North Slope Subsistence Study
Wainwright 1988

OCS Study
MMS 89-0078

Social and Economic Studies

U.S. Department of the Interior
Minerals Management Service
Alaska Outer Continental Shelf Region

Ocs STUDY
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NORTH SLOPE SUBSISTENCE STUDY
WAINWRIGHT, 1988

Submitted To

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Prepared By

Stephen R. Braund & Associates

with

Institute of Social and Economic Research
University of Alaska Anchorage

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Alaska OCS **Environmental Studies Program**

North Slope Subsistence Study - Wainwright, 1988

Principal Authors:

Stephen R. Braund
David C. Burnham
Eric Lining
Lisa Moorehead
Timothy P. Holmes
Eve Witten
John A. K-use

Stephen R Braund & Associates
P.O. Box 1480
Anchorage, Alaska 99510

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INTRODUCTION

The North Slope Subsistence Study, sponsored by the Minerals Management Service (MMS), is a three year study of Barrow and Wainwright residents' subsistence harvests. The major focus of the study is to collect harvest and location data for species used in these communities in a manner that accurately represents total community harvests. When completed, this study will describe community subsistence harvest data and the extent both offshore and onshore areas were used by Barrow and Wainwright residents during the study period. This interim report is the first of two annual reports on the findings of the Wainwright research. The first year of Wainwright data collection began on April I, 1988 and continued through March 31, 1989. Throughout this report, this time period is referred to as "Year One." The data presented in this interim report will be revised in subsequent reports as new or corrected information is collected. The reader is referred to the Year Two report for the most accurate data.

STUDY APPROACH

Essential to the study approach are the two consecutive years of data collection. The variability inherent in subsistence harvest patterns both seasonally and annually demonstrates the importance of this long-term approach. The areas used by Inupiat hunters vary seasonally according to resource distribution patterns and hunter access. Harvest patterns vary from year to year due to environmental conditions, the population status of the targeted resources, as well as social, economic, and cultural influences.

A second essential element of the study approach in Wainwright is the inclusion of all households willing to participate in the study, in contrast with the stratified sampling approach being implemented in Barrow (Stephen R. Braund & Assoc. [SRB&A] and Institute of Social and Economic Research [ISER] 1988 - Appendix). In Barrow, the study team foresaw the impossibility of contacting 937 households periodically throughout each study year and therefore applied stratified sampling techniques to obtain a sample of over 100 households to represent the community as a whole. On the other hand, the study team considered Wainwright's estimated 130 households to be a manageable number to include in the study. The implications of including all Wainwright households in the study i.e., conducting a census rather than a sample, are discussed in detail in the Methodology (see the Appendix).

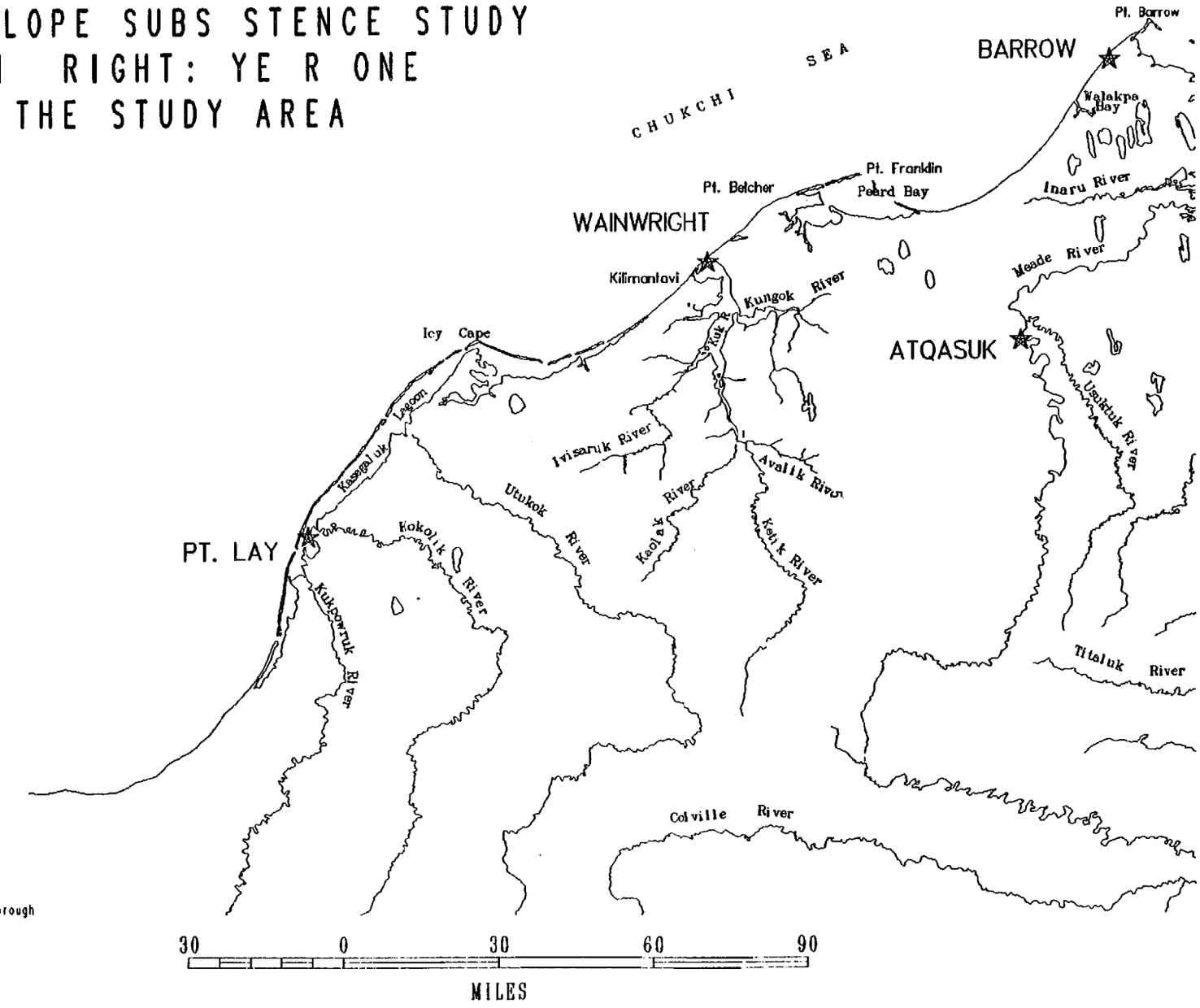
THE STUDY AREA

The community of Wainwright is situated on the Chukchi Sea coast approximately 100 miles southwest of Point Barrow, the most northerly point in the United States, and 300 miles north of the arctic circle (Map 1). The community of Barrow, about 90 miles to the northeast, is both the economic and transportation hub for most North Slope villages, including Wainwright. A North Slope Borough (NSB) census conducted in Wainwright in 1988 enumerated a population of 502 people living in 127 households (NSB Department of Planning & Community Services 1989).

Wainwright is located at the base of a small peninsula between the Chukchi Sea and the mouth of the Kuk River lagoon system. This large estuary dominates Wainwright's physical setting. Wainwright residents rely on the Kuk River and its tributaries for access to inland hunting areas. During the summer's open water season, boats are used while during winter the frozen river system forms an extensive trail network for snowmachine travel into the interior. Unlike Barrow to the north, Wainwright is not situated on a geographic point but rather on a long bight. This recessed location affects ice conditions and marine resource concentrations. During the winter and spring, open water is limited in the vicinity of the community and hunters must travel to the north (Point Belcher and Point Franklin) or to the south (Icy Cope) in search of open water suitable for hunting. Once the shorefast ice begins to break up, Wainwright residents have ample marine mammal hunting opportunities in the areas adjacent to the community. Thus, Wainwright's location provides local residents with coastal and marine harvest opportunities on the Chukchi Sea, provides access to the unique lagoon habitat adjacent to the townsite, and access to the riparian habitat of the Kuk River and its tributaries as well as the inland tundra, tundra lakes, and mountain foothills for the mammals, birds, and fish that inhabit or migrate through those areas.

Hunters travel along the coast in either direction from Wainwright, traditionally hunting as far as Cape Sabine to the southwest and Barrow to the northeast (Map 1). In 1989, Wainwright residents' coastal cabins (including those now maintained as Search and Rescue cabins) and camp sites were situated southwesterly to Icy Cape and northeasterly to Peard Bay. The majority of Wainwright residents' cabins are located inland along the Kuk River and its tributaries. Hunters travel extensively to inland camps and other traditional

MAP 1
NORTH SLOPE SUBS STENCE STUDY
I RIGHT: YE R ONE
THE STUDY AREA



Map Production: North Slope Borough
Geographic Information System
Date: June 26, 1989

hunting and fishing sites via the Kuk River in the summer and overland trails in the winter. The most experienced travelers range inland towards and occasionally through the Brooks Range during the winter months in search of forbearers inhabiting the more mountainous terrain.

FORMAT OF THIS REPORT

The purpose of this Year One report is to present the subsistence harvest data collected for Wainwright during the first year of fieldwork. Following this introduction, the second section of the report (Subsistence overview) summarizes Wainwright harvest activities, including community and household harvest levels and land use patterns for the major resource categories. The third section (Locally Harvested Renewable Resources) presents the Year One harvest data for each major species or species group. In the fourth section (Harvest Data by Harvester Level), Wainwright households arc divided into four groups based on the total amount of resources they harvested. The harvest data are then examined in terms of the percentage of each species harvested by each of the four harvester levels as well as the average harvests pcr level. The methodology for the Year One data collection, found in the Appendix, discusses the study team's data collection methods.

SUBSISTENCE OVERVIEW

The study findings for Wainwright Year One (April 1, 1988 through March 31, 1989) are summarized in this section. The basis for the harvest estimates and Wainwright demographic information are discussed below, followed by presentation (in tabular, figure and map form) of the harvest estimates and the areal extent of subsistence harvests by Wainwright residents for the major subsistence resource categories.

BASIS OF HARVEST ESTIMATES

As stated previously, the goal of this study was to obtain subsistence harvest information for all harvest events that occurred throughout the year through regular contacts with all Wainwright households. Data were collected on species harvested, harvest date, amount harvested, mapped location of the harvest, and other information for each harvest event. Throughout Year One, harvest discussions were conducted with 128 households. By the end of Year One, a full year's harvest data had been collected from 114 of the 128 households. Data for the remaining 14 households did not cover the full year for various reasons. Five households moved away from Wainwright during Year One, two new households were established mid-year (one of which also moved out before the end of Year One), and seven households refused to participate in the study for at least part of the year. (See Methodology for detailed information on household contacts).

Because the Wainwright study attempts to report on the harvest activities of the entire community (rather than on a representative sample), all harvest data collected have been included in the estimates of total community harvest for Year One, including the harvests of the households that participated for only part of the year. Calculations of average harvest amounts per household and per capita for Year One and the percentage of households harvesting each resource, however, are based only on the data provided by the 114 households that participated for the entire year. Throughout this report, these 114

households are referred to as "full-year" households and the remaining 14 are referred to as "part-year" households.

The harvest estimates presented in this report may vary from actual harvest amounts due to errors in reporting, errors in recording, and errors introduced with the use of average weights in the conversion of the number harvested to the amount of edible pounds harvested. Errors in reporting were minimized through repeated contacts with respondents over the course of the year (see Key Informant Discussions in the Appendix for further detail on the method used to conduct and determine frequency of household contacts). Errors in recording were minimized with application of rules and definitions by trained research assistants and through a review of each report by an on-site field coordinator. Additionally, data provided by one household were cross-checked with data provided by other households that participated in the same harvest event. Finally, the conversion weights applied are primarily those produced by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence from data collected in Nuiqsut and Kaktovik, both North Slope villages (ADF&G n.d.). These weights were used to aid in comparisons between the data presented in this report and other ADF&G "research. The weights are useful for comparing the relative amount of food contributed to the total community harvest by the different resources. These and other methodological issues are discussed in detail in Methodology (see the Appendix). Despite these caveats, the data collected in Wainwright are a tom-prehensive and nearly complete record of harvest events for this North Slope village.

The 114 households for which a complete year's data were collected consisted of 444 people, an average of 3.9 people per household. Of the 114 households, 113 (99 percent) were Inupiat households, defined by the study team as any household in which the head of household or spouse was Inupiat Eskimo.

Tables 1 and 2 present summary findings from the NSB census of Wainwright, conducted in late summer and early fall of 1988 (NSB Department of Planning & Community Services 1989). The NSB census enumerated 127 households and a population of 502 peep le. The average household size was 3.9 people per household and ethnicity of individuals was 89 percent Inupiat.

TABLE 3: TOTAL HARVEST EST I MATES BY MAJOR RESOURCE CATEGORY " - WAINWRIGHT, YEAR ONE

RESOURCE	CONVERSION FACTOR (1) (Edible Weight Per Resource in lbs)	COMMUNITY TOTALS (2) NUMBER HARVESTED	COMMUNITY TOTALS (2) EDIBLE POUNDS HARVESTED	AVERAGE POUNDS HARVESTED (3) PER HOUSEHOLD	AVERAGE POUNDS HARVESTED (3) PER CAPITA	PERCENT OF TOTAL EDIBLE POUNDS HARVESTED	PERCENT OF ALL WAINWRIGHT HOUSEHOLDS HARVEST I NG RESOURCE
Marine Mammals (4)	n/a	n/a	179,574	1,395.9	358.1	70%	40.4%
Terrestrial Mammals	n/a	n/a	60,696	500.6	128.5	24%	54.4%
Fish	n/a	n/a	9,895	83.5	21.4	4%	64. O%
Birds	n/a	n/a	6,161	51.0	11.0	2%	50.9%
Total	n/a	n/a	256,325	2,031.0	416.8	100%	86. 8%

(1) See Table A-2 for sources of conversion factors.

(2) Community totals are based on harvest amounts reported by all Wainwright households for all species except bowhead (see note 4).

(3) Per household and per capita means are based only on the 114 full-year households for all species except bowhead (see note 4).

(4) Edible pounds harvested for bowhead whale were derived from a pounds-per-foot-length ratio, which includes all edible portions of the whale. Average pounds per household and per capita were derived from the total edible whale amount rather than from the number of shares households reported receiving. Thus, these figures are higher than the actual amounts households received.

n/a means not applicable

Source: Stephen R. Braund & Associates, 1989

percent, and birds two percent. The last column of Table 3 presents the percentage of Wainwright households that harvested each major resource category. For example, 40.4 percent of the 114 full-year households participated in the harvest of marine mammals from April 1, 1988 to March 31, 1989. Nearly 87 percent participated in the harvest of at least" one resource.

Figure 1 graphically presents the average edible pounds of resource product per Wainwright household for each of the major resource categories. Marine mammals accounted for 1,396 pounds of the 2,031 edible pounds of subsistence resources harvested per household in Year One. Terrestrial mammals were the second most important resource category (501 edible pounds per household) followed by fish and birds.

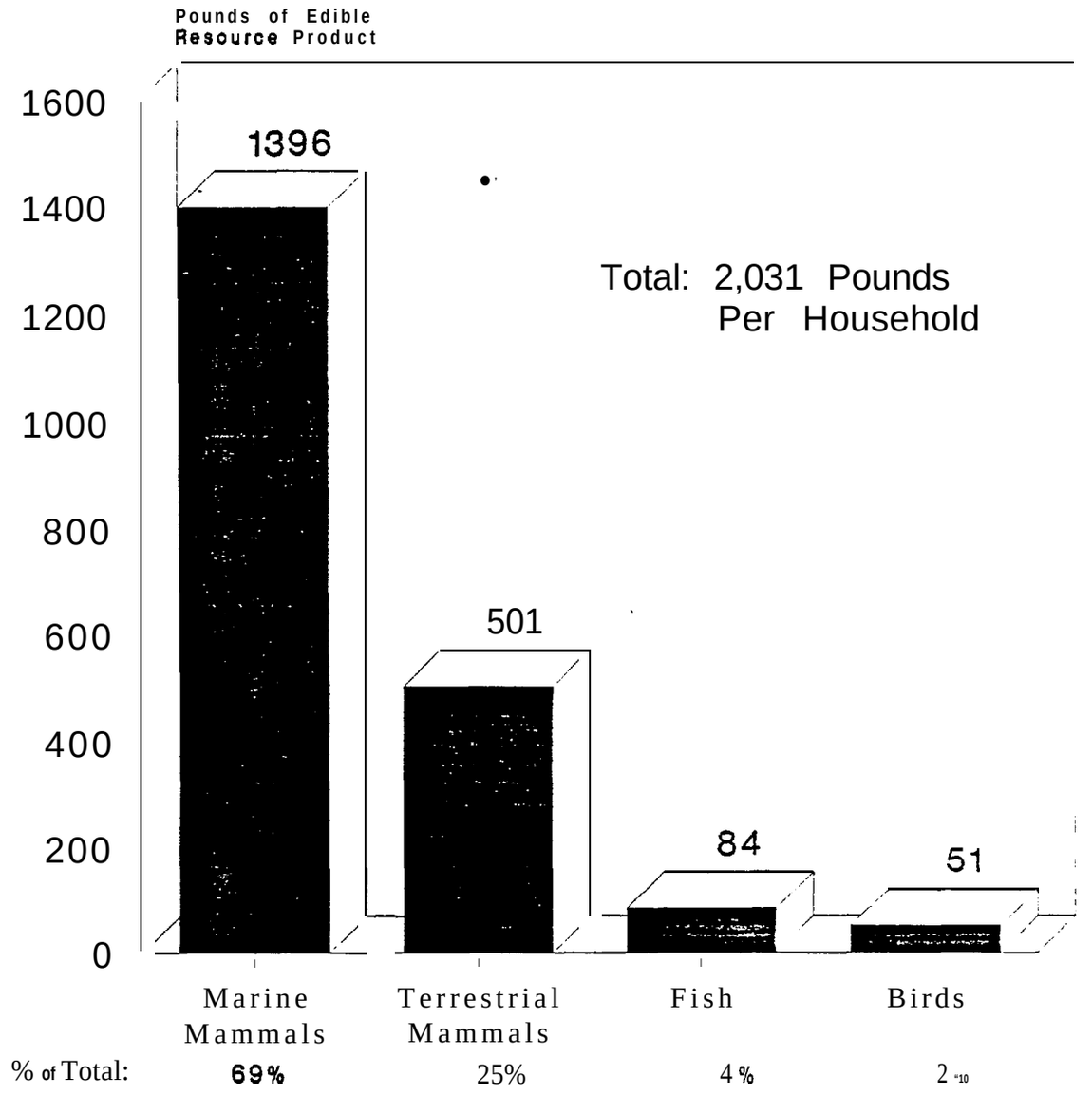
While the above estimates represent the mean harvest by Wainwright households, four cautions are noteworthy. First, the actual harvest in any given household varies depending on the level of harvest activity of household members, their hunting success, and their species preferences. Few households may actually harvest the amount exactly equal to the community mean.

Second, Figure 1 presents the relative importance of the major species categories in terms of edible pounds harvested per household. It does not necessarily indicate the relative cultural and nutritional importance of the resource categories, nor does it indicate the amount of resources actually consumed or take into account the amount of resources imported or exported.

Third, household means for bowhead whale were calculated from the entire estimated edible weight of the four whales harvested, rather than from the weight of the shares the households reported receiving. Thus, household means for bowhead (and marine mammals as an aggregate category including bowhead whale) subsume all edible portions of the whale, including: portions distributed at the community level at feasts and celebrations; the amount shared with other communities; and all the blubber.

Finally, these data pertain to a single year of harvest activity. While the relative importance of the resource categories may not change, the absolute harvest levels are likely to vary from year to year. The Year Two report for

Figure 1: Harvest Amounts By Major Resource Category Wainwright, Year One



(Mean Edible Pounds **Per Household)**

Source: Stephen R. Braund & Assoc., 1989

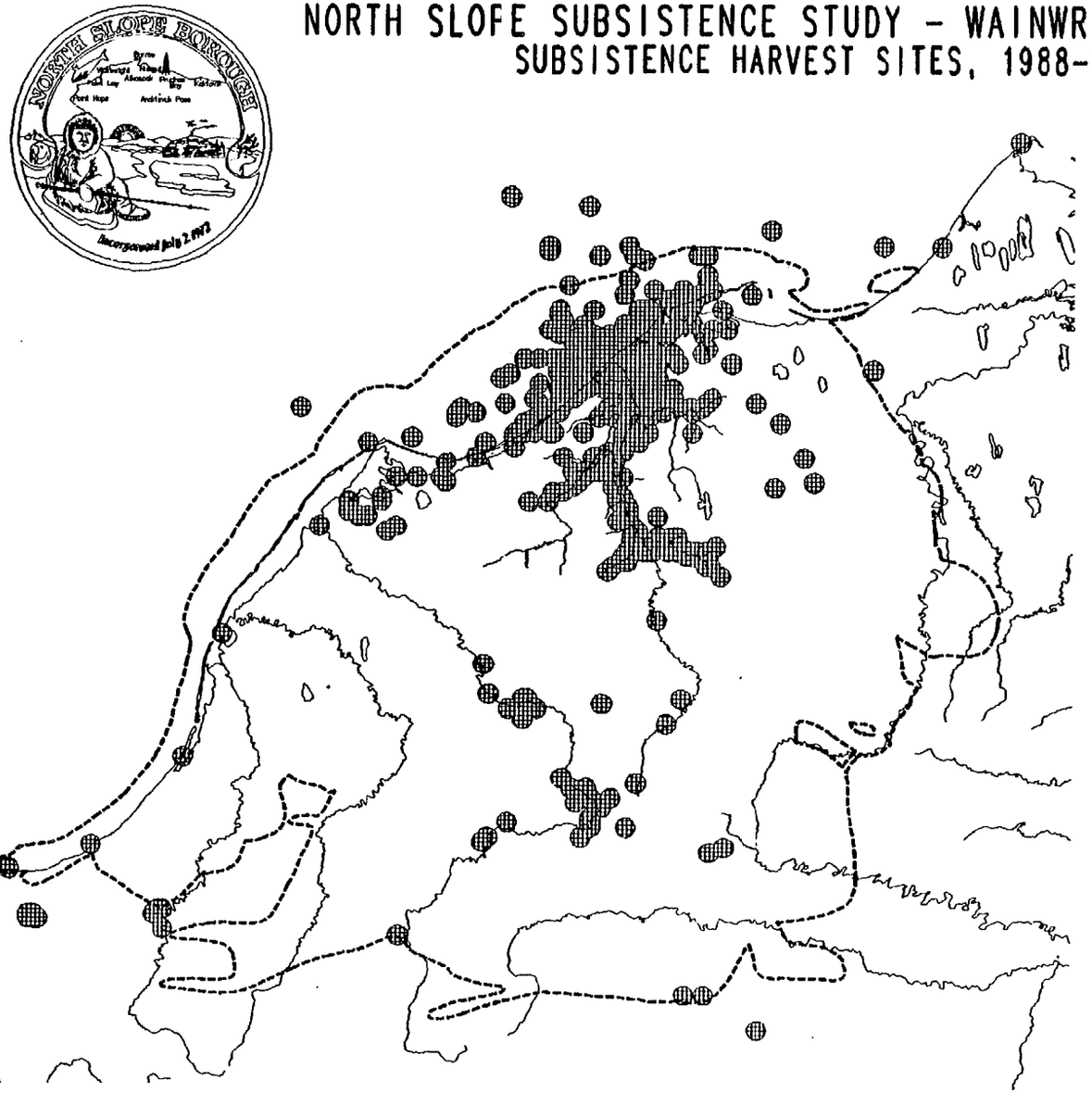
Wainwright will incorporate a comparison of annual harvest activity and will report means based on data collected over two years.

AREAL EXTENT OF SUBSISTENCE LAND USE

Map 2 illustrates Wainwright residents' harvest locations for the harvest of all species during Year One. Year One harvests were concentrated along the Kuk River system and the land and ocean areas adjacent to the community. The data presented on the maps only include the areas of successful harvests in Year One and do not include the total area hunted. During harvest discussions with study households, the hunter marked on a 1:250,000 scale map the location where each harvest occurred. On most of the maps in this report, individual harvest locations are depicted by a shaded circle. Each circle represents an actual harvest site surrounded by a two mile buffer. Overlapping circles form larger shaded areas.

The two mile buffer serves three purposes. First, the depiction of harvest sites with a two mile buffer reflects an intent to include at least the immediate hunting area. Second, the use of a buffer also accounts for possible errors in reporting the exact location. of harvest sites. Respondents reported the location of fish sites, for example, with certainty because those sites were identified easily by the geographic features of the lake or river. Other harvest sites with distinct geographic features were reported with a high degree of accuracy as well, evidenced by the respondent's ease and confidence in mapping the location. On the other hand, harvests of marine mammals or birds from boats offshore, for example, or of caribou out in the open tundra, were reported typically as an approximate location but recorded as one point on the map representing the respondent's best estimate of the exact harvest site. The lack of geographic landmarks reduced the precision with which the hunter could locate some harvest sites on the map. Third, the buffer is used to enhance the visual effectiveness of the data presented on the maps, particularly where distinct categories of data must be differentiated. Symbols as well as smaller buffers were tested as alternatives, but did not represent the data clearly, especially where harvests of multiple species overlapped (e.g., Map 3).

MAP 2
NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
SUBSISTENCE HARVEST SITES, 1988-1989



This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study. Lifetime-community harvest areas, collected in the form of map biographies from 14 households (Pederson 1979), are also illustrated.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.

LEGEND NFORMA ION

Lifetime community land use (Pedersen 1979).

All Species Har-ested

Caribou, Moose
Brown Bear, Wolf
Wolverine, Fox
Ermine, Seals
Walrus, Polar Bear
Bowhead Whale
Beluga Whale
Geese, Eiders
Other Ducks
Ptarmigan
Fish, Coal
Water

N

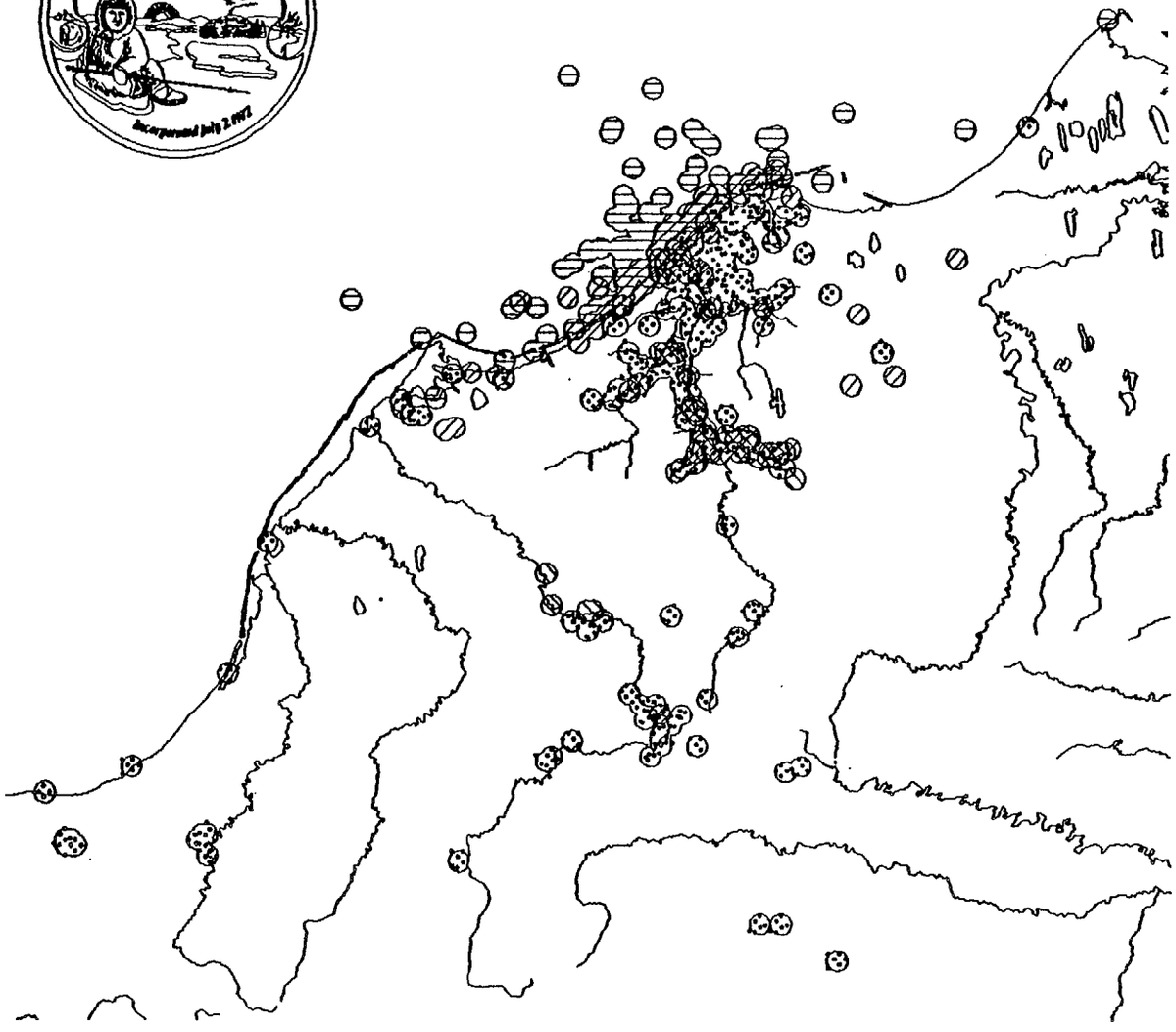
Map Production: North Slope Borough GIS

Date: June 21, 1989

120

MILES

MAP 3
NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
SUBSISTENCE HARVEST SITES BY MAJOR RESOURCE CATEGORY



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LEGEND INFORMATION

- Marine Mammals (Bowhead whale, beluga, whale, seal, walrus, polar bear)
- Terrestrial Mammals (Caribou, moose, brown bear, fox, wolf, wolverine, ermine)
- Fish (Whitefish, other freshwater fish, salmon, other coastal fish)
- Birds (Elders, other ducks, geese, ptarmigan)

N

Map Production: North Slope Borough GIS

Date: June 21, 1989

30 0 30 60 90 120

MILES

Geographic features are not named on Maps 2 through 13 due to the need to present harvest data as clearly as possible. Geographic features can be identified by consulting Map 1 in combination with the harvest data maps.

All Wainwright harvesters do not hunt and fish in the same geographic areas. Wainwright residents use a number of fixed camps for their harvest activities and visit scores of other areas in pursuit of mobile resources. The harvest sites of both part-year and full-year households are included in all maps. While possible that the few households not in the study used areas not presented in these maps, these maps represent the vast majority if not all of the hunting and fishing areas used by Wainwright residents in Year One.

These maps currently indicate where one or more harvest event occurred. A harvest site may represent one harvest event during which one animal was harvested, or it could represent any number and variety of animals harvested on different dates and by different households, all in the same location. Hence, the sites as presented do not exhibit the number of harvest events or the pounds of edible resource product harvested at each site. On most maps, these harvest events pertain to an individual species or species group harvested at that site.

The major areas where Wainwright residents harvested the four major species groups during Year One are shown on Map 3. The principal focus of marine mammal harvest activity was within a 15 mile radius of Wainwright. However, additional harvest areas occurred along the coast northeast to Peard Bay and southwest to Icy Cape. Terrestrial mammal harvest areas were widespread, occurring along the coast southwest as far as Cape Sabine and northeast of Wainwright almost to Barrow, as well as inland (south) into the Brooks Range. Fish harvest areas were located principally along the Kuk River system while bird harvest areas were split between this river system and the coastal areas near Wainwright.

LOCALLY HARVESTED RENEWABLE RESOURCES

In this portion of the report, Year One harvest data are presented in detail. The first section provides a summary of all species harvested in Year One and is followed by a month by month description of harvest activities in Year One (seasonal round), including factors that influenced the harvest. Following the seasonal round, data for each species and species group are presented by major resource category. The main components of each resource discussion are:

- Number of animals harvested (by species)
  - Totals for Year One
  - Totals by month
- Number of edible pounds harvested (by species)
  - Totals for Year One
  - Totals and percentages by month
  - Per household averages
  - Per capita averages
  - Totals by harvester level
- Percentage of total pounds harvested
- Percentage of Wainwright households harvesting the resource
- Percentage of species harvest by harvester level

Tables and figures are used extensively to summarize the data, while the computer generated maps of the data illustrate harvest ranges for each major resource category and for species or species groups within the category.

SPECIES RECORDED IN YEAR ONE

All harvested species recorded by this study in Year One are displayed in Table 4. The list includes nearly 40 individual species of mammals, fish, and birds harvested by the study households. In addition to mammals, fish, and birds, Wainwright households also harvested coal, ice, and water. It is possible that Wainwright residents harvested additional resources during Year One that were not reported during harvest discussions. The study team has found in both

TABLE 4: SPECIES HARVESTED BY WAINWRIGHT RESIDENTS
APRIL 1988- MARCH 1989

Species	Iñupiaq Name	Scientific Name
Marine Mammals		
Bearded seal	Ugruk	Erignathus barbatus
Ringed seal	Natchiq	Phoca hispida
Spotted seal	Qasigiaq	Phoca largha
Bowhead whale	Aġviq	Balaena mysticetus
Beluga whale	Qilalugaq	Delphi napterusleucas
Polar bear	Nanuq	Ursus maritimus
Walrus	Aiviq	Odobenus rosmarus
Terrestrial Mammals		
Caribou	Tuttu	Rangifertarandus
Moose	Tuttuvak	Alces alces
Brown bear	Akʸaq	Ursus arctos
Arctic fox (Blue)	Tiġiganniaq	Alopex lagopus
Red fox (Cross, Silver)	Kayuqtuq	Vulpes fulva
Ground squirrel	Siksrik	Spermophilus parryii
wolf	Amaguk	Canis lupus
Wolverine	Qavvik	Gulogulo
Ermine	Itigiaq	Mustela erminea
Fish		
Salmon (non-specified)		
Chum salmon	Iqalugruaq	Oncorhynchus keta
Pink (humpback) salmon	Amaqtuuq	Oncorhynchus gorbuscha
Whitefish (non-specified)		Coregonus sp.
Round whitefish	Aanaakliq	Prosopium cylindraceum
Least cisco	Iqalusaaq	Coregonus sardinella
Bering, Arctic cisco	Qaaktaq	Coregonus autumnalis
Arctic grayling	Sulukpaugaq	Thymallus arcticus
Arctic cod	Iqalugaq	Boreogadu saida
Burbot (Ling cod)	Tittaaliq	Lots iota
Tomcod (Saffron cod)	Uugaq	Eleginus gracilis
Sculpin	Kanayuq	Cottus cognatus
Rainbow smelt	Iʸhuaġniq	Osmerus mordax
Lake trout	Iqaluakpak	Salvelinus namaycush

TABLE 4 (cont.): SPECIES HARVESTED BY WAINWRIGHT RESIDENTS, APRIL 1987- MARCH 1988

Species	Iñupiaq Name	Scientific Name
Birds		
Eider (non-specified)		
Common eider	Amauligruaq	Somateria mollissima
King eider	Qiŋalik	Somateria spectabilis
Spectacle eider	Tuutalluk	Somateria fischeri
Stellar's eider	Igniqauqtuq	Polysticta stelleri
Other Ducks (non-specified)	Qaugak	
Pintail	Kurugaq	Anas acuta
Mallard	Kurugaktak	Anas platyrhynchos
Goose (non-specified)	Niġliq	
Brant	Niġliñġaq	Branta bernicla n.
White-fronted goose	Niglivialuk	Anser albifrons
Lesser snow goose	Kaŋuq	Chen caerulescens
Canada goose	Iqsraġutilik	Branta canadensis
Ptarmigan (non-specified)	Aqargiq	Lagopus sp.
Willow ptarmigan	Nasaullik	Lagopus lagopus
Other Resources		
Minerals		
Coal	Aluaq	
Water		
Fresh water	Imiq	
Fresh water ice	Sikutaq	
Sea ice	Siku	

Source: Stephen R. Braund & Associates, 1989

Wainwright and Barrow that, particularly with "small" or incidental resources such as plants, bird eggs, fish or, in some cases, ducks, respondents may forget to report these harvests unless the interviewer asks about them specifically. A complete list of resources known to have been harvested historically by Wainwright residents is found in Table A-1 in the Appendix.

In some instances, the researchers were not able to record each successful subsistence harvest by individual species. This problem occurred most commonly for those species harvested in mixed groups (e.g., various species of birds or fish). Thus, categories are included in the data tables for these non-specified reports, e.g., "non-specified duck" and "non-specified salmon." The recording of marine and terrestrial mammals, on the other hand, likely was more accurate. The harvest of these larger animals was more memorable for most people, and respondents had no problem distinguishing one from the other.

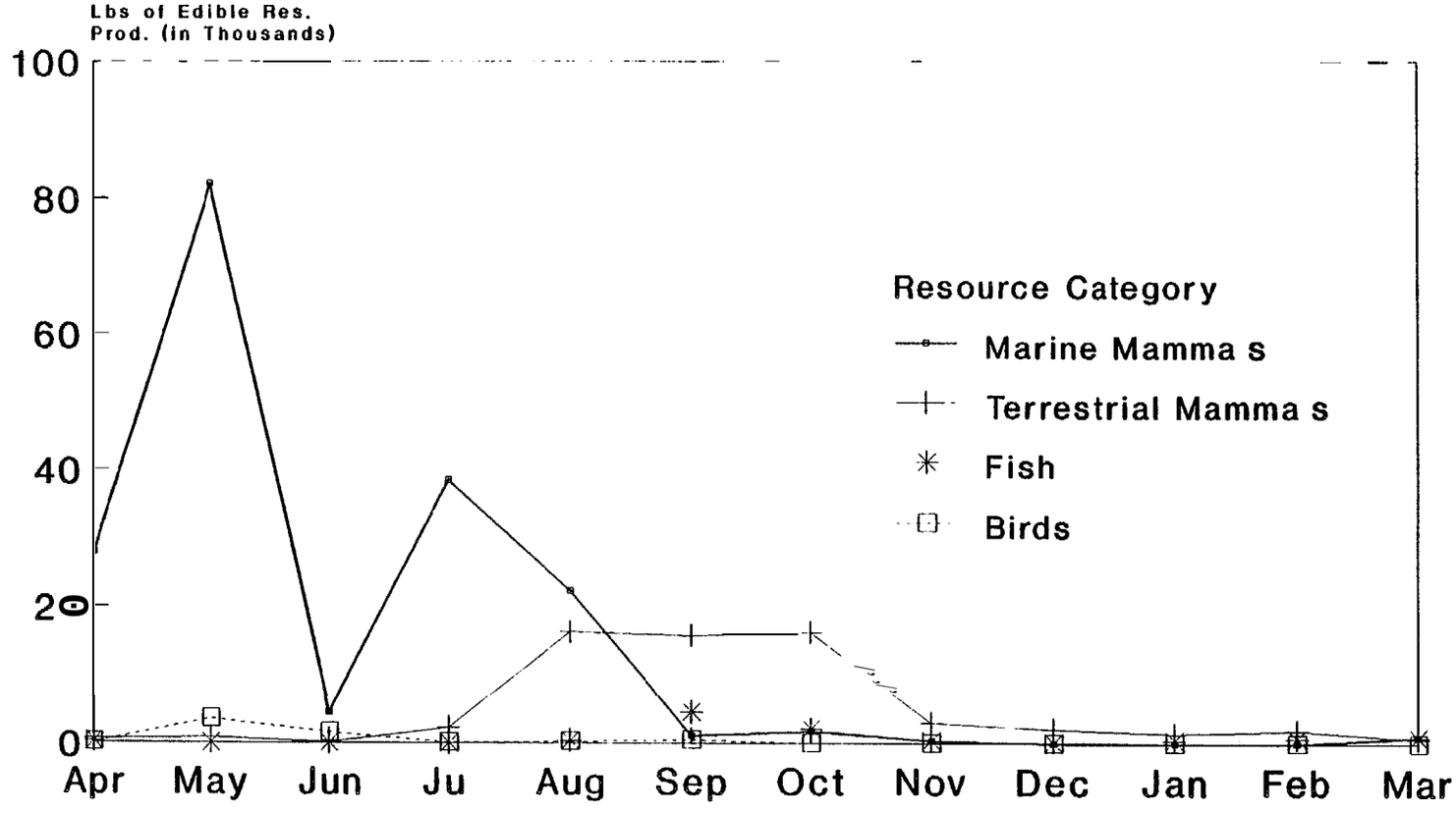
MAJOR SPECIES GROUPS HARVESTED BY MONTH

Total harvests by month for each of the major resource categories are illustrated in Figure 2. Table 5 provides a month by month accounting of the total edible pounds harvested in each major resource category.

Marine mammal harvests occurred in all but three mid-winter months during Year One. In terms of total edible pounds, April, May, July and Augustwerethe primary harvest periods. Marine mammal harvests comprised 87 percent of the total harvest in the five month period April through August.

Terrestrial mammal harvests were recorded for every month of the year, the only major resource group to be harvested all 12 months. The primary harvest period was August through October. During September and October, the harvest of terrestrial mammals far outweighed that of the other resource categories, contributing 76 percent of the total harvest for those two months combined. During November through February the harvest was also high in relation to the other categories, although the overall harvests were much lower during those months.

Figure 2: Monthly Harvest by Major Resource Category Wainwright, Year One



Source: Stephen R Braund & Assoc., 1989

TABLE 5: MONTHLY HARVESTS BY MAJOR RESOURCE CATEGORY - WAINWRIGHT, YEAR ONE
(Pounds of Edible Resource Product)

TOTALS
******

MAJOR RESOURCE CATEGORY	1988 April	May	June	July	August	Sept.	October	Nov.	1989 Dec.	Jan.	Feb.	March
Marine Mammals	27,888	81,906	4,481	38,662	22,360	1,116	1,748	420	0	0	0	992
Terrestrial Mammals	685	820	117	2,232	16,419	15,788	16,146	3,042	2,106	734	1,904	702
Fish	262	0	0	5	423	4,572	2,"104	355	86	446	753	890
Birds	123	3,517	1,567	135	314	499	2	3	0	1	0	0
Total	28,958	86,244	6,165	41,034	39,516	21,975	20,000	3,820	2,192	1,181	2,657	2,584

PERCENTS
****

MAJOR RESOURCE CATEGORY	1988 April	May	June	July	August	Sept.	Ott ober	Nov.	1989 Oec.	Jan.	Feb.	March	
Marine Mammals	16%	46%	2%	22%	12%	1%	1%	0%	0%	o%	o%	1%	= 100%
Terrestrial Mammals	1%	1%	0%	4%	27%	26%	27%	5%	3%	1%	3%	1%	= 100%
Fish	3%	o%	o%	o%	4%	46%	21%	4%	1%	5%	8%	9%	= 100%
Birds	2%	57%	25%	2%	5%	8%	o%	0%	o%	o%	o%	0%	= 100%
All Resources Combined	11%	34%	2%	16%	15%	9%	8%	1%	1%	0%	1%	1%	= 100%

Source: Stephen R. Braund & Associates, 1989

Fish harvests occurred mid-summer through early spring. The highest harvests by weight took place in September when 46 percent of all fish harvested in Year One were caught. Sixty-seven percent of all Year One fish were caught in September and October combined.

Birds were harvested primarily in April through September with the peak harvest, 57 percent, taking place in May. May and June harvests combined yielded 82 percent of the year's bird harvest.

Coal and water were the only non-animal harvests recorded in Year One. Wainwright residents collected the most coal in early September from exposed coal seams along the Kuk River. Most water was collected as ice in September and the October when it could be cut as blocks and transported by snowmachine.

THE SEASONAL ROUND

In this section, Wainwright residents' annual cycle of subsistence activities is described for the year beginning April 1, 1988 and ending March 31, 1989. Harvest activities are summarized by month so as to coincide with Figure 2, "Monthly Harvest By Major Resource Category." While the general pattern of activities likely would remain much the same from year to year, changes in environmental conditions, local resource availability, as well as social and economic factors affect the actual timing and, occasionally, the relative importance of the different resources harvested from year to year.

APRIL

As in all Alaska spring whaling communities, Wainwright residents busily prepared for whaling during April in anticipation of favorable ice conditions by the end of the month. In addition to whaling, subsistence activities during April included smelt fishing, collecting ice for drinking water, and seal hunting at the open lead. A few smelt were still available at the beginning of the month although residents indicated the majority of the smelt harvests occurred

between December and March. Households that had depleted their supply of fresh water ice cut the previous fall were now chipping ice along cracks in nearby lakes. Some hunters took advantage of favorable marine ice conditions (an open lead close to shore readily accessible by snow machine) to hunt seals.

The first whaling crews moved out on the ice to their whaling camps on April 19th; the last crews went out five days later. An open lead in the pack ice was within one mile from shore in most locations. Some camps were established just south of the village, but most of the 12 whaling camps were located about 18 to 20 miles north of Wainwright on the shorefast ice. Around six o'clock p.m. on Monday, April 25th, Wainwright whalers successfully harvested a 26 foot whale and the following morning a second whale measuring 30 feet was landed. In each case the weapons used were a darting gun with line and float attached. Residents commented that these harvests were earlier than usual for Wainwright, citing the favorable weather and ice conditions. After these successful harvests, 25 to 30 knot offshore winds made camping on the ice and boating in the open lead too dangerous and whaling activities were curtailed for a few days. The crews began going back out on the ice on Saturday, April 30th.

MAY

Whaling remained the primary subsistence activity during May. Wainwright whalers successfully harvested a 44 foot bowhead early in the evening of May 6th. Although the whale was harpooned and killed about 15 miles north of town, unstable shorefast ice conditions in the harvest vicinity prompted the captain to tow the whale until it was right in front of town. The proximity to the village resulted in very high attendance as people were able to walk from the village to the butchering site. Many families brought their wall tents for cooking and resting while the whale was being butchered. Children of all ages enjoyed climbing on top of the whale and into its mouth. Butchering began around nine o'clock p.m. and continued through the night, the last loads being hauled into town around five o'clock in the morning.

Because the whale harvested May 6th represented Wainwrights' last allocated strike, whaling stopped with all community members hoping for a transfer from one of the whaling villages further south. On May 16th the crews returned to the ice when a strike was transferred and Wainwright's fourth and final bowhead harvest for the year occurred on the 18th of May. The 49'-6" whale was taken at about 10 o'clock p.m. some distance out in the lead. Crews towed the whale into an ice inlet very near shore and about 45 minutes north of town by snowmachine. As other springtime activities (primarily geese hunting) had already started, and because the harvest site was so far north of the village, fewer people participated in the butchering of this whale than the previous whale.

Wainwright received additional strikes on May 16th and May 25th from the Alaska Eskimo Whaling Commission (AEWC) and most crews continued hunting. Whaling crews also harvested a few seals and eiders during lulls in the whale migration. One crew took a polar bear that approached their camp on the ice.

Going inland for geese hunting was also a major activity in May. Waterfowl hunting is an activity that all family members can participate in and provides the first opportunity of the year for families to get out on the land together. Although several families went inland early in the month, the majority of people who went inland did so after high school graduation and the harvest of the fourth whale.

JUNE

Inland geese hunting continued into June. Bad weather during most of the season limited hunting success for many households. It was not uncommon for families to spend two weeks inland but only have two or three days suitable for hunting the entire time. The combination of poor weather and deteriorating travel conditions ended this activity by around June 10th.

Wainwright whalers hunted as weather permitted well into June. Because of increasing amounts of water on the shorefast ice by June, many whaling crews actually camped on land and went out to the lead only during periods of active hunting. Although a number of whales were spotted, all were mothers with calves so no strikes were taken. Whaling crews searching for whales took the first walrus and ugruk of the season. Whaling ended the week of June 13th.

Waterfowl hunting (primarily eiders) from coastal camps was an important activity throughout June. When the lead was closed, the birds often flew above coastal lagoons and ponds that were already open. When the lead was open, bird hunting was conducted from boats out in the lead. Whaling crews, looking to contribute the birds to the upcoming Nalukataq (the blanket toss festival held to celebrate the whale harvest), were joined by discouraged inland hunters and other village residents. A few sea mammals were also taken from these coastal camps.

Wainwright's Nalukataqs were celebrated on the 23rd and 24th of June. Two successful crews hosted each day. Residents from virtually all North Slope villages were present as were a number of people from the NANA region. The many boxes of food distributed to those people attending Nalukataq represent an important source of subsistence foods for all households but are particularly important to those households without active hunters.

Although the ice was still present in front of town and on the lagoon, warmer temperatures encouraged seals and ugruk to sun themselves on the deteriorating shorefast ice. Hunters crawling across the stronger sections of ice or pushing small boats in front of them successfully harvested these sunning animals in the immediate vicinity of town.

JULY

Marine mammal hunting was the major subsistence activity in July. During the first few days of the month, hunters towed their boats on trailers to the mouth of Kuk Lagoon where open water provided access

to the lead. On July 4th the shore ice in front of town broke free allowing hunters direct boat access to the sea mammal hunting grounds among the floating pack ice. Depending on the wind and currents, the floating pack ice was anywhere from one to 10 miles offshore.

Fourth of July celebrations organized by the City of Wainwright reduced hunting over the long weekend as virtually everyone participated in the schedule of races, games and events. Prize money was donated by the City, the Mother's Club and the local search and rescue group.

Bearded seal was the most common marine mammal species harvested during the first two weeks of July. A few seals and walrus were also harvested. Weather conditions were generally favorable throughout the first two weeks of July but boating activity was concentrated during evenings and weekends. According to villagers, poor weather conditions during the latter part of the month limited boat travel to the lagoon.

A few caribou "were also harvested this month. Harvesting occurred just inland from the community with access provided by both boat and three or four wheelers.

AUGUST

Marine mammal hunting continued in August as weather and hunting conditions permitted. However, as most households had harvested the desired quantity of seal, ugruk and walrus by mid-month, caribou hunting became the dominant subsistence activity for the final two weeks of the month. Caribou harvests were concentrated within the immediate vicinity of the Kuk River and its tributaries as this river system provides boat access to an extensive inland hunting area. Subsistence activities also occurred along the coast both north and south of the community. A blizzard that deposited over two inches of snow the 26th of August resulted in the first use of snowmachines

since early June and several caribou were harvested using this form of transportation. As the snow melted within several days, the widespread use of snowmachines was still a month away.

Some geese and brant harvesting also occurred as the birds migrated south along the coast. The most common hunting spot for the migrating waterfowl was Thomas Point at the mouth of Kuk Lagoon. This point juts out into the ocean and provided an excellent location for harvesting waterfowl as they flew just off the coast.

SEPTEMBER

Caribou hunting continued to be a primary subsistence . activity during September. The long Labor Day weekend prompted many families to heed to inland camps for caribou hunting and fishing. Gill nets were usually set near the camping location each evening and then pulled and picked the following morning. Everyone participated in checking the nets. Least cisco was the primary species harvested.

During the first two weeks of September, boats were the major form of transportation. Consequently, caribou harvests were concentrated, within the immediate vicinity of the Kuk river and its tributaries and along the coast both north and south of the community. During the remainder of the month, freeze-up conditions limited boat travel and increased snowmachine travel. As the ice on the rivers and larger lakes was not" thick enough to travel on safely, snowmachine usc and caribou hunting were focused in a 150 square mile area south 10 miles to the Kungok River and to the east of the community about 15 miles.

Marine mammal hunting continued in the first few weeks of September as weather and ice conditions permitted. Brant harvesting also continued during the first two weeks of the month.

OCTOBER

As in September, caribou hunting was the primary subsistence activity in October. Caribou were moving in a northerly direction just inland

from the coast throughout the month. Day trips from the village were very. common as households attempted to fill their larders for winter.

Some residents who did not have children in school spent considerable time at inland camps fishing for grayling and burbot. Unlike Barrow, where setting nets under the ice is common, only a few Wainwright families set nets under the ice; jigging was the more common method of fishing at this time of year. October marked the beginning of furbearer hunting and those residents who spent time inland were always on the lookout for fresh wolf and wolverine tracks.

Although water is delivered to all the houses in town, people prefer fresh water ice cut from one of the "ice ponds" near the town for tea and coffee. The ice was cut into blocks and either stored on site and retrieved throughout the winter or hauled back to the village. October and November were the main months for cutting ice because the ice usually becomes too thick to cut later in the winter. Some people also use "glacier ice" for drinking. Glacier ice is actually two year old (or older) pack ice out of which the salt has percolated.

Several polar bears were harvested this month and a fcw people began smelt fishing at the end of the month.

The last part of October was dominated with the news of three trapped gray whales off Barrow. Approximately a dozen Wainwright residents went to Barrow to help with the rescue attempt. Coinciding with the end of the prime caribou harvest season, the opportunity for temporary employment was appreciated.

NOVEMBER

Subsistence activity declined in November. The decline was partially a result of the deteriorating weather; temperatures dropped and the winds were uncharacteristically high, limiting travel. Additional]}, although caribou were generally abundant throughout the month, few

were harvested both because the caribou were in rut (making their meat less desirable) and because high caribou harvests in September and October had alleviated any immediate need for additional caribou.

In early November, cold weather (temperatures hovering in the -20° Farenheit range, and frequently colder) and strong winds (up to 40 miles per hour) combined to make traveling and hunting both difficult and dangerous. The winds diminished near the end of the month, and some hunters searched for seals at the open lead a few miles from town. Other hunters traveled inland in search of wolf and wolverine sign for future hunting.

Glacier ice was abundant along the coast near Wainwright and was collected regularly when needed. Freshwater ice was also collected at the ice ponds north of town.

Smelt fishing began in earnest this month and continued throughout the winter. Smelt fishing took place near the mouth of Kuk Lagoon on both the ocean and river sides of the inlet. Cracks were located through the snow and holes were dug usually about five feet deep. For the most part fishing occurred on the weekends but generally anyone who had time off or was not working would go fishing.

In preparation for Thanksgiving, large quantities of stored subsistence foods were taken out of the ice cellars and delivered to the whaling captains' and crews' homes to be cooked for the Thanksgiving feast. Dishes prepared from caribou, waterfowl, whale meat, maktak (bowhead whale skin and a layer of the attached blubber) and also baked goods were brought to the two churches on Thanksgiving day. In addition to the meal eaten that day, the extra food given to every household provided many families with important subsistence food for the winter months ahead.

DECEMBER

The calm weather in the last part of November carried into the first part of December. These conditions gave some of the more active

hunters the chance to go inland to the foothills of the Brooks Range in search of wolf and wolverine. Hunting these two furbearers required considerable time, effort, and expense. Hunters utilized cabins in the interior as well as in the foothills of the Brooks Range, where most of the more elusive forbearers tend to be (e. g., wolf and wolverine). The calm weather and the windblown snow made traveling and tracking easier and a few wolves and wolverines were harvested.

Fox trapping also got under way this month although most trappers waited until after Christmas to set their traps when the animals' coats are heaviest and snowy white. A few foxes found in and near town were killed for fear of rabies and the possibility of a child being bit.

With few subsistence resources available this time of year and the main ones (i.e., furbearers) requiring considerable time and effort, many hunters considered this a good time of year to shift their emphasis to wage employment. Many people had winter jobs and took occasional short hunting trips on weekends. People harvested caribou for fresh meat and for the Christmas feast. Smelt fishing was still popular on the weekends and during any other time off. Seals were hunted less frequently as the ocean lead virtually disappeared this month.

Christmas day brought a terrible storm to an otherwise calm but cold month. The strong winds and blowing snow reduced visibility to zero and made traveling to the churches for the Christmas feasts very difficult. The storm forced water over the ice, creating deep pools on top of the ice and making travel even more dangerous. One hunter survived a fall through the ice in which he lost his snowmachine.

JANUARY

Many Wainwright residents went to Barrow in the first week of January to take part in the the traditional Kivgiq or Messenger Feast. Kivgiq is a gathering of people from all over the North Slope to exchange

gifts and food and to participate in various cultural events. Many people who remained in Barrow after the Kivgiq became stranded in Barrow when a severe cold spell and extreme high pressure system settled over the state, grounding most planes. Thus, shipments of food, supplies and equipment virtually were halted during the cold spell. With temperatures dropping to below -40° Farenheit and with sustained winds of 25 mph, the wind chill factor plummetted to -118°. These conditions were the dominant factor affecting subsistence activities this month.

Subsistence in January was limited mostly to smelt fishing. Onc group of hunters traveled to the south in search of wolverines. The bitter cold temperatures caused the wolverine hunters' snowmachines to break down, stranding them in the backcountry in the middle of the cold spell. Eventually they were rescued by the Wainwright Search and Rescue team.

Foxes were also hunted and trapped. The public safety officer reported that three of the five foxes killed in town were carrying rabies. Thus, it was acknowledged that all foxes in town should bc killed for safety reasons.

Wainwright was also hit hard by a flu bug. Many families were affected by this stomach virus and were unable to maintain their normal level of activity. Thus, the extreme cold, the virus, and the cultural activities in Barrow all contributed to January being the lowest month of the year in terms of edible pounds harvested.

FEBRUARY

The warmer and longer days of February allowed for an increase in subsistence activities over the past month. On sunny days, the lagoon was filled with people out fishing who welcomed the opportunity to bc outdoors again.

With the warmer temperatures and the return of the sun, a group of hunters again headed far south in search of wolverines and wolves.

Other families took trips deep into the mountains. The traveling for most of the month was very smooth and easy but with few signs of wolves or wolverines.

Quite a few caribou were about but were seldom pursued. Families would bring in a caribou when fresh meat was lacking or supplies from the cellar were low.

The ocean lead was still frozen; therefore, no sea mammals were taken. Polar bears were seen just north of town but none were harvested. At the end of the month, ice conditions changed drastically when a tremendous wind storm swept across the North Slope for three days. Visibility dropped to just a few feet. The wind gusted to over 102 mph and sustained winds of 50 to 70 mph were common. Houses suffered considerable damage, with roofs blown off, walls caved in, and many houses left without heat. The worst factor of this storm was the powerful wind which drove ice crashing onto the shore. When the ice stacked up along the shore to a height of 20 feet, houses near the shore were evacuated. After the storm, these high walls of ice made access to the ocean very difficult.

MARCH

After February's storm, people were busy repairing the damage. Once the destruction was cleared, people began to think of whales and the upcoming whaling season. Whaling crews were assembled and boats and sleds were repaired. The talk in town was about the condition of the ice which was a huge mass of jumbled chunks. The February storm opened a few leads near Wainwright and although some seals were seen, none were taken. At the end of the month three polar bears were taken, two of them by a Wainwright hunter ana the third by a Barrow hunter.

With the ever-improving weather, many hunters again tried to go deep into the hills for wolves and wolverines but to no avail. One hunter estimated that he had traveled over 2,000 miles looking for wolves and

wolverines with no success. Smelt fishing was the prime activity of the month with people jigging for smelts on the ice at every opportunity.

In summary, the following list highlights the key subsistence-related dates and events for Year One. Also listed are the many events and holidays that indirectly influenced harvest patterns.

DATE	ACTIVITY OR EVENT
April 3	Easter Sunday
April 19	First whaling crews out on the ice
April 25	Whale harvest, Wainwright's 1st whale
April 26	Whale harvest, Wainwright's 2nd whale
May 2	High school graduation
May 6	Whale harvest, Wainwright's 3rd whale
May 7	Eva Neakok funeral
May (mid)	Geese hunting begins
May 16	AEWC transfers strike to Wainwright
May 17	AEWC transfers strike to Wainwright
May 18	Whale harvest, Wainwright's 4th whale
May 28-30	Memorial Day weekend
June 10	Inland travel by snowmachine stops
June 13	Whaling stops
June 22	Jerry Panik funeral
June 23-24	Nalukataq
June (late)	Seal and ugruk harvests on shorefast icc
July 3-4	Fourth of July games
July 4	Shorefast ice breaks off - full scale boat travel begins
July 9	Ice in lagoon breaks up
July (mid)	First caribou harvests of summer
July 20	Russian scientists in town
July (late)	Eskimo Olympics in Fairbanks - Wainwright Dancers attend
August 7	Annual supply barge arrives
August 12	Wainwright village picnic
August 16	School starts
August (mid)	Subsistence emphasis turns inland - caribou
August 25	Edith Negovanna funeral
August 26	Two inches of snow
September 3-5	Labor Day weekend
September (mid)	Snowmachine travel becomes common
September (late)	Ice begins stacking up on shore
October 7	Trapped gray whales discovered off Pt. Barrow
October 13	North and Northwest Mayor's Conference begins in Barrow

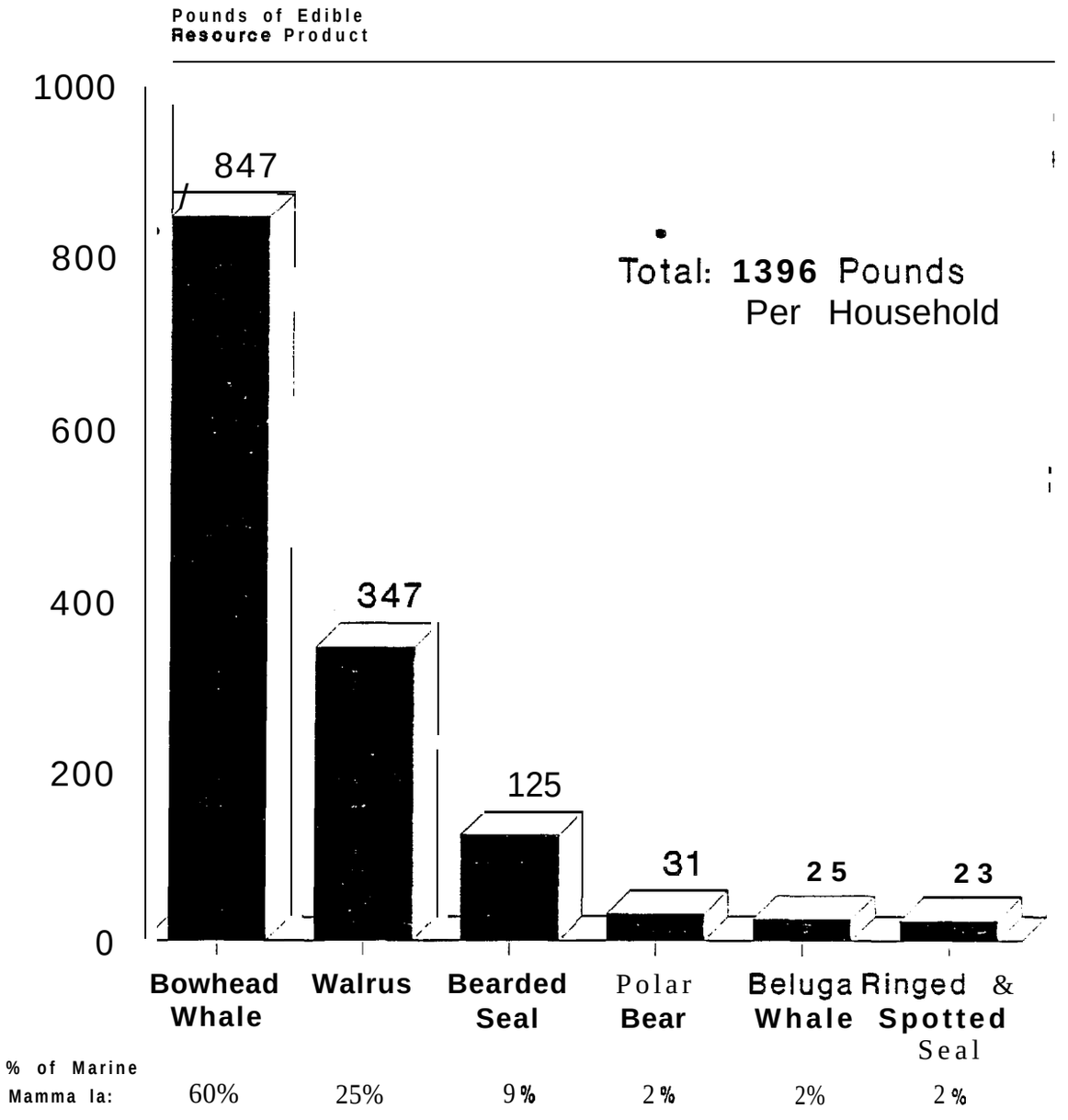
DATE	ACTIVITY OR EVENT
October (mid)	Caribou begin rutting
October 17	Gray whale rescue operation begins
October 19	Alaska Federation of Natives annual meeting begins in Fairbanks
October 22	NSB flies Wainwright people to Barrow to help with rescue
October 28	Gray whales swim free
October 31	Halloween dance
November 1	Wainwright community potluck and Eskimo dance for Reverend Simmonds prior to his moving to Barrow
November 4	Wainwright high school basketball starts
November 8	High winds, 40 + mph
November 14	Wainwright city council travels to Fairbanks
November (early)	Smelt fishing starts
November 20	Sun sets in Wainwright
November 24	Thanksgiving
November (late)	Wolf and wolverine hunting begins
December 6"	NSB Assembly meeting in Wainwright
December 25	Christmas. Major storm, blowing snow and winds to 35 mph
December 26-31	Christmas games
January 1-3	Messenger Feast (Kivgiq) in Barrow
January 19	First sunrise of the year in Wainwright
January	Extremely cold temperatures last three weeks of January
Februrary 3-6	Bad ice conditions because of high water
February 12	Snow storm, 6 to 8 inches
February 16	Wainwright town meeting with NSB Mayor Ahmaogak
February 17	Warner Asogeak funeral
February 20	NSB holiday
February 25	Severe wind storm, gusts to 104 mph recorded at Wainwright
March 8-11	Alaska Eskimo Whaling Commission annual meeting in Barrow
March 21	Wainwright general town meeting
March (mid)	Wainwright ice road built to gravel pit
March 26	Easter
March (late)	Work begins on sewage lagoon "
March (late)	Lead opens north of Wainwright
March 31-April 2	Spring Light Inspiration singers from Barrow travel to Wainwright, many by snowmachine

MARINE MAMMALS

As noted previously, the total pounds of marine mammals harvested was greater than for any other species category, accounting for 70 percent of the total edible pounds of all species harvested during Year One. Figure 3 portrays how the average Year One household harvest of 1,396 pounds of marine mammals was distributed among the individual species. Bowhead whale was the most important resource. The harvest of four bowhead whales in Year One accounted for 60 percent of the edible pounds of marine mammals harvested and 42 percent of the total community harvest for all species (Table 6). Next in importance were walrus, providing 25 percent of the marine mammal harvest, followed by bearded seal (9 percent), polar bear (two percent), beluga whale (two percent), and ringed and spotted seal (two percent).

Table 6 presents harvest estimates and related information for the Year One Wainwright marine mammal harvest. The conversion factor for the edible weight of each species is multiplied by the number of animals harvested by the entire community to determine the total pounds harvested for each species. All the marine mammal conversion weights except bowhead and beluga whale were derived from AD F&G (n.d.) data. The bowhead whale conversion weight represents the average edible weight of the four whales harvested by Wainwright whaling crews during Year One. While we are confident that these harvest data depict the relative importance of bowhead whale in the community of Wainwright, the estimates of total edible pounds of bowhead whale harvested were derived mainly from weights collected in Barrow. The study team weighed representative crews hares (i. e., the total amount of whale allocated to a crew at the butchering site) and crew member shares (i.e., an individual allocation of a crewshare) from each of the Barrow Year One whales (1987) and from most of the Barrow Year Two whales (1988) harvested and also worked in cooperation with NSB Department of Wildlife Management researchers to weigh the entire edible portions of two Barrow Year One bowhead whales. Based on these calculations of edible weight, the study team developed formulas for calculating the edible weight of a whale based on its length. A description of the method used to determine edible weight of the individual whales is found in Conversions from

Figure 3: Harvest of Marine Mammals Wainwright, Year One
(Mean Edible Pounds Per Household)



Source: Stephen R. Braund & Assoc., 1989

TABLE 6: HARVEST ESTIMATES FOR MARINE MAMMALS - WAINWRIGHT, YEAR ONE

RESOURCE	CONVERSION FACTOR (1) Edible Weight Per Resource in pounds	COMMUNITY TOTALS (2) NUMBER HARVESTED	COMMUNITY TOTALS (2) EDIBLE POUNDS HARVESTED	AVERAGE POUNDS HARVESTED (3) PER HOUSEHOLD	AVERAGE POUNDS HARVESTED (3) PER CAPITA	PERCENT OF TOTAL EDIBLE POUNDS HARVESTED	PERCENT OF ALL WAINURIGHT HOUSEHOLDS HARVESTING RESOURCE
Total Marine Mammals	n/a	n/a	179,574	1395.9	358.1	70.1%	40.4%
Bowhead (4)	27,104.0	4	108,616	847.0	217.2	42.3%	78.9%
Walrus	772.0	58	45,038	346.5	89.0	17.6%	18.4X
Bearded Seat	176.0	97	16,991	124.8	32.1	6.6%	33.3%
Polar Bear	496.0	7	3,472	30.5	7.8	1.4%	4.4%
Total Ringed & Spotted Seal	42.0	68	2,856	22.5	5.8	1.1%	23.7%
Ringed Seal	42.0	63	2,646	20.6	5.3	1.0%	22.8%
Spotted Seal	42.0	5	210	1.8	0.5	0.1%	5.3%
Beluga Whale	1,400.0	2	2,800	24.6	6.3	1.1%	0.9%

(1) See Table A-2 for sources of conversion factors.

(2) Community totals are based on harvest amounts reported by all Wainwright households for all species except bowhead (see note 4).

(3) Per household and per capita means are based only on the 114 full-year households for all species except bowhead (see note 4).

(4) Edible pounds harvested for bowhead whale were derived from a pounds-per- foot- length ratio, which includes all edible portions of the whale. Average pounds per household and per capita were derived from the total edible whale amount rather than from the number of shares households reported receiving. Thus, these figures are higher than the actual amounts households received.

n/a means not applicable

Source: Stephen R. Braund & Associates, 1989

Numbers to Pounds in the Appendix. Discussion of the edible weight calculation for beluga whales is also found in that section of the Appendix.

The average edible weight for a bowhead, 27,104 pounds, is the average edible weight of the four whales harvested during Year One. The estimated edible portion per whale ranged from 12,691 to 46,134 pounds. The average household harvest for all Wainwright households was 847 pounds and the average per capita harvest was 219 pounds. Seventy-nine percent of all Wainwright households reported participating in the harvest of bowhead whale. The estimated edible portion of each of these four whales included the muscle or meat, the maktak, the tongue, and all of the whale blubber. However, not all the edible portions of those four whales were consumed by Wainwright residents. Field observations indicated that over a quarter of all Wainwright households hosted relatives for Nalukataq. The study team estimated close to 150 additional people in the community for the two days of celebration and whale distribution. Every family present was entitled to an equal share of the harvest whether from Wainwright or from one of the several other communities represented. Since these whales were shared widely with people from other villages and because generally not all the blubber is eaten, the 'household and per capita means for bowhead are higher than the actual amounts received by Wainwright households.

Walrus was the next most important marine mammal resource in terms of total edible pounds harvested (17.6 percent) followed by bearded seal (seven percent). One-third of all Wainwright households harvested 97 bearded seals, nearly twice as many households as harvested Wainwright's 58 walrus.

That only 18 percent of Wainwright households participated in the walrus harvest indicated that some hunters specialize in this activity. However, consumption of walrus is not limited to the harvesters. SRB&A field staff observed that, as with all marine mammals, gifting and distribution to eiders and other community members was common. On several occasions successful hunters would simply announce on the Citizen's Band radio that walrus and bearded seal were available for anyone who wanted any. With only a few umiat (skin whaling boats covered in this area with bearded seal skins) in Wainwright, the need for skins does not play as important a role in bearded seal harvest patterns as in Barrow. Nonetheless, virtually all bearded seal skins were stretched and saved either for making traditional boots (mukluks) or

to sell or trade to Barrow residents. Walrus hides were rarely saved; one hunter was observed making some "Eskimo rope" from the hide of a very young walrus.

The ringed and spotted seal harvests together provided two percent of the marine mammal harvest and one percent of the total community harvest by weight. Ringed seals were far more commonly harvested than spotted seals by a ratio of over 12 to one. Twenty-three percent of Wainwright households harvested ringed seals compared to the five percent who harvested spotted seals. No ribbon seals were harvested by Wainwright households during the first year of the study. This seal, desired primarily for its striking pelt. is uncommon in the Wainwright area.

Seven polar bear harvests contributed 3,472 pounds to the community harvest, or 1.4 percent of the total harvest. About four percent of all Wainwright households harvested polar bears during the year.

That only two beluga whales, an adult female and an immature whale. were harvested during Year One demonstrates the variability inherent in subsistence harvest activities when compared to the prior year's beluga harvest. During the previous summer (1987), Wainwright hunters harvested 47 belugas during a single day. The animals were herded by a number of boats into the shallow waters of Kuk Lagoon where they were harvested. In 1988, a thick fog hung over the coast during the whale migration. Although a number of boats mobilized when they received word of the whales coming up the coast, the fog prevented the hunters from successfully herding them. This year's harvest of two beluga whales represents just over one percent of the total edible pounds harvested in Year One and nearly two percent of the marine mammal harvests at an estimated 2,800 pounds.

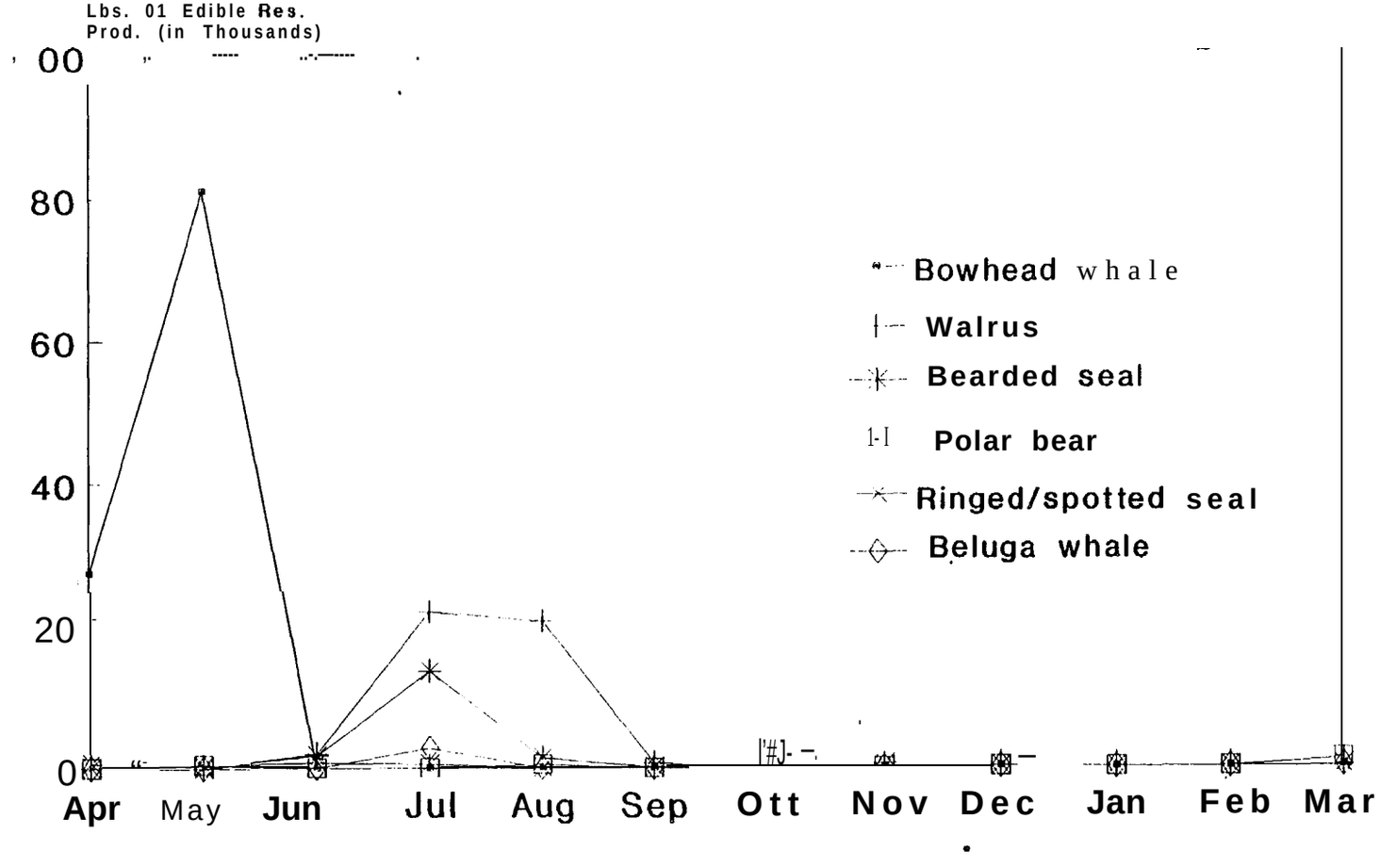
With the exception of bowhead whaling, fewer Wainwright households participated in successful harvests of marine mammals than any of the other major resource categories. Field observations indicated that" this lower level of participation was largely a function of the costs associated with maintaining and operating an ocean-going boat. In addition to initial costs, the cost of using the boat can be quite high; a crew might use as much as 30 gallons of gas in a single day of walrus and bearded seal hunting.

During Year One, the vast majority of marine mammal harvests occurred during spring whaling - April and May - and in the summer boating season, July and August (Figure 4, Tables 7 and 8). The four bowhead whales were harvested in the three and a half week period between April 25 and May 18. Ringed and spotted seal harvests began in April with harvests occurring each month through November, and no harvests at all December through March. June yielded the highest harvest of ringed seals; these animals were abundant in June, sunning themselves on the deteriorating pack ice. The most spotted seals were taken in September as hunters traveled along the coast.

July and August were the peak harvest months for walrus with 93 percent of the walrus harvests taking place then. The only other months walrus were harvested were June and September; thus, the walrus harvest was concentrated in the four month period between June and September. Similarly. the vast majority of bearded seal harvests (80 percent) were in July, with all harvests occurring between June and October. The beluga harvest occurred in July. Thus, 22 percent of all Year One marine mammal harvests occurred in July, second to May which included two bowheads harvests and higher than April, when the other two bowheads were harvested. The high walrus, bearded seal, and beluga harvests were responsible for making July such a productive month.

Marine mammal harvests dropped dramatically in September due to the seasonal changes of weather, with only three spotted seals and one ringed seal. one bearded seal, and one walrus harvested. These harvests contributed one percent to the total marine mammal harvest for Year One. In October, edible pounds of marine mammals were a bit higher (though still only one percent of the total pounds) due to the harvest of three polar bears in addition to a few seals. Nine ringed seals and one spotted seal were the only marine mammal harvests recorded for November, yielding 15 percent of the total ringed and spotted seal harvests for the year, but less than one percent of all marine mammals. Marine mammal harvests ground to a halt after November, with the following winter months of December, January, and February showing no harvests at all. The only harvests in March were two polar bears. Thus, 99 percent of the marine mammal harvest occurred from April through November. In summary, four distinct phases of marine mammal hunting were observed in Year One based on environmental conditions and resource availability. Marine mammal harvesting began when significant open leads formed in the pack ice through which bowhead whales

Figure 4: Monthly Harvest of Marine Mammals Wainwright, Year One



Source: Stephen R. Braund & Assoc., 1989

TABLE 7: MARINE MAMMAL HARVEST BY SPECIES AND MONTH - WAINWRIGHT, YEAR ONE
(Pounds of Edible Resource Product)

TOTALS
******

SPECIES	1988 April	May	1989 June	July	August	Sept.	October	Nov.	Dec.	Jan.	Feb.	March
Bowhead Whale	27,342	81,074	0	0	0	0	0	0	0	0	0	0
Walrus	0	0	2,007	21,801	20,458	772	0	0	0	0	0	0
Bearded Seal	0	0	1,760	13,515	1,364	176	176	0	0	0	0	0
Polar Bear	0	496	0	0	496	0	1,488	0	0	0	0	992
Total Ring. & Spot. Seal	546	336	714	546	42	168	84	420	0	0	0	0
Ringed Seal	546	336	714	504	42	42	84	378	0	0	0	0
Spotted Seal	0	0	0	42	0	126	0	42	0	0	0	0
Beluga Whale	0	0	0	2800	0	0	0	0	0	0	0	0
All Marine Mammals	27,888	81,906	4,481	38,662	22,360	1,116	1,748	420	0	0	0	992

PERCENTS
****

SPECIES	1988 April	May	June	1989 July	August	Sept.	October	Noy.	Dec.	Jan.	Feb.	March	
Bowhead Whale	25%	75%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Walrus	0%	0%	4%	48%	45%	2%	0%	0%	0%	0%	0%	0%	= 100%
Bearded Seal	0%	0%	10%	80%	8%	1%	1%	0%	0%	0%	0%	0%	= 100%
Polar Bear	0%	14%	0%	0%	14%	0%	43%	0%	0%	0%	0%	29%	= 100%
Total Ring. & Spot. Seal	19%	12%	25%	19%	1%	6%	3%	15%	0%	0%	0%	0%	= 100%
Ringed Seal	21%	13%	27%	19%	2%	2%	3%	14%	0%	0%	0%	0%	= 100%
Spotted Seal	0%	0%	0%	20%	0%	60%	0%	20%	0%	0%	0%	0%	= 100%
Beluga Whale	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
All Marine Mammals	16%	46%	2%	22%	12%	1%	1%	0%	0%	0%	0%	1%	= 100%

Source: Stephen R. Braund & Associates, 1989

TABLE 8: MARINE MAMMAL HARVEST BY SPECIES AND MONTH - WAINWRIGHT, YEAR ONE
(Number Harvested)

	1988							1989				
SPECIES	April	May	June	July	August	Sept.	October	Nov.	Dec.	Jan.	Feb.	March
Bowhead Whale	2	2	0	0	0	0	0	0	0	0	0	0
Walrus	0	0	3	28	27	1	0	0	0	0	0	0
Bearded Seal	0	0	10	7	7 8	1	1	0	0	0	0	0
Polar Bear	0	1	0	o	1	0	3	0	0	0	0	2
Total Ring. & Spot. Seal	13	8	17	13	1	4	2	10	0	0	0	0
Ringed Seal	13	8	17	12	1	1	2	9	0	0	0	0
spotted Seal	0	0	0	1	0	3	0	1	0	0	0	0
Beluga Whale	0	0	0	2	0	0	0	0	0	0	0	0

Source: Stephen R. Braund & Associates, 1989

could migrate. As virtually every able-bodied Wainwright hunter was engaged in this activity, the incidental harvests of other marine resources were frequent during this period. As the shore fast ice began to deteriorate, hunters targeted on ringed seals basking in the sun. With the exception of bowhead whaling, the greatest concentration of marine mammal harvest activity occurred during the open water season which lasted from July 4 through mid-September in 1988. Hunting seals at open leads in the winter pack ice continued until reduced light, inclement weather, and the freezing over of most open water brought hunting to a halt. The traditional pattern of hunting seals at breathing holes in the ice appeared to have been replaced by a more productive summer hunting season allowed by the changes in hunting technology (e.g., more powerful and seaworthy boats, see below).

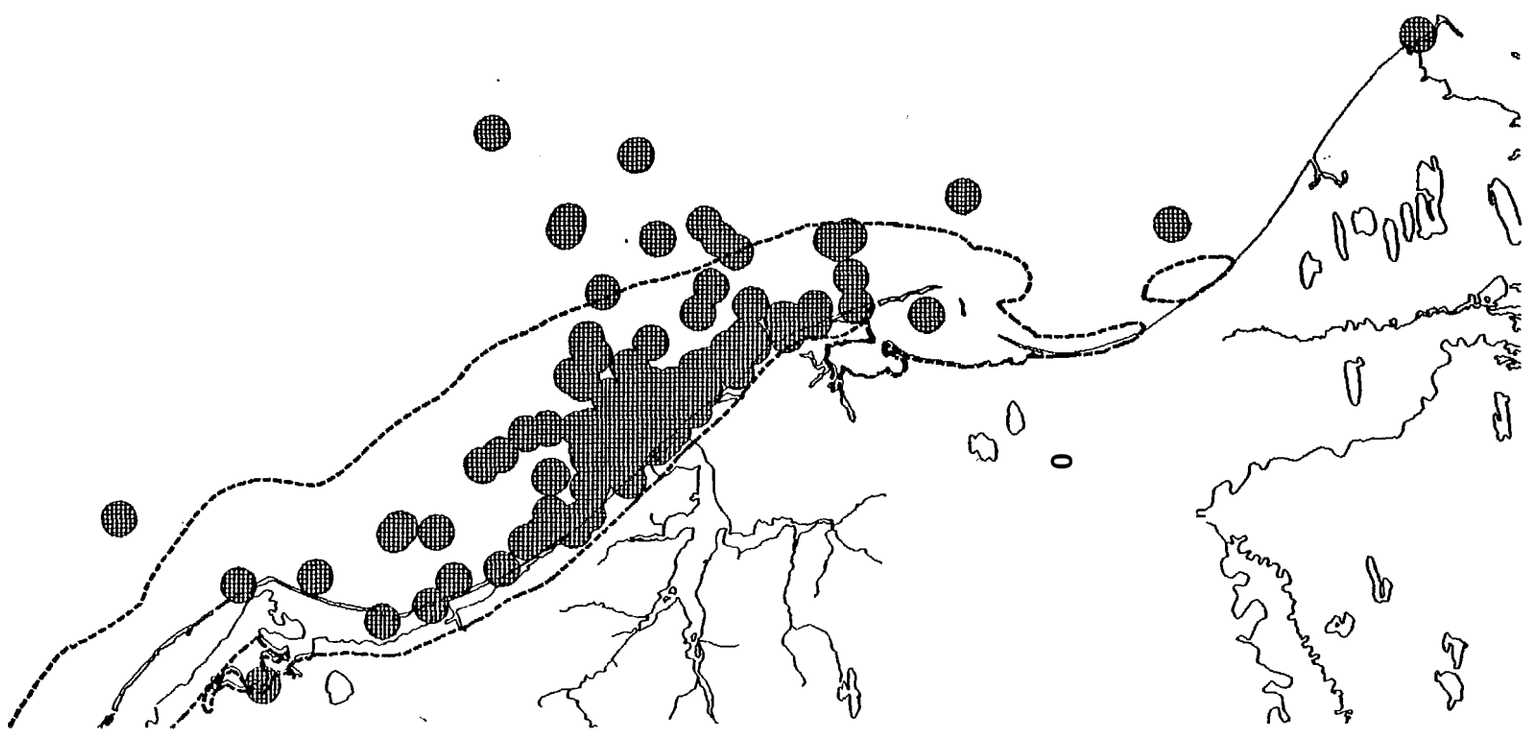
A comparison of the current marine mammal harvest area to the lifetime community harvest area documented by Pedersen (1979) in Map 4 implies that hunters now travel farther offshore for marine mammals than they did prior to 1978. As noted in Barrow (SRB&A and ISER 1988), the advent in the past several years of larger aluminum and fiberglass boats and more powerful outboard motors appears to have extended the distance that the marine mammal hunters can safely travel offshore since harvest range data were collected by Pedersen (Braund and Burnham 1984: Alaska Consultants, Inc. et al. 1984). Comparison also shows that Year One marine mammals harvesters did not travel as far to the southwest as the lifetime community harvest line indicates Wainwright hunters have traveled in the past for marine mammals. Although that line is cropped on Map 4, it extends past Point Lay to Cape Sabine, as shown on Map 2.

The area used by Wainwright hunters for Year One marine mammal hunting extended from Point Barrow to the northeast to beyond Icy Cape to the southwest, and ranged as far as 40 miles offshore. The principal Year One harvest area. however, was much smaller: from Point Belcher to the northeast to approximately 15 miles southwest of Wainwright and an average of 10 to 15 miles offshore. This principal hunting- area was largely a function of the distances comfortably traveled on trips originating and ending in Wainwright, and was limited by fuel supplies and hunter endurance (usually not more than 24 hours). Harvests outside this core area were usually based from coastal camps or occurred while traveling to other areas. For example, the harvest near Point Barrow occurred when a family traveled to Barrow by boat.

MAP 4
N°RTH SLOPE SUBSISTENCE STUDY - WA INWRIGHT: YEAR ONE
MARINE MAMMAL HARVEST SITES - ALL SPECIES

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study. Lifetime-community harvest areas, collected in the form of map biographies from 14 households (Pederson 1979), are also illustrated.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.



LEGEND INFORMATION

Lifetime community land use (Pedersen 1979).

Marine Mammals
- Bowhead whale
- Beluga whale
- Bearded seal
- Ringed seal
- Spotted seal
- Walrus
- Polar bear

Map Production: North Slope Borough GIS

Date: June 21, 1989

20 0 20 40 60 80

MILES

Maps 5 and 6 illustrate marine mammal harvest locations by species and reveal that hunters ranged farthest offshore in pursuit of walrus, approximately 40 miles. The four whale harvests took place north of the community along the edge of. the open lead, which was within a mile of the coast. Hunters harvested seals and walrus along the entire length of coast between Icy Cape and Peard Bay. While hunters may have been looking for a particular species, harvests of bearded seal, walrus, and ringed" seal were possible at any location during the open water season.

Marine mammal harvest locations are displayed by season in Map 7. The two seasons (July to October and November to June) correspond respectively with the two primary travel modes used in marine mammal hunting: hunting from boats in open water and hunting from the 'ice, either based at whaling camps or while traveling over the ice by foot or snowmachine. Map 7 illustrates that " ice-based hunting occurred primarily within a few miles . of shore, with hunters ranging extensively to the north and south of the community. The month of June was a transitional time in terms of marine travel and the marine mammal harvests located well offshore took place from boats searching the expanding lead system for bowheads. The summer season allowed hunters to travel much greater distances, both from town and while based at hunting camps along the coast.

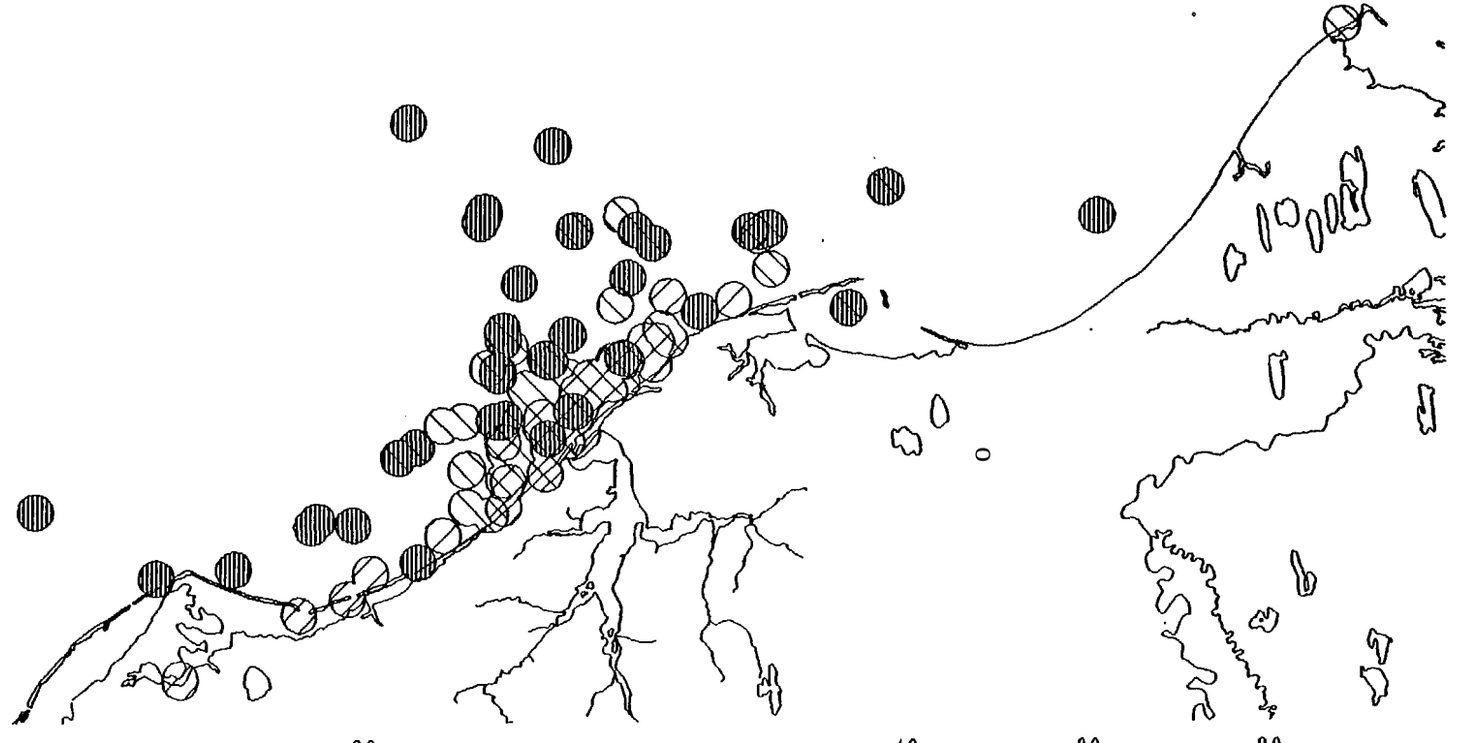
TERRESTRIAL MAMMALS

Wainwright residents harvested a variety of terrestrial mammals (nine species) in Year One. However, in terms of edible pounds harvested (which exclude the five species of furbearers), the 59,094 pounds of caribou in Year One represent 97 percent of the terrestrial mammal harvest and 23 percent of all Year One harvests combined (Table 9, Figure 5). Caribou was the second most important species (after bowhead whale) in terms of its contribution in pounds to Wainwright residents' subsistence diet. It was also the only species out of all the major resource groups that was harvested every month of Year One. Households averaged 487 pounds of caribou and 501 pounds of all terrestrial mammals combined. Fifty-four percent of all Wainwright households reported harvesting caribou in Year One. Caribou was clearly an important staple item of the Wainwright subsistence diet.

MAP 5
NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
MARINE MAMMAL HARVEST SITES BY SPECIES:
WALRUS AND SEALS

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.



LEGEND INFORMATION

- Walrus
- Bearded seal
- Ringed and Spotted seals

N

20 40 60 80

MILES

Map Production: North Slope Borough GIS

Date: June 21, 1989

MAP 6
NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
MARINE MAMMAL HARVEST SITES BY SPECIES:
WHALES AND POLAR BEAR

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.

LEGEND INFORMATION

- Bowhead whale
- Beluga whale
- Polar bear

N

20 0 20 40 60 80

ILES

Map Production: North Slope Borough GIS

Date: June 23, 1989

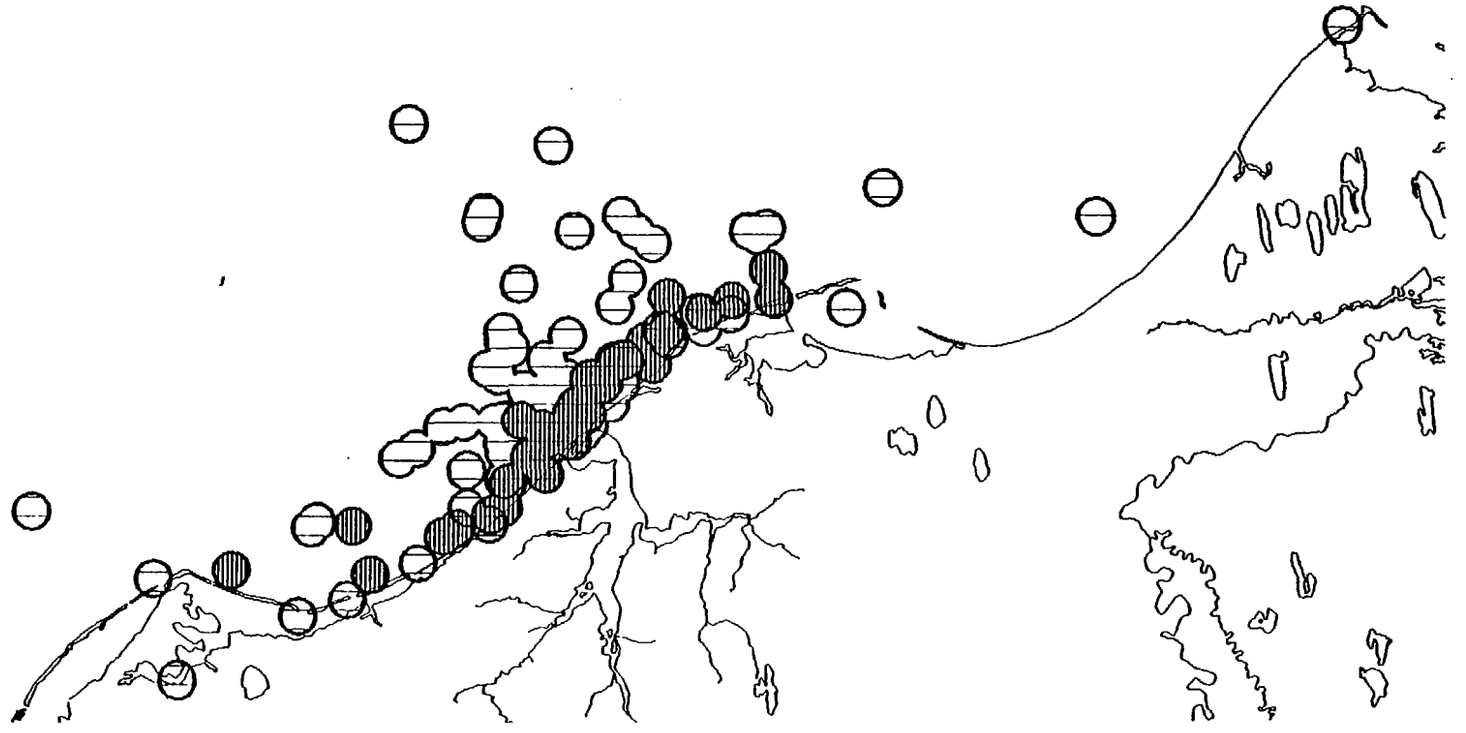
MAP 7

NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE

MARINE MAMMAL HARVEST SITES BY SEASON

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.



Map Production: North Slope Borough GIS

Date: June 23, 1989

TABLE 9: HARVEST ESTIMATES FOR TERRESTRIAL MAMMALS - WAINWRIGHT, YEAR ONE

RESOURCE	CONVERSION FACTOR (1) Edible Weight Per Resource in pounds	COMMUNITY TOTALS NUMBER HARVESTED	COMMUNITY TOTALS EDIBLE POUNDS HARVESTED	AVERAGE POUNDS HARVESTED (2) PER HOUSEHOLD	AVERAGE POUNDS HARVESTED (2) PER CAPITA	PERCENT OF TOTAL EDIBLE POUNDS HARVESTED	PERCENT OF ALL WAINWRIGHT HOUSEHOLDS HARVESTING RESOURCE
Total Terrestrial **Mammals**	**n/a**	n/a	60,696	500.6	128.5	23.7%	54 .4%
Caribou	**117.0**	505	**59,094**	486.6	124.9	23. 1%	53.5x
Moose	500.0	3	**1,500**	13.2	3.4	0.6%	2.6%
Brown Bear	100.0	1	**100**	0.9	0.2	**	0.9%
Ground Squirrel	0.4	3	**1**	*	*	•*	0.9%
Arctic Fox **(Blue)**	**n/a**	60	**n/a**	n/a	**n/a**	n/a	5.3%
Red Fox (Cross, Silver)	**n/a**	27	**n/a**	**n/a**	**n/a**	**n/a**	7.0%
Wolver ine	n/a	20	**n/a**	n/a	**n/a**	**n/a**	5.3%
wolf	**n/a**	10	**n/a**	**n/a**	n/a	n/a	3.5%
Ermine	n/a	2	**n/a**	n/a	n/a	n/a	**0.9%**

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(1) See **Table** A-2 for sources of conversion factors.

(2) Per household and per capita means are based **only** on the 114 **ful** l-year households for **all** terrestrial **mammals.**

* represents **less** than .1 pound

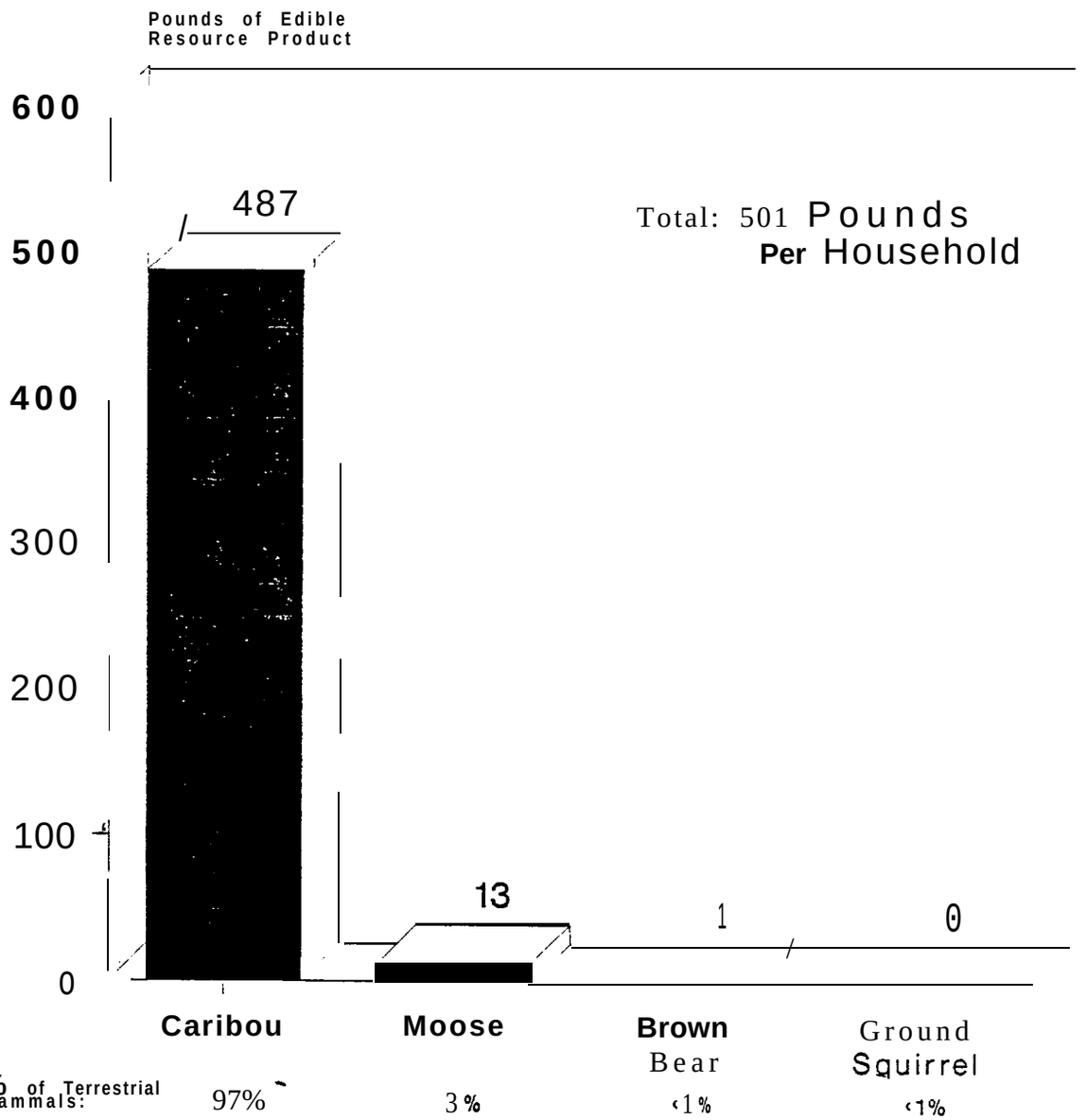
•* represents **less** than .1 percent

n/a means not **appl** i cable

Source: Stephen R. Braund& Associates, 1989

Figure 5: Harvest of Terrestrial Mammals Wainwright, Year One

(Mean Edible Pounds Per Household)



Source: Stephen R. Braund & Assoc., 1989

Moose was the next most important terrestrial resource in terms of edible pounds harvested, providing nearly three percent of the total harvest of terrestrial mammals. The average moose harvest was about 13 pounds per household. Brown bear and ground squirrel comprised the remainder of the terrestrial mammal harvests that were measured in pounds. The contribution of these species together was less than one percent of the harvest of terrestrial mammals during Year One.

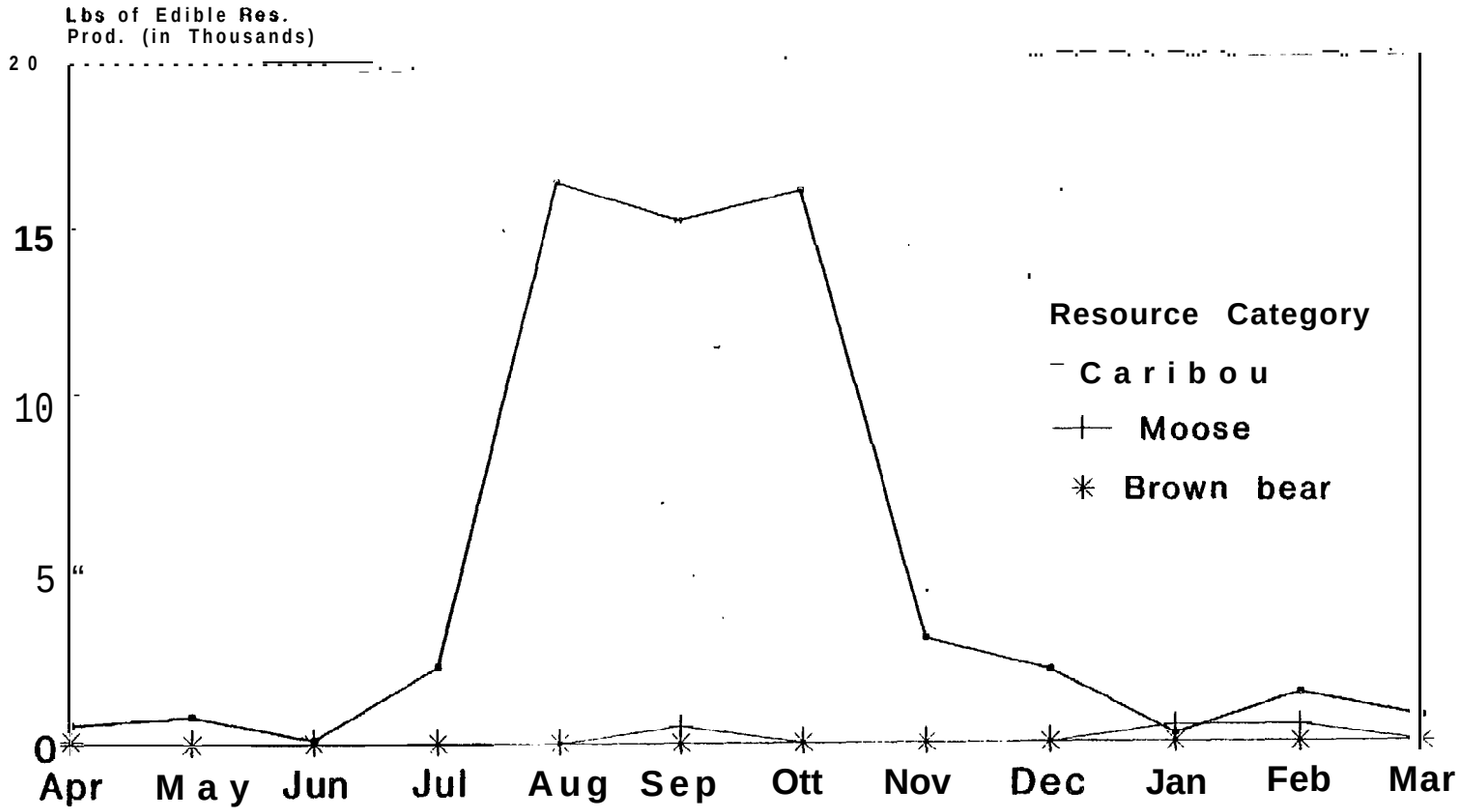
Those species harvested for their furs (wolf, wolverine, fox, and ermine) were not measured in pounds since they are not eaten. The' number of animals harvested is shown on Tables 9 and 11 but comparisons between species cannot be shown (e.g., bar charts, graphs, or percentages of total harvest) because such comparisons require that all species be converted to a common unit of measurement, such as pounds. Wainwright residents in Year One harvested 60 arctic fox and 27 red fox, in addition to 20 wolverine, 10 wolves and 2 ermine. Of the furbearers, wolf and wolverine were the most desired by Wainwright hunters while the arctic fox was the most commonly harvested fur bearer.

Presented in Figure 6 and Tables 10 and 11 are the monthly harvests of terrestrial mammals. As can be seen in Figure 6, caribou were harvested throughout the year, with peak harvests taking place between August and October and the lowest harvests occurring in June and January, The pursuit of caribou diminished significantly with the coming of rutting season in late October. By this time, most families already had a good supply of caribou stored in their cellars. The meat of caribou · in rut does not taste as good as caribou harvested other times of the year, according to Wainwright residents, and is another reason the harvest levels droped from October to November. Residents still harvested caribou at this time as the need arose, but in reduced numbers.

Caribou continued to be harvested throughout the winter months. They were often seen in small numbers near town and along the frozen Kuk River. During the winter, hunters would harvest caribou if the families desired fresh meat or for the Thanksgiving and Christmas feasts. However, harvest levels were low relative to the summer and fall months.

In March and April, large herds of caribou were seen upriver (i.e., south of Wainwright). Most of these animals were thin and ragged from the long winter

Figure 6: Monthly Harvest of Terrestrial Mammals Wainwright, Year One



Note: One edible pound of ground squirrel harvested Is not shown on this graph due to 10 scale.

Source: Stephen R. Braund & Assoc., 1989

TABLE 10: TERRESTRIAL MAMMAL HARVEST BY SPECIES AND MONTH-WAINWRIGHT, YEAR ONE
(Pounds of Edible Resource Product)

TOTALS
******

SPECIES	1988 April	May	June	July	August	Sept.	October	Nov.	Dec.	1989 Jan.	Feb.	March
Caribou	585	819	117	2,232	16,419	15,288	16,146	3,042	2,106	234	1,404	702
Moose	0	0	0	0	0	500	0	0	0	500	500	0
Brown Bear	100	0	0	0	0	0	0	0	0	0	0	0
Ground Squirrel	0	1	0	0	0	0	0	0	0	0	0	0
All Terrestrial Mammals (excluding forbearers)	685	820	117	2,232	16,419	15,788	16,146	3,042	.2,106	734	i,904	?02

PERCENTS
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SPECIES	1988 April	May	June	July	August	Sept.	October	Nov.	Dec.	1989 Jan.	Feb.	March	
Caribou	1%	1%	0%	4%	28%	26%	27%	5%	4%	0%	2%	1%	= 100%
Moose	0%	0%	0%	0%	0%	33%	0%	0%	0%	33%	33%	0%	= 100%
Brown Bear	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Ground Squirrel	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
All Terrestrial Mammals (excluding forbearers)	1%	1%	0%	4%	27%	26%	'27%	5%	3%	1%	3%	1%	= 100%

Source: Stephen R. Braund & Associates, 1989

TABLE 11: TERRESTRIAL MAMMAL HARVEST BY SPECIES AND MONTH - WAINWRIGHT, YEAR ONE
(Number Harvested)

SPECIES	TOTALS ****** 1988 April	May	June	July	August	Sept.	October	Nov.	Dec.	1989 Jan.	Feb.	March
Caribou	5	7	1	19	140	131	138	26	18	2	12	6
Moose	0	0	0	0	0	1	0	0	0	1	1	0
Brown Bear	1	0	0	0	0	0	'o	0	0	0	0	0
Ground Squirrel	0	3	0	0	0	0	0	0	0	0	0	0
Arctic Fox (Blue)	2	15	0	0	0	0	0	0	17	3	16	7
Red Fox (Cross, Silver)	0	0	0	0	0	0	0	2	1	8	15	1
Wolverine	1	0	0	0	0	0	4	0	3	4	8	0
wolf	0	4	0	0	0	0	0	2	2	2	0	0
Ermine	0	0	0	0	0	1	1	0	0	0	0	0

Source: Stephen R. Braund & Associates, 1989

and were usually not taken unless a family needed fresh meat. From November through the summer months, caribou were hunted sporadically with the prime hunting months being August through October, when the animals were fat and their coats were healthy.

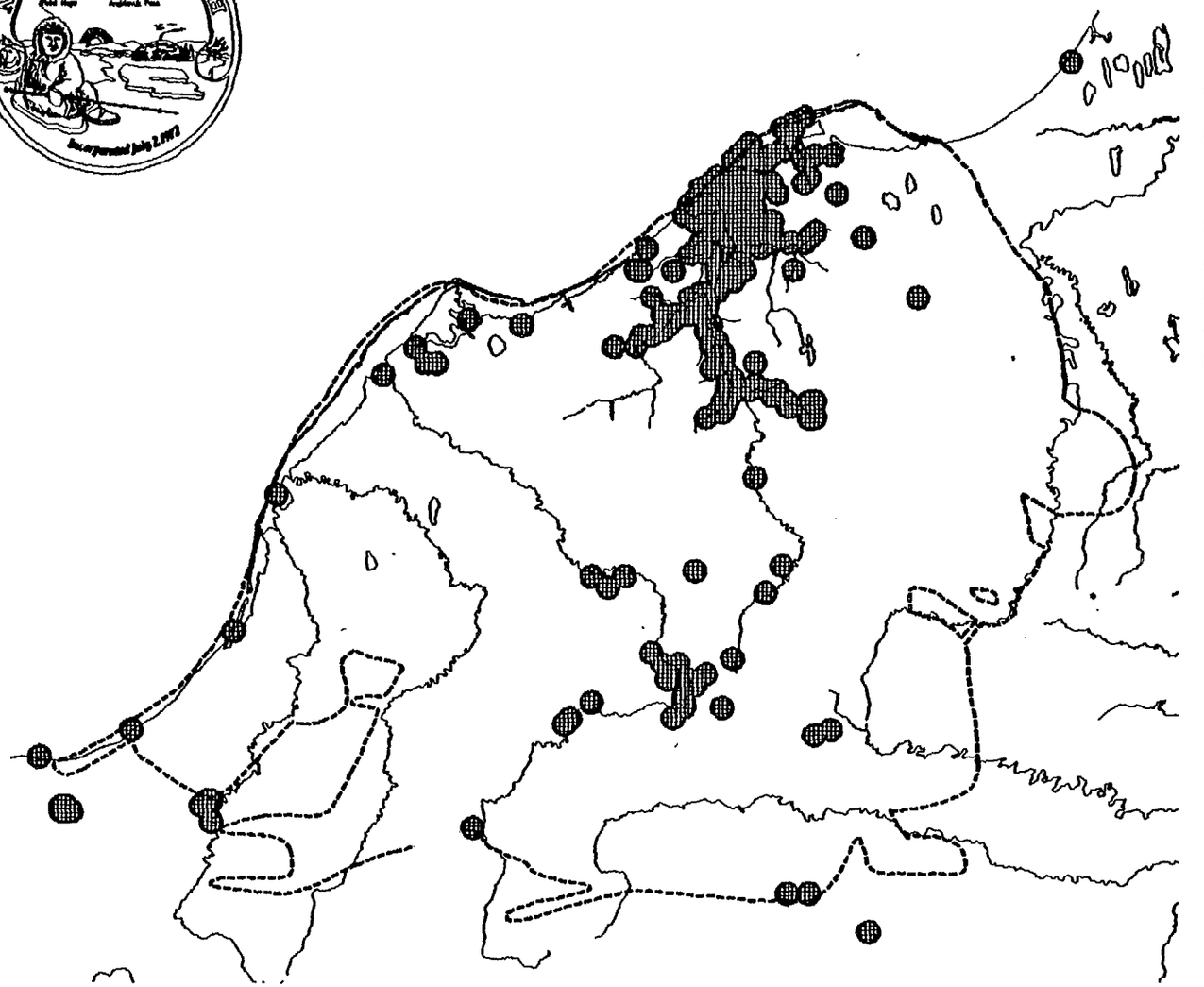
Wainwright's three moose were harvested in September, January, and February. The brown bear harvest took place in April. Table 11 indicates that furbearer harvests occurred September through May, with December, January, February and May yielding the highest number of animals harvested. T'hose hunters who pursue forbearers began preparations in November. Traps were set in December and maintained through March, covering the time period when the furs were thickest and most desirable.

Wainwright hunters harvested terrestrial mammals throughout the Ii fetime community land use area shown on Map 8. Map 9 illustrates that the harvests occurring farthest from Wainwright were of furbearers. O f the furbearer harvests recorded in Year One, most fox were taken primarily in the vicinity of Wainwright, while the majority of the wolverine were taken as far as 150 miles from Wainwright in the foothills of the Brooks Range and along the coast south of Point Lay. Arctic fox was the most common furbearer in the Wainwright vicinity.. They were trapped and hunted around the shores of the Kuk Lagoon and often were shot both north and south of Wainwright along the coast. Onc hunter's trapline in the mountains yielded only red fox.

Wolf and wolverine hunting was concentrated mostly along the Ivisaruk, Kaolak, Utukok, Ketik, Avalik and Kuk river systems. Some hunters traveled quite far to the southwest, beyond Point Lay to the Cape Sabine region, staying in this area off and on for over two months mainly to hunt wolves and wolverines. Onc family traveled over 2,000 miles in Year One looking unsuccessfully for these two animals. Furbearer hunters heading south into the mountains utilized the Kuk River and its tributaries as their primary travel route to inland cabins, from which they would make extensive forays into the foothills beyond the Colville River. Traveling over 100 miles in a day trip from a cabin was not unusual,

Wolf harvests occurred in the upper' reaches of the Utukok and Kuk (Kctik) rivers as well as closer to Wainwright in the Ivisaruk "River drainage.

MAP
NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
TERRESTRIAL MAMMAL HARVEST SITES - ALL SPECIES



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LEGEND INFORMATION

Lifetime community land use (Pedersen 1979).

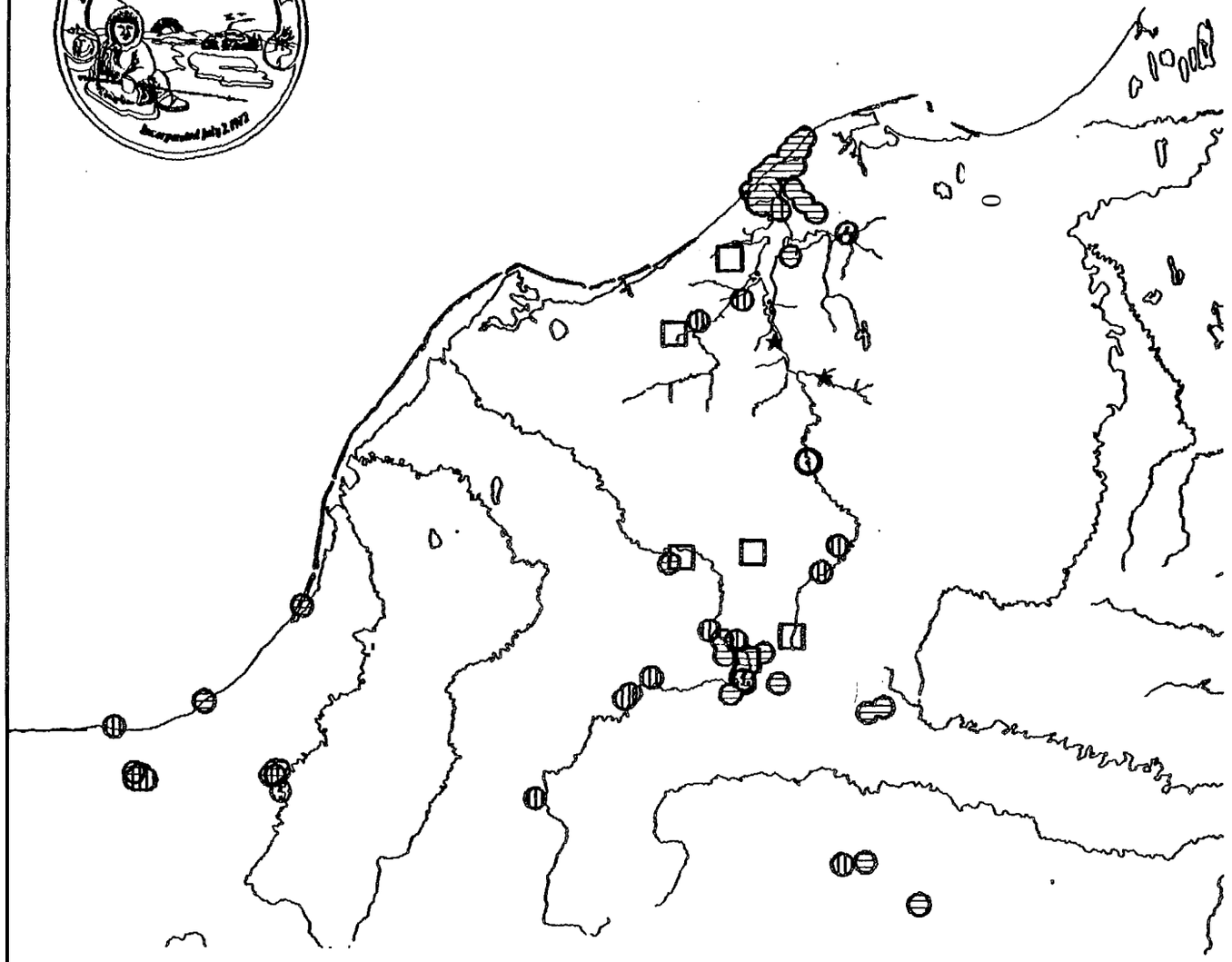
Terrestrial Mammals
- Caribou
- Moose
- Brown bear
- Fox
- Wolverine
- Wolf
- Ermine

Map Production: North Slope Borough GIS

Date: June 23, 1989

N

MAP 9
NORTH SLOPE SUBSISTENCE STUDY – WAINWRIGHT: YEAR ONE
TERRESTRIAL MAMMAL HARVEST SITES BY SPEC ES 'EXCLUDING CARIBOU)



this map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.

LEGEND INFORMAT °N

- Moose
- Fox
  - Arctic
  - Red
- Wolverine
- Brown bear
- Wolf
- Ermine

N

Map Production: North Slope Borough GIS

Date: June 26, 1989

60 90 120

L

Wolverine harvests occurred over a broader and more distant area from Wainwright along the same drainages and sweeping west to Cape Sabine.

The few ermine harvested were taken near the cabins of several Wainwright residents. The ermine are attracted to the large caches of caribou and fish stored at upriver camps.

Caribou harvests were concentrated along the coast in the vicinity of Wainwright and along the Kuk River and its tributaries. The general abundance of caribou resulted in little variation in areas used, however, locations did vary slightly in relation to what other harvest activities were taking place and the mode of transportation. Map 10 displays the caribou harvest locations by four seasons. Fieldwork for this study found that because the spring season (April, May, and June) was "characterized primarily by whaling activities, the few caribou hunted at this time were for fresh food for whaling camps. Travel during this time was by snowmachine. (One caribou harvested in June just south of Walakpa Bay was cropped from Map 10 due to a larger scale but can be seen on Map 8).

During the summer months of July, August, and September, caribou were hunted mainly from boats. Map 10 reflects boat-based harvest locations extending from Kasegaluk Lagoon to Point Belcher and throughout the Kuk River drainages. Additional summer caribou harvests took place in the vicinity of Wainwright, where walking and three-wheelers were the modes of travel.

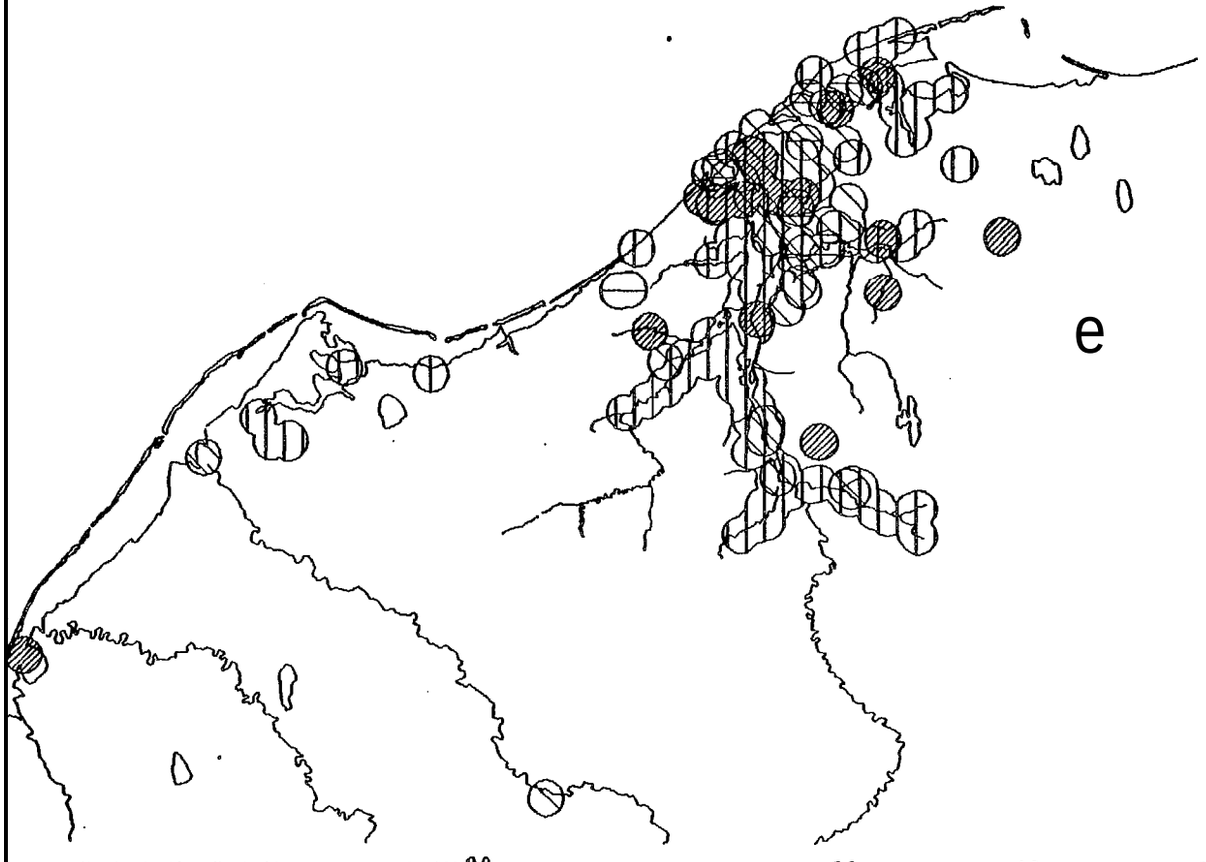
October and November caribou harvests were generally very close to Wainwright. Day trips by snowmachine were extremely common during this period and caribou generally' were abundant. A few hunters ranged far inland during this period for fishing and in search of wolves and wolverines. These hunters harvested a few caribou at significant distances from the community.

Finally, from December through March caribou were harvested mainly in the vicinity of Wainwright. Again, hunters traveling in search of furbearers harvested a few caribou at greater distances from the community.

MAP 10
NORTH SLOPE SUBSISTENCE STUDY - WA INWRIGHT: YEAR ONE
CARIBOU HARVEST SITES BY SEASON

This mop dpictsppraximatesubsistence harvest sites used by 128 Winwrihtghouseholds. All harvestsitesaredepictewith o two mile buffer. The mop depicts subsistence usc far the time period April 1, 1988 through North 31,.1989: Year One for the Wainwright North Slope Subsistence Study.

Source: Contemporor subsistence useinformation gathered d compiledby Stephen R. Braund and Associates SRB&A with the assistance of local research assistams hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Deportment of Interior, SRB& received assistance in the study from the North Slope Borough Planning ond Wildlife Management Deportments.



LEGEND INFORMATION

- April, May, June 1988
- July, August, September 1988
- October, November 1988
- December 1988, January, Februsry, March 1989

N

Map Production: North Slope Borough GIS

Date: June 26, 1989

20 0 20 40 60 80

MILES

FISH

With marine and terrestrial mammals providing 94 percent of Wainwright's subsistence foods, fish rank a distant third among the four major resource categories in terms of total edible pounds, contributing 9,895 pounds or approximately four percent of the total Year One harvest of all species by weight (Table 12).

Figure 7 illustrates the relative importance of the four different fish harvest categories: whitefish, other freshwater fish, salmon, and other coastal fish. The majority of the Year One fish harvest was whitefish, providing 51 percent of the average household fish harvest in Year One. The whitefish catch included: round and non-specified whitefish, arctic and Bering cisco, and least cisco. Other freshwater fish provided 25 percent of the fish harvest and included grayling, burbot (or ling cod), and lake trout. Grayling constituted 99 percent of the other freshwater fish category. Just two salmon species were reported (in addition to non-specified salmon). Salmon harvests totaled 49 pounds in Year One. Other coastal fish harvested during Year One were rainbow smelt, tomcod, arctic cod, and sculpin. Rainbow smelt was the most important fish in this group, representing approximately 90 percent of other coastal fish.

Nearly two-thirds (64 percent) of all Wainwright households harvested fish. Although 19 percent of Wainwright households harvested 4,892 pounds of whitefish, 53 percent of the households harvested 2,603 pounds of other coastal fish. This disproportionate ratio of participation to pounds is a function of the size of the fish and method of harvest. Smelt comprise about 90 percent of the other coastal fish category. Smelt fishing occurred throughout the winter right at the edge of town; the fish swim in large schools just under the ice in the lagoon, their movements fluctuating with the changing tides and shifting currents. Smelt fishing is a popular and easy activity that can be done in a spare couple of hours. Thus, people of all ages fish for smelt throughout the winter and participation by households is high. People caught anywhere from one to 600 fish in a day. Rainbow smelt are a delicacy to many people on the

TABLE 12: HARVEST ESTIMATES FOR FISH-WAINWRIGHT, YEAR ONE

RESOURCE	CONVERSION FACTOR (1) Edible Weight Per Resource in pounds	COMMUNITY TOTALS NUMBER HARVESTED	COMMUNITY TOTALS EDIBLE POUNDS HARVESTED	AVERAGE POUNDS HARVESTED (2) PER HOUSEHOLD	AVERAGE POUNDS HARVESTED (2) PER CAPITA	PERCENT OF TOTAL EDIBLE POUNDS MARVESTED	PERCENT OF ALL WAINWRIGHT HOUSEHOLDS HARVESTING RESOURCE
Total Fish	n/a	n/a	9,895	83.46	21.4	3.9%	64.0%
Total **Whitefish**		4,886	4,892	42.92	11.0	1.9%	19.3%
Whitef ish (non-specified)	2.0	4	8	0.07	*	**	0.9%
Round Uh i tef i sh	1.0	400	400	3.51	0.9	0.2%	3.5%
Least **cisco**	1.0	4,473	4,473	39.24	10.1	1.7%	16.7%
Bering, Arctic **cisco**	1.0	11	11	0.10	*	**	0.9%
Total Other Freshwater Fish		2,911	2,351	20.54	5.3	0.9%	20. 2%
Arctic **grayling**	0.8	2,904	2,323	20.29	5.2	0.9%	19.3%
Burbot(L ing cod)	4.0	6	24	0.21	0.1	**	2.6%
Lake trout	4.0	1	4	0.04	*	**	0.9%
Total Salmon		11	49	0.43	0.1	**	1.8%
Salmon (non-specified) ,	6.1	2	12	0.11	*	**	0.9%
Chum **(Dog)salmon**	6.1	3	18	'0.16	*	**	1.8%
Pink (Humpback) **salmon**	3.1	6	19	0.16	*	**	0.9%
Total Other Coastal **Fish**		19,877	2,603	19.57	5.0	**	52.6%
Rainbow **smelt**	0.12	19,479	2,337	17.68	4.5	**	50.9%
TomCod (Saffron Cod)	1.0	230	230	1.58	0.4	0.1%	1.8%
Arctic cod	0.2	164	33	0.29	0.1	**	0.9%
Sculpin	0.6	4	2	0.02	*	**	0.9%

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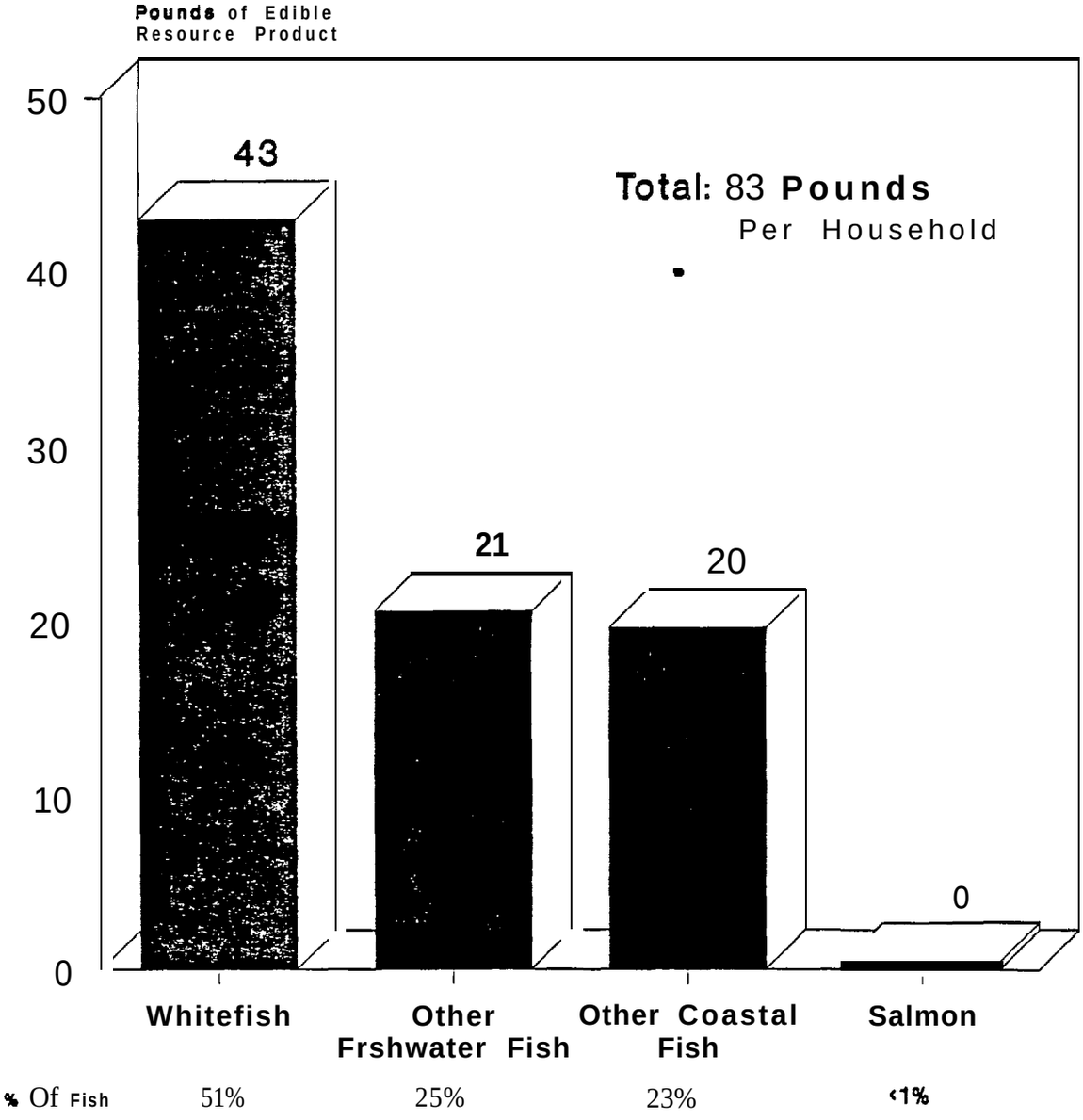
(1) See Table A-2 for sources of conversion factors.

(2) Per household and per capita means are based only on the 114 full-year households for all fish species.

* represents less than .1 pound
** represents less than .1 percent
n/a means not applicable

Source: Stephen R. Braund & Associates, 1989

Figure 7: Harvest of Fish
Wainwright, Year One
(Mean **Edible** Pounds **Per** Household)



Source: Stephen R. Braund & Assoc., 1989

North Slope, and Wainwright residents often sent them to relatives and friends in Barrow and Atqasuk. The fish itself is very small (0.12 pounds). The 19,479 smelt caught amounted to only 2,337 pounds.

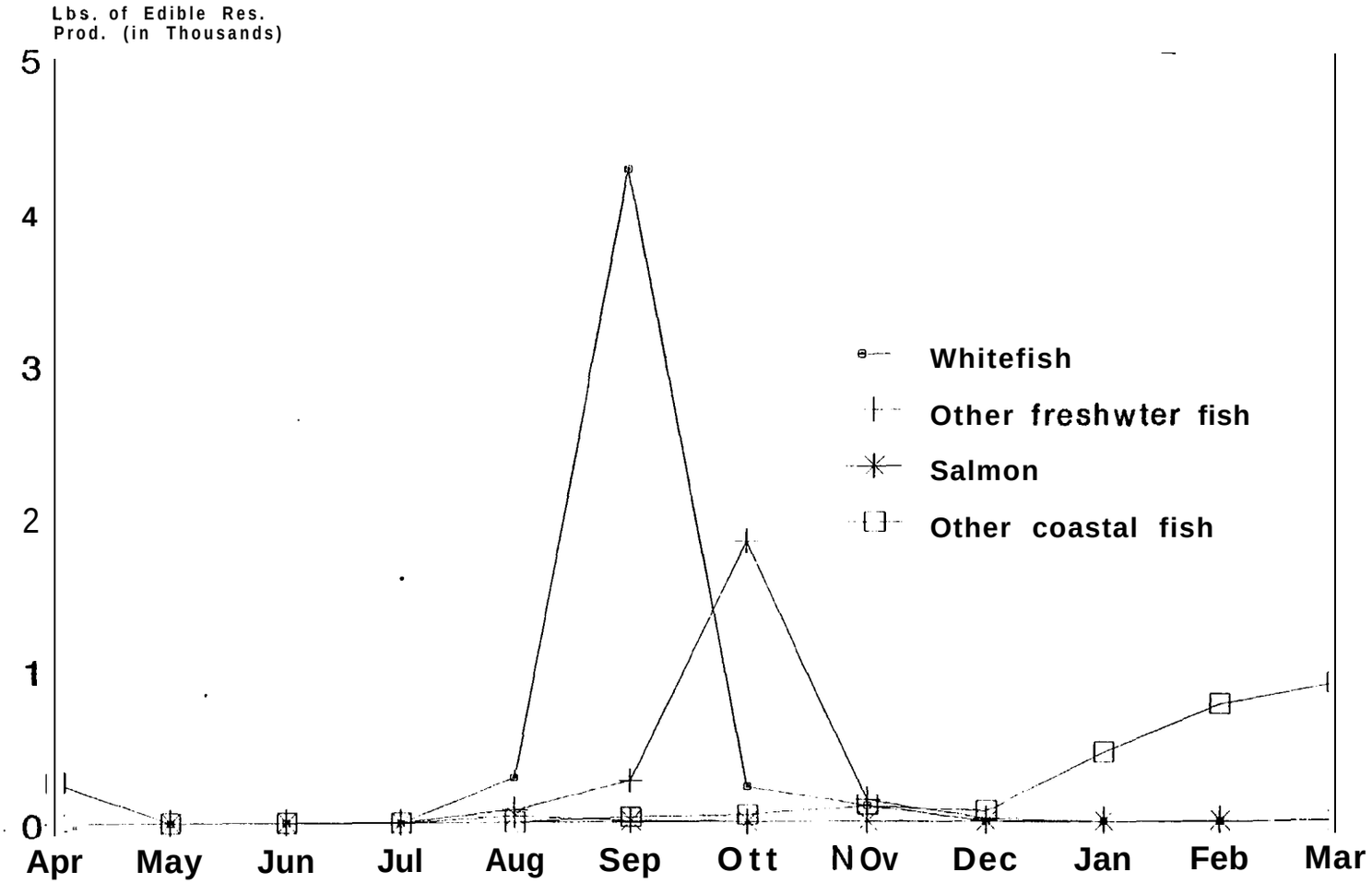
In contrast, whitefish were generally caught during stays at fish camps upriver. Most of the whitefish weigh about one pound per fish, including least cisco, the main fish in this category. Thus, harvesting these fish occurred under a more restrictive set of circumstances (such as boat travel, extended stays, and setting nets) and only 19 percent of Wainwright households harvested whitefish in Year One. Twenty percent of the households harvested other freshwater fish, and less than two percent harvested salmon.

As illustrated by the monthly harvest data presented in Figure 8 and Tables 13 and 14, September yielded over twice as many pounds of fish as any other month during Year One. Many families took advantage of the long Labor Day weekend to travel to upriver cabins and campsites by boat for the last time that year. September generally is regarded by residents as a good month for upriver travel as the insects are not a problem and both fish and caribou are abundant. Many of the employed hunters took annual leave at this time to enjoy the good hunting and fall weather. Fishing in August and September was conducted with set gillnets in open (i.e., not frozen) water. Fishing in October and November was most commonly jigging through the ice although some gillnets were set under the ice also.

Forty-six percent of the fish harvest by weight occurred in September, and September and October combined accounted for 67 percent of the total fish harvest. No fish were harvested from May through July with the exception of five arctic grayling in July. Thus, the remaining 33 percent of the fish were caught in August and the winter months of November through April.

Whitefish were harvested August through November. The peak harvest was 4,263 pounds in September, when 57 percent of the whitefish harvest took place. Seventy-eight percent of the other freshwater fish were harvested in October. As can be seen in Table 14, the grayling catch far exceeded that of any other species in the other freshwater fish category. The August salmon harvest accounted for 88 percent of the total salmon catch by weight; the remaining 12 percent were harvested in September.

Figure 8: Monthly Harvest of Fish
Wainwright, Year One



Source: Stephen R. Braund & Assoc., 1989

TABLE 13: FISH HARVEST BY SPECIES ANO MONTH - WA INWRIGHT, YEAR ONE

(Pounds of Edible Resource Product)

SPECIES	1988 April	May	June	July	August	Sept.	TOTALS ****** October	1989 Nov.	Dec.	Jan.	Feb.	March
Total Whitefish	0	0	0	0	295	4,263	230	104	0	0	0	0
Whitefish (non-specified)	0	0	0	0	0	0	4	4	0	0	0	0
Round Whitefish	0	0	0	0	0	75	225	100	0	0	0	0
Least cisco	0	0	0	0	295	4,178	0	0	0	0	0	0
Bering, Arctic cisco	0	0	0	0	0	10	1	0	0	0	0	0
Total Other Freshwater Fish	0	0	0	5	85	270	1,830	144	18	0	0	0
Arctic grayling	0	0	0	5	85	262	1,810	144	18	0	0	0
Burbot (Ling cod)	0	0	0	0	0	4	20	0	0	0	0	0
Lake trout	0	0	0	0	0	4	0	0	0	0	0	0
Total Salmon	0	0	0	0	43	6	0	0	0	0	0	0
Salmon (non-specified)	0	0	0	0	12	0	0	0	0	0	0	0
Chum (Dog) salmon	0	0	0	0	12	6	0	0	0	0	0	0
Pink (Humpback) salmon	0	0	0	0	19	0	0	0	0	0	0	0
Total Other Coastal Fish	262	0	0	0	0	33	44	107	68	446	753	890
Rainbow smelt	262	0	0	0	0	0	42	106	18	267	753	890
Tomcod (Saffron Cod)	0	0	0	0	0	0	0	1	50	179	0	0
Arctic Cod	0	0	0	0	0	33	0	0	0	0	0	0
Sculpin	0	0	0	0	0	0	2	1	0	0	0	0
All Fish Species	262	0	0	5	423	4,572	2,104	355	86	446	753	890

(Continued on next page)

TABLE 13, CONTINUED: FISH HARVEST BY SPECIES AND MONTH - WAINWRIGHT, YEAR ONE
(Pounds of Edible Resource Product)

PERCENTS
****

SPECIES	1988 April	May	June	July	August	Sept.	1989 October	Nov.	Oec.	Jan.	Feb.	March	
Total Whitefish	0%	0%	0%	0%	6%	87%	5%	2%	0%	0%	0%	0%	=100%
Whitefish (non-specified)	0%	0%	0%	0%	0%	0%	50%	50%	0%	0%	0%	0%	=100%
Round Whitefish	0%	0%	0%	0%	0%	19%	56%	25%	0%	0%	0%	0%	= 100%
Least c i sco	0%	0%	0%	0%	7%	93%	0%	0%	0%	0%	0%	0%	= 100%
Bering, Arctic cisco	0%	0%	0%	0%	0%	91%	9%	0%	0%	0%	0%	0%	100%
Total Other Freshwater Fish	0%	0%	0%	0%	4%	11%	78%	6%	1%	0%	0%	0%	= 100%
Arctic grayl ing	0%	0%	0%	0%	4%	11%	78%	6%	1%	0%	0%	0%	= 100%
Burbot(Ling cod)	0%	0%	0%	0%	0%	17%	83%	0%	0%	0%	0%	0%	= 100%
Lake trout	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	= 100%
Total Salmon	0%	0%	0%	0%	88%	12%	0%	0%	0%	0%	0%	0%	= 100%
Salmon (non-specified)	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	= 100%
Chum (Dog) salmon	0%	0%	0%	0%	67%	33%	0%	0%	0%	0%	0%	0%	= 100%
Pink (Humpback) salmon	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	= 100%
Total Other Coastal Fish	10%	0%	0%	0%	0%	1%	2%	4%	3%	17%	29%	34%	= 100%
Rainbow smelt	11%	0%	0%	0%	0%	0%	2%	5%	1%	11%	32%	38%	= 100%
Tomcod (Saffron Cod)	0%	0%	0%	0%	0%	0%	0%	0%	22%	78%	0%	0%	= 100%
Arctic Cod	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	= 100%
Sculpin	0%	0%	0%	0%	0%	0%	75%	25%	0%	0%	0%	0%	100%
All Fish Species	3%	0%	0%	0%	4%	46%	21%	4%	1%	5%	8%	9%	= 100%

Source: Stephen R. Braund& Associates, 1989

TABLE 14: FISH HARVEST BY SPECIES AND MONTH - WAINWRIGHT . YEAR ONE
(Number Harvested)

SPECIES	1988 April	May	June	July	August	Sept.	October	Nov.	Dec.	1989 Jan.	Feb.	March
Total Whitefish	0	0	0	0	295	4,263	228	102	0	0	0	0
Whitefish (non-specified)	0	0	0	0	0	0	2	2	0	0	0	0
Round Whitefish	0	0	0	0	0	75	225	100	0	0	0	0
Least cisco	0	0	0	0	295	4,178	0	0	0	0	0	0
Bering, Arctic cisco	0	0	0	0	0	10	1	0	0	0	0	0
Total Other Freshwater Fish	0	0	0	6	106	329	2,268	180	23	0	0	0
Arctic grayling	0	0	0	6	106	327	2,.263	180	23	0	0	0
Burbot(Ling cod)	0	0	0	0	0	1	5	0	0	0	0	0
Lake trout	0	0	0	0	0	1	0	0	0	0	0	0
Salmon	0	0	0	0	10	1	0	0	0	0	0	0
Salmon (non-specified)	0	0	0	0	2	0	0	0	0	0	0	0
Chum (Dog)salmon	0	0	0	0	2	1	0	0	0	0	0	0
Pink (Humpback)salmon	0	0	0	0	6	0	0	0	0	0	0	0
Total Other Coastal Fish	2,184	0	0	0	0	164	355	884	197	2,404	6,.?72	7,417
Rainbow smelt	2,184	0	0	0	0	0	352	882	147	2,225	6,272	7,417
Tomcod (Saffron Cod)	0	0	0	0	0	0	0	1	50	179	0	0
Arctic Cod	0	0	0	0	0	164	0	0	0	0	0	0
Sculpin	0	0	0	0	0	0	3	1	0	0	0	0

Source: Stephen R. Braund & Associates, 1989

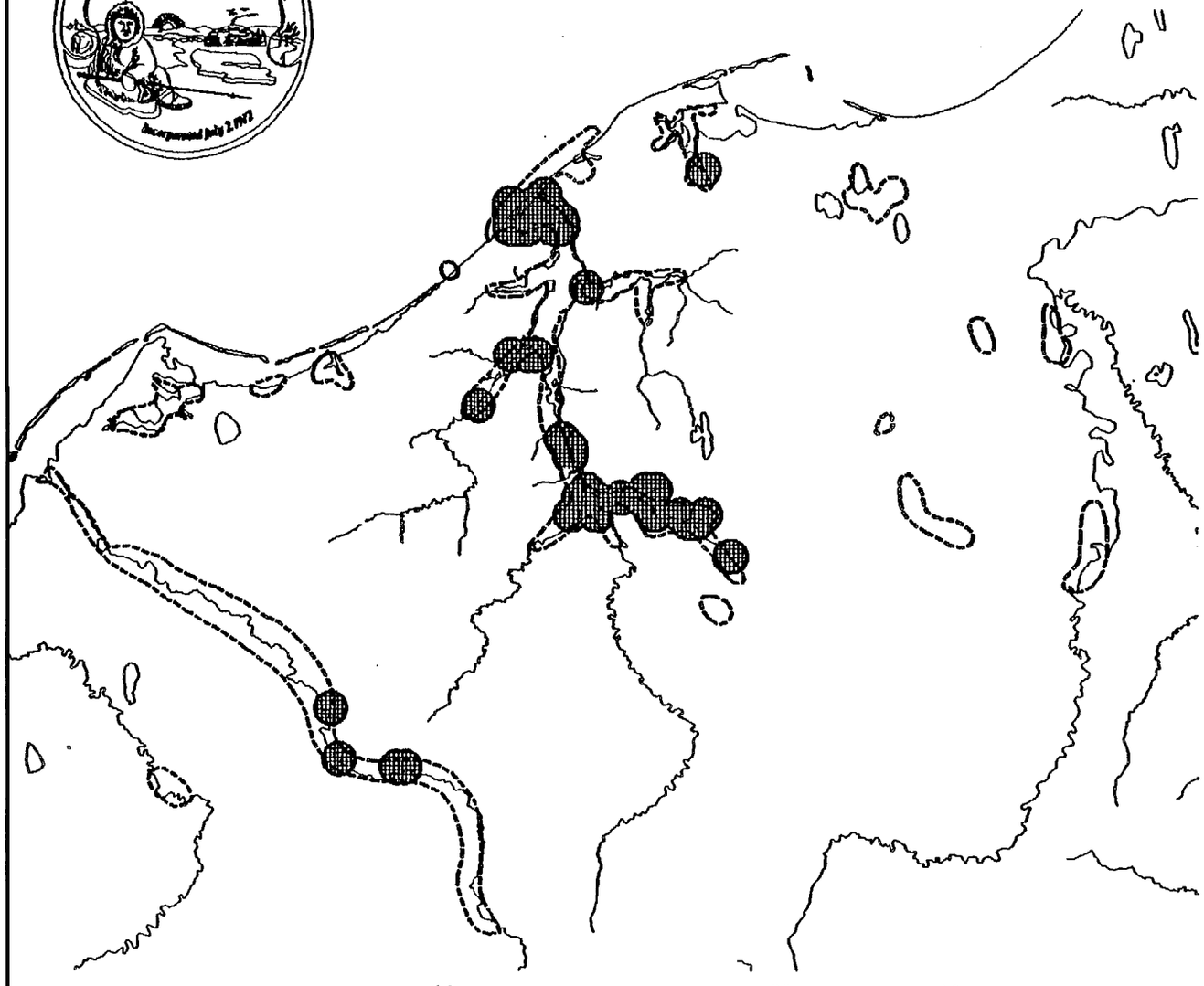
Rainbow smelt fishing occurred October through April. During weekends or holidays, whole families would be out on the lagoon ice fishing for smelts, particularly on warm days in March. With the longer, warmer days of April, smelt fishing came to a close. The ice was getting too thick to easily dig a hole through, and the warmth increased the difficulty of keeping caught fish fresh. Moreover, everyone's attention turned to whaling.

Field experience indicates that fish harvest estimates generally are recalled less accurately than the estimates for larger species such as caribou, seals, or even geese and ducks. Large numbers of fish often are harvested in a short period (e. g., a two week-long fall fishing trip in October) and a harvester's estimate of his catch is often a best guess.

Maps 11 and 12 illustrate the fish harvest locations recorded during Year One. Map 11 shows Year One harvest locations for all fish species as well as lifetime community harvest areas (based on Pedersen 1979) for fish. Contemporary fish harvest locations are very similar to those recorded in the 1970s. Notable exceptions are some of the use area "islands" defined from Pedersen's (1979) research which were not successful harvest areas for Wainwright households in Year One. However, Wainwright residents have harvested fish in some of these areas in the recent past. Key informant discussions suggest that the areas near Atqasuk and the areas along the coast near Icy Cape have been used "to get fish while traveling" in the past few years.

Map 12 illustrates Year One fish harvest sites by species groups. The map clearly shows the orientation of Wainwright fish harvests to the Kuk River system. Salmon and other coastal fish generally were harvested in the vicinity of Wainwright, primarily in the Kuk Lagoon. Whitefish and other freshwater fish were harvested throughout the primary use area.

MAP 11
NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
FISH HARVEST SITES - ALL SPECIES



This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study. Lifetime-community harvest areas, collected in the form of map biographies from 14 households (Pederson 1979), are also illustrated.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.

EGEND INFORMAT ON

Lifetime community land use (Pedersen 1979).

All Fish Species
- Whitefish
  Round whitefish, least cisco, arctic cisco
- Other Freshwater Fish
  Grayling, burbot, lake trout
- Salmon
  Chum, pink
- Other Coastal Fish
  Rainbow smelt, tomcod, arctic cod, sculpin

N

Map Production: North Slope Borough GIS

Date: June 26, 1989

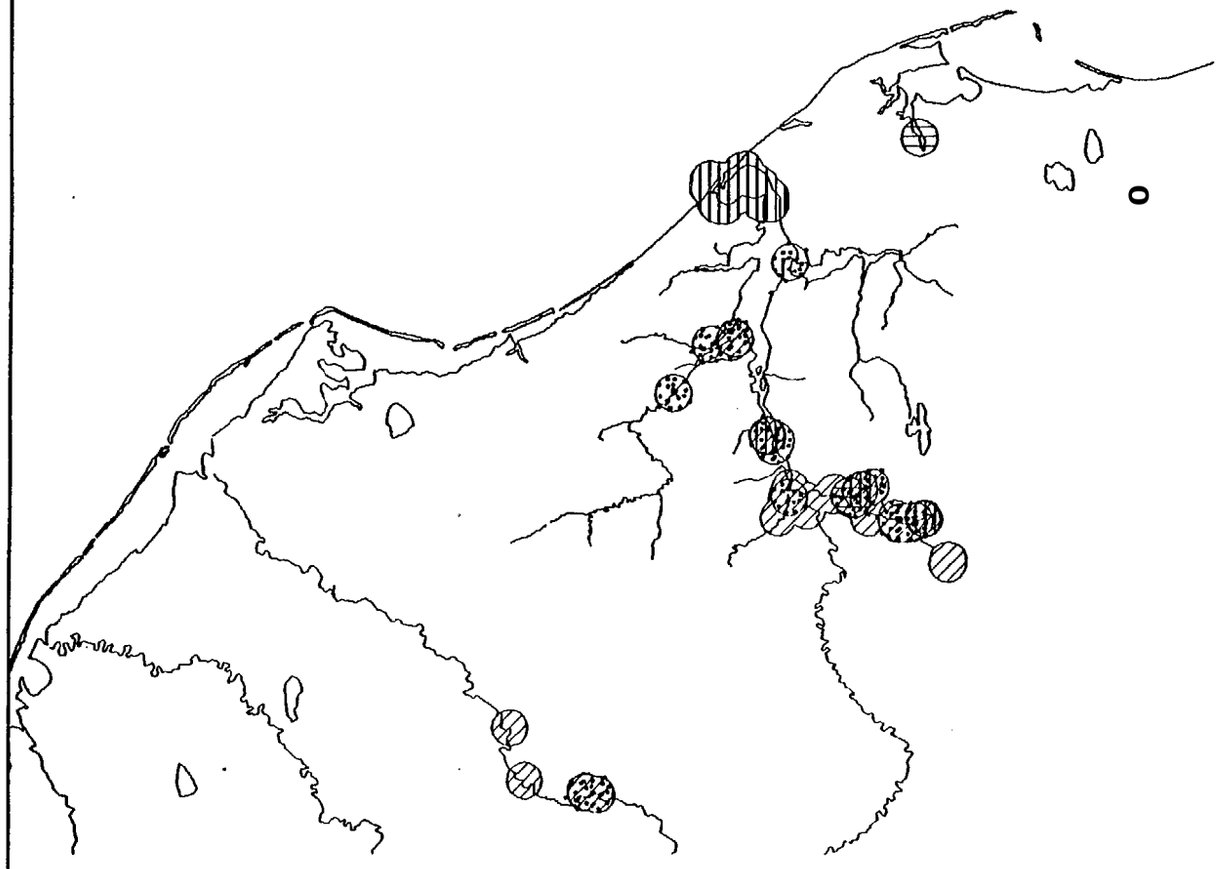
20 0 20 40 80

MILES

MAP 12
N°RTH SLOPE SUBSISTENCE STUDY – WAINWRIGHT: YEAR ONE
FISH HARVEST SITES BY SPEC ES GROUPS

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.



LEGEND INFORMA ION

- White ish
  Ro nd whitefish
  le st cisco,
  arctic cisco
- Other Freshwater Fish
  Grayling, burbot,
  lake trout
- Salmon
  Chum, pink
- Other Coastal Fish
  Rainbow smelt,
  tomcod, arctic cod,
  sculpin

N

20 60 80

MILES

Map Production: North Slope Borough GIS

Date: June 23, 1989

BIRDS

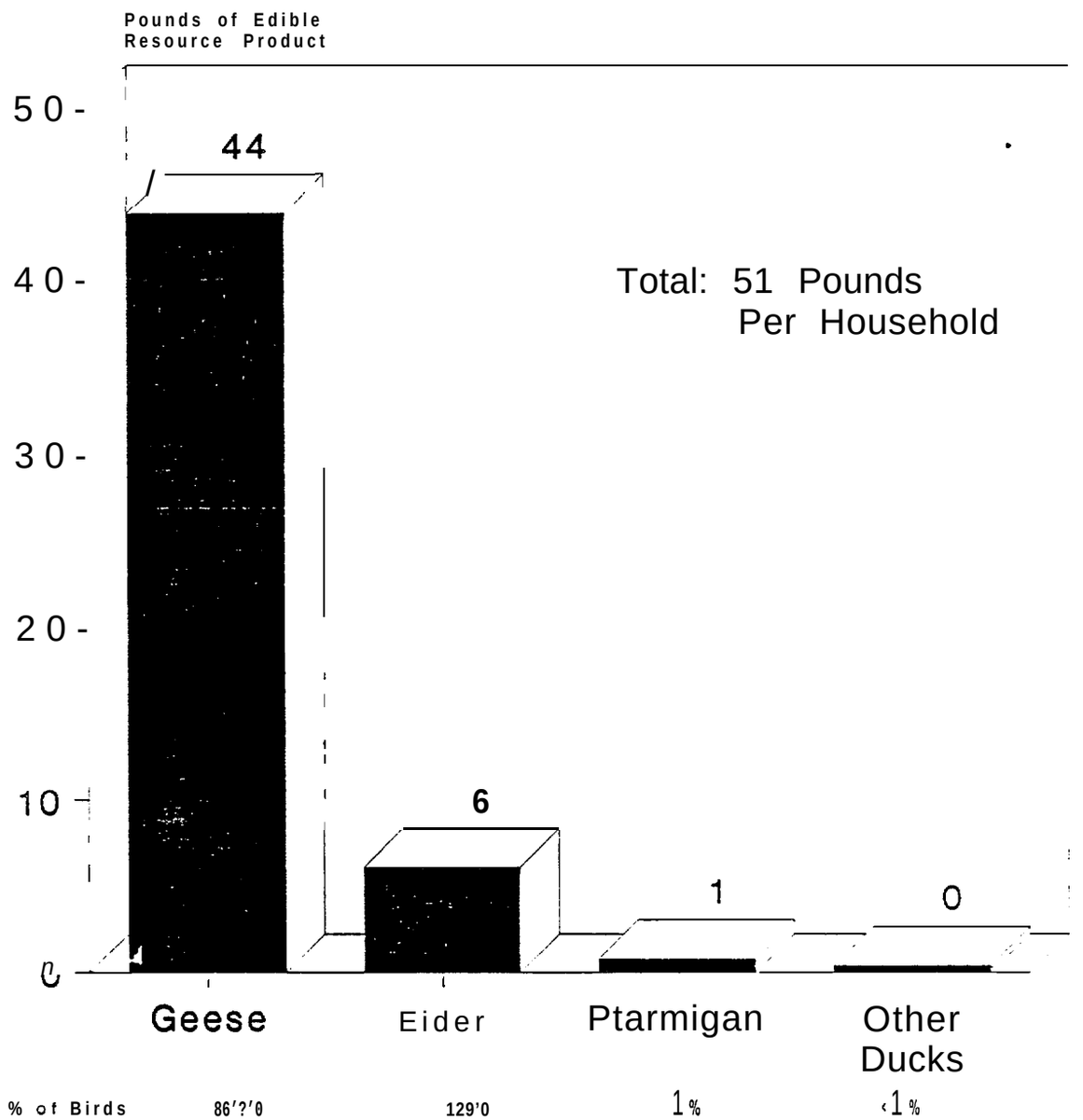
Figure 9 illustrates the relative importance of four distinct bird categories harvested during Year One. Geese accounted for the vast majority (86 percent) of the bird harvest by weight, based on average household harvests. Eiders contributed the second largest amount to the total bird harvest (12 percent), while ptarmigan accounted for approximately one percent of the harvest. The contribution of other" ducks to the total bird harvest was recorded at 47 pounds, providing less than one percent of the total bird harvest.

The total Wainwright harvest of birds was approximately 6,161 pounds and contributed 2.4 percent of the total edible pounds of resources harvested by Wainwright residents in Year One (Table 15). The average harvest per household was 51 pounds. The geese harvested were predominantly white-fronted geese (2,732 pounds) and brant (1,716 pounds). The remaining three species of geese combined contributed just over 700 pounds. The majority of eider harvests were reported simply as eiders. King eiders appear to be the most typical eider harvested, with spectacle, common, and Stellar's eider harvested as well. Because of the high number of non-specified eiders, the total number of all eiders harvested should be considered more accurate than the harvest numbers for individual species of eiders.

Other ducks harvested included pintails and mallards, as well as non-specified ducks. Pintails comprised over half of the 31 ducks reported. Willow ptarmigan was the only ptarmigan species reported by study households - 135 birds totalling 95 pounds.

Figure 10 and Tables 16 and 17 present the bird harvest by month. Ninety-nine percent of the birds were harvested between April and September, with occasional ptarmigan harvests in the intervening winter months. The peak bird harvesting month occurred in May (57 percent), the major species being white fronted geese. May and June combined contributed 82 percent of the Year One bird harvest. Eiders were harvested predominantly in June, when 84 percent of the year's eider harvest occurred. Other ducks harvests occurred only in the months of May and June. Harvests occurring in July, August, and September were

Figure 9: Harvest of Birds Wainwright, Year One
(Mean Edible Pounds Per Households)



Source: **Stephen R. Braund & Assoc., 1989**

TABLE 15: HARVEST EST I MATES FOR BIRDS - WAINWRIGHT, YEAR ONE (1)

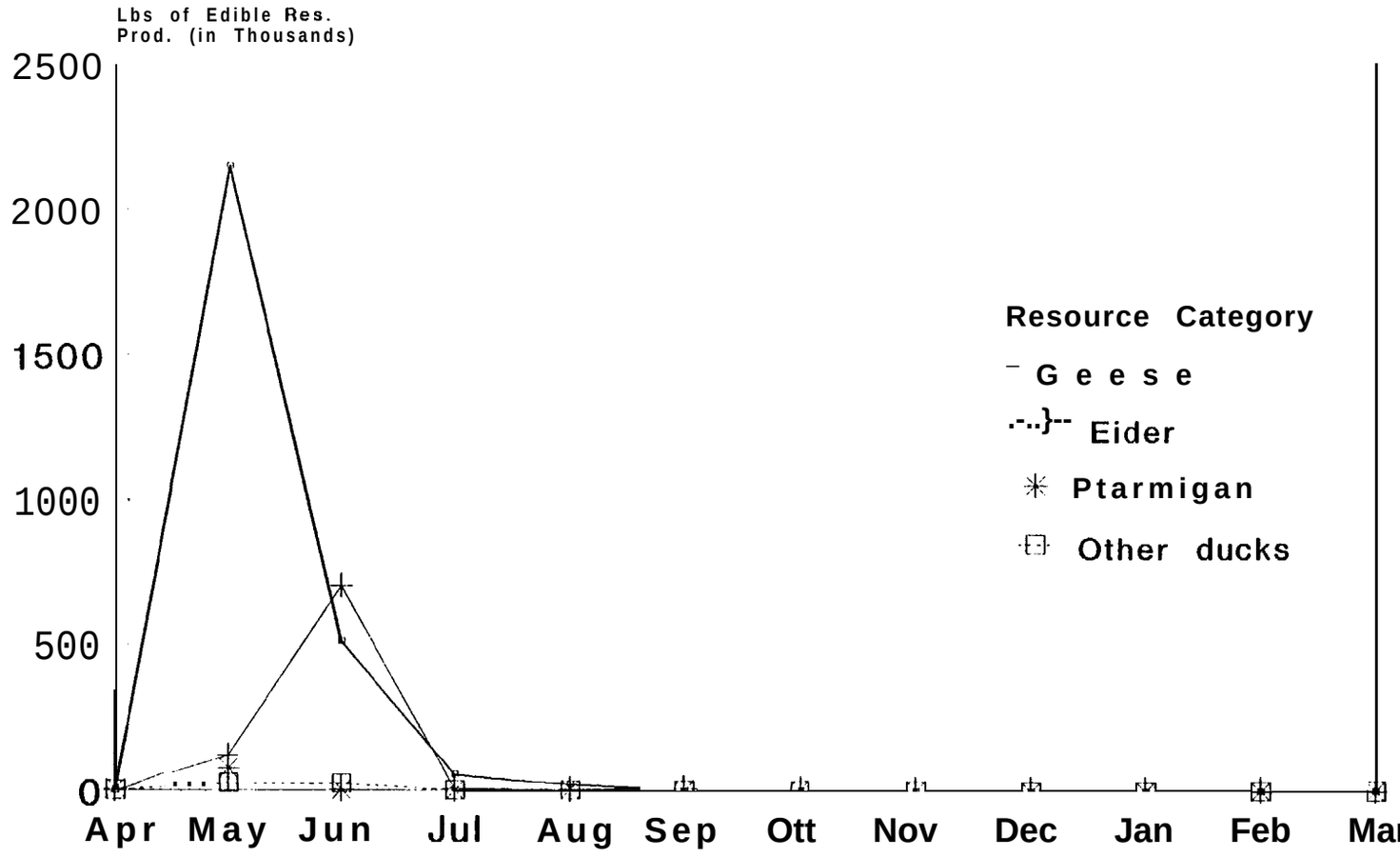
RESOURCE	CONVERSION FACTOR (1) Edible Weight Per Resource in pounds	COMMUNITY TOTALS NUMBER HARVESTED	COMMUNITY TOTALS EDIBLE POUNDS HARVESTED	AVERAGE POUNDS HARVESTED (2) PER HOUSEHOLD	AVERAGE POUNDS HARVESTED (2) PER CAPITA	PERCENT OF TOTAL EDIBLE POUNDS HARVESTED	PERCENT OF ALL WAINWRIGHT HOUSEHOLDS HARVESTING RESOURCE
Total Birds	n/a	n/a	6,161	51.04	13.1	2.4%	50.9%
Total Geese		1,342	5.181	43.76	11.2	2.0%	40.4%
White- fronted goose	4.5	607	2,732	23.45	6.0	1.1%	19.3%
Brant	3.0	572	1,716	14.18	3.6	0.7%	26. 3%
Goose (non-specified)	4.5	129	581	4.86	1.2	0.2%	9.6%
Lesser snow goose	4.5	29	131	1.07	0.3	0.1%	7.0%
Canada goose	4.5	5	23	0.20	0.1	*	0.9%
Total Eiders		5 6 0	839	6.08	1.6	0.3%	29. 8%
Eider (non-specified)	1.5	337	505	3.14	0.8	0.2%	16.7%
Common eider	1.5	57	86	0.75	0.2	*	5.3%
King eider	1.5	100	150	1.32	0.3	0.1%	10.5%
Spectacle eider	1.5	64	96	0.84	0.2	**	7.0%
Stellar's eider	1.5	2	3	0.03	*	**	0.9%
Ptarmigan	0.7	135	95	0.79	0.2	**	13.2%
Other ducks		31	47	0.41	0.1	**	7.0%
Pintai l duck	1.5	18	27	0.24	0.1	**	5.3%
Duck (non-specified)	1.5	12	18	0.16	*	**	2.6%
Mal lard duck	1.5	1	2	0.01	*	**	0.9%

(1) See Table A-2 for sources of conversion factors.

(2) Per household and per capita means are based only on the 114 full - year households for al lbird species.

* represents less than .1 pound
** represents less than .1 percent
n/a means not applicable

Source: Stephen R. Braund & Associates, 1989



Source: Stephen R. Braund & Assoc., 1989

TABLE 16: BIRD HARVEST BY SPECIES AND MONTH - WAINWRIGHT, YEAR ONE
(Pounds of Edible Resource Product)

SPECIES	1988 April	May	June	TOTALS ****** July	August	Sept.	October	Nov.	Dec.	1989 Jan.	Feb.	March
Total Geese	117	3,299	839	129	312	486	0	0	0	0	0	0
White- fronted goose	0	2,147	513	54	18	0	0	0	0	0	0	0
Brant	0	666	240	30	294	486	0	0	0	0	0	0
Goose (non-specified)	117	450	14	0	0	0	0	0	0	0	0	0
Lesser snow goose	0	36	50	45	0	0	0	0	0	0	0	0
Canada goose	0	0	23	0	0	0	0	0	0	0	0	0
Total Eiders	0	120	703	6	0	11	0	0	0	0	0	0
Eider (non-specified)	0	51	451	3	0	0	0	0	0	0	0	0
Common eider	0	14	72	0	0	0	0	0	0	0	0	0
King eider	0	35	102	3	0	11	0	0	0	0	0	0
Spectacle eider	0	21	75	0	0	0	0	0	0	0	0	0
Stellar's eider	0	0	3	0	0	0	0	0	0	0	0	0
Ptarmigan	6	75	3	0	2	2	2	3	0	1	0	0
Total Ducks (excl. eiders)	0	24	23	0	0	0	0	0	0	0	0	0
Pintail	0	17	11	0	0	0	0	0	0	0	0	0
Duck (non-specified)	0	6	12	0	0	0	0	0	0	0	0	0
Mallard	0	2	0	0	0	0	0	0	0	0	0	0
AllBird Species	123	3,517	1,567	135	314	499	2	3	0	1	0	0

(cent i nued on next page)

TABLE 16, CONTINUED: BIRD HARVEST BY SPECIES AND MONTH - WA INWRIGHT, YEAR ONE
(Pounds of Edible Resource Product)

PERCENTS

SPECIES	1988 April	May	June	July	August	Sept.	October	1989 Nov.	Dec.	Jan.	Feb.	March	
Total Geese	2%	64%	16%	2%	6%	9%	0%	0%	0%	0%	0%	0%	= 100%
White-fronted goose	0%	79%	19%	2%	1%	0%	0%	0%	0%	0%	0%	0%	= 100%
Brant	0%	39%	14%	2%	17%	28%	0%	0%	0%	0%	0%	0%	= 100%
Goose (non- specified)	20%	78%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Lesser snow goose	0%	28%	38%	34%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Canada goose	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Total Eiders	0%	14%	84%	1%	0%	1%	0%	0%	0%	0%	0%	0%	= 100%
Eider (non-specified)	0%	10%	89%	1%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Common eider	0%	16%	84%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
King eider	0%	23%	68%	2%	0%	7%	0%	0%	0%	0%	0%	0%	= 100%
Spectacled eider	0%	22%	78%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Stellar's eider	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Ptarmigan	7%	79%	3%	0%	2%	2%	2%	3%	0%	1%	0%	0%	= 100%
Total Ducks (excl. eiders)	0%	52%	48%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Pintail	0%	61%	39%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Duck (non-specified)	0%	33%	67%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
Mallard	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	= 100%
All Bird Species	2%	57%	25%	2%	5%	8%	0%	0%	0%	0%	0%	0%	= 100%

Source: Stephen R. Braund & Associates, 1989

TABLE 17: BIRD HARVEST BY SPECIES AND MONTH - WA INWRIGHT, YEAR ONE

(Number Harvested)

	1988			1989								
sPECIES	April	May	June	July	August	Sept.	October	Nov.	Dec.	Jan.	Feb.	March
Total Geese	26	807	213	32	102	162	0	0	0	0	0	0
White-fronted goose	0	b77	114	12	4	0	0	0	0	0	0	0
Brant	0	222	80	10	98	162	0	o	0	0	0	0
Goose (non-specified)	26	100	3	0	0	0	0	0	0	0	0	0
Lesser snow goose	0	8	11	10	0	0	0	0	0	0	0	0
Canada goose	0	0	5	0	0	0	0	0	0	0	0	0
Total Eiders	0	80	469	4	0	7	0	0	0	0	0	0
Eider (non-specified)	0	34	301	2	0	o	0	0	0	0	0	0
Common eider	0	9	48	0	0	0	0	0	0	0	0	0
King eider	0	23	68	2	0	7	0	0	0	0	0	0
Spectacle eider	0	14	50	0	0	0	0	0	0	0	0	0
Stellar's eider	0	0	2	0	0	0	0	0	0	0	0	0
Ptarmigan	9	107	4	0	3	3	3	4	0	2	0	0
Total Ducks (excl. eiders)	0	16	15	0	0	0	0	0	0	0	0	0
Pintail	0	11	7	0	0	0	0	0	0	0	0	0
Duck (non- specified)	0	4	8	0	0	0	0	0	0	0	0	0
Mallard	0	1	0	0	0	0	0	0	0	0	0	0

Source: Stephen R. Braund & Associates, 1989

almost exclusively brants with a few other geese, eiders and ptarmigan contributing to the totals for that period. The ptarmigan harvest was greatest during May when 79 percent of the Year One harvest took place. The remaining 21 percent of the ptarmigan were harvested in small numbers throughout Year One.

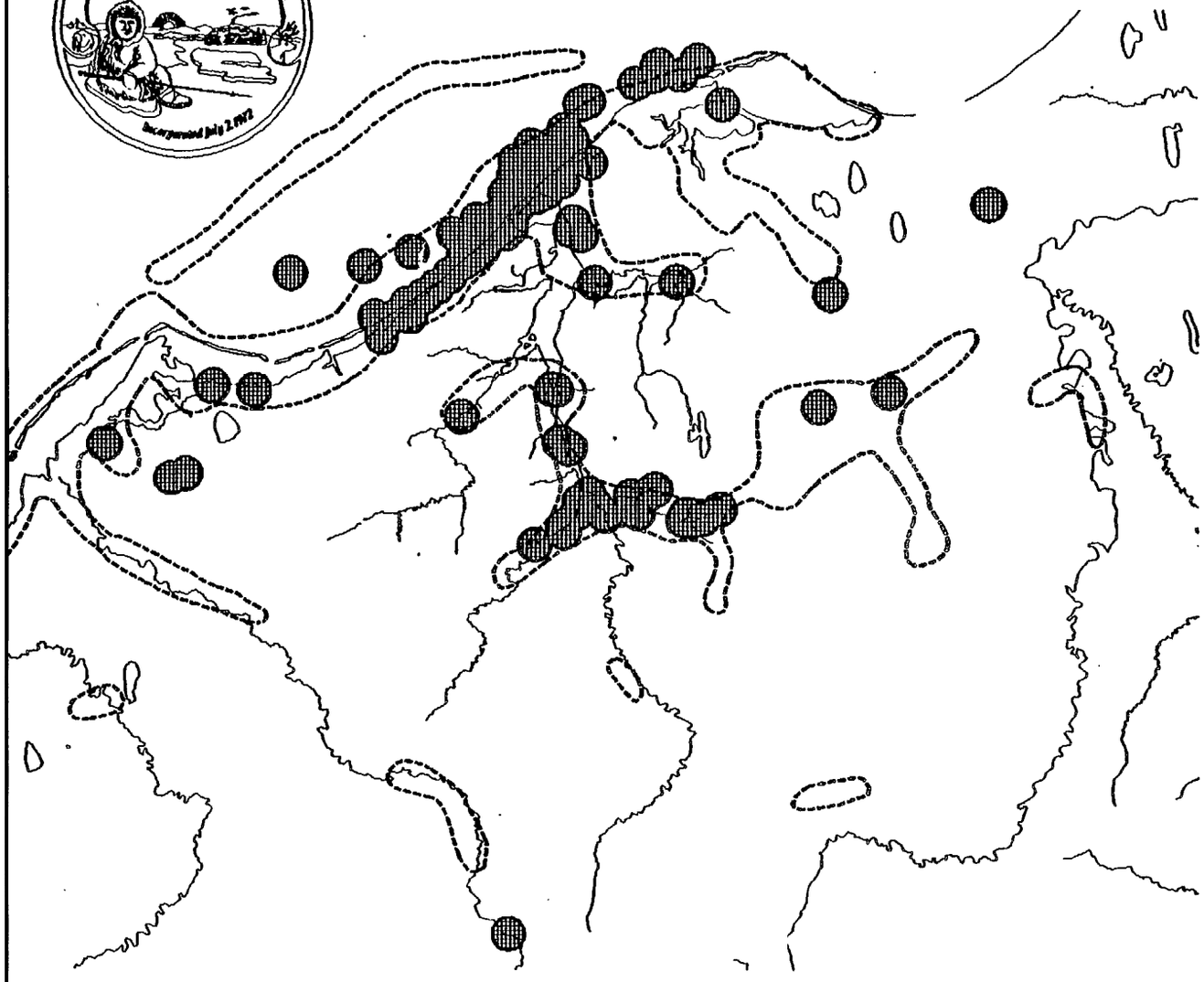
The areal range of Year One bird harvests was similar to that determined by earlier research (Pedersen 1979), although Year One harvests tended to be concentrated near the central portion of the lifetime community harvest area (Map 13). Birds were not harvested as far off the coast of Wainwright as the earlier. research indicates. The more distant offshore harvests documented by Pedersen (1979) may have been incidental to whale hunting from boats during years when the open lead was some distance from" Wainwright; during Year One whaling, the lead was exceptionally close to the community.

As can be seen in Map 14. eider harvests occurred predominantly along the coast. Goose harvests were the most widespread, being divided between coastal areas (mainly brants) and inland along Kuk River tributaries (mainly white-fronted geese). Ptarmigan harvest areas corresponded closely to those of geese and often both species were harvested during the same hunting trip, usually occurring in May. Other duck harvests also occured both inland and along the coast. A white-fronted goose harvest on the upper UtukokRiverdoes not appear in Map 14. but can be identified as the southernmost site on Map 13.

OTHER RESOURCES

Other resources that residents reported harvesting included coal and water in its various forms (e. g., water, ice, and snow). Because the majority of the harvests are of animals, respondents had to be reminded to include coal, water and other resources in their harvest accounts. Harvest amounts for these resources were least likely to be recalled by the respondents during harvest discussions. For this reason, coal and water amounts may be underreported, and the absence of any record of other resources (such as plants and bird eggs) may be a function of underreporting as well. Some respondents indicated they had been given bird eggs, but no respondents reported harvesting them.

MAP 13
NORTH S OPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE
BIRD HARVEST SITES - ALL SPECIES



This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study. Lifetime-community harvest areas, collected in the form of map biographies from 14 households (Pederson 1979), are also illustrated.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.

EG ND NFORMA ION

Lifetime community land use (Pedersen 1979).

Birds

- Eiders
  Common, King, Spectacled, Stellar'
- Other Ducks
- Geese
  White-fronted goose, lesser snow goose, Canada goose, brant
- Ptarmigan

Map Production: North Slope Borough GIS

Date: June 26, 1989

20 0 20 40 60 80

MILES

N

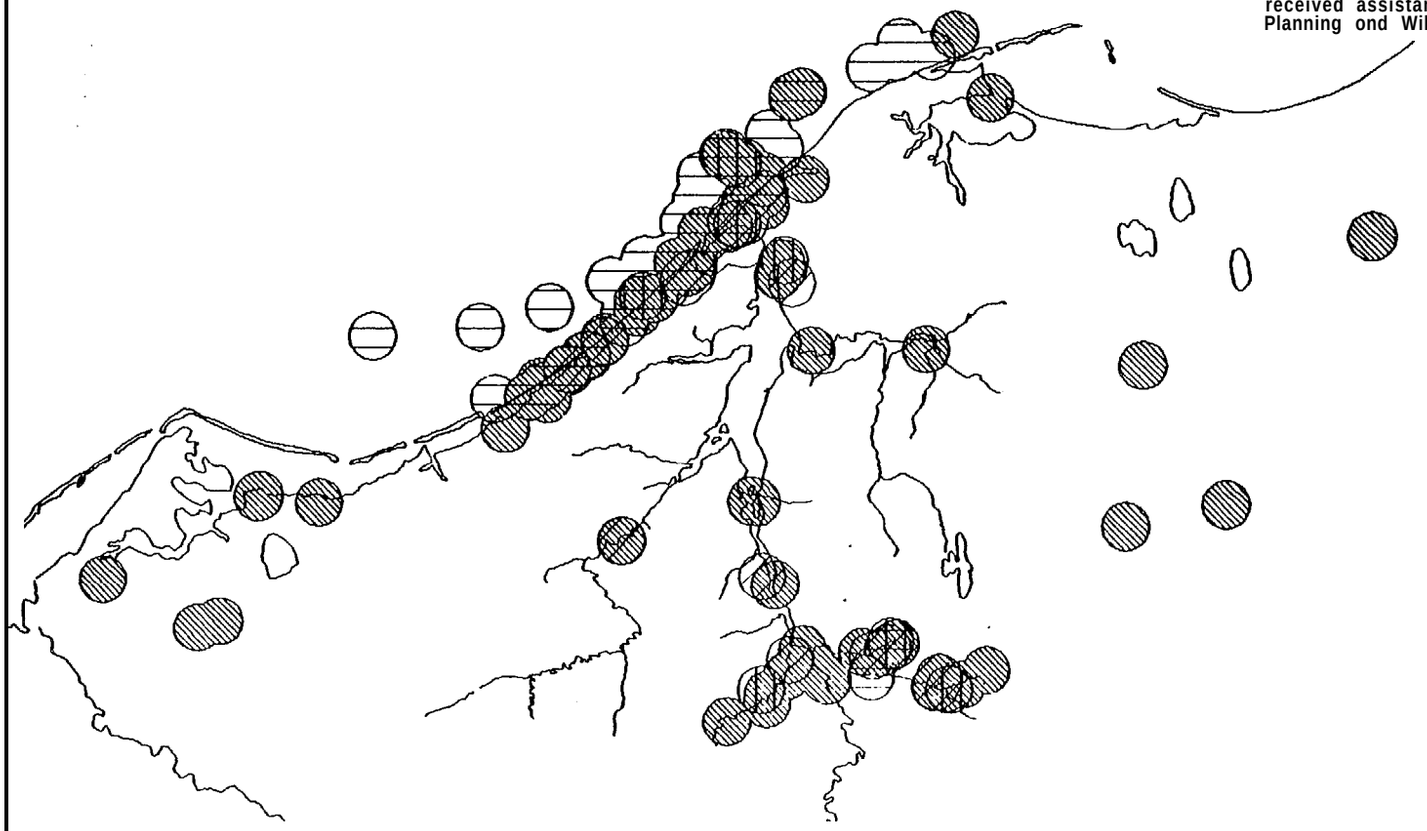
MAP 14

NORTH SLOPE SUBSISTENCE STUDY WA INWRIGHT: YEAR ONE

BIRD HARVEST SITES BY SPECIES GROUPS

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a lwo mile buffer. The map depicts subsistence use for the time period April 1. 1988 brough March 31 1989. Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gored and compi led by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Pro gram. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study tram the North Slope Borough Planning ond Wildlife Management Departments.



LEGEND INFORMA"

- Eiders
- Other Ducks
- Geese
- Ptarmigan

N

20 0 20 40 60

MILES

Map Product Ian: North Slope Borough GIS

Dole: June 26, 1989

MAP 15

NORTH SLOPE SUBSISTENCE STUDY - WAINWRIGHT: YEAR ONE

COAL AND WATER COLLECTION SITES

This map depicts approximate subsistence harvest sites used by 128 Wainwright households. All harvest sites are depicted with a two mile buffer. The map depicts subsistence use for the time period April 1, 1988 through March 31, 1989: Year One of the Wainwright North Slope Subsistence Study.

Source: Contemporary subsistence use information gathered and compiled by Stephen R. Braund and Associates (SRB&A) with the assistance of local research assistants hired through the North Slope Borough Mayor's Job Program. Under contract to the Minerals Management Service, U.S. Department of Interior, SRB&A received assistance in the study from the North Slope Borough Planning and Wildlife Management Departments.

LEGEND INFORMATION

Coal

Water
- Freshwater
- Freshwater ice
- Fresh sea ice

N

20 0 20 40 60 80

MILES

Map Production: North Slope Borough GIS

Date: June 23, 1989

At least two inactive coal mines are situated within 15 miles of Wainwright up the Kuk River (Map 15). Residents reported getting about 172 sacks of coal, or 8,600 pounds, in Year One. River access to the sites enabled residents to get coal by boat during the summer as well as by snowmachine in the winter.

Fresh water was collected all year as well, although residents reported gathering it primarily as ice from October through April. Residents indicated that the best time to get ice was in the late fall and early winter months when the ice was thick enough to cut into "cakes". Generally, ice was measured in sled loads. The field coordinator determined that one sled load consisted of about six cakes or the equivalent of 100 gallons of water. During Year One. residents reported collecting nearly 15,000 gallons of water from ponds near town that are regarded as their drinking water ponds and from "glacier" ice, i.e., aged sea ice from which the salt has leached out.

HARVEST AMOUNTS BY HARVESTER LEVEL

Thus far, this report has presented preliminary Wainwright Year One harvest data in" terms of community totals (by month and for the entire year) and household and per capita means. Preceding data tables have also shown the percentage of Wainwright households participating in the harvest of each species. This section of the report expands upon that statistic as well as the household means in order to look more closely at the distribution of harvest activity across households.

Based on statistical analysis (rather than field observations), the study team divided the 114 full-year Wainwright households into four categories according to the total number of pounds each household harvested in Year One. Using a listing of the amount of total pounds harvested by each household, the categories or harvester levels were defined by placing roughly 25 percent of the households in each category. Thus, the first quarter of the households (Harvester Level 1) are those who harvested between zero and 299 pounds. The next quarter are those who harvested 300 to 999 pounds, followed by those households that harvested 1,000 to 1,999 pounds and the highest group of households (Harvester Level 4) harvesting 2,000 pounds or more in Year One. The actual range in total pounds harvested was from zero pounds to one household that harvested approximately 20,000 pounds. The total pounds per household upon which these breakdowns were based included only edible products and thus excluded furbearers, coal, and water.

The harvest data by harvester level are presented in two tables. Table 18 shows what percentage of the total community harvest of a species was obtained by each harvester level. Table 19 presents the average amount of pounds of each species harvested per household within " each harvester -level. The far right column of Table 19 shows mean harvests per household for the entire community. For most entries, this statistic corresponds to the column entitled "Average Pounds Harvested Per Household" in Tables 3, 6, 9, 12 and 15. These figures do not match for bowhead whale, and consequently for the total marine mammals and total mean household harvest. The calculations for bowhead in

TABLE 18: PERCENTAGE OF TOTAL POUNDS HARVESTED BY SPECIES AND BY HARVESTER LEVEL, WA INWRIGHT YEAR ONE /1

SPECIES HARVESTED	HARVESTER LEVEL 1 0-299 LBS	HARVESTER LEVEL 2 300-999 LBS	HARVESTER LEVEL 3 1000-1999 LBS	HARVESTER LEVEL 4 2000++ LBS	TOTAL
All Species	0.8%	10.3%	23. 7%	65. 3%	100%
Total Marine Mammals	0.9%	13.7%	22. 9%	62.5%	1 00%
Bowhead	1.9%	25.9%	36. 9%	35 .3%	100%
Walrus	0.0%	0.0%	7.1%	92. 9%	1 00%
Bearded Seal	0.0%	12.2%	23.4%	64 .4%	1 00%
Polar Bear	0.0%	14.3%	14.3%	71 .4%	1 00%
Total Ringed & Spotted Seat	0.0%	3.3%	23.2%	73.5%	100%
Ringed Seal	0.0%	3.6%	22.3%	74.1%	1 00%
Spotted Seal	0.0%	0.0%	33.4%	66. 6%	1 00%
Beluga Whale	0.0%	0.0%	0.0%	100. VA	1 00%
Total Terrestrial Mammals /2	0.6%	4.0%	24.4%	71.0%	100%
Caribou	0.6%	4.1%	24. 2%	71.1%	1 00%
Moose	0.0%	0 . 0 %	33.3%	66. 7%	1 00%
Brown Bear	0.0%	0.0%	0.0%	100. 0%	1 00%
Ground Squirrel	0.0%	0.0%	100. 0%	0.0%	1 00%
Total Fish	0.3%	8.2%	22.774	68. 9%	1 00%
Total Whitefish	0.0%	3.6%	16.2%	80. 2%	100%
Whitefish (non-specified)	0.0%	0.0%	0.0%	100.0%	1 00%
Round Whitefish	0.0%	0.0%	56.3%	43.8%	1 00%
Least cisco	0.0%	4.0%	12. 7%	83.3%	100%
Bering, Arctic cisco	0.0%	0.0%	0.0%	100. CM	1 00%
Total Other Freshwater Fish	0.0%	10.0%	39.3%	50.8%	1 00%
Arctic grayling	0.0%	9.9%	39.7%	50.3%	1 00%
Burbot (Ling cod)	0,0%	16.7%	0.0%	83.3%	1 00%
Lake trout	0.0%	0.0%	0.0%	100.0%	1 00%
Total Salmon	0.0%	0.0%	87. 6%	12.4%	1 00%
Salmon (non-specified)	0.0%	0.0%	100. CM	0.0%	1 00%
Chum (Dog) salmon	0.0%	0.0%	66. 7%	33.3%	1 00%
Pink (Humpback) salmon	0.0%	0.0%	100. 0%	0.0%	1 00%
Total Other Coastal Fish	1.2%	16.4%	18. 0%	64. 4%	1 00%
Rainbow smelt	1.3%	16. 6%	19.9%	62. 3%	1 00%
Tomcod (Saffron Cod)	0.0%	0.0%	0.0%	100. CM	100%
Arctic cod	0.0%	100. 0%	0.0%	0.0%	1 00%
Sculpin	0.0%	0.0%	0.0%	100. 0%	1 00%

(Continued next page)

TABLE 18 (cent i nued): PERCENTAGE OF TOTAL POUNDS HARVESTED
BY SPECIES AND BY HARVESTER LEVEL, WAINWRIGHT YEAR ONE

SPECIES HARVESTED	HARVESTER LEVEL 1 0-299 LBS	HARVESTER LEVEL 2 300-999 LBS	HARVESTER LEVEL 3 1000-1999 LBS	HARVESTER LEVEL 4 2000++ LBS	TOTAL
Total Birds	2.0%	8.5%	33. 4%	56.1%	1 00%
Total Geese	1.9%	8.3%	30.6%	59.2%	1 00%
White-f ronted goose	1.3%	2.5%	43. 9%	52.2%	1 00%
Brant	0.9%	17.3%	16.9%	64. 9%	1 00%
Goose (non-specified)	8.1%	4.1%	3.3%	84. 6%	100%
Lesser snow goose	0.0%	37.0%	29. 6%	33. 3%	1 00%
Canada goose	0.0%	0.0%	100.0%	0.0%	100%
Total Eiders	2.8%	10.4%	50.4%	36.3%	1 00%
Eider (non-specified)	0.0%	" 18.9%	38.8%	42.3%	1 00%
Common eider	3.5%	0.0%	59.6%	36.8%	100%
King eider	11.0%	0.0%	56.0%	33. 0%	1 00%
Spectacle eider	0.0%	4.7%	76. 6%	18. 8%	100%
Stellar's eider	0.0%	0.0%	0.0%	100.0%	100%
Ptarmigan	0.0%	3.9%	49.6%	46.5%	1 00%
Other ducks	0.0%	9.7%	51.6%	38.7%	100%
Pintai l duck	0.0%	5.6%	44. .4%	50.0%	1 00%
Duck (non-specified)	0.0%	16.7%	66. 7%	16.7%	100!4
Mal lard duck	0.0%	0.0%	0,0%	100.0%	1 00%

1. The percentages for bowhead in this table are based upon the number of crew member or vi llage shares each household reported receiving, rather than on the entire edible whale weight divided by the number of Wainwright households, as was done elsewhere in this report.
2. Forbearers were not included in the calculation of harvester levels or amounts harvested per harvester Level. They are not eaten and therefore are not measured i n pounds, the unit upon which this analysis is based.

Source: Stephen R. Braund & Associates, 1989

TABLE 19: MEAN EDIBLE POUNDS HARVESTED BY HARVESTER LEVEL , WA1 NWR I GHT YEAR ONE /1

SPECIES HARVESTED	HARVESTER LEVEL 1 0-299 LBS (LBS.)	HARVESTER LEVEL 2 300-999 LBS (LBS.)	HARVESTER LEVEL 3 1000-1999 LBS (LBS.)	HARVESTER LEVEL 4 2000++ LBS (LBS.)	MEAN LBS. PER HOUSE-HOLD FOR ENTIRE COMMUNITY
All Species	53.0	635.4	1,469.9	4,495.6	1,631.3
Total Marine Mammals	36.2	517.0	868.4	2,630.9	996.3
Bowhead	36.2	440.0	627.0	667.3	447.4
Walrus	0.0	0.0	93.9	1,358.7	346.5
Bearded Seal	0.0	57.7	111.1	339.6	124.8
Polar Bear	0.0	16.5	16.5	91.9	30.5
Total Ringed & Spotted Seal	0.0	2.8	19.8	69.7	22.5
Ringed Seal .	0.0	2.8	17.5	64.6	20.6
Spotted Seal	0.0	0.0	2.3	5.2	1.8
Beluga Whale	0.0	0.0	0.0	103.7	24.6
Total Terrestrial Mammals /2	11.5	76.1	464.9	1,501.1	500.6
Caribou	11.5	76.1	448.2	1,460.4	486.6
Moose	0.0,	0.0	16.7	37.0	13.2
Brown Bear	0.0	0.0	0.0	3.7	0.9
Ground Squirrel	0.0	0.0	0.0	0.0	0.0
Total Fish	1.0	25.9	71.9	242.7	83.5
Total Whitefish	0.0	5.9	26.5	145.2	42.9
Whitefish (non-specified)	0.0	0.0	0.0	0.3	0.1
Round Whitefish	0.0	0.0	7.5	6.5	3.5
Least cisco	0.0	5.9	19.0	138.0	39.2
Bering, Arctic cisco	0.0	0.0	0.0	0.4	0.1
Total Other Freshwater Fish	0.0	7.8	30.6	44.0	20.5
Arctic grayling	0.0	7.7	30.6	43.1	20.3
Burbot (Ling cod)	0.0	0.1	0.0	0.7	0 . 2
Lake trout	0.0	0.0	0.0	0.1	0.0
Total Salmon	0.0	0.0	1.4	0.2	0.4
Salmon (non-specified)	0.0	0.0	0.4	0.0	0.1
Chum (Dog) salmon	0.0	0.0	0.4	0.2	0.2
Pink (Humpback) salmon	0.0	0.0	0.6	0.0	0.2
Total Other Coastal Fish	1.0	12.2	13.4	53.2	19.6
Rainbow smelt	1.0	11.1	13.4	46.5	17.7
Tomcod (Saffron Cod)	0.0	0.0	0.0	6.7	1.6
Arctic cod	0.0	1.1	0.0	0.0	0.3
Sculpin	0.0	0.0	0.0	0.1	0.0

(Cent i nued next page)

TABLE 19, cent inued: MEAN EDIBLE POUNDS HARVESTED BY HARVESTER LEVEL, WAINWRIGHT YEAR ONE

SPECIES HARVESTED	HARVESTER LEVEL 1 0-299 LBS (LBS.)	HARVESTER LEVEL 2 300-999 LBS (LBS.)	HARVESTER LEVEL 3 1000-1999 LBS (LBS.)	HARVESTER LEVEL 4 2000++ LBS (LBS.)	MEAN LBS. PER HOUSEHOLO FOR ENTIRE COMMUNITY
Total Birds	4.3	16.5	64.7	120.9	51.0
Tots l Geese	3.6	13.8	50.8	109.4	43.8
White- fronted goose	1.3	2.3	39.2	51.7	23.5
Brant	0.6	9.3	9.1	38.9	14.2
Goose (non-specified)	1.7	0.8	0.6	17.3	4.9
Lesser snow goose	0.0	1.5	1.2	1.5	1.1
Canada goose	0.0	0.0	0.8	0.0	0.2
Total Eiders	0.7	2.4	11.6	9.3	6.1
Eider (non-specified)	0.0	2.3	4.6	5.6	3.1
Common eider	0.1	0.0	1.7	1.2	0.8
King eider	0.6	0.0	2.8	1.8	1.3
Spectac led eider	0.0	0.2	2.5	0.7	0.8
Stellar's eider	0.0	0.0	0.0	0.0	0.1
Ptarmigan	0.0	0.1	1.5	1.6	0.8
Other ducks	0.0	0.2	0.8	0.7	0.4
Pintai l duck	0.0	0.1	0.4	0.5	0.2
Duck (non-specified)	0.0	0.1	0.4	0.1	0.2
Mal lard duck	0.0	0.0	0.0	0.1	0.0

1. The percentages for bowhead in this table are based upon the number of crew member or vi l lage shares each household reported receiving, rather than on the entire edible whale weight divided by the number of Wainwright households, as was done elsewhere in this report.
2. Forbearers were not included in the calculation of harvester levels or amounts harvested per harvester level. They are not eaten and therefore are not measured in pounds, the unit upon which this analysis is based.

Source: Stephen R. Braund & Associates, 1989

Tables 18 and 19 are different than those used in other tables in this report because they reflect the number of crew member or village shares households reported receiving, multiplied by the estimated weight of such shares. In contrast, other tables in this report derive household means for bowhead from the total estimated edible weight from each whale, including all the blubber and shares set aside for community feasts, not just shares received and reported to this project by study households.

Table 18 shows that, in terms of all species combined, Level 4 harvested 65 percent of the total community harvest. In other words, one fourth of the households harvested two thirds of the total pounds harvested. Level 3 harvested close to one fourth of the total amount harvested. Level 2 harvested 10 percent and Level 1 harvested less than one percent of the Year One total edible pounds.

When looking at major resource groups, these proportions remain roughly the same. For example, Level 4 harvested between 63 and 71 percent of the total marine mammals, terrestrial mammals and fish. Level 3 consistently harvested 22 to 23 percent of those three resource categories, while Level 2 harvested four to 14 percent and Level 1 harvested less than one percent of each of the three resource groups. The harvest of birds was unique in that its distribution across harvester levels was shared slightly by the lower harvester levels, with 56 percent harvested by Level 4, 34 percent harvested by Level 3. and 8.5 and two percent harvested by levels 2 and 1 respectively.

As can be seen in Table 19, Level 3 household means for the major resource categories consistently are quite close to the overall community mean per household, compared to how close the other levels are to the overall mean. Table 19 is also useful for scanning intra-level relationships. By looking down the Harvester Level 1 column, one observes that marine mammals (specifically bowhead whale) represent the largest share of their entire Year One harvest, followed by terrestrial mammals (caribou), fish (salmon), and birds. While the first three major resource categories are represented by only one species, Level 1 households harvested a variety of geese and eider species. A similar examination of the columns for each of the other levels reveals an increasing variety of species harvested the higher the harvester level. Table 20 summarizes the number of species harvested by harvester level.

TABLE 20: NUMBER OF SPECIES HARVESTED BY HARVESTER LEVEL, WAINWRIGHT YEAR ONE[1]

	HARVESTER LEVEL 1 0-299 LBS.	HARVESTER LEVEL 2 300-999 LBS.	HARVESTER LEVEL 3 1000-1999 LBS.	HARVESTER LEVEL 4 2000+ LBS.
Marine Mammals	1	4	6	7
Terrestrial Mammals	1	1	3	3
Fish	1	5	5	10
Whitefish	0	1	1	3
Other Freshwater Fish	0	2	1	3
Salmon	0	0	2	1
Other Coastal Fish	1	2	1	3
Birds	4	6	9	9
Geese	2	3	4	3
Eiders	2	1	3	3
Ptarmigan	0	1	1	1
Other Ducks	0	1	1	2
TOTAL:	7	16	23	29

1. Harvests recorded as "non-specified" whitefish, salmon, geese, ciders, or ducks were not included in this table.

Stephen R. Braund & Associates, 1989

An analysis of household size by harvester level indicates that the average household size increases with the harvester level. In other words. those households harvesting the most pounds in Year One are also the largest households on average, while the households that harvest the lowest amount are smaller. Average household sizes are presented by harvester level in Table 21.

In summary, an examination of harvest amounts by harvester level indicates that one fourth of the households harvested two-thirds of the total pounds harvested in Year One. The data also show that the variety of species harvested increases with each harvester level, as does the average household size for each harvester level.

TABLE 21: AVERAGE HOUSEHOLD SIZE BY HARVESTER LEVEL.
WAINWRIGHT YEAR ONE

Harvester Level 1 (O to 299 pounds)	2.7 persons per household
Harvester Level 2 (300 to 999 pounds)	3.7 persons per household
Harvester Level 3 (1,000 to 1,999 pounds)	4.5 persons per household
Harvester Level 4 (2,000 or more pounds)	4.6 persons per household
Entire community	3.9 persons per household

Stephen R. Braund & Associates, 1989

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APPENDIX: METHODOLOGY

This appendix details the methodology used in Wainwright to collect comprehensive community harvest data by species and location. The study team focused on three factors when designing and implementing the Wainwright field methodology: first, the insights and lessons learned from conducting fieldwork in Barrow; second, Wainwright's much smaller population size; and third, the impact that changing certain elements of the data collection design, already implemented in Barrow, would have on comparative analyses between the study communities. The methodology is presented in three sections. The first section describes the basic design elements of the field methodology. The second section describes the data collection procedures and the frequency of contacts for the first year of data collection in Wainwright. The third and final section describes the data coding and processing procedures. References for this Appendix are found in the References Cited section immediately preceding this methodology (page 92).

DATA COLLECTION DESIGN

Unquestionably, the single most important difference between the study approaches used in Wainwright and Barrow resulted from Wainwrights' smaller size. The large population of Barrow necessitated that data be collected from only a small, representative percentage (sample) of Barrow households. Additionally, stratifying the households based on level of harvest activity was essential to designing a cost efficient sampling strategy that would produce statistically valid results (SRB&A et al. 1988). In Wainwright, however, such a detailed sampling strategy was not necessary and the study team set out to include all households in the community.

A Census vs. A Sample

Conducting a census in a study of this nature "has several advantages over a random sample. First, if all productive households could be encouraged to participate, one would eliminate the risk of missing a household that, through specialization, harvests a significant portion of a given resource in the

community (e. g., a successful whaling captain's household). Second, the harvest areas indicated by a census would accurately represent the use areas for the entire community. Third, even if some members of the community did not participate in the study, those activities they undertake with participating households would be included. Finally, although some refusals would be inevitable, there is no reason to believe the response rate would be better in a random sample of households.

The Household as the Sampling Unit

As in Barrow, the study team selected the household as the most logical sampling unit. The household is a convenient, easily defined entity that has now been used effectively in both the Barrow and Wainwright data collection efforts. In addition, using the household as the sampling unit would allow the greatest degree of comparability with the data being collected in Barrow.

The major disadvantage of using the household as the sampling unit is the artificial boundary it creates in a culture that places great importance on the extended family. The study team recognizes that the individual household does not necessarily reflect functional or productive economic units in their entirety. In fact, field observations suggest that hunters generally function in groups that change in size and composition depending on the species sought. time available, and traditional aspects of hunting party formation. This complicating factor of individuals hunting in dynamic functional groups necessitated careful cross-checking between harvest reports to insure that all members of the hunting party were included in our data base. Thus, although records were kept by household, participant observation and key informant interviews allowed the study team to verify subsistence data based on our knowledge of the economic unit in question. By understanding who hunted with whom, approximation of functional harvesting groups was possible which aided in filling in data gaps and the verification of sometimes difficult to remember harvest dates and amounts.

Wainwright's population of 502 (one-sixth the size of Barrow) in 1988 lived in 128 households (NSB Department of Planning & Community Services 1989). During Year One, construction of a new high school resulted in a large number of

non-Natives living in the community. This transient population, housed at the hotel, several rented houses as well as in temporary housing, were not included in our sample as they were a non-local work force and, for the purposes of this study, not linked with the community. Working six or seven days a week, 10 to 12 hours per day left little time for subsistence activities. Excluding this transient population, the response rate of 95 percent resulted in the continuous monitoring of 114 households throughout Year One in Wainwright.

Changes in Household Composition

Over the course of Year One, the actual number and the composition of some households fluctuated. However, because each Wainwright household was self representing, movement of individuals between households did not affect the community harvest estimates. Even though the production levels of some households changed during the course of the year (the result of several active hunters passing away, other hunters moving from one household to another, and still others moving out of the community), aggregate harvest estimates for the community accommodated these changes. Because the household was the sampling element, community members that formed a new household became a new reporting unit. New households were assigned identification numbers and their harvest activities were tracked in the same manner as households that were in existence at the beginning of the study. In some cases, adult children moved into an old family house for the summer and then back into their parents' house in the fall when heating costs became prohibitive. In these instances, harvest activities conducted in the summer by these individuals were incorporated with their parents' household data.

The in-migration of Natives who formed new households also occurred during the first year of data collection in Wainwright. As our goal was to perform a complete census of harvest activities in Wainwright, these new households were included in the sample if it was determined that they were either active hunters or planned to make Wainwright their permanent home. Native non-local construction workers associated with the building of the new high school were contacted initially but not included in the study if they reported that their only purpose in town was that of a transient worker.

Households that were formed after the beginning of Year One or that moved with all family members from the community after the beginning of Year One were not included in the estimates of mean household harvests. That is, while their harvest activities contributed to the total community harvest for the year, because these households were not in existence for the entire year their harvest data were not used in the calculation of average household harvests per year.

DATA COLLECTION PROCEDURES

The primary study objective (i.e., community representative subsistence harvest data by species and location) was achieved in Wainwright through regular contact with 95 percent of Wainwright's full-year households. Over 1,140 different harvest events "were recorded during Year One (not including individually recorded crew member shares from the whale harvests, gifts, or food received at community feasts). The study team employed two main methods of collecting the data for this project: informal key informant discussions and participant observation. The key informant discussions formed the backbone of this 'data collection effort with participant observation primarily used to cross-check and verify hunting party composition and harvest data.

Kev Informant Discussions

The basic harvest data were collected by SRB&A staff and local research assistants during periodic visits with each sample household. During each visit, the key informant reported the harvest activities of household members. Primary data items reported by species were harvest site and number killed. Key informants also reported (if available): the sex of the species harvested, which household members participated in the harvest activity, "total number of household members present during the harvest trip, and the total number of non-household members participating in the harvest activity. Finally, researchers also recorded any anecdotal information regarding weather, comparisons with previous harvests, observations on animal health or populations, or similar topics.

The researchers usually recorded the harvest activity data directly on the data coding forms or occasionally in field notebooks. The household's harvest

locations were marked directly onto blueline copies of U. S.G.S. 1:250,000 scale maps by the researcher or by the harvesters themselves. Each map was marked at the time of the interview with both the appropriate household number and harvest period. The same identification variables appeared on harvest activity record forms (discussed in detail below).

Field researchers attempted to discuss each household's harvest activity with the most active hunter in the household. If he (or she) was unavailable, they contacted another household member who was present during the harvest. Occasionally a household member who was not present during the harvest would provide information about the recent harvest activities of the household members. In these cases, field staff later contacted the participating harvesters to verify the data and/or to obtain any missing information.

The researchers also tried to determine who else participated (i.e., from other households) from outside the household in every harvest event. Thus, if a harvester did not know exactly where the harvest took place, the researcher could identify the harvest location through interviews with other members of the hunting party. In order to produce the most accurate and reliable information possible, the study team always cross-checked the harvest activity sheets of all members of a hunting party against one another. In instances where data conflicted (most commonly the date of the harvest) the respondent interviewed closest to the time of the harvest event was considered the most reliable source for the date unless another member of the same hunting party kept a calendar of his harvest events.

Contact Frequency

In Wainwright, the actual frequency with which households were contacted depended primarily on the presence of SRB&A field staff and the availability of local research assistants. Under the proposed schedule of contacts, the study team hoped to contact the most active households three to four times a month, the somewhat active households hi-monthly, the less active households once a month and the inactive households quarterly. Due to a high attrition rate of qualified research assistants, this schedule proved unattainable. However, the study team was able to minimize recall and other problems associated with less frequent contacts by careful analysis of each household's level of activity

during the various seasons and throughout the year, and by taking into consideration other circumstances in scheduling contacts. All aspects of the contact methodology are discussed below.

SRB&A Field Presence

Three distinct hiatuses in data collection can be traced to periods when SRB&A staff were absent from the community. First, in late July and August SRB&A field coordinator David Burnham left the community to work on other tasks in the Anchorage office. Since the Wainwright field coordinator's position originally was designed to cover only part of the year, Burnham's absence in August was intended to allow field coverage to extend an extra month in the fall. As anticipated, the unloading of fuel and supply barges resulted in numerous employment opportunities; additionally, several families travelled to Fairbanks for the Eskimo Olympics. Thus, the general level of subsistence activities during much of this period was reduced. Despite Burnham's confidence in his primary research assistant's ability to continue data collection without in-person supervision, no harvest contacts were made in August until Burnham returned.

Second, a change in field staff in October (when Burnham was replaced by Eric Loring) produced some confusion among residents, the most problematic aspect being that people assumed Burnham's departure meant the project must be over. Some residents saw the change in staff to be an opportunity to drop out of the survey. Consequently, Loring had to reintroduce the project and himself to the community. Talks at city meetings, notices in public places, memos on the local cable television message channel, word of mouth and door to door introductions educated residents as to the nature of the change and encouraged their continued participation. However, this necessary effort also limited the time available for contacts during October.

Third and finally, when Loring left the community for Christmas vacation and staff meetings in Anchorage, contact levels again dropped.

Without SRB&A staff providing in-person encouragement and assistance, local research assistants showed little initiative in conducting household

harvest discussions during the field coordinators' absences. Thus, few contacts occurred during those absences. However, these breaks in conducting harvest discussions were timed to coincide with lower periods of hunting and fishing activity or were sandwiched between months of very intensive and successful harvest data collection.

Research Assistants

Recruiting qualified RAs committed to staying with the project was the most serious problem faced in the data collection phase of the project. During Year One, only five of 13 RAs hired worked for more than a week and during several lengthy periods of time no local assistants could be found. Other jobs lured several RAs away and the difficult nature of the work frustrated some RAs. Of the five RAs who worked for more than a week, only three demonstrated the initiative necessary for successful data collection. This is not to say that the participation of each of the RAs who worked on the project was not appreciated; rather, the availability of trained research assistants was essential if a high rate of contact frequency was to be maintained. Contact frequency was best during periods when the RA staff was stable as they acquired the expertise and confidence to conduct harvest discussions efficiently. Their steady work also allowed the field coordinator to spend the time necessary to edit, code, and process data instead of searching for, hiring, and training RAs. The field coordinators found that contacting, conducting, coding, and processing more than 80 interviews in a single month, even when working 10 and 12 hour days, was not possible without assistance.

Adjusting the Frequency of Contacts

The complexity and detailed nature of the data processing phase of the project, combined with the difficulty in scheduling and conducting harvest discussions, even with local assistance, required the study team to reassess the planned rate of contacts. As the study team became familiar with each household's harvest activities, they were able to adjust the contact schedule for each household so that it corresponded to their active periods of harvesting. Many households hunted caribou and fished in the fall, while others did not. Some households resided at camp for part of

the summer, constituting their subsistence activities for the entire year. While full-time work did not prevent most hunters from hunting in the evenings and on weekends, others hunted only during vacations and leave time taken in the spring and fall. Once the general household pattern was determined, the frequency of visits was adapted to fit with the level and timing of the household's harvest activities. For example, the sampling interval for one household varied from as little as six days between contacts during an especially active harvest period to as long as nine weeks when household members were doing little or no harvesting.

The study team enlisted other methods to minimize hunters' memory attrition and ensure that harvest 'reports were accurate. Some active households recorded their harvests and harvest · locations on their own (e.g., on a calendar or sheet of paper and a map). . The monitoring of external variables, such as environmental conditions or cultural events, were also considered by the study team in the scheduling of contacts. For example, if blowing snow and high winds resulted in "white out" conditions that prevented travel outside the immediate vicinity of the community for several days or weeks, the contact schedule was modified to accommodate this known lull in harvest activity. In- addition, many of the respondents quickly memorized the short set of questions repeatedly asked about their harvest activities. Recall appeared to be enhanced significantly through this process (an impression based on the ease versus the difficulty a respondent would have in reporting their data). Flexibility proved essential in obtaining accurate harvest data within the limits of the manpower available.

In summary, of those households monitored continuously in Year One, the average number of successful harvest discussions per household was 6.5, with the number of contacts ranging from three to ten. The total number of Year One harvest discussions per month for the entire sample of 128 households ranged from zero in January to 101 in July, and the total number of successful harvest discussions for the year was 734. These figures do not include the numerous attempts that often were involved in locating and contacting the respondent before competing a successful harvest discussion, but do include one Year Two visit (i.e., a visit that occurred

after March 31, 1989) per household during which harvests through the end of Year One (March 31, 1989) were recorded.

Participant Observations

David Burnham resided in Wainwright as a full-time field coordinator from March through October of Year One. Eric Loring moved to Wainwright in October, was trained by Burnham, and assumed the position of field coordinator for the remainder of Year One. The full-time presence of a field coordinator in the community provided ample opportunity for participant observation at various subsistence related activities and events. The most important participant observations occurred:

- o during preparation for spring whaling and at whaling camps on the ice;
- o at whale harvest locations;
- o while whaling *crew* shares were distributed at captains' homes;
- o during the Nalukataq celebrations;
- o on various day and overnight hunting trips;
- o during visits to spring and fall camps.

Participant observation improved the accuracy of the data collection in a number of ways. "Most importantly, it provided the opportunity to continually field check the data collection rules and methods. Researchers directly observed, for example: how harvests were divided among hunters; how harvests were counted and weighed; and how hunters approached the task of locating harvest resources. The experience gained in these situations was applied to a modification of data coding and entry rules. In addition, the training program for the research assistants was subsequently improved to handle unique harvest reports.

Data Coding and Processing

To obtain the desired data on resource harvest activities, the study team set out to document each separate resource harvest activity undertaken by each household member. Thus, a single resource harvest activity is one of the two

primary recording units for the study; the household is the other main recording unit. The harvest data consist of attributes descriptive of the specific harvest event: date, time, species, amount harvested, location, and participants. The specific definitions of these variables are presented below.

The Household

The household is conceptually defined for the purposes of data collection to consist of the people who sleep in a sampled dwelling (e. g., house or apartment). Anyone living in a sample household at the time a resource harvest occurs is treated as a member of the household. If, for example, a daughter normally living in Anchorage visits her parents at fish camp and helps tend the nets, she is recorded as one of the participants in the resource harvest activity. This approach produces- data that are generalizable to households whose compositions may change over time.

The Harvest Activity

The definition of a single resource harvest activity for recording purposes is a species-specific harvest at a particular location during no more than a two week period by one or more members of a sample household. The activity must be species-specific but can include the harvest of two or more of the same species. Hunting or fishing activities which do not result in a harvest are not recorded.

The particular location of a harvest activity is important to the assessment of OCS effects. Although the incidence of many OCS effects may be difficult to predict, the geographic location of land-based activities such as supply bases and pipelines could have significant effects on subsistence harvest activity. A "particular" location is defined as a hunting or fishing area that can be readily differentiated from other locations on a 1:250,000 scale map.

While recording the actual date of harvest is desired, in some cases this goal was not possible. When a respondent was vague about a date, the interviewer showed him or her a calendar to prompt a more specific response. In some cases, this tool effectively elicits a specific date, while in other cases it serves to simply narrow the harvest date down to a particular week. Camp-based

harvest activities were treated slightly differently since asking informants to recall their opportunistic hunting and fishing activities on a daily basis while at camp proved impractical. Therefore, for camp-based harvests occurring more or less continuously (e. g., fish nets under the ice), respondents were asked to report their overall harvest of a specific species in a two week period rather than asked to recall their catch on "a daily basis. The implication of the two week time limit on a single resource harvest activity is that the maximum error in reporting a harvest date is two weeks. In most cases, however, the record date matches the actual harvest date.

The above definition of a single resource harvest activity produces the following results:

(1) The harvest of two species at the same location on the same trip generated two observations.

(2) The harvest of two or more of the same species at the same location on the same trip generated one observation (with the harvest amount recorded as part of the observation).

(3) The harvest of the same species at two locations on the same day generated two observations.

(4) The harvest of the same animal at a single location by two members of a household generated one observation (with household members participating recorded as part of the observation).

(5) The harvest of the same animal by single members of two different households generated two observations. The amount recorded in this instance, or in the case of any shared harvest, is a value proportionate to the individual's share of the harvest. If the individual's share was a fraction of an animal, then that fraction was recorded to the nearest tenth of a percent.

Recording Units

The harvest activity and the household were the two recording units for quantitative data. They formed the organizational basis for gathering, storing, and analyzing the data collected through key informant interviews. Data coding forms were developed for both recording units. The data items recorded on each form are considered attributes. Figure A-1 displays the Harvest Activity Sheet and below is a complete description of each attribute.

FIGURE A- : HARVEST ACTIVITY SHEET

ARVEST ACTIV TY SHEET

RESEARCHER ID _____ BEGIN DATE

HOUSEHOLD ID _____ END DATE

HH CONTACT D _____ TODAY'S DATE ____

ENTRY ID	MAP ID	DATE	SPECIES/ RESOURCE HARVESTED	AMOUNT/NUMBER HARVESTED TOTAL	M	F	ESTIMATED SIZE OR # OF SACKS	TIME IN FIELD HRS	DAYS	HH HARVESTERS INDIVIUAL ID #s	NO. OF HHOLD PARTIC.	NO. OF NON-HH PARTIC.	COMMENTS:

Harvest Activity Sheet

The Harvest Activity Sheet can be used to record six different harvest events (records) by a specific household. In addition to recording the attributes of each harvest event, the sheet is designed to easily match the data with sample households, to enable the , field coordinator to keep track of the source of the data (i.e., who performed the interview, who in the household was interviewed, the beginning and end dates of the recording period represented by the form, and the date of the interview), and to permit the calculation of field statistics such as the cumulative number of contacts for the year for each of the sample households and the total number of households contacted.

Interviewer ID: A unique two digit numeric code. With more than one interviewer present, the ID number of the senior interviewer is coded.

Household ID: A three digit numeric code for each household. This is a unique number assigned to each household so that resource harvest activity records can be aggregated by household and linked to household characteristics.

HH Contact ID: A two digit numeric code. If more than one household member answered questions, the household member responsible for the greater amount of actual harvesting is coded.

Begin Date: A set of three two digit numeric codes representing the beginning month, day and year covered by the harvest activity sheet. The begin date should be continuous with, but not overlapping, the last contact date or two week period.

End Date: A set of three two digit numeric codes representing the last month, day and year of the recording period.

Today's Date: A set of three two digit numeric codes corresponding with the month, day and year of the interview. This date corresponds with the end date in most cases. The only exceptions are those interviews in which harvest dates are unknown and the "two week rule" is in effect.

Entry ID: A unique five digit numeric code attached to every successful harvest record. These values are assigned sequentially at the time of coding and are marked in four places: 1) On the harvest activity sheet next to the successful harvest record; 2) on the original map adjacent to the corresponding Map ID (described below); 3) on the compiled harvest map going to GIS; and 4) in the SPSS file.

Map ID: A two digit numeric code corresponding to mapped harvest locations. A value of 97 signifies that the harvest is related to whaling and a value of 95 signifies that the actual harvest location was not mapped but an estimated location was assigned the harvest.

Date: A set of three two digit numeric codes representing the month, day and year covered by the particular harvest record or case.

Species/Resource Harvested: A unique three digit numeric code representing all species and resources used by Wainwright residents. Table A-1 is a species and resource list that includes all the resources Wainwright residents are known to have harvested in the past as well as the number used to code each species. The species are divided into resource categories. The first code under each category is inclusive of all species in that group and is to be used when the particular species is unknown, The numbering system is not sequential so as to allow for the addition of other species in the different categories if they are encountered.

Amount/Number Harvested:

Total" A one to three digit, one decimal numeric code representing the total amount of a given resource harvested. In all cases but water, ice, snow and coal, this value represents the number of animals harvested. For any form of water, this number represents the number of gallons harvested; "for coal, it represents the number of sacks.

Male: Same as above except only males are coded. No effort is made to sex waterfowl or fish.

Female: Same as above except only females are coded. No effort is made to sex waterfowl or fish.

Estimated Size or Measurement: A four digit numeric code that represents the amount in pounds of a given resource harvested. This column is left blank until conversion tables can be refined from both existing data and data collected in the field. Coding will be done at a later date. Information that will assist in this conversion is coded under Comments (see below).

Time in Field:

Hours: A one or two digit numeric code representing the hours the hunter spent away from Wainwright pursuing this harvest. Can be used independently of Days for any trip under 24 hours, but should be used in conjunction with Days for trips longer than 24 hours. That is, a 26 hour trip would be represented as 2 HRS and 1 DAY.

Days: A one or two digit numeric code representing the number of days the hunter spent away from Wainwright in this harvest activity. Used in conjunction with HRS above.

Household Harvesters: A series of two digit numeric codes (unique within each household) that represents the household members who actually participated in the harvest. If more than five members of the household participated in an event, the five members who where most active in the event are coded.

No. of Household Participants: A two digit numeric code representing the total number of household members present during the harvest documented by this record. In most instances, this value corresponds to the number of household harvesters above. However, for harvest activities that occur during an extended visit to a hunting or fishing camp (for which the majority of the family is in attendance) this value should represent the total number of household members present.

TABLE A-1: WAINWRIGHT SPECIES CODING LIST

Species	Inupiaq Name	Scientific Name	Code
Big Game			001
Caribou	Tuttu	Rangifer tarandus	002
Moose	Tuttuvak	Alces alces	003
Brown bear	Akʻaq	Ursus arctos	004
Musk Oxen	Umiŋmaq	Ovibos moschatus	005
Dan sheep	Imnaiq	Ovis dalli	006
Marine Mammals			010
Seal			011
Bearded seal	Ugruk	Erignathus barbatus	012
Ringed seal	Natchiq	Phoca hispida	013
Spotted seal	Qasigiaq	Phoca largha	014
Ribbon seal	Qaiġulik	Phoca fasciata	015
Whale			020
Beluga whale	Qilalugaq	Delphinapterus leucas	021
Bowhead whale	Aġviq	Balaena mysticetus	022
Polar bear	Nanuq	Ursus maritimus	025
Walrus	Aiviq	Odobenus rosmarus	026
Furbearers, Small Game			030
Fox			031
Arctic (Blue) fox	Tiġiganniaq	Alopex lagopus	032
Red fox	Kayuqtuq(Qiangaq)	Vulpes fulva	033
Cross fox	Qiangaq	Vulpes fulva	033
Silver fox	Qiugniqtaq	Vulpes fulva	033
Snowshoe hare	Ukalliq	Lepus americana	036
Arctic Hare	Ukalliq	Lepus arcticus	037
Lynx	Niutuiyiq	Felis lynx	038
Hoary marmot	Siksrikpak	Marmota caligata	039
Porcupine	Qiŋaġluk	Erethizon dorsatum	040
Ground squirrel	Siksrik	Spermophilus parryii	041
wolf	Amaġuq	Canis lupus	042
Wolverine	Qavvik	Gulo gulo	043
Ermine (Weasel)	Itigiaq	Mustela ermines	044
Wildfowl			050
Duck	Qaugak		051
Oldsquaw	Aaqhaaliq	Clangula hyemalis	052
Pintail	Ivugaq	Anas acuta	053
Mallard	Kurugaktak	Anas platyrhynchos	054
Red-breasted merganser	Aqpaqsruayuuq	Mergus serrator	055
Surf scoter	Aviluktuq	Melanitta perspicillata	056
Greater scaup	Qaqʻuktuuq	Aythya marila	057
Eider			060
Common eider	Amauligruaq	Somateria mollissima	061
King eider	Qiŋalik	Somateria spectabilis	062

TABLE A-1 (cont.): WAINWRIGHT SPECIES CODING LIST

Species	Inupiaq Name	Scientific Name	Code
Spectacle eider	Tuutalluk	Somateria fischeri	063
Stellar's eider	Igniqauqtuq	Polysticta stelleri	064
Goose	Niġliq		066
Brant	Niġliñġaq	Branta bernicla n.	067
White-fronted goose	Niġlivialuk	Anser albifrons	068
Lesser snow goose	Kaŋuq	Chen caerulescens	069
Canada goose	Iqsraġutilik	Branta canadensis	070
Emperor goose	Mitilugruak	Chen canagica	071
Murre			075
Common murre	Atpak (Atpa)	Uris aalge	076
Thickbilled murre	Atpatuuq	Uris lomvia	077
Loon			080
Arctic loon	Qaqsrauq	Gavia arctica	081
Common loon	Malġi	Gavia immer	082
Red Throated loon	Qaqsraupiagruk	Gavia stellata	083
Yellow billed loon (King bird)	Tuullik	Gavia adamsii	084
Ptarmigan	Aqargiq		085
Rock ptarmigan	Niksaaktuŋiq	Lagopus mutus	086
Willow ptarmigan	Nasaullik	Lagopus lagopus	0s7
snowy owl	Ukpik	Nyctea scandiaca	090
Sandhill crane	Tatirqaq	Grus canadensis	091
Tundra (Whistling) swan	Qugruk	Cygnus columbianus	092
Gull	Nauyak	Larus SP.	093
Black guillemot	Inagiq	Cepphus grylle	094
Fish			110
Salmon			111
Chum salmon	Iqalugruaq	Oncorhynchus keta	112
Pink (humpback) salmon	Amaqtuuq	Oncorhynchus gorbuscha	113
Silver (coho) salmon	Iqalugruaq	Oncorhynchus kisutch	114
King (chinook) salmon		Oncorhynchus tshawytscha	115
Whitefish			1.20
Round whitefish	Aanaakliq	Prosopium cylindraceum	121
Broad whitefish (river)	Aanaakliq	Coregonus nasus	122
Broad whitefish (lake)	Aanaakliq	Coregonus nasus	124
Humpback whitefish	Piquktuuq	Coregonus clupeaformis	125
Least cisco	Iqalusaaq	Coregonus sardinella	126
Arctic, Bering cisco	Qaaktaq	Coregonus autumnalis	123
Capelin	Pagmaksraq	Mallotus villosus	130
Arctic Grayling	Sulukpaugaq	Thymallus arcticus	131
Arctic char	Iqalukpik	Salvelinus alpinus	132

TABLE A-1 (cont.): WAINWRIGHT SPECIES CODING LIST

Species	Inupiaq Name	Scientific Name	Code
Arctic cod	Iqalugaq	Boreogadus saida	133
Burbot (Ling cod)	Tittaaliq	Lota Iota	134
Tomcod (Saffron cod)	Uugaq	Eleginus gracilis	135
Arctic flounder	Nataaġnaq	Liopsetta glacialis	136
Northern pike	Siulik	Esox lucius	137
Sculpin	K a n a y u q	Cottus cognatus	138
Rainbow smelt	Iḥuaġniq	Osmerus mordax	139
Lake trout	Iqaluaqpaq	Salvelinus namaycush	140
Blackfish	Iḥuuqiñiq	Dallia pectorals	141
Invertebrates			150
Clams	Kiirauraq(iviluq)	Macoma calcerea	151
Crab	Puyyugiaq	Chionoecetes opilio & Paralithodes platypus	152
Shrimp	Igliġaq	Pandalidae sp. & Cragonidae sp.	153
Berries			160
Blueberry	Asiaq	Vaccinium uliginosum	161
Cloudberry	Aqpik	Rubus chamaemorus	162
Cranberry	Kimminaq	Vaccinium vitis-idaea	163
Crowberry	Paungaq	Empetrum nigrum	164
Salmon berry	Aqpik	Rubus spectabilis	165
Bird Eggs	Mannik		170
Tern eggs			171
Gull eggs			172
Geese eggs			173
Eider eggs			174
Forest/Vegetation			190
Alder bark	Nunaŋiak		191
Birch tree	Urgiiliq		192
Willowbrush	Uqpik		193
Driftwood	Qiruk		194
Sod	Ivruq		195
Aspen	Nunaŋiak		196
Greens/Roots			200
Grass roots	Qalġaq		201
Hudson's Bay tea	Tilaaqiq	Ledum decum	202
Sourdock		Rumex archius	203
Swamp grass	Nakaat		204
Wild celery	Ikunsuq	Angelica lucida	205
Wild chives	Quaġaq	Allium schoenoprasum	206
Wild potato	Masu	Hedysarum alpinum	207
Wild rhubarb	Qunulliq	Oxyric digyna	208
Wild spinach	Qauġaq	Rumex arcticus	209
Willow leaves	Akutuq	Salix sp.	210

TABLE A-1(cont.): WA IN WRIGHT SPECIES CODING LIST

Species	Inupiaq Name	Scientific Name	Code
Minerals			220
Clay	Qiku		221
Coal	Aluaq		222
Fine sand	Maġġaraaq		223
Gravel	Qaviaraaq		224
Water			230
Fresh water	Imiq		231
Fresh water ice	Sikutaq		232
Fresh water sea ice	Siku		233
Snow	Apun		234

Source: Stephen R. Braund & Associates, 1989

No. of Non-HH Participants: A two digit numeric code representing the number of non-household members present during the harvest documented by this harvest record. When recording whaling crew shares, the total number of crew member shares (minus the number of household harvesters) is noted in this column.

Comments: A string code of text with a maximum length of 156 printable characters (including spaces). Only comments directly related to the harvest record are coded here (e.g., an estimated size or measurement, names of participants).

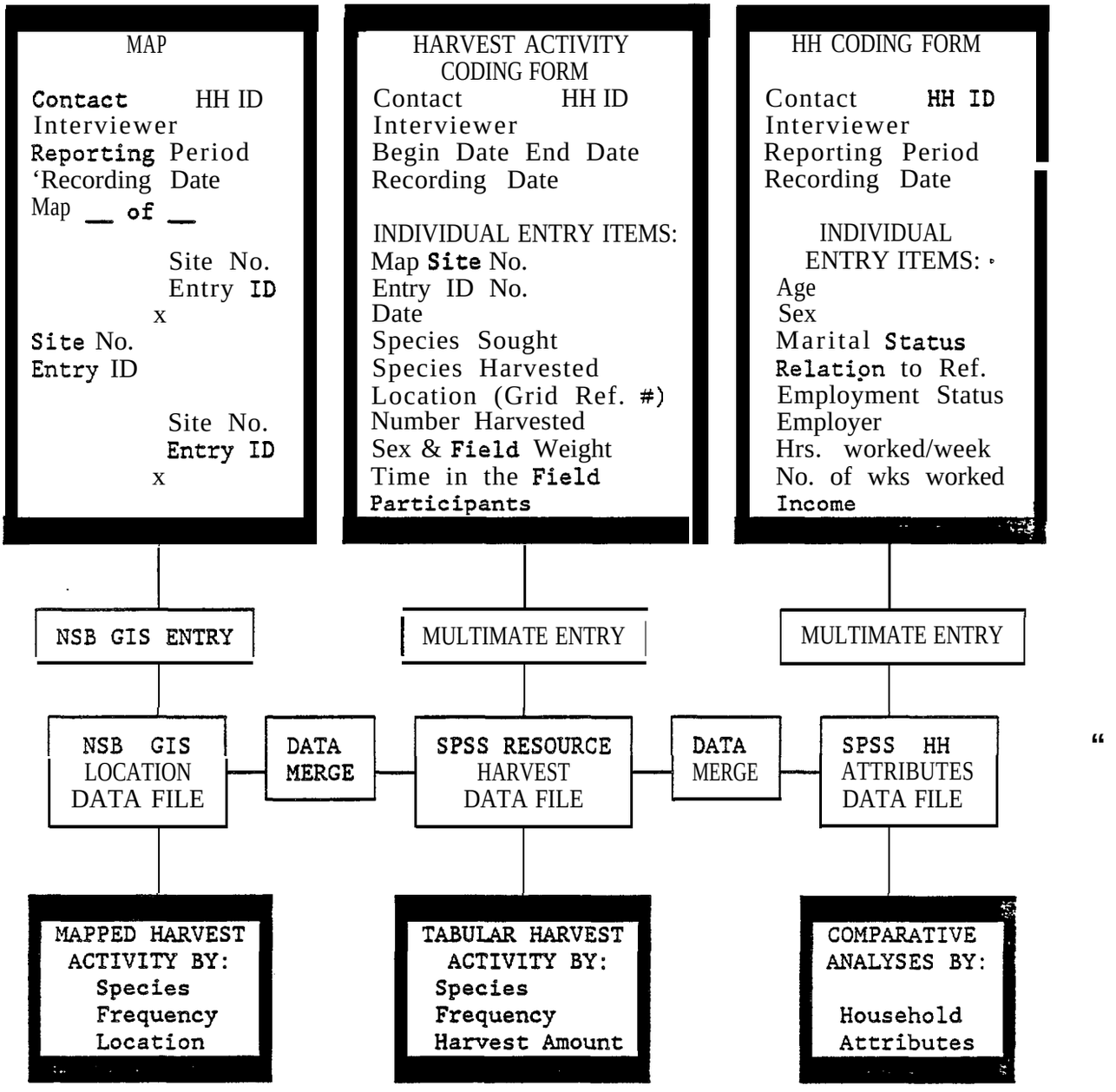
Data Processing

By maintaining stringent guidelines as to the format in which individual data items were coded for computer entry, the study team was able to statistically analyze data collected through key informant interviews.

SPSS/PC+ was the primary tool for data entry, organization, and analysis. A subset of the data was converted to an ASCII file and transferred to the GIS. This file included the entry identification number, species, and amount harvested for every resource harvest observation. Individual records in this file were matched with the digitized location already entered into the GIS using the entry identification number. Data in the GIS thus include entry identification number, species, amount harvested and a digitized location for each resource harvest observation. These data were sufficient to generate the maps of resource harvest activity by frequency of use and amount of harvest by location for each species.

Figure A-2 summarizes the transfer of data from fieldworker maps and harvest activity coding forms into the GIS and SPSS/PC+ data processing systems. After the necessary mapping data are transferred from the SPSS/PC+ file to the GIS the two data processing systems can operate independently. The GIS produced the mapped summaries of resource harvest activity. SPSS/PC+ was used to produce tabular summaries of resource harvest activity.

FIGURE A-2: SUMMARY OF DATA PROCESSING



Stephen R. Braund & Associates, 1989

C(conversions from Numbers to Pounds

The harvest data are presented as the number of animals harvested and edible pounds of resource product. The edible weights were selected as one reporting unit in order to provide the public with data that are easily compared with ADF&G data. The ADF&G has published the bulk of Alaska subsistence studies and the majority of their research is reported as edible (usable) pounds. One notable exception is the' recent Kivalina study by Burch (1985). Burch (1985) discusses in detail the tremendous variations in what is considered by the harvesters and users as the edible weight of an animal. Burch mentions fish as an example of how edible weight varies significantly and that edible weight may be as high as 99 percent of live body weight (Burch 1985). The study team expressed · similar cautions in our discussion of the Barrow Year One fish harvest data (SRB&A et al. 1988). Further research by the study team on the field weights of resources and on the variation in those weights during the next year may result in a discussion of field weights in subsequent reports.

The edible weight conversions for each subsistence resource are listed in Table A-2. Fish harvests often required an additional conversion, an estimate of the number of fish per sack. Unless otherwise noted, the type of sack is a large garbage or gunny sack. For those fish harvests that were reported in number of sacks, the number of fish in a sack were computed as follows:

Fish Species	Inupiaq Name	Number of Fish per Sack
Whitefish (non-specified)		50
Round whitefish	Aanaakliq	50
Least cisco	Iqalusaaq	100
Bering, Arctic cisco	Qaaktaq	100
Arctic grayling	Sulukpaugaq	90
Rainbow smelt	Ilhuagniq	80 per grocery sack
Arctic cod	Iqualugaq	80 per grocery sack
Tomcod	Uugaq	100
Sculpin	Kanayuq	30 per grocery sack

The method used to determine the number of pounds of edible bowhead harvested in Wainwright in Year One is based on a formula that calculates edible pounds from the length of the whale. Whereas in Barrow the study team actually weighed crewshares and crew member shares to calculate the amount of edible

TABLE A-2: CONVERSION FACTORS [1]

Species	Inupiaq Name	Edible Weight per Resource in Pounds
Marine Mammals		
Bearded seal	Ugruk	176.0
Ringed seal	Natchiq	42.0
Spotted seal	Qasigiaq	42.0
Bowhead whale	Aġviq	27,104.0[2]
Beluga whale	Qilalugaq	1,400.0[3]
Polar bear	Nanuq	496.0
Walrus	Aiviq	772.0
Terrestrial Mammals		
Caribou	Tuttu	117.0
Moose	Tuttuvak	500.0
Brown bear	Akłaq	100.0
Arctic fox (Blue)	Tiġiganniaq	0.0
Red fox (Cross, Silver)	Kayuqtuq	0.0
Ground squirrel	Siksrik	0.4[4]
wolf	Amaġuq	0.0
Wolverine	Qavvik	0.0
Ermine	Itigiaq	0.0
Fish		
Salmon (non-specified)		6.1[4]
Chum salmon	Iqalugruaq	6.1[4]
Pink (humpback) salmon	Amaqtuq	3.1
Whitefish (non-specified)		2.0[5]
Round whitefish	Aanaaliq	1.0
Least cisco	Iqalusaaq	1.0[5]
Bering, Arctic cisco	Qaaktaq	1.0[5]
Arctic grayling	Sulukpaugaq	0.8
Arctic cod	Iqalugaq	0.2[6]
Tomcod (Saffron cod)	Uugaq	1.0[6]
Sculpin	Kanayuq	0.6[6]
Burbot (Ling cod)	Tittaaliq	4.0
Rainbow smelt	Ilhuaġniq	0.12[5]
Lake trout	Iqalukpik	4.0

TABLE A-2 (cont.): CONVERSION FACTORS'

Species	Inupiaq Name	Edible Weight per Resource in Pounds
Birds		
Duck (non-specified)	Qaugak	1.5
Mallard	Kurugaktak	1.5
Pintail	Ivugaq	1.5
Eider (non-specified)		1.5
Common eider	Amauligruaq	1.5
King eider	Qinalik	1.5
Spectacle eider	Tuutalluk	1.5
Stellar's eider	Igniqauqtuq	1.5
Goose (non-specified)	Niġliq	4.5
Brant	Niġliñgaq[6]	3.0
White-fronted goose	Niġlivialuk	4.5
Lesser snow goose	Kaŋuq	4.5
Canada goose	Iqsraġutilik	4.5
Ptarmigan (non-specified)		0.7
Willow ptarmigan	Aqargiq	0.7
Other Resources		
Water[7]		0.0
Fresh water	Imiq	0.0
Fresh water ice	Sikutaq	0.0
Sea ice	Siku	0.0
Coal[8]	Aluaq	

1. Sources are ADF&G Division of Subsistence Community Profile Database for Nuiqsut and Kaktovik (n.d.) unless otherwise noted.
2. Whale conversion weight was computed by the study team from the mean total edible weight per whale of the four' whales harvested in Year One (see Table A-5).
3. Study team estimate based on Burch (1985) and knowledge of the age and sex of whales harvested.
4. Source: Impact Assessment, inc. 1989.
5. Study team estimate.
6. Source: Burch 1985.
7. Water is measured in gallons and ice is measured in sled loads. A sled load is estimated to equal 100 gallons of water.
8. Coal is measured in sacks. One sack weighs approximately 50 pounds.

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product harvested from individual whales (see SRB&A et al. 1988), this method was not feasible in Wainwright. The SRB&A field coordinator arrived in Wainwright a short time before most of the town's harvesters went to whaling camps. Thus, the study was not yet well established in Wainwright. Wainwright residents were not as accustomed to having researchers present at their harvests to weigh and measure bowhead whales in the midst of the butchering and distribution. Given the study team's newness in the community and people's lack of familiarity with the study, the field coordinator decided that an unobtrusive presence would be more appropriate and thus did not collect more than a few crew member share weights on two of the whales.

The formula to calculate edible product from Wainwright whales was developed by the study team from knowing (1) the length of each of the four whales harvested by Wainwright in 1988 and (2) the study team estimate of edible weight from Year One and Year Two Barrow bowhead harvests, based on data collected by the SRB&A Barrow study team in cooperation with the NSB Wildlife Management Department. The four bowhead whales harvested by Wainwright crew's were, in chronological order of their harvest, 25.9, 29.9, 44, and 49.5 feet in length (converted from 7.9, 9.1, 13.4, and 15.1 meters - AEWC personal communication). (The inches have been converted to tenths to facilitate discussion of the mathematical calculations used). One could simply add up all the edible weights from each 1987 and 1988 Barrow whale and divide the total edible weight by the combined length of all the whales to arrive at an average edible weight per foot (654 pounds) and multiply that figure by the length of each Wainwright whale. However, the weight per foot length of a bowhead whale increases with the length of the whale (i.e., shorter whales have a smaller body circumference and thus weigh less per foot on the average than longer whales whose body mass is proportionately larger per foot). Thus, the study team examined the existing data on Barrow whales and calculated edible weight per foot length for "short" (24 to 34 feet long) and long whales (46 to 56 feet) for which we had data and then extrapolated from those length-to-weight ratios to arrive at edible weights per foot for mid-sized whales (35 to 45 feet).

In 1987 and 1988, Barrow whalers harvested 11 "short" whales that ranged in length from 24.5 to 30.5 feet. Based on the total edible weight harvested from these whales, the study team calculated an average of 490 pounds per foot length for whales in this size range (Table A-3).

TABLE A-3: SUMMARY STATISTICS FOR 24 TO 31 FOOT WHALES

NSB Whale ID Number	Date Harvested	Length (in feet)	Estimated Edible Weight
87-B1	5/1/87	30.5	17,290
87-B2	5/2/87	29.3	13,750
87-B7	10/29/87	27.8	22,620
88-B1	4/24/88	29.0	13,975
88-B2	4/25/88	29.7	14,150
88-B3	4/25/88	29.7	13,450
88-B4	4/25/88	25.5	9,162
88-B5	4/25/88	29.2	11,267
88-B6	5/2/88	27.3	14,820
88-B7	5/4/88	,26.8	14,187
88-B8	5/6/88	24.6	7,030
Average length:		28.13	
Average edible weight:			13,791

Average edible weight per foot length: 490 pounds of edible product per foot length for bowhead whales between 24.6 and 30.5 feet in length.

To cross-check the feasibility of using one average weight per foot for this range of whale lengths, we selected sub-ranges and averaged the weights for those sub-ranges (Table A-4), then compared them to the overall weight per foot for the 24.6 to 30.5 foot range. The smallest weight per foot average belonged to the shortest set of whales, 24.6 to 25.5 feet at 323 edible pounds per foot, while the largest per foot average belonged to the second shortest set of whales, 26.8 to 27.8 feet at 630 edible pounds per foot. Because the pounds per foot did not increase proportionately with the length of the whales, our choice to average the pounds per foot length for all whales between 24 and 31 feet was reinforced.

This average edible weight per foot length, 490 pounds, then was multiplied by the length of Wainwright's first two whales in 1988 since their lengths fall within this range. The first whale harvested was 25.9 feet long, which computes to 12,691 pounds of edible product. The second whale, at 29.9 feet, was estimated to yield 14,651 pounds.

TABLE A-4: AVERAGE EDIBLE WEIGHTIER FOOT LENGTH FOR SUB-RANGES OF 24 TO 31 FOOT WHALES, BARROW 1987 AND 1988

Date Harvested	Length (in feet)	Estimated Edible Weight
Subrange #1:		
5/6/88	24.6	7,030
4/25/88	25.5'	9.162
Totals:	50.1	16,192
Average pounds per foot:	323	
Subrange #2:		
5/4/88	26.8	14,187
5/2/88	27.3	14,820
10/29/87	27.8'	22.620
Totals:	81.9	51,627
Average pounds per foot:	630	
Subrange #3:		
4/24/88	29.0'	13,975
4/25/88	29.2'	11,267
5/2/87	29.3'	13,750
4/25/88	29.7'	14,150
4/25/88	29.7'	1.3.450
Totals:	146.9	66,592
Average pounds per foot:	453	
Subrange #4:		
5/1/87	30.5'	17,290
Average pounds per foot:	567	

The existence of data on Barrow whales in the 50 foot range allowed the study team to use a similar process for estimating the edible weight of Wainwright's fourth whale which measured 49.5 feet long. (The third whale will be discussed last.) In spring of 1987, Barrow crews harvested one 51.3 foot whale that yielded an estimated 64,213 pounds of edible product. That fall, a 51.25 foot whale was harvested of which approximately half the meat was spoiled and therefore was inedible. The usable portion of the whale weighed approximately 31,357 pounds. Rather than adjusting this whale's edible weight upwards to approximate an unspoiled whale at this length, the study team decided to accept the low edible weight figure since spoilage does occur occasionally and, based on field observations in Barrow, was more likely to occur with whales in the larger size category. Thus, the average edible weight per foot of length for the two 51 foot whales harvested in Barrow was 932 pounds per foot. Multiplying this weight by 49.5 feet gives an estimated edible weight of 46,134 pounds for Wainwright's fourth whale.

Wainwright's third whale measured 44 feet long. Possessing Barrow data for only one whale in this size range (a 36.75 foot whale), the study team extrapolated from the "short" and "long" whale weight-per-foot ratios to generate a weight-per-foot for a 44 foot whale. The 11 whales that averaged 490 pounds per foot averaged 28.13 feet in length (Table A-4). The "long" whales that averaged 932 pounds per foot were 51.25 feet long. Considering the difference between these average lengths to be a continuum, 44 feet falls at 69 percent between 28.13 and 51.25 feet. This percentage can then be applied to a similar continuum for pounds per foot from 490 to 932. Sixty-nine percent of the difference between those weights is 305 pounds, which is added to the base weight of 490 to give an edible weight per foot of "795 for a 44 foot whale. Thus, Wainwright's third whale was estimated to yield approximately 34,940 pounds of edible product.

The following table summarizes the estimated edible weights for the 1988 Wainwright whales.

TABLE A-5: SUMMARY STATISTICS ON 1988 WAINWRIGHT WHALE HARVESTS

Harvest Date	Length (in feet)	Estimated Edible Weight (lbs.) Per Foot	Total
4/25/88	25.9	490	12,691
4/26/88	29.9	490	14,651
5/6/88	44.0	795	34,940
5/18/88	49.5	932	46,134
Average length:	37.3		
Average weight per foot of length:		677	
Average weight:			27,104

Stephen R. Braund & Associates, 1989

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and' natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Terntories under U.S. Administration.