial fishery. Five outsiders came to Kivalina, mostly to help unload barges delivering construction material.

C. Subsistence: Subsistence activities were superceded in importance this week by construction work in Kivalina, and by commercial fishing in Kotzebue.

D. Harvest:

(1) Caribou: 1 nd. [= 225 lbs.]

(2) Fish: 42 chum salmon [= 441 lbs.]

(3) Walrus: 1 (small) nd. [= 1,000 lbs.]

(4) Total: 1,696 lbs.; adjusted total = 1,696 lbs.

Week 410 (July 31 - August 6, 1983)

A. Environment: The onshore winds continued this week, but shifted to the south, and increased in speed to a steady 15 miles per hour. This significantly raised the water level in the lagoon and along the shore; rough surf brought boating on the ocean to a halt from Wednesday through Friday. Temperatures mostly in the 50's (F.). Small amounts of rain fell each day, Tuesday through Friday. The first blueberries were ripe enough for picking this week.

B. Village: Forty villagers went to Kotzebue this week, 16 to visit, 7 to shop, 7 to go to jail, 5 for the commercial fishery, and 2 for medical examinations. No outsiders visited Kivalina this week. Construction work in the village continued.

C. Subsistence: Getting drinking water seemed to be about the only subsistence activity this week. A few people went berry picking, but they did not get much. Even the fish nets were pulled up.

D. Harvest:

(1) Plants:

Blueberries: 11 quarts [= 19 lbs.]

Week 410 - Continued

(2) Seal, bearded: 1 female [= 525 lbs.]

(3) Total: 544 lbs.; adjusted total = 525 lbs.

Week 411 (August 7-13, 1983)

A. Environment: Poor weather this week, with cloudy skies, fog, rain and drizzle almost every day. The breeze was pretty stiff. Its direction changed practically every day, and had covered most of the cardinal points of the compass by week's end. Temperatures in the 30's and 40's (F.). High water and a rough surf on the ocean side all week long.

B. Village: Construction work continued this week. One outsider came in to visit. Thirty two villagers made trips out, for quite diverse purposes; included among them were 8 youngsters going to the regional camp at Sivunirvik, in the Kobuk delta.

C. Subsistence: Berry picking was the main activity this week, although some hunting was done by a few of the younger men. Weather conditions made boat travel on the ocean all but impossible.

D. Harvest:

(1) Birds:

Canada geese: 8 nd. [= 42.4 lbs.]

(2) Caribou: 1 male [= 310 lbs.]

(3) Fish:

Coho salmon: 3 fish [= 30 lbs.]

(4) Moose: 2 males [= 1,800 lbs.]

(5) Plants:

Blueberries:

7 pints	[= 6.1 lbs.]
2 lbs.	[= 2.0 lbs.]
2 ziplock bags	[= 14.0 lbs.]
Total	[= 22.1 lbs.]

(6) Total: 2,205 lbs.; adjusted total = 2,140 lbs.

Week 412 (August 14-20, 1983)

A. Environment: Cloudy with moderate westerly winds most of the week. On Thursday and Friday, however, they shifted to the southwest and increased to 25-55 m.p.h. in speed. It also rained on those two days. Temperatures in the 40's all week. The char run into the river seems to have begun in mid-week.

B. Village: Construction work continuing. Large numbers of villagers are still in Kotzebue for the commercial fishery. Twenty-four trips were made out of the village this week, most of them visits to friends or relatives in Kotzebue. Only one outsider came to Kivalina.

C. Subsistence: Berry-picking was the main activity early in the week, although this year's crop is poor. Stiff onshore winds prevented ocean travel all week, and the generally bad weather from Thursday on brought subsistence activities pretty much to a halt.

D. Harvest:

(1) Birds:

(a) Canada goose: 1 nd. [= 5.3 lbs.]

(b) Pintails: 5 nd. [= 10.45 lbs.]

(2) Fish:

Char: 1 fish [= 2 lbs.]

(3) Moose: 1 small female [= 500 lbs.]

(4) Plants:

(a) Blackberries: 2 buckets [= 21 lbs.]

(b) Blueberries:

21 gallons	[= 147.0 lbs.]
1 small bucket	[= 7.0 lbs.]
2 regular buckets	[= 14.0 lbs.]
56 lbs.	[= 56.0 lbs.]
1.5 ziplock bags	[= 10.5 lbs.]
Total	[= 234.5 lbs.]

(c) Salmonberries: 1 bucket [= 14 lbs.]

(5) Total: 787 lbs.; adjusted total = 502 lbs.

Week 413 (August 21-27, 1983)

A. Environment: Northwesterly winds kept the ocean waters rough all week. Temperatures dropped to the 30° - 50° F. range. A bit of rain fell on Friday morning.

B. Village: A disastrous commercial salmon fishery in Kotzebue was closed on the 20th, and people started returning to the village this week. Seven villagers made trips out, and 3 outsiders visited Kivalina. Construction work on the community building continued.

C. Subsistence: Another week of berry picking. Some of the young men fished with rod and reel on the lower Wulik with some success, and caribou and moose hunters also had some luck. Rough water on the ocean most of the week hampered coastal travel.

D. Harvest:

(1) Birds:

Pintails: 4 nd. [= 9 lbs.]

(2) Caribou: 7 males [= 2,170 lbs.]

(3) Fish:

Char: 46 medium-sized fish [= 230 lbs.]

(4) Moose:

	1 male	[= 900 lbs.]
	1 nd.	[= 800 lbs.]
	2 total	[= 1,700 lbs.]

(5) Plants:

(a) Blackberries

13 buckets	[= 137 lbs.]
10 gallons	[= 50 lbs.]
Total	[= 187 lbs.]

(b) Blueberries

6 buckets	[= 72 lbs.]
5 gallons	[= 35 lbs.]
3 ziplock bags	[= 21 lbs.]
Total	[= 128 lbs.]

Week 413 - Continued

(6) Total: 4,424 lbs.; adjusted total = 4,100 lbs.

Week 414 (August 28 - September 3, 1983)

A. Environment: A steady wind from the west blew all week, bringing fog, rain and even some snow. Temperatures ranged from the mid-20's to the mid-40's (F.). The mountains were covered with a layer of snow on Wednesday.

B. Village: Commercial salmon fishermen still returning. People involved in organizing things after their prolonged absence. Construction work continued; 3 new workers were added to the payroll, for a total of 13. Seven villagers made trips out of town; no outsiders came in.

C. Subsistence: Berry picking and fishing dominated the subsistence activities this week. The first gill nets were set near the channel for char. One crew did some seining, and some of the young men fished in the river with rod and reel.

D. Harvest:

(1) Birds:

(a) Geese, unidentified: 2 nd. [= 9.4 lbs.]

(b) Eiders: 2 nd. [= 8.22 lbs.]

(2) Caribou: 1 male [= 340 lbs.]

(3) Fish:

(a) Char:	1 tub	[= 100 lbs.]
	3 garbage cans	[= 600 lbs.]
	85 medium-sized fish	[= 425 lbs.]
	Total	[= 1,125 lbs.]
(b) Salmon, unidentified:	25 fish	[= 181 lbs.]

(4) Plants:

(a) Blackberries:

32.75 gallons	[= 172 lbs.]
7.5 buckets	[= 79 lbs.]
11.00 ziplock bags	[= 58 lbs.]
Total	[= 309 lbs.]

Week 414 - Continued

(b) Blueberries:

10 ziplock bags	[= 70 lbs.]
1 bucket	[= 14 lbs.]
Total	[= 84 lbs.]

(5) Ground squirrels: 25 nd. [= 38 lbs.]

(6) Total: 2,095 lbs.; adjusted total = 1,684 lbs.

Week 415 (September 4-10, 1983)

A. Environment: The pattern of onshore winds continued this week, but became somewhat more variable in direction. Finally, on Saturday, the wind shifted to the east, bringing a mixture of rain and snow. Temperatures ranged from the mid 20's to low 40's (F.). The ocean remained pretty rough all week. Some caribou appeared on the north side of the Kivalina River.

B. Village: People were fairly actively involved in subsistence activities this week, to the extent that the weather permitted. Construction work continued. Fourteen trips out were made this week, half of them visits to Noatak and Kotzebue, half to a funeral in Point Hope. Three outsiders came to visit Kivalina.

C. Subsistence: Berry-picking continued, as did fishing at a moderate level. Several men hunted caribou along the Kivalina River.

D. Harvest:

(1) Caribou:

3 males	[= 1,020 lbs.]
8 females	[= 1,480 lbs.]
4 fawns	[= 380 lbs.]
15 total	[= 2,880 lbs.]

(2) Fish:

(a) Char:

1.5 tubs	[= 150 lbs.]
2 sacks	[= 120 lbs.]
4 garbage pails	[= 800 lbs.]
29 fish	[= 58 lbs.]
Total	[= 1,128 lbs.]

Week 415 - Continued

(b) Salmon, unidentified

13 fish	[= 94 lbs.]
.5 garbage pail	[= 100 lbs.]
Total	[= 194 lbs.]

(3) Plants:

Blackberries:	2 buckets	[= 21 lbs.]
	10 gallons	[= 53 lbs.]
	Total	[= 74 lbs.]

(4) Walrus: 1 female [= 1,800 lbs.]

(5) Total: 6,076 lbs.; adjusted total = 6,002 lbs.

Week 416 (September 11-17, 1983)

A. Environment: Onshore winds resumed for the first part of the week, bringing clouds and a mixture of rain and snow. The winds shifted to offshore on Tuesday, and stayed there (mostly north or northeast). Temperatures in the 30's and 40's (F.). Caribou continued to arrive from the northwest.

B. Village: Fifty-one trips out this week, almost all of which were to a funeral in Kotzebue. Construction work continued. Nine outsiders came in, most of them members of the Friend's Church pastor's family coming for the winter.

C. Subsistence: Berry picking ground to a halt, and fishing nearly did so. Caribou hunting, however, increased significantly along both rivers.

D. Harvest:

(1) Birds: 1 unidentified duck [= 3.16 lbs.]

(2) Caribou:

(a)	7 males	[= 2,380 lbs.]
(b)	30 females	[= 5,550 lbs.]
(c)	6 nd.	[= 1,572 lbs.]
(d)	1 fawn	[= 95 lbs.]
	44 total	[= 9,597 lbs.]

Week 416 - Continued

(3) Fish:

(a) Char:

8 medium-sized fish	[= 40 lbs.]
1 tub	[= 100 lbs.]
Total	[= 140 lbs.]

(b) Coho salmon: 1 fish [= 10 lbs.]

(4) Moose: 1 male [= 950 lbs.]

(5) Total: 10,700 lbs.; adjusted total = 10,697 lbs.

Week 417 (September 18-24, 1983)

A. Environment: North winds from Sunday through Friday brought warm weather for a couple of days, but then the temperature dropped and the lagoon began to ice up at night. Temperatures in the 30's and 40's (F.) declined to the 20's and 30's, and eventually the mid-teens by week's end.

B. Village: Construction work continued, but most of the men who were not employed spent the week fishing. There were ten trips out, mostly to Kotzebue for various purposes. Five outsiders came in, 12 to fish, the rest for visits.

C. Subsistence: The first fish crew headed upriver to camp on Tuesday; others followed later in the week. A few men continued to hunt caribou.

D. Harvest:

(1) Caribou:

4 males	[= 1,360 lbs.]
15 females	[= 2,775 lbs.]
19 total	[= 4,135 lbs.]

(2) Fish:

Char:	23 sacks	[= 1,380 lbs.]
	83 tubs	[= 8,300 lbs.]
	Total	[= 9,680 lbs.]

(3) Total: 13,815 lbs.; adjusted total = 13,815 lbs.

Week 418 (September 25 - October 1, 1983)

A. Environment: Wind mostly from the east and southeast brought clouds, and rain mixed with snow almost all week. Temperatures in the 20's and 30's (F.). The rivers and the lagoon began to ice up. An estimated 10,000 caribou crossed the Kivalina river about 5 miles inland and spread out on the Flat.

B. Village: Fishing and caribou hunting were the main themes this week. Work on the community building was finished on Friday. Sixteen trips were made to Kotzebue, mostly visits. Only 2 outsiders came to visit in Kivalina.

C. Subsistence: Several fishing crews went out this week, some camping, others operating out of the village. The crews, as well as individuals and small groups of men, also did a lot of caribou hunting. When the fish run is on and the caribou are available in large numbers, bad weather such as they had this week has to be ignored. Fortunately, the water level in the river was not too high.

D. Harvest:

(1) Caribou:

28 males	[= 9,520 lbs.]
14 females	[= 2,590 lbs.]
19 nd.	[= 4,978 lbs.]
3 fawns	[= 285 lbs.]
64 total	[= 17,373 lbs.]

(2) Fish:

Char:

186 tubs	[= 18,600 lbs.]
1.5 sacks	[= 90 lbs.]
21 baskets	[= 3,150 lbs.]
10 medium-sized fish	[= 50 lbs.]
Total	[= 21,890 lbs.]

(3) Total: 39,263 lbs.; adjusted total = 39,263 lbs.

Week 419 (October 2-8, 1983)

A. Environment: Cloudy, raw weather characterized this week. Shifting winds, mostly onshore, brought mixed rain and snow every

day until Thursday, then just snow for the remainder of the week. Temperatures in the 20's and 30's (F.). The lagoon froze up, then thawed. There was a lot of slush ice in the river, but it had melted by Saturday. There was a flood warning due to a storm surge on Tuesday and Wednesday.

B. Village: Fishing and hunting were again the dominant themes this week. There were 24 trips out, mostly to Kotzebue, for various purposes. No outsiders visited Kivalina.

C. Subsistence: Fish crews operated out of the village early in the week. Toward week's end the focus shifted to caribou hunting. A couple of bears were shot near the fish caches.

D. Harvest:

(1) Bears, grizzly:

1 male		[= 475 lbs.]
1 nd.	(8 feet long)	[= 387 lbs.]
2 total		[= 862 lbs.]

(2) Caribou:

16 males	[= 4,960 lbs.]
13 females	[= 2,535 lbs.]
29 total	[= 7,495 lbs.]

(3) Fish:

(a) Char:

103 tubs	[= 10,300 lbs.]
1 fish	[= 2 lbs.]
Total	[= 10,302 lbs.]

(b) Grayling:

4 tubs	[= 400.0 lbs.]
2 fish	[= 2.5 lbs.]
Total	[= 402.5 lbs.]

(c) Whitefish: 6 tubs [= 600 lbs.]

(4) Total: 19,662 lbs.; adjusted total = 19,662 lbs.

Week 420 (October 9-15, 1983)

A. Environment: The bad weather of last week persisted through Monday of this week. Then the wind shifted to the east, dropping nighttime temperatures into the teens, and daytime temperatures into the 20's (F.). The rivers and the lagoon were covered by a layer of thin ice from Thursday on. Saffron cod appeared in the lagoon; large numbers of caribou were visible from the village.

B. Village: There were 32 trips out this week, mostly shopping expeditions to Kotzebue; 10 school children went on a school trip. Some kind of flu struck the village. Two outsiders came to visit relatives.

C. Subsistence: Caribou hunting and fishing continued to be major activities this week, although seining came to a halt when the river froze up. The flu kept many men at home. Owl traps were set.

D. Harvest:

(1) Birds:

Snowy owls: 2 nd. [= 8 lbs.]

(2) Caribou:

	21 males	[= 6,510 lbs.]
	32 females	[= 6,240 lbs.]
	1 fawn	[= 100 lbs.]
	54 total	[= 12,850 lbs.]

(3) Fish:

(a) Char:

3 baskets	[= 450 lbs.]
38 tubs	[= 380 lbs.]
1.5 sacks	[= 90 lbs.]
Total	[= 920 lbs.]

(b) Grayling:

2 fish	[= 2.5 lbs.]
1 basket	[= 150.0 lbs.]
3 tubs	[= 405.0 lbs.]
Total	[= 557.5 lbs.]

Week 420 - Continued

(c) Saffron cod:

.5 sacks	[= 30 lbs.]
1 box	[= 25 lbs.]
Total	[= 55 lbs.]

(d) Whitefish: 7 tubs [= 700 lbs.]

(4) Total: 15,091 lbs.; adjusted total = 15,083 lbs.

Week 421 (October 16-22, 1983)

A. Environment: It was clear but cold this week, with a stiff wind out of the north. Temperatures ranged from 0° to the 20's (F.). The river and lagoon were frozen solid, but the lack of snow made overland travel by snowmobile very difficult.

B. Village: Several people went to Anchorage for the A.F.N. convention, and others went shopping in Kotzebue, for a total of 17 trips out. Eighteen outsiders came in this week, 10 from Deering for a basketball game, the rest just to visit.

C. Subsistence: It was another good week for caribou. Ice fishing continued in the lagoon, and was extended up the river. Cod fishing much better than last year.

D. Harvest:

(1) Birds:

(a) Snowy owls: 5 nd. [= 20 lbs.]

(b) Ptarmigan: 3 nd. [= 3.36 lbs.]

(2) Caribou:

1 male	[= 310 lbs.]
8 females	[= 1,560 lbs.]
14 nd.	[= 3,528 lbs.]
1 fawn	[= 100 lbs.]
24 total	[= 5,498 lbs.]

(3) Fish:

(a) Char: 25 small fish [= 50 lbs.]

Week 421 - Continued

(b) Saffron cod:

50 fish	[= 50 lbs.]
13.5 sacks	[= 810 lbs.]
Total	[= 860 lbs.]

(c) Sculpin: 2 fish [= 1.13 lbs.]

(4) Total: 6,432 lbs.; adjusted total = 6,409 lbs.

Week 422 (October 23-29, 1983)

A. Environment: Clear, calm, cold (-8° to +12° F.) weather all week, with traces of snow almost every night, but no measurable snowfall. The lagoon ice was covered with overflow on Monday and Tuesday, but it froze up on Wednesday. On Friday ice began to form along the ocean beach, the earliest in anyone's memory. Almost no snow cover.

B. Village: Ten National Guardsmen went to Point Hope for training, and 5 girls went to Shungnak for a basketball game. Several others went to Kotzebue, for a total of 32 trips out. Thirteen outsiders came in, nine of whom were from Shungnak, in for a basketball game. The others came for visits.

C. Subsistence: Ice fishing and caribou hunting continued to be good. The lack of snow was a hindrance to caribou hunters, but there were so many around that they could be hunted near the river.

D. Harvest:

(1) Caribou:

13 males	[= 4,030 lbs.]
16 females	[= 3,120 lbs.]
5 nd.	[= 1,260 lbs.]
34 total	[= 8,410 lbs.]

(2) Fish:

(a) Char:

6 medium-sized fish	[= 30 lbs.]
1 burlap sack	[= 100 lbs.]
.5 plastic sack	[= 30 lbs.]
Total	[= 160 lbs.]

Week 422 - Continued

(b) Saffron cod:

1 sack	[= 60 lbs.]
1 box	[= 25 lbs.]
Total	[= 85 lbs.]

(c) Whitefish, humpback: 3 sacks [= 180 lbs.]

(3) Total: 8,835 lbs.; adjusted total = 8,835 lbs.

Week 423 (October 30 - November 5, 1983)

A. Environment: Almost no wind all week, with temperatures ranging between about 0° and 18° F. Variably cloudy, with very small amounts of snow almost every day -- until Saturday. On Saturday a stiff (15-25 m.p.h.) SE wind arose, producing blowing snow, and temperatures ten degrees colder. The ocean began to freeze again on November 4th, an extremely early date. Quite a few colored foxes in the area. Alaska's several time zones were collapsed into one, meaning that for about half of the year western Alaskans will get up in darkness, but have sunlit evenings.

B. Village: Twenty-four people made trips out, mostly to shop, visit and attend a meeting in Kotzebue. Six outsiders came in, mostly for a NANA meeting about the Red Dog Mine.

C. Subsistence: A big week for Arctic cod fishermen in the lagoon. Opening of trapping season. Other subsistence activities slowed down.

D. Harvest:

(1) Birds:

Snowy owls: 5 nd. [= 20 lbs.]

(2) Caribou:

1 male	[= 290 lbs.]
2 females	[= 380 lbs.]
3 total	[= 670 lbs.]

(3) Fish:

(a) Char: 67 medium-sized fish [= 335 lbs.]

Week 423 - Continued

(b) Arctic cod:	90 fish	[=	14.0 lbs.]
	.5 shopping bags	[=	7.5 lbs.]
	1 burlap sack	[=	125.0 lbs.]
	1 bucket	[=	10.0 lbs.]
	26 plastic sacks	[=	1,560.0 lbs.]
	Total	[=	1,716.5 lbs.]

(4) Furs:

Fox, red: 3 nd. [= 31.5 lbs.]

(5) Total: 2,773 lbs.; adjusted total = 2,753 lbs.

Week 424 (November 6-12, 1983)

A. Environment: The stormy weather from the southeast that began last Saturday persisted until Tuesday afternoon. Temperatures dipped to the -20's F. The lagoon was covered with overflow from the ocean, and the new sea ice was smashed up and driven against the shore. On Wednesday the wind dropped to zero, where it remained the rest of the week, and temperatures moved back above zero (F.). Trace amounts of snow fell on Wednesday through Saturday, but not enough to compensate for the fact that most of the country was blown clear of snow by the storm earlier in the week.

B. Village: This was a big week for travel. Thirty villagers made trips out -- to Kotzebue to visit, and to Point Hope and Kotzebue for church meetings. Thirty-seven outsiders made trips in, most of them for a basketball tournament.

C. Subsistence: This was an active and productive week in all areas of normal fall subsistence activity.

D. Harvest:

(1) Birds:

(a) Ptarmigan: 6 nd. [= 6.7 lbs.]

(b) Snowy owls: 8 nd. [= 32.0 lbs.]

(2) Caribou:	2 males	[=	580 lbs.]
	7 females	[=	1,330 lbs.]
	9 total	[=	1,910 lbs.]

Week 424 - Continued

(3) Fish:

(a) Char: 33 medium-sized fish [= 165 lbs.]

(b) Grayling: 6 fish [= 7.5 lbs.]

(c) Arctic cod:

1 box	[= 30.00 lbs.]
40 fish	[= 6.25 lbs.]
13.25 sacks	[= 795.00 lbs.]
Total	[= 831.25 lbs.]

(4) Furs:

Red fox: 8 nd. [= 84 lbs.]

(5) Total: 3,036 lbs.; adjusted total = 2,998 lbs.

Week 425 (November 13-19, 1983)

A. Environment: It was clear, with little wind and temperatures in the -5° to the plus teens range all week; it was somewhat colder at week's end than earlier. There was almost no snow on the land, making overland travel difficult. The sea iced up again this week, although it was too thin to travel on, and areas of open water remained.

B. Village: Thirteen National Guardsmen from Point Hope spent part of the week in Kivalina for training exercises, and 5 other outsiders came just to visit. Twenty-two villagers made trips out. Several went to Pt. Hope for a basketball game; most of the rest went to Kotzebue to visit or shop.

C. Subsistence: This was another broadly productive week for hunters and fishermen. The combination of good weather and an abundance of fish and game was a good one.

D. Harvest:

(1) Birds:

(a) Ptarmigan: 11 [= 12.32 lbs.]

(b) Snowy owls: 6 [= 24 lbs.]

Week 425 - Continued

(2) Caribou:

6 males	[= 1,740 lbs.]
14 females	[= 2,660 lbs.]
5 nd.	[= 1,200 lbs.]
25 total	[= 5,600 lbs.]

(3) Fish:

(a) Char: 50 medium-sized fish [= 250 lbs.]

(b) Arctic cod:

70 fish	[= 11 lbs.]
.5 tubs	[= 25 lbs.]
1 garbage can	[= 100 lbs.]
2 burlap sacks	[= 125 lbs.]
1 shopping bag	[= 15 lbs.]
1 small bag	[= 5 lbs.]
6.75 plastic sacks	[= 405 lbs.]
Total	[= 686 lbs.]

(4) Furs:

Red fox:

2 females	[= 18 lbs.]
8 nd.	[= 84 lbs.]
10 total	[= 102 lbs.]

(5) Seals, ringed: 2 females [= 206 lbs.]

(6) Total: 6,880 lbs.; adjusted total = 6,844 lbs.

Week 426 (November 20-26, 1983)

A. Environment: There was a snow storm from the east during the first part of the week, with snow, blowing snow and whiteout conditions. Temperatures ranged from the minus 20's to the low (plus) teens. On Thursday the wind stopped, leaving a fairly

good ground cover of snow, but one that was too soft for good travel. Temperatures rose a bit toward week's end. There were lots of caribou on the North Flat. There was ice along the shore, but the ocean was ice free otherwise.

B. Village: Thursday was Thanksgiving, and much of the week was spent in preparation for church services and feasts. Only 2 villagers made trips out this week, while 15 outsiders from Kotzebue, Noatak, Point Hope and Wainwright came in for the holiday.

C. Subsistence: Subsistence activities were curtailed a bit this week due to the weather and the holiday. Fishing tapered off quite a bit this week.

D. Harvest:

(1) Birds:

Ptarmigan: 8 birds [= 9 lbs.]

(2) Caribou:

	7 males	[= 2,030 lbs.]
	12 females	[= 2,280 lbs.]
	2 nd.	[= 480 lbs.]
	21 total	[= 4,790 lbs.]

(3) Fish:

(a) Char:

	5 small fish	[= 10 lbs.]
	13 medium-sized fish	[= 65 lbs.]
	Total	[= 75 lbs.]

(b) Arctic cod:

	.25 sack	[= 15 lbs.]
	1 bucket	[= 10 lbs.]
	Total	[= 25 lbs.]

(4) Furs:

(a) Fox, red:

2 males	[= 24 lbs.]
3 nd.	[= 32 lbs.]
5 Total	[= 56 lbs.]

Week 426 - Continued

(b) Fox, white: 1 nd. [= 8 lbs.]

(c) Wolverines:

2 males	[= 64 lbs.]
1 nd.	[= 27 lbs.]
3 total	[= 91 lbs.]

(5) Total: 5,054 lbs.; adjusted total = 5,045 lbs.

Week 427 (November 27 - December 3, 1983)

A. Environment: The cold weather turned very warm (+30° F.) on Monday, accompanied by a 38 m.p.h. east wind and blowing snow. The weather improved on Tuesday, and stayed pretty much the same for the rest of the week; moderate easterly winds and warm temperatures. The latter produced overflow on the lagoon, water on the ocean, and very soft snow inland. On Saturday the east wind picked up speed, and temperatures dropped to slightly below zero. The caribou began to leave during Monday's stormy weather, and by week's end hardly any were around.

B. Village: The National Guardsmen went to Point Hope this week, and a basketball team went to Ambler; the total number of trips out was 28. Only 2 outsiders came to Kivalina this week, both to visit relatives.

C. Subsistence: This was a poor week on the subsistence front. Stormy weather prevented hunting on Monday, and the caribou headed inland. The snow was too sparse and too soft for hunters to want to pursue them over the rough ground.

D. Harvest:

(1) Caribou:

4 males	[= 1,120 lbs.]
8 females	[= 1,480 lbs.]
12 total	[= 2,600 lbs.]

(2) Furs:

(a) Fox, red:

2 males	[= 24 lbs.]
4 nd.	[= 42 lbs.]
6 total	[= 66 lbs.]

Week 427 - Continued

(b) Fox, white:

1 female	[= 8 lbs.]
1 nd.	[= 8 lbs.]
2 total	[= 16 lbs.]

(3) Total: 2,682 lbs.; adjusted total = 2,682 lbs.

Week 428 (December 4-10, 1983)

A. Environment: The warm weather continued, but was stormy from the SE on Tuesday. By Thursday the weather was excellent: calm and clear, with comfortable temperatures ranging from slightly below zero to the (plus) teens (F.). On the ocean, young ice began forming toward the southeast. The caribou that left the area last week re-appeared in the Mulgrave Hills, some 10,000 strong.

B. Village: It was a sad week because a baby girl died; twenty-five outsiders came in for the funeral. Nine others came in for a basketball game. Twenty villagers made trips out, mostly to visit and shop in Kotzebue.

C. Subsistence: Lots of men hunted caribou in the Mulgrave Hills, although the poor trail (from lack of snow) hampered their efforts. Fishing in the river resumed after a week's absence.

D. Harvest:

(1) Caribou:

4 males	[= 1,120 lbs.]
21 females	[= 3,885 lbs.]
25 total	[= 5,005 lbs.]

(2) Fish: 69 medium-sized char [= 345 lbs.]

(3) Furs:

Fox, red:

2 females	[= 18 lbs.]
2 nd.	[= 21 lbs.]
4 total	[= 39 lbs.]

(4) Total 5,389 lbs.; adjusted total = 5,389 lbs.

Week 429 (December 11-17, 1983)

A. Environment: The wind was relatively calm most of the week, then became very strong from the east, with blowing snow and whiteout conditions on Saturday. Temperatures ranged from about -10° up to the low teens (F.). There was very little snow along the coast and on the flat, and what there was was icy. In the hills beyond the flat there was more snow, but it seemed more like ice. Early in the week there was quite a bit of water on the ocean, but by Friday the sea was covered with a thin sheet of ice. Thousands of caribou spent the week on the Flat.

B. Village: Quite a few people did their Christmas shopping in Kotzebue this week, which ended with 49 villagers having made the trip. Only 2 outsiders came in, and that was just to do some repairs to the school.

C. Subsistence: Kivalina hunters spent a quiet week, evidently because food supplies were pretty good. Several Noatak men were hunting in the Kivalina area, however.

D. Harvest:

(1) Caribou:

2 males	[= 560 lbs.]
18 females	[= 3,330 lbs.]
1 nd.	[= 232 lbs.]
21 total	[= 4,122 lbs.]

(2) Seals, ringed: 1 female [= 117 lbs.]

(3) Total: 4,239 lbs.; adjusted total = 4,239 lbs.

Week 430 (December 18-24, 1983)

A. Environment: It was very warm (+20's and 30's F.), but very windy (25-45 m.p.h.) from the east, except for Friday, when the wind was from the southwest. All the snow was blown away by the wind. The southwest wind on Thursday crushed the remaining sea ice, packed it against the beach, and raised a surf. Thousands of caribou on the Flat. Shortest days of the year this week -- no sun in Kivalina.

B. Village: Christmas preparations were the primary activity this week. Twenty-nine villagers went to Kotzebue to finish their shopping, and 20 outsiders came to Kivalina to spend the holidays.

C. Subsistence: Subsistence activities consisted primarily in building up firewood and water supplies for Christmas week.

Week 430 - Continued

D. Harvest:

(1) Caribou:

1 male	[= 280 lbs.]
7 female	[= 1,295 lbs.]
2 nd.	[= 464 lbs.]
10 total	[= 2,039 lbs.]

(2) Furs:

(a) Fox, red: 1 nd. [= 10.5 lbs.]

(b) Fox, white: 1 nd. [= 8 lbs.]

(3) Total: 2,058 lbs.; adjusted total = 2,058 lbs.

Week 431 (December 25-31, 1983)

A. Environment: Most of the week was warm (+20's F.), with moderate winds shifting from southeast to south and back to east. There was quite a bit of fog early in the week. On Friday the wind shifted to the north and picked up speed (15-20 m.p.h.), and temperatures dropped to the -20's F. On Sunday much of the lagoon was covered with overflow from the ocean, although it froze later on. During the first part of the week an area of ice about 400 yards wide was packed against the shore, with open water beyond that. By week's end the ocean was beginning to freeze again.

B. Village: This was a complicated week because the Christmas church services, village feast and games had to be put off for a day because of the funeral for a village elder. However, everything planned for the week eventually came to pass, the warm weather contributing to the success of the outdoor races and games. Twenty-nine villagers visited Kotzebue during the week, and 13 outsiders visited Kivalina, mostly for the funeral.

C. Subsistence: Since food supplies were good, and Christmas activities beckoned, little effort was expended on subsistence activities this week despite the nearby presence of large numbers of caribou.

D. Harvest:

(1) Caribou:

2 males	[= 560 lbs.]
4 females	[= 740 lbs.]
6 total	[= 1,300 lbs.]

Week 431 - Continued

(2) Total: 1,300 lbs.; adjusted total = 1,300 lbs.

Week 432 (January 1-7, 1984)

A. Environment: Variable light winds this week were accompanied by cold (-20's F.) temperatures early on, and colder (-30's) temperatures and ice and fog at week's end. A bit of snow fell on Tuesday and Wednesday. The sea had very little ice on Sunday, but by Saturday a strip of rough ice about 500 yards wide had formed along the shore. Thousands of caribou were within sight of the village all week.

B. Village: Very quiet week. Twelve villagers went to Kotzebue for various purposes; no outsiders visited Kivalina.

C. Subsistence: Hunting resumed at a modest pace this week. Hunters took advantage of the proximity of caribou and the ice conditions to produce an adequate harvest without much effort.

D. Harvest:

(1) Caribou:

4 males	[= 1,080 lbs.]
18 females	[= 3,240 lbs.]
1 nd.	[= 225 lbs.]
23 total	[= 4,545 lbs.]

(2) Furs:

(a) Red fox: 1 nd. [= 10.5 lbs.]

(b) Wolverines:

1 male	[= 32 lbs.]
2 nd.	[= 27 lbs.]
3 total	[= 59 lbs.]

(3) Seals, ringed:

3 males	[= 459 lbs.]
2 females	[= 254 lbs.]
2 nd.	[= 280 lbs.]
7 total	[= 993 lbs.]

Week 432 - Continued

(4) Total: 5,608 lbs.; adjusted total = 5,608 lbs.

Week 433 (January 8-14, 1984)

A. Environment: Excellent weather this week, with little wind and warm temperatures (+5° to 22° F.). The ocean was covered with ice on Sunday, and stayed that way all week. Still thousands of caribou within a few miles of the village.

B. Village: Hunting and fishing were the main priorities early in the week, although 25 people left for Kotzebue for one reason or another. The generally excellent week was spoiled by a death, on Thursday, followed by grave digging on Friday. Thirty-two outsiders came in, mostly for the funeral.

C. Subsistence: Hunting and fishing were active and reasonably productive until Thursday. Little of either was done after Thursday because of grave digging and related activities.

D. Harvest:

(1) Birds:

Ptarmigan: 1 [= 1.12 lbs.]

(2) Caribou:

	3 males	[= 810 lbs.]
	19 females	[= 3,420 lbs.]
	1 nd.	[= 225 lbs.]
	23 total	[= 4,455 lbs.]

(3) Fish:

Char:	.5 sacks	[= 30 lbs.]
	2 small fish	[= 6 lbs.]
	4 medium-sized fish	[= 20 lbs.]
	Total	[= 56 lbs.]

(4) Furs:

(a) Red fox:

1 male	[= 12.0 lbs.]
1 nd.	[= 10.5 lbs.]
2 total	[= 22.5 lbs.]

Week 433 - Continued

(b) Wolf: 1 nd. [= 96 lbs.]

(c) Wolverine: 1 nd. [= 27 lbs.]

(5) Seals, ringed:

1 male	[= 153 lbs.]
1 female	[= 127 lbs.]
4 nd.	[= 560 lbs.]
6 total	[= 840 lbs.]

(6) Total: 5,498 lbs.; adjusted total = 5,498 lbs.

Week 434 (January 15-21, 1984)

A. Environment: It was very mild early in the week, and it even rained a bit on Tuesday. It got colder (-18° to -6° F.) by week's end, and a raw breeze blew from the west and northwest. There was open water about a quarter of a mile out on Wednesday, and most of the ice was gone by Friday.

B. Village: The week began with a funeral (on Monday), but normal activities resumed shortly thereafter. Seventeen more people arrived for the funeral, 14 came in for a basketball game, and 3 arrived to hunt caribou, for a total of 36 trips in. There were 15 trips out, mostly to Kotzebue, for diverse purposes.

C. Subsistence: It was a quiet week subsistence-wise, as hunters preferred to draw down food reserves over hunting in the raw weather.

D. Harvest:

(1) Caribou:

3 males	[= 810 lbs.]
18 females	[= 3,240 lbs.]
1 nd.	[= 225 lbs.]
22 total	[= 4,275 lbs.]

(2) Furs:

(a) Red fox: 1 nd. [= 10.5 lbs.]

(b) White fox: 1 nd. [= 8 lbs.]

Week 434 - Continued

(3) Seals, ringed:

	4 males	[= 612 lbs.]
	5 females	[= 635 lbs.]
	9 total	[= 1,247 lbs.]

(4) Total: 5,541 lbs.; adjusted total = 5,541 lbs.

Week 435 (January 22-28, 1984)

A. Environment: The stiff westerly breeze concluded with a 20 m.p.h. flourish on Sunday, then shifted to the northwest and dropped to about 4 m.p.h. Friday and Saturday were calm. Temperatures dropped from the -6° to -12° F. range on Sunday to the minus 30's and 40's from Thursday on, well below the scale of the available thermometer. There was some ice-fog in mid-week. The ocean was frozen solid by week's end. Still lots of caribou around. Apparently a lot of overflow up the Wulik River.

B. Village: It was a quiet week in Kivalina. However, 41 people made trips out, almost all of them to funerals in Noatak and Kotzebue. No outsiders visited Kivalina.

C. Subsistence: Renewed freezeup brought seal hunting to a halt by mid-week. Trapping remained poor because the snow had turned almost to ice and most of the foxes disappeared. People hunted caribou on an ad hoc basis; those whose reserves were getting low would just go out, shoot one and bring it home, all in less than an hour. The cold made it difficult to start the snowmobiles.

D. Harvest:

(1) Birds:

Ptarmigan: 9 [= 10 lbs.]

(2) Fish:

Char: 37 medium-sized fish [= 185 lbs.]

(3) Furs:

Red fox: 1 nd. [= 10.5 lbs.]

(4) Seals, ringed:

2 males	[= 306 lbs.]
2 females	[= 254 lbs.]
2 nd.	[= 280 lbs.]
6 total	[= 840 lbs.]

Week 435 - Continued

(5) Total: 1,046 lbs.; adjusted total = 1,046 lbs.

Week 436 (January 29 - February 4, 1984)

A. Environment: It was clear, but bitterly cold all week, with temperatures in the -30's and -40's F., plus winds ranging from 5 to 20 m.p.h., an unusual and harsh combination. Thousands of caribou remained close to the village.

B. Village: A quiet week. There were 9 trips out of town, to various places and for diverse purposes. Three outsiders came in to visit.

C. Subsistence: There was little interest in hunting this week because of the cold, and the main subsistence activity was collecting firewood. One man went fishing on Thursday despite the bitter cold, and got lucky, producing the week's entire catch of fish in just a couple of hours. Seal hunting was very bad because of the ice conditions.

D. Harvest:

(1) Caribou:

3 males	[= 780 lbs.]
3 females	[= 525 lbs.]
1 nd.	[= 217 lbs.]
7 total	[= 1,522 lbs.]

(2) Fish:

Char:

109 small fish	[= 218 lbs.]
5 big fish	[= 50 lbs.]
Total	[= 268 lbs.]

(3) Furs:

Red fox: 5 nd. [= 52.5 lbs.]

(4) Seals, ringed: 2 females [= 270 lbs.]

(5) Total: 2,113 lbs.; adjusted total = 2,113 lbs.

Week 437 (February 5-11, 1984)

A. Environment: The week began with clear skies, but strong (35-50 m.p.h.) north winds, blowing snow and temperatures in the -20°'s F.

Week 437 - Continued

The wind moderated on Wednesday and Thursday, but resumed in the 15-35 m.p.h. range on Friday. It finally moderated on Saturday. Ocean frozen solid all week.

B. Village: Another quiet week. There were 28 trips out, mostly visits to Kotzebue, and only 2 trips in.

C. Subsistence: The stormy weather did not encourage much hunting. However, during the brief period when the wind moderated, fishermen got out in some numbers. The thousands of caribou on the Flat are being largely ignored now.

D. Harvest:

(1) Caribou:

5 males	[= 1,300 lbs.]
3 females	[= 525 lbs.]
3 nd.	[= 651 lbs.]
11 total	[= 2,476 lbs.]

(2) Fish:

Char:

.5 sacks	[= 30 lbs.]
36 small fish	[= 72 lbs.]
123 medium-sized fish	[= 615 lbs.]
3 big fish	[= 30 lbs.]
Total	[= 747 lbs.]

(3) Total: 3,223 lbs.; adjusted total = 3,223 lbs.

Week 438 (February 12-18, 1984)

A. Environment: The week began with relatively moderate temperatures in the -20° to -4° F. range accompanied by a light breeze out of the north. By week's end the temperatures had declined to the -40's (F.). Clear skies all week. Lots of caribou remained scattered all over the Flat. The ocean is frozen solid, hence there are no seals.

B. Village: This week was primarily oriented to subsistence activities, although 23 people left town

Week 438 - Continued

for awhile, most of them to see or play in a basketball game in Noatak. Six outsiders came to town to visit, all of them from Kotzebue.

C. Subsistence: No water on the ocean means no seal hunting. The fox trapping remains poor. People are tired of caribou, so they drive right by them. Fishing was the major subsistence activity this week, apart from the perennial chores of getting firewood and ice for drinking water.

D. Harvest:

(1) Birds:

Ptarmigan: 4 nd. [= 4.5 lbs.]

(2) Caribou:

5 males	[= 1,300 lbs.]
8 females	[= 1,400 lbs.]
13 total	[= 2,700 lbs.]

(3) Fish:

Char:

1 sack	[= 60 lbs.]
193 small fish	[= 386 lbs.]
182 medium-sized fish	[= 910 lbs.]
17 big fish	[= 170 lbs.]
Total	[= 1,526 lbs.]

(4) Furs:

Wolverines: 2 nd. [= 54 lbs.]

(5) Total: 4,285 lbs.; adjusted total = 4,280 lbs.

Week 439 (February 19-25, 1984)

A. Environment: This was one of the coldest weeks in memory, with lows in the low -40's and -50's every day, and highs rarely above -40° F. until week's end. Light breeze from a different direction each day. Not a cloud all week, but ice and fog Sunday through Thursday. Sea ice piling up offshore. The caribou remain in place on the Flat.

Week 439 - Continued

B. Village: It was so cold that planes could not fly much of the week. Most people stayed inside and watched television. There were just 5 trips out -- mostly visits to Kotzebue, and no trips in.

C. Subsistence: The bitter cold made it difficult to start the snowmobiles, and uncomfortable (and probably dangerous) to travel. Seal hunting remains an impossibility because of the solid ice. Caribou hunting continues at a low but steady pace; there is greater interest in char.

D. Harvest:

(1) Birds:

Ptarmigan: 20 [= 22.4 lbs.]

(2) Caribou:

4 males	[= 1,040 lbs.]
6 females	[= 1,050 lbs.]
3 nd.	[= 651 lbs.]
13 total	[= 2,741 lbs.]

(3) Char:

4 small fish	[= 8 lbs.]
52 medium-sized fish	[= 260 lbs.]
Total	[= 268 lbs.]

(4) Furs:

Red foxes: 2 nd. [= 21 lbs.]

(5) Total: 3,052 lbs.; adjusted total = 3,030 lbs.

Week 440 (February 26 - March 3, 1984)

A. Environment: It was stormy the first part of the week, with low temperatures (-30's F.), north winds gusting to 30 m.p.h., and blowing snow. On Wednesday the wind finally dropped to a gentle breeze, and the temperature rose to the -20 to 0° F. range. Still no water on the ocean, but caribou everywhere inland, including the Flat just across the lagoon from the village.

B. Village: Fifty-two people left town this week. Sixteen National Guardsmen went to Point Hope for an encampment, while 36 went to

Week 440 - Continued

Noatak, first for a funeral, later for a volleyball game. Two outsiders came in to visit.

C. Subsistence: Quite a few of the people who remained in town went fishing, but without much success. Caribou hunting continued on an *ad hoc* basis, while seal hunting remained at a standstill.

D. Harvest:

(1) Birds:

Ptarmigan: 33 [= 37 lbs.]

(2) Caribou:

3 males	[= 780 lbs.]
2 females	[= 350 lbs.]
8 nd.	[= 1,736 lbs.]
13 total	[= 2,866 lbs.]

(3) Fish:

Char:

63 small fish	[= 126 lbs.]
79 medium-sized fish	[= 395 lbs.]
Total	[= 521 lbs.]

(4) Total: 3,424 lbs.; adjusted total: 3,387 lbs.

Week 441 (March 4-10, 1984)

A. Environment: It was much warmer this week, with rather little wind, and temperatures rising into the +20's (F.). Traces of snow fell on Sunday, Monday and Tuesday. On Friday an east wind opened up a lead in the sea ice, but it was several miles out. The caribou remained in their accustomed area on the Flat.

B. Village: Twenty-seven people left town this week, about half for basketball games in Deering, the rest to visit in Kotzebue. Two visitors came in from outside.

C. Subsistence: Although a lead finally appeared in the ice, the east wind made it too dangerous for hunters to go out to it. No one needs caribou any more. It was a good week to go fishing, however. Lots of people went hooking, and two men set a net under the ice of the Wulik River.

Week 441 - Continued

D. Harvest:

(1) Birds:

Ptarmigan: 30 [= 33.6 lbs.]

(2) Caribou: 1 female [= 170 lbs.]

(3) Fish:

(a) Char:

27 small fish	[= 54 lbs.]
186 medium-sized fish	[= 930 lbs.]
8 big fish	[= 80 lbs.]
Total	[= 1,064 lbs.]

(b) Whitefish: 48 fish [= 60 lbs.]

(4) Furs:

(a) Fox, red: 1 nd. [= 10.5 lbs.]

(b) Wolverine: 1 male [= 32 lbs.]

(5) Total: 1,370 lbs.; adjusted total = 1,337 lbs.

Week 442 (March 11-17, 1984)

A. Environment: It was warm (32° F.) and calm on Sunday, but temperatures declined to the 0 to +12° F. range, and the wind increased to about 15 m.p.h. on Wednesday. The wind dropped, but the temperature remained about the same for the rest of the week. A trace of snow fell on Sunday, Tuesday and Thursday. The fishermen report that the ice on the Wulik is about 4 feet thick. On the ocean, last week's lead closed, re-establishing the winter's solid cover. Caribou were still abundant.

B. Village: There were 31 trips out this week, about a third of them visits to Kotzebue, and the rest to different places and for different purposes. No outsiders visited Kivalina. The National Guardsmen -- who had been flown from Point Hope to the middle Kobuk Valley for encampment, returned on Saturday.

C. Subsistence: Seal hunting remained at a standstill because of ice conditions, and caribou hunting remained at a standstill because everyone had enough. Fishing thus took priority, with satisfactory results.

Week 442 - Continued

D. Harvest:

(1) Birds:

Ptarmigan: 21 [= 23.5 lbs.]

(2) Caribou: 2 nd. [= 420 lbs.]

(3) Fish:

Char:

73 small fish		[= 146 lbs.]
113 medium-sized fish		[= 565 lbs.]
2.5 sacks		[= 150 lbs.]
	Total	[= 861 lbs.]

(4) Furs:

Red fox: 3 nd. [= 31.5 lbs.]

(5) Total: 1,336 lbs.; adjusted total = 1,313 lbs.

Week 443 (March 18-24, 1984)

A. Environment: There was fairly pleasant weather this week, with temperatures ranging from cold (-30° F.) to moderate (0° F.), and north winds light except on Wednesday, when they reached 15 m.p.h. The sea ice remained unbroken. The caribou began to move out of the area toward the northeast.

B. Village: Some coming and going this week, as 17 villagers made trips out -- mostly to Kotzebue, and 17 outsiders (from various places) paid visits to relatives in Kivalina.

C. Subsistence: Fish continued to be the focus of attention, increasingly so as the days lengthened. Friday and Saturday provided especially nice hooking weather. Caribou were of little interest despite the fact that they seemed to be moving out. Seal hunting remained impossible.

D. Harvest:

(1) Birds:

Ptarmigan: 34 [= 34 lbs.]

Week 443 - Continued

(2) Caribou:

2 males	[= 500 lbs.]
2 females	[= 340 lbs.]
4 total	[= 840 lbs.]

(3) Fish:

(a) Char:

58 small fish	[= 116 lbs.]
273 medium fish	[= 1,365 lbs.]
20 big fish	[= 200 lbs.]
Total	[= 1,681 lbs.]

(b) Whitefish: 10 [= 12.5 lbs.]

(4) Furs:

Red fox: 1 nd. [= 10.5 lbs.]

(5) Total: 2,578 lbs.; adjusted total = 2,544 lbs.

Week 444 (March 25-31, 1984)

A. Environment: The weather was good all week. The wind out of the north was gentle, then stopped altogether on Friday and Saturday. Temperatures were generally below zero (-25° to -2° F.) most of the week, but rose to the low 30's on Saturday. The sea ice remained solid. The caribou continued to move out. The sun was up for 14 hours on Sunday, and the daylight was increasing fast.

B. Village: Very little activity of any kind this week, except fishing. Eleven people left town, about half to attend meetings, the other half for medical purposes. Three outsiders visited Kivalina.

C. Subsistence: The major interest remained fish this week, but, for a change, the fish were not particularly cooperative.

D. Harvest:

(1) Birds:

Ptarmigan: 12 nd. [= 13.4 lbs.]

(2) Caribou: 1 female [= 170 lbs.]

Week 444 - Continued

(3) Fish:

(a) Char:

26 small fish		[= 52 lbs.]
21 medium-sized fish		[= 105 lbs.]
1 big fish		[= 10 lbs.]
	Total	[= 267 lbs.]

(b) Burbot: 1 fish [= 1.65 lbs.]

(4) Total: 452 lbs.; adjusted total = 439 lbs.

Week 445 (April 1-7, 1984)

A. Environment: It was warm (10°-30° F.) and relatively calm at the beginning of the week, but a strong (24-32 m.p.h.) north wind and blowing snow developed on Wednesday and lasted through Friday. Temperatures were down in the -30° to -20° range by week's end. Still no open water on the ocean except for 1 small crack. The caribou were pretty well gone.

B. Village: Nothing much happened this week. Nineteen villagers made trips out, mostly visits to Kotzebue. No outsiders came to Kivalina.

C. Subsistence: There was some fishing at the beginning and end of the week, but it was too stormy to go out on Wednesday, Thursday and Friday.

D. Harvest:

(1) Birds:

Ptarmigan: 30 [= 33.6 lbs.]

(2) Fish:

Char:

5 small fish		[= 10 lbs.]
39 medium-sized fish		[= 195 lbs.]
	Total	[= 205 lbs.]

(3) Furs:

Red fox: 3 nd. [= 31.5 lbs.]

Week 445 - Continued

(4) Seal, ringed: 1 male [= 116 lbs.]

(5) Total: 386 lbs.; adjusted total = 353 lbs.

Week 446 (April 8-14, 1984)

A. Environment: There was pleasant weather all week. It was clear, the sun was high in the sky, it was not too cold (-34° to 0° F.), and the winds were light and variable. Still no water on the ocean.

B. Village: There were 26 trips out of the village, almost all of them visits to Kotzebue. No outsiders came in.

C. Subsistence: There was very little action on the subsistence front this week. Apparently in April people prefer to hunt seals -- which was impossible this week -- or wait for warmer weather.

D. Harvest:

(1) Birds:

Ptarmigan: 11 [= 12.3 lbs.]

(2) Fish:

Char:

13 small fish	[= 26 lbs.]
30 medium-sized fish	[= 150 lbs.]
1 big fish	[= 10 lbs.]
Total	[= 186 lbs.]

(3) Total: 198 lbs.; adjusted total = 186 lbs.

Week 447 (April 15-21, 1984)

A. Environment: It was clear and cold (-32° to -20° F.), but relatively calm through most of the week. However, on Friday and Saturday there was a strong (10-30 m.p.h.) north wind and blowing snow. Still no open water. A few caribou passed through.

B. Village: Most of the week was spent preparing for the Easter celebrations, which are especially important in Kivalina. Forty-three outsiders came in from Kotzebue, Noatak, Point Hope, Wainwright, Selawik, Deering, Barrow and Buckland, all for Easter. Twenty-two villagers made trips out, mostly to Kotzebue for diverse purposes.

Week 446 - Continued

C. Subsistence: There was very little hunting or fishing activity this week. People seemed to be more interested in retrieving the last of the fish from their fall caches.

D. Harvest:

(1) Birds:

Ptarmigan: 9 [= 10 lbs.]

(2) Caribou: 2 nd. [= 404 lbs.]

(3) Fish:

Char: 16 medium-sized fish [= 80 lbs.]

(4) Total: 494 lbs.; adjusted total = 484 lbs.

Week 448 (April 22-28, 1984)

A. Environment: The wind died down on Sunday, and stayed down until late Saturday. Skies were generally clear, and temperatures were in the -12° to +12° F. range most of the week. During the first part of this week several cracks in the ice developed to the southeast of Cape Thompson.

B. Village: Sunday was Easter, and Monday was feast-day, the two forming one of the really major holidays in Kivalina. Forty-three outsiders were in for the occasion, having arrived last week. Early this week most of them went home, but 13 Noatakers came for a basketball game. Toward the end of the week a minimum of 55 people arrived from Kotzebue, Noatak, Point Hope, Selawik, Sheshalik, and Noorvik to hunt belukhas and/or acquire some whale meat or muktuk. Many others probably arrived on Thursday, but left before their names could be recorded. Only 3 villagers made trips out.

C. Subsistence: After a winter of frustration because of the sea ice, and with fears of failure this spring, some whaling captains chartered a plane Wednesday morning and searched for cracks or leads in the ice. They finally found some southeast of Cape Thompson, and they were full of both bowhead and belukha whales. Accordingly, that afternoon five whaling crews headed in that direction. They established stations 22 miles up the coast, and 5 miles out from shore. They got one bowhead that same night, and after they had hauled it (piecemeal) back to the village, they took several belukha. The hunting was brought to a halt Saturday evening by a stiff (20 m.p.h.) north wind, which made hunting dangerous.

D. Harvest:

(1) Bear, polar: 1 nd. [= 775 lbs.]

Week 448 - Continued

(2) Belukha: 27 nd. [= 71,550 lbs.]

(3) Bowhead whale: 1 33-feet long nd. [= 157,080 lbs.]

(4) Fish:

Char:

46 medium-sized fish [= 230 lbs.]

(5) Seal, bearded: 1 nd. [= 662 lbs.]

(6) Total: 230,297 lbs.; adjusted total = 230,297 lbs.

Week 449 (April 29 - May 5, 1984)

A. Environment: There was stormy weather from the north on Tuesday, and whiteout on Saturday, but otherwise the weather was reasonably pleasant, with moderate winds and temperatures in the +20 to +25° F. range. The leads and cracks that were so productive last week were closed by the current and kept that way all week. A few caribou passed through.

B. Village: Twenty-six outsiders came in this week, most of them intent on acquiring some free muktaaq or whale meat from friends or relatives in Kivalina. Eight villagers made trips out, mostly to shop in Kotzebue.

C. Subsistence: Most of this week was spent looking for cracks in the ice so that bearded seals and belukha could be hunted; much of the search was carried out by hunters from other villages, who hoped for a repeat of last week's bonanza. A plane was chartered to assist in the search, but unfortunately there was no water anywhere within safe hunting distance of the shore.

D. Harvest:

(1) Bear, polar: 1 female [= 550 lbs.]

(2) Caribou: 1 male [= 250 lbs.]

(3) Seal, bearded: 1 nd. [= 612 lbs.]

(4) Total: 1,412 lbs.; adjusted total = 1,412 lbs.

Week 450 (May 6-12, 1984)

A. Environment: Spring weather finally arrived this week, with moderate south and southwest winds and daytime temperatures above freezing almost every day. Small amounts of snow fell on Sunday, Tuesday and Saturday, and it was cloudy all week. The first ground squirrels emerged from their burrows, and flights of waterfowl began to appear. The sea ice remained solid.

Week 450 - Continued

B. Village: The big event this week was high school graduation. There were 24 trips out of town for various purposes and to diverse destinations. Three outsiders came to visit.

C. Subsistence: Seal hunting remained impossible because there was no open water, not even a crack. Most of what little hunting there was, therefore, was devoted to waterfowl.

D. Harvest:

(1) Birds:

(a) Brant: 8 nd. [= 24.2 lbs.]

(b) Canada geese:

2 males	[= 11.8 lbs.]
5 nd.	[= 26.5 lbs.]
7 total	[= 38.3 lbs.]

(c) Eiders:

4 males	[= 17 lbs.]
2 females	[= 8 lbs.]
6 total	[= 25 lbs.]

(d) Snow geese:

4 males	[= 24.2 lbs.]
5 females	[= 27.5 lbs.]
9 total	[= 51.7 lbs.]

(2) Fish:

Char: 10 medium-sized fish [= 50 lbs.]

(3) Ground squirrels: 5 nd. [= 7.5 lbs.]

(4) Total: 197 lbs.; adjusted total = 58 lbs.

Week 451 (May 13-19, 1984)

A. Environment: Pleasant spring weather all week, with clear skies, temperatures ranging from the low 20's to the high 40's (F.), and light winds. The snow was melting fast, but the sea ice remained as solid as ever. Waterfowl were arriving in increasing, although still moderate, numbers.

Week 451 - Continued

B. Village: This was a quiet week. No outsiders came to Kivalina, but 16 Kivalina people made trips out, most of them visits to people in Kotzebue.

C. Subsistence: With the sea ice all closed up, there was little to do except hunt ducks up the rivers.

D. Harvest:

(1) Birds:

(a) Brant:

1 male	[= 3.19 lbs.]
5 nd.	[= 15.15 lbs.]
6 total	[= 18.34 lbs.]

(b) Canada geese:

25 males	[= 147.5 lbs.]
21 females	[= 98.7 lbs.]
12 nd.	[= 63.6 lbs.]
58 total	[= 309.8 lbs.]

(c) Ducks, species not reported: 7 nd.

[= 22 lbs.]

(d) Eiders, species not reported:

7 males	[= 29.6 lbs.]
5 females	[= 20.0 lbs.]
25 nd.	[= 103.0 lbs.]
37 total	[= 152.6 lbs.]

(e) Mallards: 4 nd. [= 10.4 lbs.]

(f) Snow geese:

13 males	[= 97 lbs.]
9 females	[= 50 lbs.]
22 total	[= 147 lbs.]

Week 451 - Continued

(2) Caribou: 1 female [= 150 lbs.]

(3) Ground squirrels: 23 nd. [= 34.5 lbs.]

(4) Total: 845 lbs.; adjusted total = 185 lbs.

Week 452 (May 20-26, 1984)

A. Environment: It was clear but cool most of the week, with variable onshore winds ranging from 4 to 15 m.p.h., and temperatures in the 20's and 30's (F.). The onshore winds reportedly kept most of the waterfowl away from the coast. River water was flowing out on top of the ice and through both the Kivalina and Wulik channels; there is water on top of the ice in front of and behind the village.

B. Village: This was an unusually quiet week even for Kivalina. No outsiders came in, and there were 7 trips out -- mostly members of one family off on a visit to Noatak.

C. Subsistence: There was little one could do except hunt ducks this week; the river ice was covered with water, and the sea ice was shut tight.

D. Harvest: all birds

(1) Brant: 5 nd. [= 15 lbs.]

(2) Canada geese:

2 males	[= 11.8 lbs.]
2 females	[= 9.4 lbs.]
16 nd.	[= 84.8 lbs.]
20 total	[= 106.0 lbs.]

(3) Cranes: 1 nd. [= 9.3 lbs.]

(4) Ducks, species not reported: 4 nd. [= 12.6 lbs.]

(5) Eiders, species not reported:

2 males	[= 8.5 lbs.]
2 females	[= 8.0 lbs.]
90 nd.	[= 370.0 lbs.]
94 total	[= 386.5 lbs.]

(6) Mallards: 4 nd. [= 10.4 lbs.]

Week 452 - Continued

(7) Snow geese: 2 males [= 12.12 lbs.]

(8) Total: 552 lbs.; adjusted total = 0 lbs.

1983 - 1984 Harvest Summary

A. Birds:

(1) Brant:

1 male	=	3 lbs.
53 nd.	=	161 lbs.
54 total	=	164 lbs.

(2) Canada Geese:

29 males	=	171 lbs.
23 females	=	108 lbs.
68 nd.	=	360 lbs.
120 total	=	639 lbs.

(3) Cranes: 1 nd.= 9.3 lbs.

(4) Ducks, species not specified: 21 nd.= 66 lbs.

(5) Eiders, species not specified:

13 males	=	55 lbs.
9 females	=	36 lbs.
146 n.d.	=	600 lbs.
168 total	=	691 lbs.

(6) Geese, species not specified: 2 nd. = 9.4 lbs.

(7) Gull egss: 20 eggs = 3.13 lbs.

(8) Mallards: 8 nd. = 21 lbs.

(9) Murres: 18 nd. = 39 lbs.

(10) Murre eggs: = 59 lbs.

(11) Old squaws: 4 nd. = 8 lbs.

(12) Pintails: 9 nd. = 19 lbs.

(13) Ptarmigan: 242 nd. = 267 lbs.

(14) Snow geese:

19 males	=	133 lbs.
14 females	=	78 lbs.
33 total	=	211 lbs.

(15) Snowy owls: 26 nd. = 104 lbs.

(16) Swans: none reported

TOTAL BIRD HARVEST: 2,310 lbs.

B. Fish:

(1) Burbot: 2 lbs.

(2) Char: 68,467 lbs.

(3) Cod, artic: 3,259 lbs.

(4) Cod, saffron: 1,040 lbs.

(5) Grayling: 968 lbs.

(6) Salmon, species not identified: 375 lbs.

(7) Salmon, chum: 1,660 lbs.

(8) Salmon, pink: 32 lbs.

(9) Salmon, coho: 40 lbs.

(10) Sculpin: 1 lb.

(11) Smelt: 20 lbs.

(12) Whitefish, species not identified: 1,428 lbs.

(13) Whitefish, humpback: 180 lbs.

TOTAL FISH HARVEST: 77,472 lbs.

C. Land Mammals:

(1) Bears, grizzly:

1 male	=	475 lbs.
1 nd.	=	387 lbs.
2 total	=	862 lbs.

(2) Bears, polar:

1 female	=	550 lbs.
1 nd.	=	775 lbs.
2 total	=	1,325 lbs.

(3) Caribou:

165 males	=	50,125 lbs.
312 females	=	57,975 lbs.
87 nd.	=	19,653 lbs.
564 total	=	127,753 lbs.

(4) Fox, colored:

5 males	=	60 lbs.
4 females	=	36 lbs.
45 nd.	=	473 lbs.
53 total	=	569 lbs.

(5) Fox, white:

1 female	=	8 lbs.
4 nd.	=	32 lbs.
5 total	=	40 lbs.

(6) Hare, artic: none reported

(7) Lynx: none reported

(8) Mink: none reported

(9) Moose:

4 males	=	3,650 lbs.
1 female	=	500 lbs.
1 nd.	=	800 lbs.
6 total	=	4,950 lbs.

(10) Otter: none reported

(11) Porcupine: none reported

(12) Sheep, mountain: none reported

(13) Squirrels, ground: 53 nd. = 80 lbs.

(14) Wolf: 1 nd. = 96 lbs.

(15) Wolverines:

4 males	=	128 lbs.
6 nd.	=	135 lbs.
10 total	=	263 lbs.

TOTAL LAND MAMMAL HARVEST: 135,938 lbs.

D. Plant Products:

(1) Blackberries: 591 lbs.

(2) Blueberries: 488 lbs.

(3) Salmonberries: 14 lbs.

(4) Eskimo potato: none reported

(5) Sourdock: none reported

TOTAL PLANT HARVEST: 1,093 lbs.

E. Sea Mammals:

(1) Belukha:

1 male	=	3,300 lbs.
27 nd.	=	71,550 lbs.
28 total	=	74,850 lbs.

(2) Seal, bearded:

28 males	=	15,050 lbs.
13 females	=	7,275 lbs.
19 nd.	=	10,778 lbs.
60 total	=	33,103 lbs.

(3) Seal, ribbon: none reported

(4) Seal, ringed:

35 males	=	3,850 lbs.
31 females	=	3,461 lbs.
43 nd.	=	4,465 lbs.
109 total	=	11,776 lbs.

(5) Seal, spotted: 1 female = 145 lbs.

(6) Walrus:

1 female	=	1,800 lbs.
3 nd.	=	4,200 lbs.
4 total	=	6,000 lbs.

(7) Whale, bowhead: 1 nd. = 157,080 lbs.

(8) Whale, gray: 1,000 lbs. from derelict carcass

TOTAL SEA MAMMAL HARVEST: 283,954 lbs.

F. Total:

(1) Recorded total: 500,767 lbs.

(2) Adjusted total: 497,364 lbs.

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