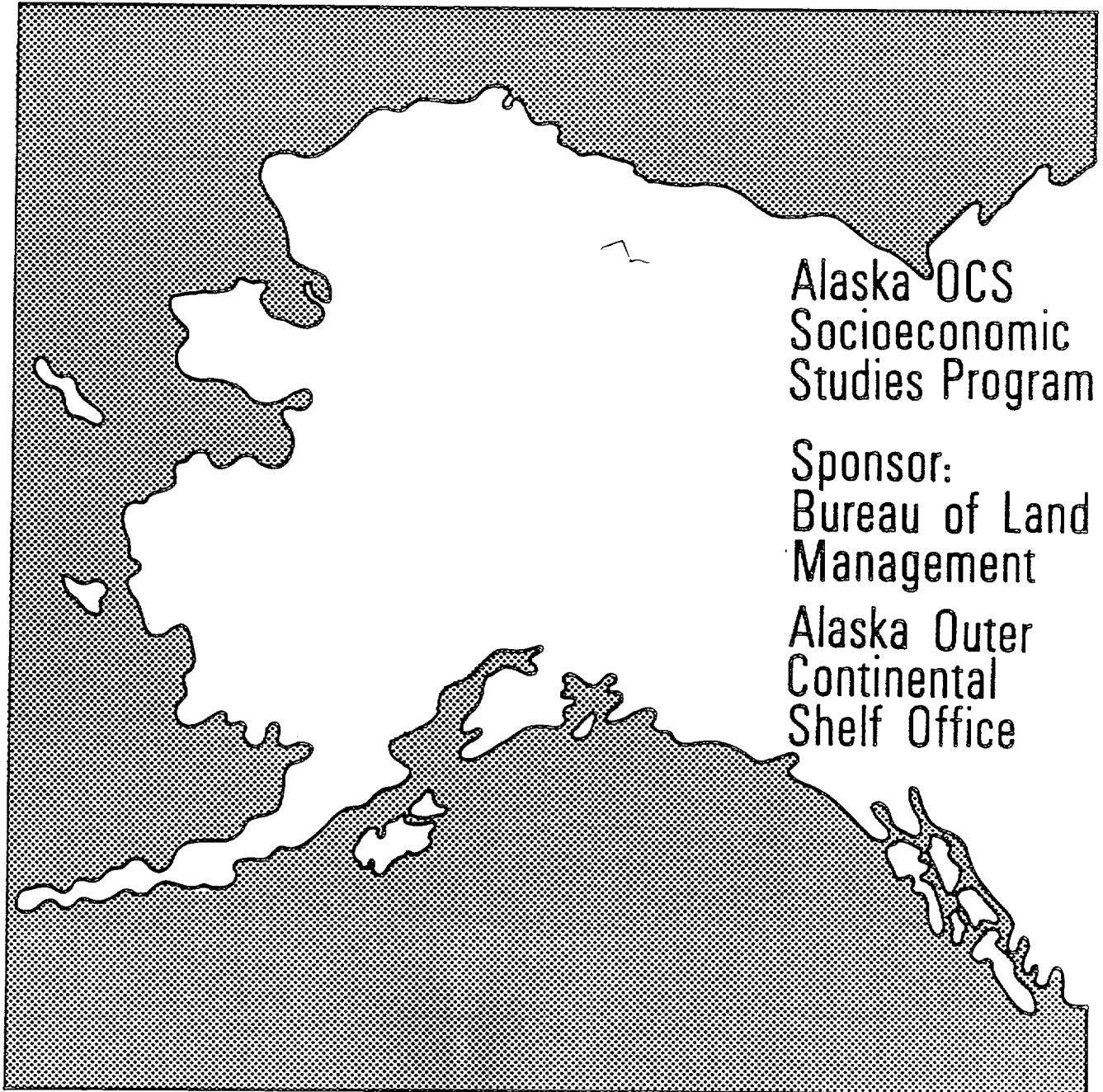


TECHNICAL REPORT
NUMBER 72



NORTON SOUND/YUKON DELTA
SOCIOCULTURAL SYSTEMS
BASELINE ANALYSIS

The **United** States Department of the Interior **was** designated by the Outer Continental Shelf (**OCS**) Lands Act of 1953 to carry out **the** majority of the Act's provisions for administering the mineral **leasing** and development of offshore areas of the **United** States under federal jurisdiction. Within the Department, the Bureau of Land Management (**BLM**) has the responsibility to meet requirements of the National Environmental Policy Act of 1969 (**NEPA**) as **well** as other legislation and regulations dealing with the effects of offshore development. In Alaska, unique cultural differences and climatic conditions **create** a need for developing additional socioeconomic and environmental information to improve **OCS** decision making at **all** governmental levels. In **fulfillment** of its federal responsibilities and with an awareness of these additional information needs, the **BLM has** initiated several investigative programs, one of which is the Alaska **OCS** Socioeconomic Studies Program (**SESP**).

The Alaska **OCS** Socioeconomic Studies Program is a multi-year research effort which attempts to predict and evaluate the effects of **Alaska** OCS Petroleum Development upon the physical, social, and economic environments within the state. The overall methodology is divided into three broad research components. The first component identifies **an** alternative set of assumptions regarding the location, the nature, and **the** timing of future petroleum events and related activities. In this component, the program takes into account the particular needs of the petroleum industry and projects the human, technological, economic, **and** environmental offshore and onshore development requirements of the regional petroleum industry.

The second component focuses on data gathering- that identifies **those** quantifiable and qualifiable facts by which **OCS-induced** changes can be assessed. The critical community and regional components are identified and evaluated. Current **endogenous** and exogenous sources of change and functional organization among different sectors of community and regional life are analyzed. Susceptible community relationships, values, activities, and processes also are included.

The third research component focuses on an **evaluation** of the changes that could occur due to the potential oil and gas development. Impact evaluation concentrates **on an** analysis of the impacts at the statewide, regional, and **local level**.

In general, program products are sequentially arranged in accordance with **BLM's** proposed OCS lease sale schedule, so that information is timely to **decisionmaking**. Reports are available through the **National** Technical Information Service, and the **BLM** has a limited number of copies available through the Alaska **OCS** Office. Inquiries for information **should be** directed to: Program Coordinator (**COAR**), Socioeconomic Studies Program, Alaska OCS Office, P. O. **Box** 1159, Anchorage, **Alaska** 99510.

Alaska OCS Socioeconomic Studies Program

Norton Sound/Yukon **Delta Sociocultural**

Systems Baseline Analysis

Technical **Report Number** 7'2

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Subsistence Division

Alaska Department of Fish and Game

and

Socioeconomic Studies Program

Alaska **Outer Continental Shelf** Office

Bureau of Land Management

October 1981

NOTICE

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Alaska **OCS** Socioeconomic Studies Program

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October 1981

TABLE OF CONTENTS

	Page
LIST OF TABLES s	6
LIST OF FIGURES	7
NOTE ON THE USE OF PAST TENSE0..0.	10
ABSTRACT OF THE REPORT'S FINDINGS	11
INTRODUCTION.	16
Description of the Study	16
Background	16
Purpose of the Study	18
Methodology.	19
Organization of the Report	24
CHAPTER	
1. THE PEOPLE OF THE YUKON DELTA REGION	26
The Yukon Delta Study Area	26
Environmental Setting	28
Cultural Groups in the Study Area	30
Historic Demography	31
Historic Economy and Culture	34
2. SETTLEMENT PATTERNS IN 1980-1981	36
Winter Communities	37
Summer Fishcamps ,	41
Fall, Winter, and Spring Camps	53

	Summary	56
3.	THE REGIONAL ECONOMY IN 1980-1981	58
	The Annual Round of Economic Activities	61
	The Kwikpagmiut Seasonal Round	62
	The Tapraqmiut Seasonal Round	80
	Marketing and Wage Employment	88
	The Cost of Living on the Yukon Delta	95
	Effects of the Commercial Fishery	96
	Geographic Patterns of Resource Utilization	104
	Salmon Fishing Locations	105
	Seal Hunting and Belukha Hunting	107
	Non-salmon Fish Species	111
	Waterfowl, Land Mammals, and Fur Bearers	121
	Geographic Characteristics of Resource Utilization	121
4.	SUBSISTENCE AND COMMERCIAL HARVESTS IN THE YUKON DELTA REGION, JUNE 1980 - MAY 1981	124
	Household Harvests of Fish and Game Resources, June 1980 - May 1981	131
	Community Comparisons	145
	Ecological Adaptations	145
	Economic Insecurity	150
5.	KINSHIP SYSTEMS AND THE ORGANIZATION OF GROUPS AND NETWORKS FOR FOOD PRODUCTIONS AND EXCHANGE	158
	Definition of Special Terms	159
	Kinship as a Conceptual System	160
	Kinship Systems of the Yukon Delta	161
	Kinship Principles	169

	Generational Differences	173
6.	THE ORGANIZATION OF SALMON FISHING	176
	Production for Personal Use and Sale	177
	The Kinship-based Production Unit	179
	The Functional Integration of Roles byAgeandSex.	197
	Sex-relatedRoles	197
	Age-relatedRoles	199
7.	SHARING AND EXCHANGE OF FOOD RESOURCES	207
	Examples of Food Sharing	210
	The Giving of Food (Chigiq)	214
	The Exchange of Food as an Economic Good	217
	Regional Patterns of Distribution	221
	Sharing Within the Close Family	224
	Sharing Meals	226
	Other FormsofSharing	228
	The Meaning of Sharing	231
8.	CULTURAL CONCEPTS OF RESOURCE UTILIZATION	233
	Spatial Arrangements of Harvest Efforts	235
	Principles Regulating Land Use Patterns	240
	The Principle of Participatory Use	242
	The Principle of Geographic Affiliation	242
	The Principle of Deference to First-users	245
	The Principle of Kinship Affiliation	249
	Optimization.	250

9.	OIL DEVELOPMENT IN NORTON BASIN AND THE YUKON DELTA ECONOMY: IDENTIFICATION OF PROSPECTIVE ISSUES	253
	Perceived Threats to the Regional Economy	254
	 Environmental Degradation	255
	Increased Inflation Rates	257
	Inadequate Knowledge and Technology	259
	Ice Conditions	259
	Fall Floods	260
	Ocean Currents	260
	Cleanup	261
	"Risks Without Benefits"	261
	Negative Acculturative Impacts	261
	Cultural Survival	262
	BIBLIOGRAPHY	265
	APPENDIX	
	A Glossary of Terms for Selected Food Species Utilized on the Yukon Delta or Stebbins	267
	B Resource Conversion Factors	270

LIST OF TABLES

Table	Page	
1.	1980 Populations of Study Communities of the Yukon Delta Region	38
2.	Fur Bearer Harvest Seasons and Methods in the KwikagmiutRegion	76
3.	Food Prices at Emmonak , June 1981	97
4.	Sample of Households Interviewed from Communities of the YukonDeltaRegion	129
5.	Characteristics of Sampled Households	130
6.	Mean Household Harvests of Selected Fish and Game Resources, June 1980 - May 1981	132
7.	Percentage of Sampled Households Harvesting Selected Species, June 1980 - May 1981	135
8.	Mean Household Subsistence Harvests by Community . .	138
9*	Monetary Incomes per Households by Community and Source	140
10.	Mean Monetary Income per Household by Source for Six Yukon Delta Communities Combined	141
11.	Meat, Fish, and Poultry Prices, Alaska Commercial Company Store, Emmonak , June 16 , 1981	144
12.	Ecological Adaptations of the Eskimos of the Yukon Delta Region	146
13.	Sources of Seal Oil for Fifteen Mountain Village Households	223

LIST OF FIGURES

Figure		Page
1.	Place names mentioned in the text	27
2.	Historic regional groups in the Yukon delta area, circa AD 1833	32
3.	Approximate locations of summer fishcamps of households from Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins in 1981	43
4.	Seasonal round of fishing, hunting, and trapping activities for selected species, lower Yukon delta area, during 1980-1987	63
5.	Seasonal round of fishing, hunting, and trapping activities for selected species, Stebbins, during 1980-1981	81
6.	Approximate areas for salmon fishing during 1980 by residents of Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins	106
7.	General fall seal and belukha hunting areas during 1980 for hunters from Alakanuk, Emmonak, Kotlik, Sheldon Point, and Stebbins	109
8.	General spring seal hunting areas during 1981 for hunters from Alakanuk, Emmonak, Kotlik, Sheldon Point, and Stebbins	110
9.	Fishing locations for non-salmon fish species, June 1980-May 1981, based on a sample of 88 households from Alakaunk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins	112
10.	Fishing locations for non-salmon fish species, June 1980-May 1981, of a sample of households from Stebbins (n=12)	113

11.	Fishing locations for non-salmon fish species, June 1980-May 1981 , of a sample of households from Kotlik (n=14)	114
12.	Fishing locations for non-salmon fish species , June 1980-May 1981 , of a sample of households from Emmonak (n=18)	115
13.	Fishing locations for non-salmon fish species , June 1980-May 1981 , of a sample of households from Alaknuk (n=21)	116
14.	Fishing locations for non-salmon fish species , June 1980-May 1981, of a sample of households from Sheldon Point (n=7)	117
15.	Fishing locations for non-salmon fish species, June 1980-May 1981 , of a sample of households from Mountain Village (n=16)	118
16.	Fishing locations for non-salmon fish species in the Kusilvak Mountains Region, June 1980-May 1981 , of a sample of households from Emmonak, Alakanuk, Sheldon Point, and Mountain Village (n=62) s..	119
17.	Fishing locations for non-salmon fish species, June 1980-May 1981, not depicted in Figures 10-16	120
18.	Commercial king salmon catches by statistical area, 1965-1980	152
19.	Commercial chum salmon catches by statistical area, 1971-1980	153
20.	Yukon delta kinship terminology, 'southern system" (Alakanuk, Emmonak, Sheldon Point, Mountain Village)	163
21.	Yukon delta kinship terminology, 'northern system" (Kotlik, Stebbins)	164
22.	Fishcamp composed of a single nuclear household . . .	183
23.	Fishcamp composed of three households from two villages.	184
24.	Fishcamp composed of three households, each with its own tents, racks, and smokehouses	187

25.	Fishcamp composed of six households using five tents and three smokehouses	189
26 .	Fishcamp composed of four households from two villages ,	191
27.	Cooperative group at a winter village composed of two households ,	192
28.	Subsistence output by age of hunter, Alakanuk	201
29.	Subsistence harvests of non-salmon fish species, seals , and waterfowl by age of hunter, Alakanuk . .	203
30.	Subsistence output per household, by age of household head, Alakanuk ,	204
31.	The distribution of' waterfowl from a hunt	212
32.	Examples of food distributions among a group of households ,	213

Note on the Use of Past Tense

This report describes fishing, hunting, trapping, gathering, and marketing activities in the Yukon delta region as they occurred during 1980 and **1981**, based on observations made during summer **1981**, and on verbal reports of residents concerning the period June 1980 to May 1981. Consequently, the report describes **"current"** economic activities in the Yukon delta region. Scientific standards require that the report be written in **"past tense"** even though it depicts current realities, for descriptions are of events occurring from several months to about a year ago. Readers should be mindful that unless otherwise stated, past tense implies the period 1980 to 1981, and reflects current conditions in the Yukon delta area during this period.

Abstract of the Report's Findings

1. This report describes the **economy and culture** of **six** communities **on** or near the Yukon River **delta--Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins**. It provides basic information necessary for agency decisions about projected petroleum development **on** the Bering-Norton **Outer** Continental Shelf'.
2. **During 1980-1981, the people of the Yukon delta** comprised a strong **and** growing cultural group because **of their** success in utilizing **local** resources **of the land, rivers, and sea**. In the **economy**, most production occurred **within 'family units"--social** groups composed of members **of** one or several households, typically related by kinship **ties**. The male head **of** a household commonly was self-employed in several **roles**, as **fisherman, hunter, trapper,** and seasonal wage earner. Harvests of **local** food resources were processed for personal use by the members of the family **units**, exchanged **locally**, and sold on export markets. Food production for personal consumption was flexible and diversified, harvesting in substantial quantities **salmon, herring, sheefish, Bering cisco, broad whitefish, blackfish, bearded seal, ringed seal, spotted seal, belukha, migratory waterfowl, and walrus**. The **largest and** most consistent **source** of monetary income to **the** region was the sale **of** commercial salmon.

3. During the period June 1980 to May 1981, it was estimated that a household produced 4,997 pounds dressed weight of subsistence foods, or 783 pounds per household member. The value of this food was calculated to be \$21,238, more than the earned monetary income per household in the Yukon delta area. The estimates were based on a 20 percent sample of households in the study area.

4. During the period June 1980 to May 1981, it was estimated that a household produced 10,447 pounds of commercial salmon, sold at a value of \$8,026. Commercial fish harvests represented about 41.5 percent of a household's total earned monetary income, while 40.7 percent came from wage employment, 5.7 percent from the commercial sale of furs, and 2.6 percent from retirement and social security benefits. Of a household's total monetary income, 90.5 percent was earned; 9.5 percent came from food stamps and other forms of income assistance. Annual earned income was estimated at \$17,512 per household.

5. The subsistence and "market" sectors of the economy appeared to be interdependent and mutually supportive. Neither sector alone could sustain the region's population. A household's success in one sector typically facilitated success in the other.

6. Collectively, the fishing and hunting activities of the six communities in the study area covered the entire Yukon delta region. Several important economic resources were harvested directly from or near to ocean waters--king, chum, and coho salmon; herring;

bearded, ringed, and spotted seal; belukha; saffron cod; sheefish; Bering cisco; broad whitefish; blackfish; walrus; and migratory waterfowl. Changes in the region's oceanic, riverine, and coastal tundra environment could be expected to have direct and immediate effects upon the major economic activities of the region.

7. The settlement pattern of the Yukon delta area changed markedly between winter and summer. During winter, households clustered at six major winter communities, from which persons traveled to fish, hunt, and trap. About half of the communities' households moved to fishing camps during the summer of 1981, widely dispersed throughout the region. Temporary camps were established during winter, spring, and fall by some individuals as bases for fishing, hunting, trapping, and plant gathering activities.

8. Production of food within family units commonly was accomplished by allocating particular tasks according to age and sex criteria. Most fishing, hunting, and trapping was accomplished by males; most processing of food products for storage and use was done by females. Total food output by males was highest between the ages 30 to 59; age-specific output patterns varied by resource. Older adults commonly assumed leadership roles; children and young adults contributed labor in a number of support activities. Modifications in the region's economy might be expected to influence the pattern of economic activities within these kinship-related units.

9. Two Yupik **terminological** systems for kinship reckoning were used by Yukon delta residents during 1980 to 1981. Both were based on bilateral descent, and made fine distinctions among siblings by age and sex. One system used the classic **"Eskimo-type"** cousin terminology; the other system resembled the 'Iroquois-type' cousin terminology.
10. Exchange of local food products was substantial between households and between persons of different communities. A major food item exchanged from coastal communities to main river communities was seal oil.
11. Resource utilization revealed distinct geographic patterns which varied by species. Cultural concepts of land and sea use tentatively were advanced to explain these spatial trends.
12. The majority of Yukon delta residents expressed deep concern about projected offshore petroleum development. Issues identified by residents included:
 - a. The substantial threats to the regional economy posed by petroleum development, due to environmental degradation and increased inflation rates.
 - b. The inadequate knowledge and technology of oil developers, especially related to ocean ice conditions, flooding, ocean currents, and oil cleanup.

- c. The risks assumed by the region without benefits from oil development.
- d. The negative **acculturative** impacts **of** uncontrolled contact **of** outside workers **with local** communities.
- e. The question whether **oil** development **in Norton** Basin threatened the very cultural survival of the Yukon delta people.

INTRODUCTION

Description of the Study

This report is a baseline description of the economy and culture of the people of the Yukon River delta as they existed during 1980-1981. Its information was compiled from 12 weeks of field-based studies conducted over the Yukon delta during the summer of **1981**. These studies were undertaken to provide basic information about the economy and culture of the Yukon delta people considered necessary for agency **policy** decisions regarding projected petroleum development on the Bering-Norton Outer Continental Shelf. The research was subcontracted through the Subsistence Division, Alaska Department of Fish and Game, from funding provided by the Bureau of Land Management, Alaska Outer Continental Shelf Office (**OCS**), Socioeconomic Studies program.

Background

The Norton Sound/Yukon Delta **Sociocultural** Systems Baseline Analysis was initiated in response to projected petroleum development in Norton Basin. In response to Federal Outer Continental Shelf Sale **57** comprising Norton Basin being placed on a lease schedule anticipated to occur in May **1982**, the Alaska OCS Office provided funding for a study of the impact of petroleum development on **sociocultural** systems within

the **Bering Strait-Norton** Sound vicinity (published as Bering-Norton Petroleum Development Scenarios, Sociocultural Systems Analysis, Ellanna, April 30, 1980). It was originally anticipated by the Alaska OCS Office that oil development and its impacts would be centered primarily in **Bering Strait** and northern Norton Sound, especially within the vicinity of **Nome**. The major funded study of the impact of **sociocultural** systems was designed to **focus** on these areas (Ellanna, 1980).

There were several sources of concern that too much emphasis was placed on **Bering Strait** and northern Norton Sound in the original scope of this study, and oil development might occur in the southern Norton Sound area, close to the **Yukon River delta**. The **Yukon delta** area therefore was **hastily** added to the scope of this initial sociocultural impact study. However, time and funds allowed **field visits** of minimal duration to **four** of the six communities in the **Yukon delta** vicinity identified as having the highest potential for impacts. This amount of research effort was insufficient for an adequate description and **analysis** of **such** a large geographic and demographic area.

This present study was funded to provide information on the economy and **sociocultural** systems of the **Yukon delta** population which was unavailable previously. The study is not an **impact analysis per se**. Instead, it was developed to **gather basic** descriptive information on the **Yukon delta region** which might be useful in further research and

discussion concerning the impacts of petroleum development on the region's **sociocultural** systems.

Purpose of the Study

The purpose of the Norton Sound/Yukon Delta **Sociocultural** Systems Baseline Analysis was to provide a description of the economy and culture of the people of the Yukon River delta as they existed in 1980-81. The communities included within the study were **Alakanuk, Emmonak, Kotlik**, Mountain Village, Sheldon Point, and **Stebbins**, and the seasonal communities of Hamilton and Bill Moore Slough. The population of these communities were about 91 percent Alaska native. Specific research objectives included:

1. identification and mapping of general settlement patterns;
2. description of the economic patterns of the population;
3. identification and mapping of general resource utilization patterns;
4. description of the annual seasonal round of resource utilization;
- 5* description of household subsistence patterns;
6. description of economic networks for production and exchange;
- 7* description of **fishcamp** compositions;
8. description of the monetary components **of** fishing, hunting, and marketing activities;
- 9* description of the regional kinship systems; and
10. identification of issues pertaining to **land, sea**, and resource allocation, use, and disruptions.

This information was considered **basic to understanding the sociocultural systems of the people of the Yukon delta area.**

Methodology

The study was conducted by Robert J. Wolfe, Ph.D., from the University of Southern California, with assistance from Linda Ellanna, Subsistence Division of the Alaska Department of Fish and Game, and bilingual research assistants within each of the study communities. The study comprised first, a literature review of published and unpublished information pertaining to the Yukon delta vicinity, and second, field research within each of the six study communities. The literature review was conducted during the months of April 1981 to May 1981. The field research was conducted from May 20, 1981 to August 13, 1981.

Previous to the field research component, the native regional corporations of Nunam Kitlutsisti and the Association of Village Council Presidents were contacted and consulted concerning the nature and intent of the study. Information concerning the project was disseminated to the IRA Councils and Corporations of each of the Yukon delta communities. Prior to initiation of data collecting within each community, representatives of the IRA Councils and Corporations were contacted and consulted. In addition, the researcher and the project were introduced to community representatives at public meetings in Emmonak, May 31; Kotlik, June 1; and St. Mary's, June 2.

The field design called for visits to **each** delta community and to summer **fishcamps** during the summer of 1981 to gather pertinent information. **Stebbins** and Mountain Village were visited by plane because of distances, but travel between the communities of **Kotlik, Emmonak, Alakanuk,** and Sheldon Point was conducted primarily by boat. The researcher generally established a base camp at the winter community, traveling to surrounding areas with a research assistant familiar with the people and fishcamps located within the vicinity.

Data were gathered through a combination of participant observation techniques, and in-depth, systematic conversations with residents. Participant observation entailed participating in culturally significant activities, such as salmon fishing, waterfowl hunting, gathering plants, preparing meals, and processing food. Qualitative observations were made from these activities. In-depth, **systematic** conversations entailed discussions with knowledgeable residents concerning the **communities'** economy and culture, and issues related to offshore petroleum development in Norton Sound.

The study attempted to generate quantitative and graphic data on fishing, hunting, and marketing activities as well. This component of the study was conducted in the following manner. Systematic information was desired from a 20 percent sampling of household in the region. A household was defined as a group of people residing in a separate dwelling at the winter community. A list of households was developed from a knowledgeable resident for the winter community, identified by

the name of the household% **head**. The researcher indicated that **he** was interested in learning about **fishing, hunting, and other** aspects of the economy; to **do so, which** household heads **should** he speak **with?**

Knowledgeable assistants indicated **which** household heads were **believed would be** fruitful to contact. Apparently, **many** persons so indicated were actively involved **in** fishing and hunting; others were not presently **involved**, but were thought to be knowledgeable about them (such as elderly persons). **The** researcher attempted to **contact** and speak with **each** of the households indicated. Additional households visited were not **selected** by any deliberate **systematic criteria**, thereby **comprising** a **sample of** convenience. Following this strategy, 88 households **were** contacted for systematic discussion comprising a 20.7 percent **sample** of the **region's** identified households (see Chapter 4).

The procedure for selecting the **sample** of households **cautions** about making generalizations from the **systematic**, quantitative information. **If** a **sample** bias was injected by the sampling **procedure**, probably it was toward selecting **older**, more knowledgeable and/or more economically successful household heads in a community in comparison with those not selected. For certain ethnographic purposes this bias is beneficial. **To** document the breadth or extent **of land** and resource use **in** the **region**, a research **design** would want to draw information from more knowledgeable persons over **less** knowledgeable **persons**, and **from** more actively involved persons **over less actively involved**. Possibly, **an older**, more knowledgeable and more **active** sample facilitates **this** research **goal**. However, the possible selection bias does not produce

information representing (1) some 'mean' or "average" household use pattern or harvest level, for the entire region, or (2) some 'total' or "summary" use pattern or harvest level for the entire region. **The** systematic, quantitative data of this report should not be used to represent average or summary harvest patterns for the six communities or Yukon delta region. To achieve 'average' or 'total' data, a complete canvass of households could be **done**, preferably over several years to control for the effects of normal and abnormal yearly **variations** in a household's production levels. A complete survey of households is feasible only during winter months when **households** tend to cluster at winter communities.

When interpreting quantitative data in Chapter 4, mean household harvests within a community should be taken to represent mean household harvests for the sample, which may have the biases mentioned above. It is noteworthy that of the 88 households, 71.6 percent had at least one household member working for some part of the year at a wage paying job other than commercial salmon fishing or commercial fur trapping. This probably is an overestimate of the percentage of households in the Yukon delta area with members working at remunerative employment, resulting in an overestimate of the yearly monetary income per household for the area. That is, this sample of household members may have been more involved in wage paying employment than non-sampled household members in the region. At the same time, the harvests of resources for personal consumption and local trade by sampled households also may be greater than non-sampled households. Without data for other

households, however, the extent **of** these possible differences cannot be estimated. Until such data is **forthcoming**, generalizations **from** the **sample** must be tentative and qualified.

Households were visited with the **local research** assistant. **Preferably**, discussions occurred with both the household head and spouse present, if there was a spouse. In the **course of discussion**, they were questioned concerning the **types and** quantities of **food** resources harvested the previous year. Fishing and hunting locations **of** these activities were noted on **1:63,000** USGS topographical maps. **Compiled**, these data became the basis for the maps **in** Chapter **3**, and the quantitative estimates of food production in Chapter 4. **For** additional information **on** this methodology consult **Wolfe (1979)**.

The maps of **fishcamp** locations were compiled differently. Several knowledgeable informants were **asked to** indicate **on** the **1:63,000 USGS** topographical maps the current locations **of** the **summer fishcamps** of the **list** of household **heads**. From the answers of several **persons**, a consensus was generally reached. Many of these locations were confirmed **from** field visits to these camps by the researcher. The **majority**, **however**, have not been confirmed by **field** visits. Consequently, these locations should be considered approximate **only, useful for** depicting **general** tendencies **in summer** demographic patterns.

Fishcamp visits and **discussions** with families returned from **fishcamps** included the gathering of information on the genealogical composition of

the **fishcamp** group. This became a basis for discussion concerning principles of social organization.

Kinship terminologies were elicited from key informants within each community. The methodology is described in Leaf (1972).

In addition to participant observation **of**, and in-depth conversations about, economic and **sociocultural** systems, residents were asked their opinions about petroleum development in Norton Basin. These unstructured discussions comprised the basis for the identification of issues pertaining to land, sea, and resource allocation, use, and disruptions.

Organization of the Report

The report is organized into nine chapters. The first chapter describes the general characteristics of the study area, and provides a brief history of the region's population. Chapter 2 describes the settlement patterns in 1980-1981 within the region, depicting the locations and compositions of winter communities, summer **fishcamps**, and fall, winter and spring camps. Chapter 3 provides an overall description of the regional economy in general terms. This includes the annual round of economic activities, **commercial** marketing and wage employment, and geographic patterning of resource utilization. Chapter 4 provides quantitative estimates of the types and quantity of resources produced by a sample of households from each community during June 1980 to May

1981. Some **sociocultural** aspects of the economy are presented in the next four chapters. Chapters 5 and 6 describe **the** region's **kinship** system **and** the organization of **summer fishcamps**. Chapter 7 discusses the sharing and exchange of food resources. **Chapter 8** provides a tentative discussion of cultural concepts regarding resource utilization, The final Chapter 9 identifies **issues in the Yukon delta region** associated with petroleum development **in Norton Basin**.

CHAPTER 1

THE PEOPLE OF THE YUKON DELTA REGION

The Yukon Delta Study Area

The communities of this research effort were identified primarily because of their geographic proximity to the projected petroleum development in Norton Basin. The communities studied included **Alakanuk**, **Emmonak**, **Kotlik**, Mountain Village, Sheldon Point, **Stebbins**, and the seasonally occupied communities of Hamilton and Bill Moore Slough. As is evident in Figure 1, all these settlements except Mountain Village were on or near the coast of Bering Sea or Norton Sound. Mountain Village lay about 87 miles inland along the Yukon River. It was included with the coastal communities primarily because its economic base was suspected to be similar to those of the coastal settlements, and because of its socioeconomic relationships with the coast. These six winter communities, and the area between, defined the Yukon delta study area, as used herein. Other than these criteria above, the boundary of the study area was somewhat arbitrary, reflecting time and funding criteria. In reality, other communities along the Yukon River and the coast south of the study area were part of a regional pattern, or economic and cultural continuum, and could have been included in the study area because of their economic and cultural similarities.

This chapter outlines some of the environmental and cultural characteristics of this grouping of six communities. It will be shown that the people of the Yukon delta study area shared more than geographic **propinquity**. The people of the lower Yukon delta were integrated by a common ecology and cultural tradition. Currently, the populations of these communities were about **91** percent Alaska Native. The Alaska Natives of all the communities except **Stebbins** belonged to a larger culturally defined regional group, the **Kwikipagmiut**. **Stebbins** was linked to this regional group economically and socially. To understand the current economy and culture of the people of the region, one must know something of the people's ecology and cultural history.

Environmental Setting

The study area predominantly comprises a low and flat alluvial deposit of the Yukon River mouth, bordered to the north and east by a volcanic mountain range. The Yukon River divides into three main passes before meeting the ocean: the south **Kwikluak** Pass, the middle **Kwikipak** Pass, and the north **Apoon** Pass. The land between the south and north passes rises only a few feet above sea level. South of **Kwikluak** Pass, the land elevates to about 30 to 70 feet, and is punctuated by a few volcanic hills and mountains. The delta is a wide expanse of meandering waterways and innumerable lakes, the interstitial land comprise of **tundra, scrub, grass, low** willows, and alders. Hills front the north bank of the Yukon River at Mountain Village. The low hills are carpeted with tundra and stands of spruce, birch, aspen, alders, and

willows. The hills increase to elevations of 2,500 feet, becoming the **Andreafsky Range** separating the **Yukon River** from **Norton Sound**. One **spur** of these mountains enters the **waters of Norton Sound** at **St. Michael** and **Stuart Island**, the **location** of **Stebbins**. Unlike the **delta**, this sector is characterized by volcanic **hills**, steep **cliffs**, and rocky beaches, cut by rivers draining into Norton Sound, and covered by **tundra**, **grasses**, and willows.

The **Eskimoan** biotic province encompasses most of the **region**, **except** for the eastern **edge**, which **enters the Hudsonian**. From **May** through **September**, mean Fahrenheit temperatures range in the **40's** and **50's**, with **highs** in the **70's** and **lows** in the **mid-20's**. After **September**, **temperatures fall rapidly**, so that from **December** through **March** mean temperatures range from **about 20 to minus 5 degrees**, with **lows** in the **minus 20's** and **30's**. **Ice** covers the **Yukon River** and the coastal waters from about **late October** to **middle May**. **During fall, winter, and spring** the region becomes a frozen **flatland** traveled by **snowmachine** and **sled**. In **summer**, the rivers become the major arteries **for travel** by boat.

The **region** is rich in fish and game resources. Except for caribou since the **middle 1800's** and beaver for a discrete period during the historic **fur** trade, the area apparently has suffered **no** significant declines in resource population levels. The same **local** resources that sustained the **people** historically **still** sustained **the people** today (see Wolfe, 1979).

The major fish species include king, chum, silver, red, and pink salmon; humpback, round, and broadnosed whitefish; **sheefish (inconnu)**; **burbot**; **blackfish**; saffron cod; Bering **cisco**; northern pike; **grayling**; lamprey; and varieties of smelt and sticklebacks. At **Stebbins**, Pacific herring, starry flounder, and **sculpin** are common species. The immediate coast is visited by bearded, ringed, and spotted seals; **belukhas**; and a few walrus and sea lions. Moose inhabit upriver sloughs and grasslands, and small caribou herds range the Andreafsky Mountains.

Mink, arctic and red fox, muskrat, tundra and snowshoe hares, and land otter inhabit **lowlying** areas. There are beaver, arctic ground squirrel, wolverine, grey wolf, **lynx**, black bear, porcupine, weasel, and marmot in wooded regions. Migratory waterfowl include Canada **white-fronted**, emperor, and snow geese; black **brant**; and a variety of duck species, such as mallard, American widgeon, **pintail**, green-winged common teal, greater scamp, and old squaw. Ptarmigan and willow grouse are permanent residents.

Cultural Groups in the Study Area

The people of the lower Yukon River during 1980-1981 called themselves **Kwikipagmiut**--"people of the big river." This was an explicit statement concerning the major unifying aspect of their society, the **riverine** environment that shaped large portions of their lives. The **Kwikipagmiut** represented a Western **Yu'pik** Eskimo society. **Kwikipagmiut** was a 'regional **designation**," sometimes referred to as a "tribe" in the

anthropological literature (Oswalt, 1967: Ray, 1964). Historically, and during 1980-1981, the Eskimos who called themselves **Kwikipagmiut** lived along the Yukon River from Paimiut to the Bering Sea (Figure 2). The **Kwikipagmiut** were living in the region at historic contact, circa AD 1833 (Zagoskin, 1833). Archeological research traces the continuity of the Western Alaskan people for several thousand years.

Historically, the people of Stebbins called themselves **Tapraqmiut**, and were not part of the **Kwikipagmiut** cultural group. It is not clear what regional designation the **Tapraqmiut** had at historic contact. The majority of its present population, however, traced their ancestry to the people of Nelson Island, south of the **Kwikipagmiut** region. Near the turn of the present century, **Nelson Island** people frequently traveled to St. Michael for trade and other economic opportunities. Many of these people established residence with the **Tapraqmiut**. Thus, although residing along southern **Norton Sound**, the people's cultural affiliations lay to the south.

Historic Demography

The **Kwikipagmiut** historically comprised a large society relative to other Eskimo groups. Their population at historic contact has been estimated at about 1,780 persons (Wolfe, 1979). Since contact, the region's population has been struck by several severe epidemics, smallpox 1838 and 1839, measles and influenza 1900, influenza 1919, and tuberculosis circa 1940. Despite high mortalities the population

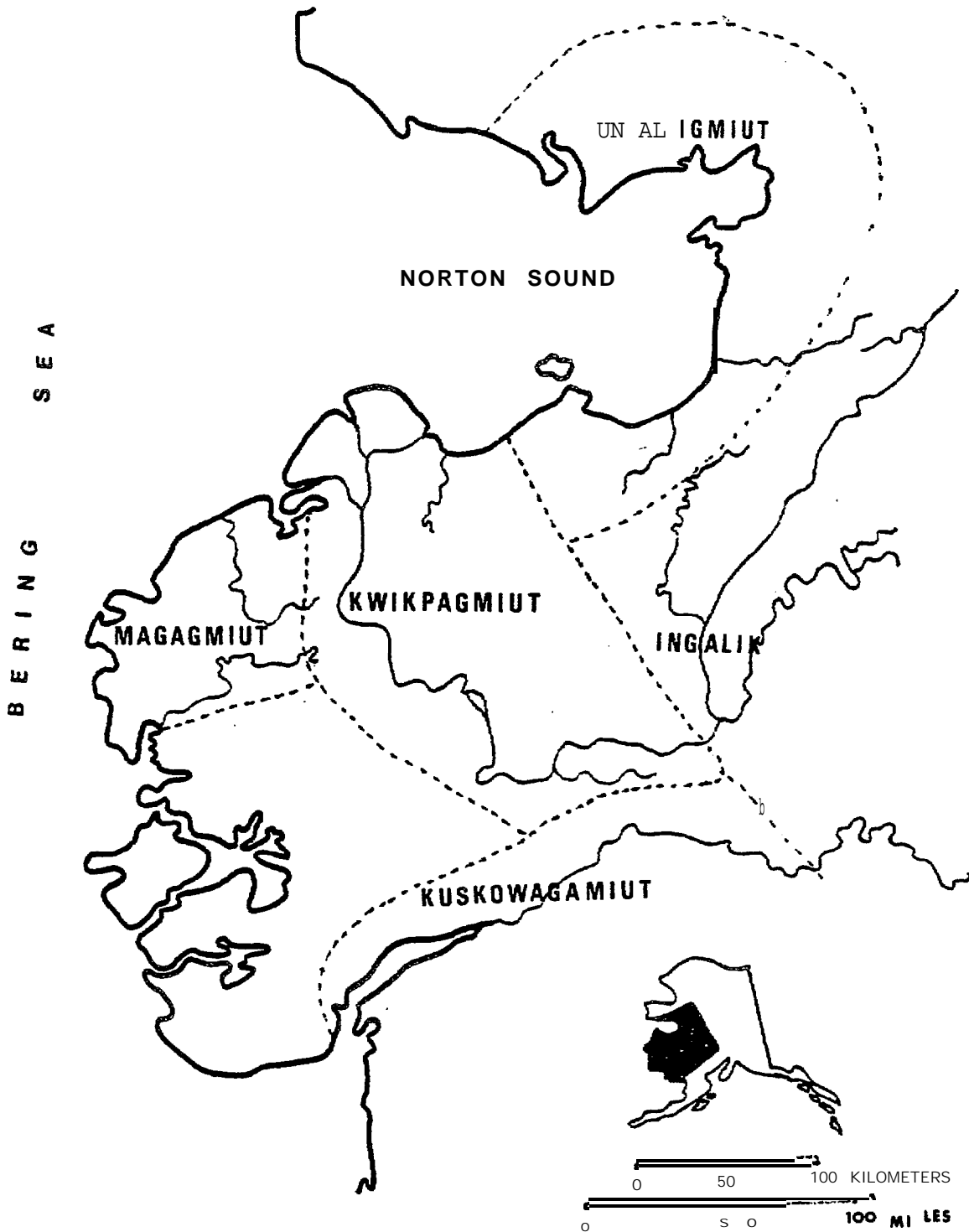


Figure 2. Historic regional groups in the Yukon delta area, circa A.D. 1933

endured and **grew**, currently exceeding its estimated aboriginal levels. In 1980 the **Kwikipagmiut** population was estimated to number 2,972 persons (3,288 including **Stebbins**). The total population of the region was 3,206 (3,537 including **Stebbins**). The sustained population levels despite biological pressures is evidence of the cultural group's historic vitality and adaptability.

Historic population trends are complicated by changes in settlement patterns within the region. Since the turn of the present century, the **Kwikipagmiut** have absorbed part of another regional group to the south, called the **Magagmiut**, "people of the tundra flats." **Magagmiut** communities dotted the low region between **Kwikluak** Pass on the north, and the **Mukunoaliwik** and **Kashunuk** Rivers on the south. The **Magagmiut** historically resided in dozens of small winter settlements rarely larger than three or four households. The spatially dispersed **Magagmiut** consolidated about schools established at places like **Akulurak** and **Nunaqaq** (New Knock **Hock**) after about 1895. Eventually, part of the **Magagmiut** population merged with the **Kwikipagmiut** at **Alakanuk**, **Emmonak**, **Mountain Village**, and other contemporary settlements. Despite these movements the lands and waters of the **Magagmiut** still were being fished and hunted in the 1980's by the residents of **Kwikipagmiut** winter villages. Thus, in terms of geography, the **Kwikipagmiut** region covered the area between the **Mukunoaliwik** and **Kashunuk** Rivers on the south, the **Pastolik River** on the north, and upriver to **Paimiut Slough**, including the surrounding mountains and tundra.

Historic Economy and Culture

The **Kwipagmiut** economy and culture have demonstrated a **perduring** stability throughout the historic period, dating about AD **1833**. Historically as today, the economy comprised a flexible pattern of fishing, hunting, and marketing activities. The **Kwipagmiut's** primary food resources, king and chum **salmon**, locally supplemented with **seal, belukha**, waterfowl, Bering **cisco, sheefish**, broad whitefish, and other fish species, historically were harvested for local consumption and market sale. Before and after historic contact, the **Kwipagmiut** participated in the Western Alaskan trade network for furs, caribou skins, fish, and other products, which linked markets in Siberia and Alaska (traditional marketing activities are referred to as "**barter**" by some historians). " Traditionally, local markets also existed. Profitable export markets for salmon, and at times for furs, have developed outside the region, stimulating an expansion of fishing and hunting for market sale for these products since historic contact. In this region, commercial salmon fishing and fur trapping have not replaced fishing, hunting, or trapping for personal consumption and local trade, but have become integrated within the regional economic system. As is shown in subsequent chapters, the "**commercial**" and "**subsistence**" sectors of the economy are, in general, complementary and mutually supportive (see Wolfe, 1979).

Largely because of the rich and stable fish and game resource base, the **Kwipagmiut** have maintained themselves as a culturally strong and

self-sufficient group. Most **Kwipagmiut** households during 1980-1981, as **in the past**, subsisted from a mixed pattern of **economic** activities. Households harvested substantial quantities of **local fish** and game resources. **A portion** was processed **and retained for personal consumption** and **local** exchange; the remainder was sold **on external markets** for monetary income. Cash income allowed for the purchase of imported fishing and hunting **technology**, such as fish **nets**, boat **motors**, and **snowmachines**, as well as other material products which supported **economic** production and the region's way of **life**. **Historically, the Kwipagmiut** have successfully adapted **their** mixed subsistence and **market** economy to the economic and **social** conditions of the modern era (Wolfe, 1979).

The cultural continuities and **economic viability** of the historic **Kwipagmiut** culture is somewhat **remarkable in** comparison with the experiences of other **Native American groups**. In the face of **substantial social** and economic **changes**, the **Kwipagmiut** have created an enduring and growing society and **culture**. Subsequent chapters describe aspects of the region's economy and culture as **it existed in 1980-1981**.

CHAPTER 2

SETTLEMENT PATTERNS IN 1980-1981

The demographic patterning of the Yukon delta population in 1980-1981 could be described as a dynamic movement within seasonal configurations. Families of the Yukon **delta** study area generally consolidated into six main communities (locally termed "**villages**") during winter. These communities served as bases for winter activities that frequently ranged many miles from the home settlements. During summer families frequently dispersed and reorganized into a number of smaller settlements (called 'summer camps,' or "**fishcamps**") stretched along the banks of the **region's** rivers, sloughs, and distributaries. At times during fall, winter, and spring, families or hunting groups in addition might reside days or weeks at camps generally established inland, away from the main river. The size, composition, and location of living sites showed seasonal, and at times daily variation, with winter villages showing the most stable conformation and fall and spring camps the **least** stable. Many individuals were highly mobile between alternative dwelling places, especially during summer months. Consequently, the demographic patterning of the regional population best viewed as a dynamic flux of persons between places, rather than as a relatively static structure. This chapter presents some general characteristics of these **regional** settlement patterns and describes summer **fishcamps** in

some detail. A description of subsistence activities occurring at seasonal settlements **is** presented in subsequent chapters.

Winter Communities

In 1980 there were six main communities within the Yukon **delta** study **area**, occupied by some individuals the entire **year**, and by others during **fall, winter**, and spring. The populations of these **communities**, according to the 1980 census, **is** presented in **Table 1**. The greatest **concentration of** winter population was **along or** near the **Kwikluak Pass**. Three **winter** communities were located **in** this area of the **delta--** Emmonak **along Kwiguk Pass**, Alakanuk **along Alakanuk Pass**, and Sheldon Point **along Kwemeluk Pass**. **Collectively** they **comprise** 49.7 percent of the population **of the six** study villages. **The high concentration of** persons in this sector of **the delta** probably resulted from two factors. **First**, on normal years **the bulk of** the **Yukon River** salmon runs entered through the south mouth. Individuals **living** near the south mouth **were** afforded **first** opportunity to harvest the **salmon runs**. Second, **since the** turn of the century commercial fishing buyers and processors typically have located in this **area**, attracting participants **in** the commercial salmon fisheries.

By contrast, the middle and north passes currently supported a **single winter** community **Kotlik**, near **the north Apoon Pass**, with a population **of 293**. Two other incorporated **areas**, **Hamilton and Bill Moore Slough**, also **lay in** this sector of the **delta**. The population of these two

TABLE 1
 1980 POPULATIONS OF STUDY COMMUNITIES
 OF THE YUKON DELTA REGION*

Community	Alaska Native Population	Non-Native Population	Total Population	Percent Alaska Native
Alakanuk	491	31	522	94.1
Emmonak	517	50	567	91.2
Kotlik	280	13	293	95.7
Mountain Village	539	44	583	92.5
Sheldon Point	98	5	103	95.1
Stebbins	316	15	331	95.5
Combined Communities	2,241	158	2,399	93.4

*
 Source: 1980 United States Census.

settlements fluctuated **seasonally**, most families choosing to **reside** at **Kotlik** during winter to be near educational and **retail** facilities. Approximately **37** miles separated **Kotlik** from the nearest **south** pass community, **Emmonak**, a two-hour trip by boat or **snowmachine**.

The winter community of **Stebbins** lay about 50 miles northeast of **Kotlik** **on** the coast of St. Michael Island **along** southern Norton **Sound**. **Sup-**porting a 1980 population **of 331**, **Stebbins** participated in summer fishing activities **on** or near **the** north mouth **of** the Yukon River, and maintained trade and ceremonial relations **with the** community of **Kotlik**.

Upriver from the south **mouth**, about 48 **miles**, the three passes **of** the Yukon **delta** diverged from a **single** main channel. **Along** the Yukon River channel, between 87 and **213** miles from **the coast**, were six **winter** communities within the **Kwipagmiut** cultural region--**Mountain Village**, **Pitkas Point**, **St. Mary's-Andreafsky**, **Pilot Station**, **Marshall (Fortuna Ledge)**, and Russian Mission. Of these, Mountain Village was included as part **of** this present study. Mountain Village was a relatively **large** community, supporting a 1980 population **of 583** individuals.

The winter communities served as centers for certain political, **eco-****nomi**c, **educational**, and ceremonial activities for the **region's popula-****tion**. All six winter communities were incorporated as second **class** **cities with** municipal governments. Paralleling **city** governmental **structures**, most communities contained **Alaska Native** corporations created since the Alaska Native **Claims** Settlement Act (**ANCSA**) **of 1971**,

and councils established by the Indian Reorganization Act. Authority over local concerns such as land **ownership**, public services, housing development, and business were allocated among the governmental bodies, the pattern of allocation differing among communities. The Native corporations pursuant to ANCSA were entitled to become holders and managers of selected tracts of federal land surrounding **the** winter communities. As of the summer of **1981**, **all** six communities were **still** involved in the conveyance process.

The winter communities contained usually one or two retail stores, the main source of imported food and material products to the region's population. Even when families dispersed for seasonal hunting and fishing activities, they frequently returned to the winter community to purchase supplies. Most seasonal remunerative employment other than . salmon fishing also was centered at winter communities. **Participation:** in wage employment frequently influenced a household's seasonal movements, generally requiring the household to maintain frequent contacts with the winter community.

Most of the winter communities possessed public educational facilities offering education or training from preschool through high school. Mandatory public education was the primary reason for the historic consolidation of families into large settlements. Currently, families maintained residence at the winter village from September through May so that children could attend **school**. During this time most religious and ceremonial activity also occurred in the community. Religious

services and traditional dances and **potlatches** frequently stimulated **intervillage** visiting and exchanges during winter.

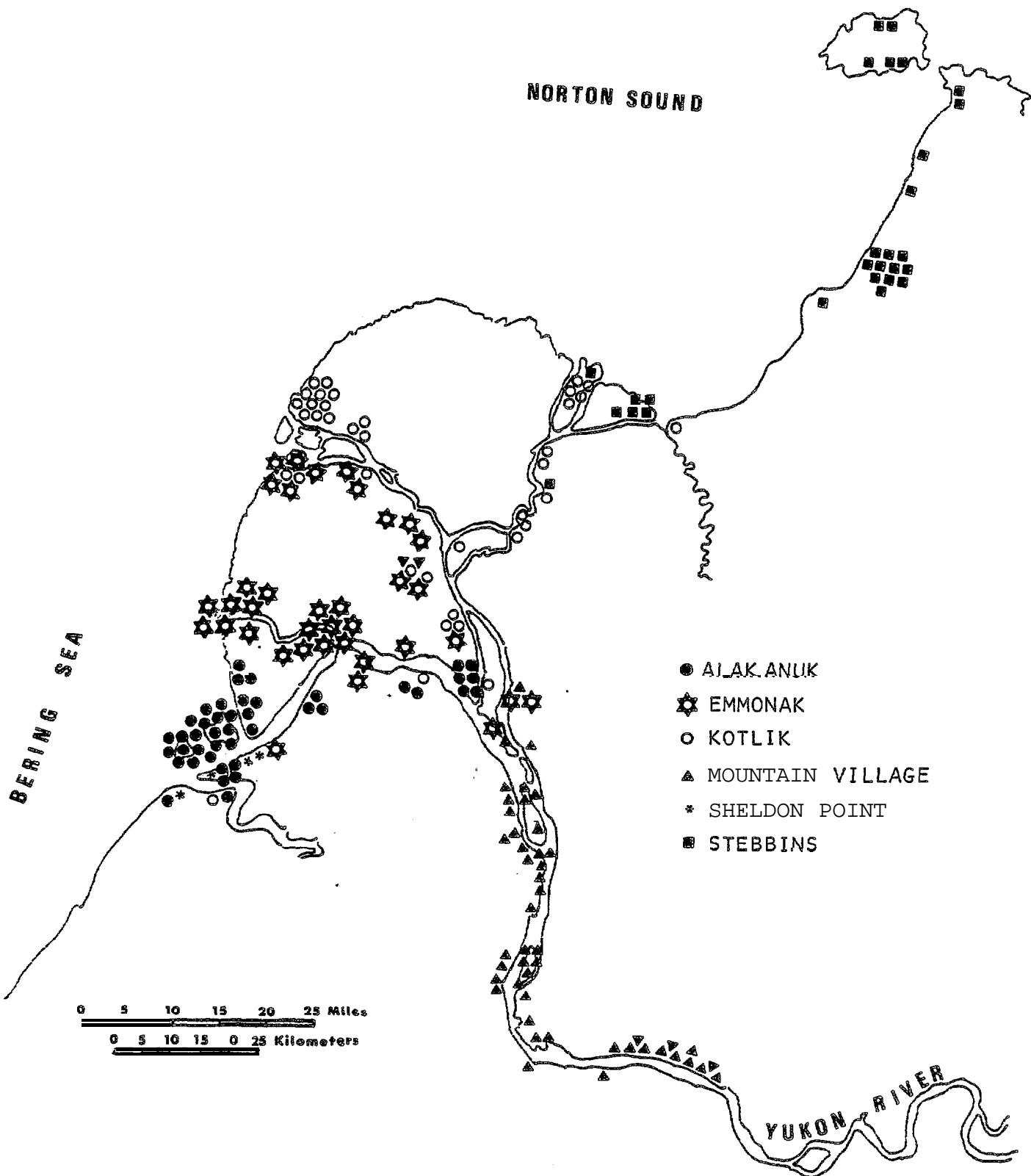
The **winter** communities **served as** bases for a number of **fishing** and hunting activities. **As will be** discussed in subsequent **chapters**, households frequently maintained nets and traps **close** to the community for non-salmon fish species during **fall, winter,** and spring. Hunting **forays** by **snowmachine** for **fur bearers**, other **land mammals**, and birds **regularly** were conducted **from** the winter community. About half of the households in the region used the winter **village** as a base for summer **salmon** fishing activities **during 1980-1981**. In these cases, the **house-**hold maintained cutting **areas, drying racks,** and smokehouses in the **village**, usually located **close** to the river% edge. Drifting and setting nets **for salmon** might take **place** some distance from the **vil-**lage, and the fish brought back for processing after each open fishing period.

Summer Fishcamps

Following **the** breakup of Yukon River ice, **usually** near the end of May or during **early June**, the settlement patterning of the Yukon delta population changed. Many individuals and families disengaged **from** the winter **community**, traveled to other areas of the **delta**, and reorganized **at** locations **called "fishcamps," or simply, "camps."** The process resulted in a more dispersed and **fluid** demographic configuration **on** the **delta**, generally persisting from June through August. **The** extent of

dispersion can be seen in Figure 3, which depicts approximate locations for households during the summer of **1981**. (Chapter 1 provides a discussion of the methodology used in map construction). As illustrated in Figure 3, the areas surrounding most main passes and distributaries of the delta became populated by individuals, families, or clusters of families. The delta changed from a region seemingly devoid of habitations to one filled with small settlements. As is discussed in **subsequent** chapters, the major purpose of this movement was to increase an individual^s or **family's** effectiveness in harvesting salmon.

Figure 3 depicts locations where persons or families resided for some period of time during summer, 1981. As movement by persons between camps and winter villages was substantial, the fixed, static appearance of the map is somewhat deceiving. Typically, a visit to a **fishcamp** on any particular day would find certain individuals present and in residence, other individuals present but considered to be only visiting, and other persons missing, considered in residence, but temporarily out checking nets, gathering firewood, visiting, and so forth. At times, especially during the weekly closed fishing periods, a **fishcamp** would empty--becoming a cluster of tents, racks, and smokehouses without people--while the residents would visit the winter village to obtain supplies and socialize until the next open period. Additionally, some **people** occupied **fishcamps** for **only** part of the summer, while others established fishcamps at two or more sites during the summer. Thus , the geographic arrangement of **fishcamps** in Figure 3 is not a static



APPROXIMATE LOCATIONS OF SUMMER FISHCAMPS OF HOUSEHOLDS FROM ALAKANUK, EMMONAK, KOTLIK, MOUNTAIN VILLAGE, SHELDON POINT, AND STEBBINS IN 1981

structure, but represents a configuration within which people frequently engaged in mobile forms of activity.

Some geographic trends can be noted in Figure 3 in the choice of **fishcamp** locations by persons. The **fishcamp** locations of Mountain Village people stretched from about Pilot Station downriver to the head of the three major Yukon passes. **Alakanuk** residents tended to locate **fishcamps** near the mouth of **Kwikluak** Pass, especially on Manning Island and Flat Island. **Kotlik** residents located **fishcamps** along **Apoon** Pass and **Kwikpak** Pass, with a large cluster at the middle mouth on **Kasavik** Island. **Emmonak** residents chose **fishcamp** sites intermediary between **Alakanuk** and **Kotlik fishcamps**, especially along the **Kwiguk** Pass and the southern shore of **Kawanak Pass**. Seven households from **Stebbins** (those with commercial salmon permits) located **fishcamps** near the north **pass**, while most of the remainder were placed along the southern shore of Norton Sound, especially near the **Pikmiktalik** River. Sheldon Point people by and large fished from the winter village. People from several villages located **fishcamps** together at a few places, such as at the head of **passes**, and at Acres Camp near Aproka Pass.

The significance of these areas occupied by persons from particular winter villages is discussed in Chapter 80. It can be mentioned here that these geographic areas probably do not represent village fishing territories. **Kwikpagmiut** fishermen ordinarily did not utilize concepts like ownership, control, and defense of land or water in the selection and maintenance of **fishcamps**. The fishing areas seemingly

associated with particular villages are more properly understood to be "use areas," the shape developing over time from the operation of several factors, such as distance from winter villages, location of fish buyers, kinship affiliation, and conscientious regard for the rightful priorities of pre-existing users of a resource area.

It may be noted in this context that the fishcamp locations of seasonal residents and families from other communities are not depicted in Figure 3. In Particular, a number of families from St. Mary's and Pilot Station had fishcamps along the main Yukon River, frequently intermingled with fishcamps of Mountain Village residents. Several families from Unalakleet and St. Michael resided on the Yukon delta during the summer of 1981, especially at middle mouth. Reportedly, Scammon Bay families regularly moved north to fish salmon around the mouth of the Black River. In 1981 some Scammon Bay people fished along the south pass, apparently with fishcamps established on Manning Island. In addition, a number of fishermen with residences outside of the Yukon delta region established camps to fish and sell salmon. None of these locations is depicted in Figure 3.

The social composition of fishcamps along the Yukon delta is discussed in Chapter 6. In brief, fishcamp sites frequently were occupied by one or several families related to one another by bilaterally extended kinship links. It was not uncommon, however, to find persons or families fishing together who did not demonstrate close kinship

affiliations. They fished together from the same camp simply as "friends" or 'buddies. "

Fishcamp locations, according to most respondents queried, 'belonged" to no one particular family. The designation of 'so-and-so% **fishcamp**" did not **imply** ownership. Instead, **fishcamp** sites were 'places" occupied by persons. Most **fishcamps** had names, generally referring to some **promi-** nent physical feature, such as a river or a vegetation type. For instance, one **fishcamp** north of Emmonak was called Kipchuq, "the big **twist**," referring to a sharp incised meander of **Kawanak** Pass at that location. The people residing at that location were termed Kipchugmiut, the "people of the big **twisty**." Thus, people frequently were named after the **fishcamp**, rather than **fishcamps** after people. The people inhabiting a **fishcamp** might change over time, but the identity of the place endured. This represents an interesting contrast to Western **place** designations which commonly are named after people, and suggests that perceived relationships between people and land within the **Kwikipagmiut** cultural group may be different in some respects from people-land relationships in certain Western cultures.

Some **fishcamp** sites were known to have been occupied for generations. The camp of Nilaraq, located near the south mouth, fished in 1981 by an Emmonak resident, had been utilized as far back as anyone **could** remember. However, other **fishcamp** locations changed over **time**, primarily due to the continual erosion of river banks, and the changing course of the Yukon. Frequent and apparently enjoyable topics of

conversation by **Kwipagmiut** while boating concerned former campsites now **fallen** into the **river**.

Most **fishcamps** were strategically **located to** take advantage **of a parti-**
cular set of fishing conditions. For **instance**, an eddy where the
current of the river slacks and reverses near **the bank comonly** due to an
incoming slough or a **promitory**, was considered a prime site for placing
a set net. In **eddies**, a net hangs loosely and vertically in the water
so that the webbing retains an optimal shape for catching fish. **In**
addition, reportedly **salmon** swim **along** eddies meeting **less** resistance
from the current. **Other** strategic sites were located near a narrowing
of stream **channels**, where fish were forced to **funnel**; near submerged
sand **bars**, which also directed fish movements; **or** near a coastal mouth
where fish were expected to **school** before entering the river system.

When a **fishcamp** lost its strategic **advantage**, it frequently was aban-
doned. Consequently, one may expect that the patterning of **fishcamps**
existing **in** 1981 would show substantial variations from those to be
mapped other years. A ten-year-old map of campsites made by the **Emmonak**
Corporation **durin** land claim proceedings located many camps of **Emmonak**
residents at the mouth of the **Bugomowik** Slough, the next major waterway
north of **Kwiguk** Pass. **In 1981**, these camps apparently were unoccupied.
Reportedly, the **slough's** mouth had **silted up**, making the area **less**
productive for fishing.

Although sites changed, some families occupied camps for long periods. This occurred in part because **fishcamps** frequently became a favorite residence for families, enjoyed sometimes more than the winter community. To illustrate this continuity, of eight **Kotlik** families interviewed in **1976**, all occupied the same **fishcamps** when interviewed five years **later** in 1981 (**Wolfe**, 1979). One family had been at its site for over 10 years. As another example of **fishcamp tenure**, one fisherman from **Alakanuk** reported he maintained a **fishcamp** on Manning Island from 1949 to **1967**, placing nets in Casey% Channel. He moved to Tin Can Point where his **fishcamp** was from 1968 to 1979. Since then he had fished from **Alakanuk**, placing his nets along sand bars in **Kwikluak** Pass. His son, who also had a fishing license, still fished near the **Tin** Can Point site.

The relative age of a **fishcamp** frequently was evident from its physical features. At times a **fishcamp** began as a **floorless** white tent without amenities other than a Coleman stove, inhabited by one or two young males. Typically, the men operated from the camp during open commercial fishing periods, eating and resting at the tent between checking set **nets**, drifting, or making fish deliveries. During closed periods solitary males frequently returned to their **parents'** house in the main village, or if married, to their own families. Fish taken at camp might be carried to the winter village to be cut, air **dried**, and smoked by kin relations. The transport of a wife and children to camp usually was accompanied by the construction of a plywood floor and partial side walls for the tent, fish drying **racks**, and eventually a smokehouse of

wood **or** corrugated sheet **metal**. **During** the building stage salmon might be **air** dried at **camp**, and smoked at the winter' village. Tents housing **families** commonly were furnished **with** a **cast iron stove**, **or** a stove made from gasoline drums; **tables** and stools fashioned **from** driftwood; sleeping bags or bedding; and storage shelves **for clothing, food**, and eating and cooking utensils. Further additions to a **fishcamp** included fish-cutting tables by the river bank, **a toilet pit** in the nearby **wil-**
lows, and a **CB** radio antenna. By this stage, usually several families have located together at the site. **Fishcamps** most commonly grew by attracting other families. When families attached themselves to pre-existing camps, frequently rack and smokehouse facilities were shared temporarily. At this point in the evolution of a **camp**, families usually stayed **longer periods**, drying and smoking **fish** at camp for the winter food supply. The **final** additions to a 'mature' **camp** might **include** wooden houses and a sweat bath, traditionally a symbolic focus **of** a community.

The **fishcamps** on the delta represented different stages **of** this evolution, and the use of **fishcamps** varied accordingly. Some camps were utilized only during open fishing periods by young men, to be emptied during **closed** periods. At some **camps, whole** families moved back and forth between **fishcamps** and winter villages during the summer. **If** family members **held jobs** at the winter **village**, frequently **only** partial families were present at **camp**. Some families stayed at camp **early in** the **season**, putting up fish before the commercial season began and during the first few **weeks**, returning to the winter village at some

point. Other families fished for commercial sale from the winter village, and moved to camp at the later stages of the season to put up subsistence fall chums and silvers. A substantial number of households stayed the entire summer at camp, not returning to the winter village until the onset of freezeup. The camp might serve as a base for berry picking and seal hunting during the late summer and early fall months.

Some of the variation in settlement patterning can be illustrated by the following cases.

Case 1. This **Kotlik family** illustrates **long** tenure at **fishcamp**. During 1980, the family arrived at **fishcamp** on May 19, soon after ice breakup, before even the smelt run preceding the summer salmon runs. At camp were the household head, his wife, four children, and his **wife's** sister's daughter. The eldest son remained at **Kotlik** for seasonal employment. The family stayed at **fishcamp** throughout the entire **commercial** season until the last week of August. Both the father and son had commercial salmon permits, and fished from **the** camp with set nets or drift nets. During the **season**, the family put up three 50-pound barrels of kings, four 6-gallon buckets of king strips, one 50-pound barrel of chums, and five **6-gallon** buckets of dried chum and coho salmon. The family made infrequent visits to the winter village.

Case 2. This case illustrates **fishcamp** residence without a family. Two **Alakanuk** brothers, one married with his own household, and the other single and living with his parents, set nets from a **fishcamp** on Manning

Island, where they fished without their families **during** commercial periods during **1980**. Fish from the commercial catch were transported home **to the parent's household** to be processed by the mother and **father**, who because **of** a partial disability **could not currently fish**. **Last** year about 70 kings and 100 chums and **cohos** were **put** up for the extended **family**, cut and dried at **Alakanuk**. Some of the fish were put up before the commercial season began, and some **cohos** were dried after the **commercial** season ended. Both households shared from the common cache of food. The commercial earning belonged to each of **the** boys, and was not **an** automatic part of the parent% income. **However**, because of the poor runs **last year**, the boys 'came out in the **hole"** for the season.

Case **3**. The head of this household at **Stebbins** had full-time employment at the **winter** village, from **which** he engaged **in** most fishing and hunting activities in 1980. In anticipation of the salmon season, he took off the entire month of June without pay to fish with his extended **family** **along** the **Pikmiktalik** River. At **camp** in 1980 were his **wife** and three children plus his eldest son and his children. None possessed commercial salmon permits. With a 25-fathom net he caught enough salmon to **fill** one **50-pound** barrel of salted **kings**, one 10-pound **barrel** of dried **kings**, one 50-pound barrel of dried **chums**, and four **6-gallon** buckets of chums **and** a few **cohos**. **He also** gave kings from his net to another household camping at **Pikmiktalik** who **salted** two barrels of kings. **He** **returned** with his **family** to **Stebbins** in July to **resume** work. **Normally** the family **would** have remained at camp longer. Because of the short

stay in 1980, there was no time to put up king salmon strips, as would have been done most years.

Case 4. The following case may exemplify a family in transition between **fishcamps**. This 55-year-old man from **Alakanuk** formerly had a **fishcamp** on a slough near the mouth of the **Kwikluak** Pass. However, the channel was becoming shallow, the eddies were changing, and there were 'too many nets" located near his own. So during 1980 he decided to drift for commercial salmon 25 miles upriver below Fish Village staying at a **fishcamp** nearby of a 'distant relative," his 'buddy." He would leave his wife and young children Monday mornings, boat upriver to fish Monday 6:00 P.M. to Tuesday 6:00 **P.M.**, and return to **Alakanuk** Tuesday evening. He repeated the trip again to fish the open period Thursday 6:00 P.M. to Friday 6:00 P.M. His two oldest sons, unmarried, in their 20s, and with permits, accompanied him. As there was no smokehouse yet at the 'newⁿ camp, he saved a few **unsold** fish to be cut, air dried, and smoked by his wife at **Alakanuk**. After the **commerical** season closed, his nets were **placed** at **Alakanuk** Pass. The catch of **cohos** was processed for personal use at **Alakanuk**. Last year, in this manner, the family processed 35 kings and 132 **small** salmon, cut into strips or salted in barrels. This year he chose to follow the same pattern, but fishing with his second son **only**. The eldest (28 years old) decided to **locate** at another upriver camp with a 'buddy" from St. Mary%. Conceivably, **if** the **father's fishcamp** site seems advantageous, a rack and smokehouse may be constructed, and the entire **family** transported to **fishcamp**. The eldest son, in turn, may choose to attach himself to his

family's camp, to another **fishcamp**, or establish his own camp alone or with friends.

Fall, Winter, and Spring Camps

In addition to summer **fishcamps**, many families or individuals maintained camps at intervals during the **fall, winter**, and spring. These **camps** tended to be located on inland tundra or mountain **areas** away from the Yukon River. Many of these camp locations were temporary sites established for a few days only **as** a base camp for harvesting a food resource distant from the winter community. Because **of** their temporary **nature**, and because their locations might change from year to **year**, the camps were less **likely** to be named **like fishcamp sites**. **Certain** camps **for** winter hunting or **trapping, however**, were used on a more **permanent**, or regular basis, and were **likely** to have names. Abandoned village locations frequently were sites for **camps**, utilized by persons born there, or by persons related to such **persons**, and who consequently were familiar with the resources in the region. Because of the great number and variability of campsites and the short duration of this **study**, there was no attempt made to map **fall, winter, and spring** camp **locations**. Such an endeavor **would** be valuable to illustrate the **full** extent **of** land and **resource** use patterns **in** the **Kwikipagmiut** region.

Fall camps were frequently established during August and September **by** families for the purpose of gathering berries. Whole families frequently boated up Yukon tributaries to upland areas to camp for

several days to a week, during which time the members would engage in concentrated berry picking. Tents might be set at a new location each day as the family unit moved to find new berry areas. Families frequently traveled long distances in the procurement of berries. For instance, in 1981 family groups from **Emmonak** were noted to pick berries in areas near the **Pastolik** River, the hills above Fish Village, and the tundra areas around Black River and **Kusilvak** Mountains. It was evident **that**, given such wide search patterns by families for berries, probably the whole **Kwipagmiut** region became utilized during fall berry harvest over a series of years.

During fall, winter, and spring, certain individuals regularly established camps for the purposes of hunting moose, caribou, seals, waterfowl, fur bearers, and muskrats. Like berry camps, these camps collectively covered the entire **Kwipagmiut** region, as illustrated by the following examples. A fall camp utilized by **Kotlik** residents for hunting seal, **belukha**, and waterfowl was located near the extreme lip of the flat delta at Okshokwewhik Pass mouth. From the evident number of **belukha** bones from former kills, the site apparently received regular use. Two winter camps utilized by **Emmonak** and **Alakanuk** hunters were located in the Andrafsky Mountains along the Andrafsky River (the Macherevik River), north of St. Mary%, over 75 miles by **snow-**machine from the winter village. A fall and winter camp for taking fur bearers by Mountain Village hunters was located about 40 miles from the winter village, south of **Kusilvak** Mountains along the **Kashunuk** River. Some Sheldon Point, **Alakanuk**, and **Emmonak** residents utilized **fall** and

winter camps as far south as the Mukunoaliwik River, over 50 miles from the winter village. Some Stebbins families established berry camps on Stuart Island during fall. Winter hunting at times was conducted from camps located in the Andraefsky Mountains to the south of the village, including the Golsovia River, East Fork of the Andraefsky, west to the headwaters of the Pigmiktalik River.

Unlike fall berry picking camps, frequently the hunting camps established in fall, winter, and spring were occupied solely by male hunters. Women and young children normally remained at the winter village while husbands and single young adult males made short hunting forays for land mammals. Historically whole families traveled to fall, winter, and spring camps. However, mandatory public education forced women and children to remain at winter villages near schools.

Fall, winter, and spring camps were typically bases for harvesting several food resources simultaneously. While hunting seals or fur bearers, or while harvesting berries, typically a hunter would set a net to harvest whitefish, or a trap to harvest blackfish. A person was considered to have missed an opportunity if nets or traps for other food sources like fish were not placed while hunting. Even if no game were taken, a person frequently brought back firewood to compensate for the costs of making a hunting trip.

Summary

To summarize, the demographic patterning of the Yukon delta population in 1980-81 was characterized **by** substantial seasonal movement between **settlements**, covering the entire Yukon delta region. Maps of the Yukon delta commonly depict only winter communities, portraying a misleading view of the delta population as confined to a few locations with vast tracts of empty land between. Actually, effective hunting and fishing required substantial movement over relatively large areas. A map of summer settlements (**fishcamps**) revealed that the entire length of the main Yukon River from Mountain Village to the coast was inhabited during the summer months. About one-half of the households of winter communities moved to **fishcamps** during summer to harvest salmon. The locations of camps fell within general **village "use areas."** Duration of occupancy and social composition of these **fishcamps** were shown to vary greatly between families.

In addition to summer **fishcamps**, camps regularly were established by families and individuals at times during **fall**, winter, and spring. A cataloging of these camp sites was not attempted, but case examples illustrated their geographic dispersal. Like the Yukon River during **summer**, the entire land area comprising the **Kwikpagmiut** region, stretching from the **Kasunuk** and Black Rivers to the south and including the Andraefsky Mountains to the north contained camp sites from which individuals hunted, fished, and gathered at times during the seasonal round of activities. As a general **rule**, during winter the population

was most sedentary during summer most **mobile**. **However, at all** times during the year fishermen and hunters moved **across** the landscape between **living** and working areas.

CHAPTER 3

THE REGIONAL ECONOMY IN 1980-81

The **Kwipagmiut** have persisted as a strong and growing cultural group because of their success in utilizing local resources of the land and the sea. The **Kwipagmiut** over time have developed and refined a viable economic system particularly suited to the opportunities and challenges of the Yukon delta region. In 1980-81 the economic system was comprised of techniques and strategies for production and exchange matched to ecological and social realities. In terms of production, the **Kwipagmiut were** invested highly in the yearly harvest of fish, **game,** and plant resources. A substantial portion of these yearly harvests were retained for home consumption, or exchanged within local trade networks. The remainder was sold for cash income which, in addition to providing basic sustenance, became the investment capital to ensure the capacity for fishing, hunting, and gathering in the future. The **Kwipagmiut** recognized that a strong economic system had been maintained by achieving some optimal mix of food income produced directly from the land, rivers, and sea, and monetary income derived from the sale of harvested fish on external markets. Because of the **region's** high current dependency on local fish and game resources, disruptions to the fish and game resources or fishing and hunting practices, entailing reduced access to or availability of the **region's resources,**

would **be** expected to have direct and potentially negative effects on the economy of the Yukon **delta** population.

This chapter begins the description of the production **and** exchange **systems** that comprise the economy **of** the Yukon **delta** region. **It** seeks to establish a **"baseline"** description of the economy **as** it appeared during 1980-1981. Scientific standards **for** ethnographic description require that this section be written in the **"past tense,"** even though it depicts 'current' realities for descriptions are made of events occurring about a year ago. Readers should **be** mindful that these are not decriptions of a remnant of the **past**. This description is of current conditions in the Yukon **delta area**. **Unless** otherwise **stated**, past tense implies the **period 1980-1981**.

In the Kwikpagmiut society during 1980-1981, most production occurred within **family units**, the heads of **which** typically were **males, self-**employed in several roles, as **fishermen, hunters, trappers,** and seasonal wage earners. Further, many **local** exchanges of food between individuals flowed along lines **of** kinship affiliation. As most socially significant economic activity occurred within kinship-based **groups**, the economic system is described by and large at **the level** of the producing **consuming,** and exchanging household. **It** is acknowledged that other approaches can be taken; **indeed, a** more complete understanding of the cultural **group's economic** system requires other **theoretical** perspectives. The following depiction therefore represents

primarily a description of **Kwipagmiut** production and exchange activities from the level of the household unit.

The annual seasonal round of economic activities in the region is presented first. This is primary because the regional economy was indissolubly linked with the annual cycles of fish and game populations. In production, the **Kwipagmiut** judiciously adjusted their labor and capital investments to the exterior requirements of ecological systems. Following this, the geographic patterns of resource utilization are depicted. Harvest efforts of a sample of households from six communities within the study area are mapped to suggest the spatial patterning of economic activity. The maps show that most major food and **commerical** resources in the region originated from the ocean or littoral fringe. General characteristics of the economy are then discussed. The **Kwipagmiut** economy is characterized as being a diversified system, organized by the principles of kinship and secondary associations? manifesting adaptability to short term fluctuations in resource levels. The major species utilized, and **Kwipagmiut** harvest techniques are discussed throughout. Finally, the integration of the **"cash"** and **"subsistence"** sectors of the **economy is** discussed.

As can be noted, this chapter presents the **Kwipagmiut** economy in terms of general patterns. Further chapters seek to quantify food output in the study area for a single year, and to depict certain social and symbolic aspects of the economic system.

The Annual Round of Economic Activities

The economy of the Yukon delta region during 1980-1981 was based primarily upon the utilization of local land, river, and sea resources including fish, sea mammals, land mammals, waterfowl, and plants. Most families were supported by the harvest efforts of members, who were self-employed as fishermen hunters, and trappers. The harvested products were processed for personal use by the family, exchanged locally, or sold on export markets. In addition to the harvest of local land, river, and sea resources, the economy offered limited, generally seasonal, employment in wage-paying occupations. Consequently, a family also was supported by the monetary income derived from the temporary remunerative employment of household members. Because of the low levels of cash incomes for the region in general, and correspondingly increased cash requisites many families received some income in the form of federal or state income assistance.

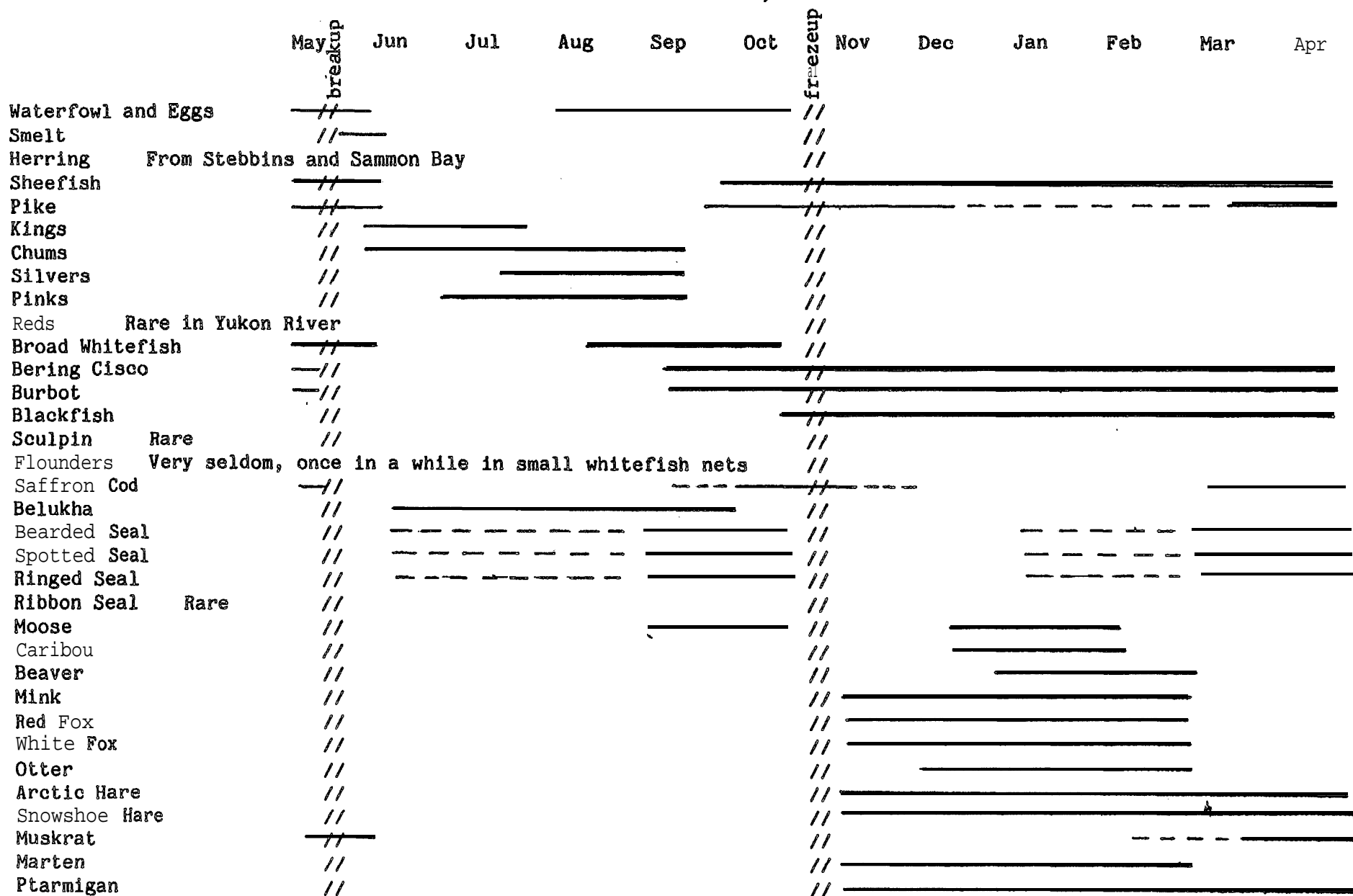
As previously stated, the regional economy was closely tied to the annual cycles of fish and wildlife populations. The local environment during delimited periods of the year provided Yukon delta residents with a set of economic opportunities. A fisherman or hunter held certain options concerning whether to harvest a food resource when it became locally available. Similarly, income opportunities arose as seasonal employment became available, such as construction projects during fall, commercial fish processing during summer, or local school-related jobs during fall, winter, and spring. The types of food

resources, employment opportunities, and their timing differed among communities in particular aspects. Nevertheless, most **Kwipagmiut** communities close to the delta shared a general annual seasonal round of economic pursuits. This general cycle is presented below. The annual seasonal round of the people of **Stebbins** is presented separately from that of the Yukon delta people, because it exhibited notable differences.

The **Kwipagmiut** Seasonal Round

The general seasonal round of fishing and hunting activities for the **Kwipagmiut** region is depicted in Figure 4. The figure illustrates the times of year when selected food resources typically were harvested by residents of the Yukon delta region. Figure 4 does not portray fluctuations in the seasonal availability or abundance of fish and wildlife resources. A resource may be available on the delta the year around, yet may be harvested predominantly during particular seasonal periods. The incidental harvest of these species is not depicted in the figure. For instance, **sheefish** were occasionally taken in **gill** nets set for salmon during summer. These incidental catches are not shown in the seasonal round as a major economic activity. Nets for **sheefish** were placed primarily after freezeup and maintained by certain individuals throughout the winter and spring. It is this activity that is depicted.

Figure 4. SEASONAL ROUND OF FISHING, HUNTING, AND TRAPPING ACTIVITIES FOR SELECTED SPECIES, LOWER YUKON DELTA AREA, DURING 1980-1981 (———— USUAL PERIOD OF HARVEST EFFORT ; - - - - OCCASIONAL PERIOD OF HARVEST EFFORT)



The figure also does not reflect variations in the timing or level of harvest effort. In certain years, the harvest of resources may occur relatively early or late, depending upon environmental conditions. For **instance**, sealing from the edge of the land-fast ice pack could take place anywhere from about January to May. Most years it occurred from the end of February to April. Thus, the timing of harvest efforts varied from year to year. A second major variant is level of harvest effort. The number of individuals harvesting a resource at any point in time varied considerably during a year, and from year to year. For instance, the greatest number of nets for **sheefish** typically were maintained during the first few weeks following the freezeup of the Yukon River. Usually certain individuals removed their nets as their **house-**hold^s need for sheefish diminished and ice fishing became more difficult; others maintained nets throughout **the** entire year. The figure does not represent these variable patterns of time or harvest effort, variations which could be documented adequately only with longitudinal data.

For the Yukon delta region as a whole, the breakup of ice on the Yukon River signaled the beginning of the period of intensive summer salmon fishing activities. From the comparative quiescence of midwinter and **spring**, summer burgeoned with activity. Wooden skiffs were **recalced**, sanded, and painted; outboard motors overhauled; and gill nets purchased, rehung, or mended. Initial supplies of food, fuel, and other materials commonly were purchased on credit from community stores or from commercial fish buyers who arrived during the first weeks of

summer. In preparation for the salmon **season**, a family frequently incurred substantial debt to be paid **off** with commercial salmon earnings. There were **no banks in the six Yukon delta** communities at **the time** of the study, **so local** stores and **commercial fish** buyers were forced into assuming lending **roles**.

Other harvest efforts occurred concurrently **with** salmon fishing **prepar-**
ations. Certain families, especially containing elderly **members**, harvested a **late** spring and **early** summer run *of sheefish* at the delta mouth. **The sheefish** were said to run **in** the main **river** just before and after breakup. **At** this time the **flesh** was considered to be of high quality, especially **in** comparison **with** summer **sheefish**. **Sheefish** taken **in spring** was **cut, hung, and air dried on fish racks**. **At this time** **small** quantities of eggs **of** migratory waterfowl **might be collected,** "**along** with the gathering of certain **early** summer **plants**, usually by **women, children,** or the **elderly**. An **early** summer run of **smelt** on the main **Yukon River** lasting **no** more than a few days was harvested with dip nets by members of a few families in **Kotlik, Alakanuk, Emmonak,** and Sheldon Point, commonly by adolescent and young adult members. The **smelt** usually became distributed widely among families **in** the **region**, and surplus was strung and dried for **later** consumption.

The first run of king **salmon** normally occurred **during** the **early** part of June. **However,** in recent **years** the **king run** had formed **earlier, begin-**
ning the **latter** part of **May**. Some **families** placed nets to harvest these **early runs**, with the intent of putting up a substantial portion

of the winter **supply** of dried salmon even before the **commerical** fishing season opened. Late May and early **June**, families moved to summer **fishcamps**, described in Chapter 2. During 1981, approximately half of the households from the six delta communities resided at a **fishcamp** for some period during summer. At times during **early** summer, winter communities appeared virtually bereft of people.

Successive runs of king, chum, pink, and coho salmon *were* harvested during summer. **Salmon** were taken by two main techniques: by placing set gill nets in **eddies**, along river banks, along coastal channels, and in mid-river along submerged sand bars; or by drifting nets from small skiffs along relatively **straight**, snag-free stretches of river. Nets generally were managed by men, although man-woman teams were common, and occasionally solitary women handled set nets. Fishing efforts occurred during 24-hour open periods twice a week as established by state regulations. Between open periods nets had to be removed from the river. Harvested fish was sold to commercial buyers (if a person had a commercial salmon permit), and retained and processed for personal use and local exchange. Some individuals had no commercial fishing permits. Consequently, all fish from their nets had to be processed for personal use. Processing of salmon for home consumption was generally a woman's occupation. The most common preservation technique was to partially air dry the **flesh** for several days on fish racks, and then slowly smoke the salmon within a smokehouse for up to several weeks.

For most households, **salmon** represented the largest **single** source of **food** and monetary income. Of **all resources**, it might be considered the **staple food and primary market product of the** region. Depending upon **its size**, a family put up a sizable stock of dried **salmon** during summer for storage **in** a cache **at** the **winter** village. A family normally put up supplies of **salmon** to last at least **9** months following the end of summer, **until** the next summer **salmon** season. Income **from** the sale of **salmon** was **the** only source of **monetary** income **for** many families that was dependable each year. Whereas most other remunerative work represented irregular short **term** employment opportunities, a household **could count** upon the **salmon** Puns each year to provide income. When the **salmon run** was not **strong**, households frequently ran out of cash, and went into debt for **the year** to **local** stores. **The** economic solvency of **Kwipagmiut** households **usually** pivoted upon the success of **salmon** fishing.

During summer **Kwipagmiut** hunters **also** captured an occasional **belukha**, spotted **seal**, or adolescent **bearded seal** near the **Yukon** mouth or on the Yukon River itself. For coastal **Kwipagmiut**, these usually represented fortuitous **events**, rather than planned hunting efforts. Most summer economic activities were related to **salmon fishing**, not sea **mammal** hunting. **Belukhas** at times were abundant **around** the mouth of the Yukon **during early summer** when they were feeding upon migrating **salmon**, whereas **seals** were **less** frequent visitors. A substantial portion of **the few belukhas** and **seals** taken during **summer** were **caught in salmon nets**, whereas the **remainder** were harpooned and shot from **boats**. **Seals**

occasionally ventured as far up the Yukon River as Russian Mission. Main river **Kwipagmiut**, unlike their coastal relatives, maintained a watchful eye for riverine seals during summer, and attempted to capture them with **rifles** and harpoons whenever possible. **Seals** taken upriver during summer might lessen a household's need to procure seal oil and meat from the coast during fall.

Salmon fishing normally continued through August, and frequently into September. Some years, as in 1981, fishing effort diminished earlier, sometimes by late July, because of large early harvests.

During August many households began to harvest other food resources. **Salmonberries**, blueberries, blackberries, and **lowbush** cranberries became ripe from early August through September. Whole families frequently made excursions to upland tundra areas to harvest berries. Many families established fall camps on the tundra as bases from which to harvest. Households attempted to procure several **6-gallon** buckets of berries, which were frozen or stored in cool caches for use the remainder of the year. Berries were an essential ingredient of a traditional food dish, **agutak**, made of boiled fish (especially whitefish and pike), fats (such as seal **oil**, vegetable oil, lard, or tallow), and fruit.

Hunting waterfowl also began during August and continued into October for certain species. Hunting waterfowl was predominantly a **men's** activity. Either singly or in hunting groups of two or three, men

would boat or wade among sloughs and estuaries known to be frequented by ducks, geese, cranes, and swans, shooting flying or swimming birds with shotguns. Camps were sometimes established from which the hunting of birds, seals, and/or moose occurred. Generally, men harvested enough birds to last his family and perhaps an elderly neighbor or relative a few months as an occasional meal or base stock for soup. As indicated in later chapters, an ethic prevailed among most Kwikpagmiut concerning most resources and waterfowl in particular, against taking more than was needed by a family. Although hunting clearly was a pleasurable activity for men, hunting primarily for sport and enjoyment was not considered proper or right. Most households maintained strict limits on waterfowl harvest levels for these ethical reasons. In addition, waterfowl hunting was a relatively expensive subsistence pursuit, requiring substantial costs in boat fuel and shells for a relatively modest food return. The costs of hunting placed practical limits on waterfowl takes for most people. Some households indicated that they took only enough waterfowl to be eaten on special occasions. Birds taken during fall were gutted and slightly salted. by women and hung in caches.

While at fall camps, men occasionally set short nets with about 4-inch stretch mesh to harvest broad whitefish, and nets with 3-inch mesh to harvest Bering cisco and round whitefish during August. The major harvest of whitefish generally occurred later, just before and after freezeup about late October or early November.

Throughout early spring, summer, and **fall**, women and children frequently harvested local plants. Collecting **ethnobotanical** information was not a feasible objective of this study, **plant** identification representing a specialized **research** task. Nevertheless, from general indications, a wide variety of plants were being utilized by families on the Yukon delta. **Plants** utilized included the **Pallus** buttercup, **marestail**, dwarf fireweed, **sourdock**, cowslip, wild rhubarb, wild celery, **willow** leaves, **tall cottongrass**, Labrador tea, berries listed previously, and a number of other unidentified greens, **bulbs**, and flowers. Many of these plants were collected on low lying tundra along the Bering Sea coast and coastal islands.

The period of intensive sealing activities along the coast occurred from **late** August **until** freezing. During fall, seals and **belukhas** were hunted from boats, usually with a crew of two, one to operate the motor, the other to harpoon and shoot. In the hunting areas of south pass villages, the species taken most commonly during fall were spotted seals, which at times migrated in large groups along the coast, and adolescent bearded **seals**. In the hunting areas of **Kotlik** and **Stebbins**, ringed seals also were frequently captured during fall. Seals and **belukhas** occasionally were hunted by large groups of boats. When this occurred the fat and meat *of* bearded seals and **belukhas** generally were divided among participating hunters more or less according to traditional cultural rules (the division termed **ninyiq**), described in Chapter **7**. Small seal species **normally** were not subject to **ninyiq** conventions. Ribbon seals were rarely taken along the delta.

Occasionally sea lions and walruses were killed. Most seal meat was consumed soon after capture by a family; some portion might be air dried for later use. Seal fat, and occasionally belukha fat, were rendered into oil. Seal oil was considered an indispensable food item by Kwikpagmiut. Dried fish was dipped into seal oil while being eaten; and seal oil was a common component of soups and other prepared dishes. Seals, belukhas, and seal oil were major food items exchanged among friends and relatives from the coastal district to main river communities, discussed further in Chapter 7. Bearded seal hides provided material for the soles of summer and winter boots, while the skins of spotted and ringed seals were utilized for the upper portions of boots, parkas, and other handcrafted products.

During September small parties of men commonly traveled to the rivers and valleys surrounding Pilot Station, Russian Mission, and Paimiut to hunt moose. For men from coastal villages, these trips might last over a week and require substantial quantities of fuel (up to two 55-gallon drums). Other families might receive moose meat from relatives and friends upriver, sometimes in exchange for seal oil. Occasionally moose were taken on the flats of the delta as well.

Just before and immediately following the freezeup of the main Yukon River, usually in late October and early November, a second period of intensive fishing occurred within most communities. At this time there were substantial runs of broad whitefish, Bering cisco, sheefish, and saffron cod in the small rivers, sloughs, and estuarine channels of the

delta. The role of these non-salmon fish species in the **Kwipagmiut** economy generally has been unrecognized in the literature. During 1978-1981 whitefish and cod represented a significant portion of the annual food production of most families. Their importance has gone unnoticed probably for several reasons: they were harvested at a season when most seasonal residents have left **the delta**; they were fish species previously with no **commercial** market value; and their seasonal habits were relatively undocumented within the scientific community.

Coastal fishermen set short nets with about a 3-inch stretch mesh along narrow estuarine sloughs for **small** whitefish. In a few days or weeks, hundreds of pounds of Bering **cisco** and small **sheefish** frequently were taken. Upriver at Mountain Village, small whitefish nets set in Yukon tributaries caught **Bering cisco**, small pike, and small broad whitefish. Some individuals reset their small whitefish nets after freezeup near the village, where they caught fresh fish for the family throughout the winter. **Small** whitefish commonly were stored in caches in cardboard boxes; more occasionally they were air dried.

Larger mesh nets (about 4 inches) frequently were set for broad whitefish just before and after freezeup in freshwater streams and lakes. During September, large broad whitefish could be taken migrating from lakes, but smaller specimens could be obtained year around in side **sloughs, lakes**, and along the coastal passes, Upriver, broad whitefish catches generally continued strong through December, slacking off during January and February, and building again during March and April

just before breakup. Many individuals along the main river maintained set nets under the ice from October **until** May. Whitefish were eaten **fresh, dried, or "aged"** several weeks in a **cache**.

Sheefish were harvested in **gill** nets with about a **6-inch** mesh, set beneath the river ice after freezeup. Large catches of **sheefish** were taken during November within coastal **Kwikpagmiut** communities. Upriver fishermen from Mountain Village reported **that, while sheefish** were taken in salmon nets during summer and broad whitefish nets most other seasons, their number **built** to a heavy run during January and February. Many fishermen maintained **sheefish** nets from October through **May** beneath the main river ice, taking **sheefish** and an occasional **burbot**. The nets were occasionally reset **after ice** breakup in coastal **commu-**
nities to harvest a strong **sheefish run just before and after ice** breakup.

In addition to these varieties of **whitefish**, saffron cod (locally called **egathluk** and **"tom cods"**) along the **coast**, and lampreys (called **"eels,"** and **ngumugiuq**) at Mountain Village, were **harvsted before or** soon after freezeup. Saffron cod were taken with large hooped dip nets utilized as seines by fishermen from **Emmonak, Alakanuk, and Sheldon Point**. **While** one person placed the net within the mouth of a small estuary **at high tide**, another person would beat the **water's surface** with paddles **upriver**, driving fish into the net. **In** this manner sometimes several hundred **pounds** of fish were taken **within** a few **hours**. **More** commonly, saffron cod were taken by hooking through **ice** holes

using lures or baited hooks. Cod were frozen and strung for drying. The **Kwipagmiut** of main river villages from Mountain Village to Russian Mission frequently harvested a brief run of lampreys soon after freeze-up. When the run appeared, holes were chopped in the ice in front of the village, and lampreys scooped from the water. At Mountain Village, people used a wooden device about 4 feet long, 4 inches wide, and 1 inch thick, its edges rimmed with half-sunk penny nails with their heads snipped off. Lampreys were snagged on the nails as the device was swung laterally, first to one side and then the other, through ice trenches. Other individuals utilized **dip** nets. Lampreys were commonly eaten baked, and were exchanged widely throughout the region.

The **Kwipagmiut**, especially of the south passes and main river, placed basket traps for **blackfish** beneath the ice of lakes and narrow tundra creeks just before and *soon* after **freezeup**. The traps were made of small wire mesh stretched around wooden or plastic hoop frames, with a wire mesh funnel set into one end. Some individuals still utilized basket traps made of thin pine strips. Traps might be reset in different locations throughout the **fall**, winter, and spring months. The abundant **blackfish** were widely shared throughout a winter community, so that the traps of a few individuals could procure food for several families. **Blackfish** also was used to feed family dogs.

A few individuals placed baited hooks under the ice for **burbot** following **freezeup**. A line was stretched between two poles, **along** which hooks were secured and baited with live **blackfish** or whitefish.

Burbot also were taken **in gill** nets set **for sheefish and broad** whitefish throughout **fall, winter,** and spring. **At St. Mary's** fish **traps** were maintained **under** the ice **to harvest burbot.**

After about early December, activities directed toward food procurement generally diminished in intensity! remaining at a relatively **low level** **until** about **March.** **Fish** nets, **traps,** and hooks beneath the ice **might** be checked on alternative **days,** generally taking enough to **provide** **fresh** fish **for** the **family** to supplement dried **salmon.** **During winter** **people** commonly jigged **for whitefish, sheefish, cod,** and pike through holes in the river ice near the **winter village.** Longer **trips** might **be** taken to jigging areas noted **to** be productive. These excursions acquired the air **of** a recreational **outing,** entailing jigging and picnicking **on** the ice.

Winter marked the beginning **of** hunting and trapping **for** fur bearers. The most common practice was **for male** hunters to make one-day hunting trips by **snowmachine** over the flat tundra regions surrounding the winter village, looking **for** fox and checking baited spring traps, mink basket **traps,** otter **traps,** and beaver snares. The timing and method of fur harvest activities are summarized **in Table 2.** Some individuals maintained trapping camps several **miles from the** winter **village.** These persons were likely **to** maintain **traplines** which would be checked on regular rounds. **Small land** mammals provided a **source of fresh** meat **for** the **table, fur** for **parka ruffs, mittens,** dress **parkas,** and other hand-crafted **items,** and monetary income when **sold** to fur buyers. The meat

Table 2

FURBEARER HARVEST SEASONS AND METHODS IN THE KWIKPACMIUT REGION

	<u>Months Taken for Sale</u>	<u>Months Taken for Subsistence Use</u>	<u>Harvest Methods</u>
Muskrat	April to June	April-June, also in fall and winter mink traps	.22 rifle, #1, #1-1/2 spring traps, mink traps
Tundra Hare	fur too fragile for sale	March-May; sometimes entire winter	.22, wire loop snares
Snowshoe Hare	fur too fragile for sale	from first snow to May	.22, wire loop snares
Beaver	January to March (pelts prime for sale)	summer and fall (pelts best for clothing trim)	winter: wire loop snares, #2, #3 spring traps; summer: rifles
Mink	November to February (pelts prime)	rarely used for subsistence; some parka trim	small wire basket traps; #1, #1-1/2 spring traps; wire loop snares
Fox	November to February (pelts prime)	primarily sold	baited #1-1/2, #3 spring traps; rifles
Land Otter	November to February	November to February	large wire basket traps; rifles; clubs

of tundra and snowshoe hares, **beaver**, and land otter was eaten **regularly** when **taken**. By **contrast**, the meat of muskrats occasionally was **eaten**, mink **rarely** and fox never. When **not** personally **consumed**, the meat of fur bearers provided food **for family** dogs.

During January and February, households sometimes subsisted on diets predominantly composed **of** dried fish and **cereal** products from the local stores. The fresh meat of hares **and an** occasional ptarmigan added welcome variety to the uniform **fare**. **To** procure fresh meat **for** the **village during** these **months**, one or two **small hunting** parties **each** winter might enter the **Andreafsky** Mountains **on** the northern boundaries of the **Kwikipagmiut** region **in search** of moose and caribou. **Hunting trips usually** were carried' **out in** sub-zero temperatures with the threat **of** sudden **Arctic** snowstorms trapping the **party in** tents many **miles** from home. Such hardships were considered justified by the prospect **of** fresh meat **during** a **lean** time **of** the **year**. A **successful** hunt **might yield** one or two moose or caribou per **group**. The harvest typically was divided among hunters, each of whom frequently distributed the meat among relatives and friends at the winter village. Thereby many families **in** the community usually received a share **of** the **kill**.

Beginning **in** March and **April** (**at times** as **early as** **January** and **February**), **small** parties of men from coastal **Kwikipagmiut** communities made **trips to** the edge **of** the land-fast **ice of the delta** to hunt **seals**. **Ringed seals** and bearded seals frequented lead areas throughout the **late fall, winter,** and spring. **However**, severe weather and ice conditions

usually precluded hunting trips until late winter or spring. Men generally traveled by **snowmachines** directly out from the winter village until the lead area was encountered. Hunting frequently occurred 20 to **30** miles from shore, and sometimes farther. Seals were shot with high caliber rifles as they appeared swimming or basking on ice floes, the floating carcass retrieved with a boat dragged on a work sled. Some hunters motored about ice floes in boats searching for seals. The oil of spring seals commonly was distributed among relatives and friends within the winter village. During spring sealing trips, persons also frequently hooked for saffron cod through tidal cracks in the ice.

During March and April, many residents of south pass and main river villages made one or two trips by **snowmachine** to the base of the **Kusilvak** Mountains to place nets and hook for pike in the **Kipneak** (Black) River. Several hundred pounds of pike commonly were taken by one person from a single day's activities. Families from **Chevak**, Hooper Bay, and **Scammon** Bay also fished this area, which at times took on the appearance of a tent city on the ice.

During late spring, subsistence activities continued to increase in number and intensity from the midwinter **lull**. Broad whitefish, **shee-**fish, and saffron cod catches from set nets and hooking sites increased in volume due to spring runs. Hunters, especially young males, searched for muskrats in low wet areas surrounding the village. Some established "**rat camps**" on inland tundra areas to hunt muskrats for several days to a week. About middle April, migratory waterfowl began

their **return** to the **delta**, a welcome sign to **villagers**, signaling fresh meat once **again** and the beginning of a **new summer**. Food **stores** in **family caches** and **local** retail stores **were** at their lowest **yearly levels at** this time. It was not uncommon for village stores to **be** depleted of most staple **items**, showing bare shelves which **would** not be **filled until** the first barge arrived after spring breakup. Villages frequently ran out of gasoline as **well**, despite **it** being rationed **during** winter. Individuals sometimes made trips **to** neighboring communities **to** buy one or **two** drums **of fuel** and stove **oil**.

At this time **of** general **scarcity**, hunters **commonly** made one or two hunting **trips** to procure waterfowl for their families. Using **shotguns**, hunters **killed** waterfowl as they **flew** over tundra beginning to thaw from **its** cover of snow. **Most** hunters restricted **their** harvests to limited numbers of **birds**, just enough **to** provide the **family** with some fresh meat **until** the salmon runs arrived.

Nets and traps set throughout winter were removed when the **ice** became **rotten**, honeycombed with air pockets. Trash accumulated during the year frequently was stacked on river ice, to be carried off with breakup **some**time **middle** May to **early** June. After **ice breakup**, with the lengthening **of days**, **families** made preparations to **begin** anew the **annual cycle** of economic activities.

The **Tapraqmiut** Seasonal Round

The annual round of economic activities of the **Tapraqmiut** at **Stebbins** during 1980-81 differed in several respects from that of the **Kwipagmiut** (Figure 5). Their location along the southern coast of Norton Sound at St. Michael Island enhanced the importance of small sea mammals, walrus, and herring in the local economy. At this location, land-fast ice tended to break into lead areas **closer** to shore than on the relatively featureless coast of the delta. These lead areas **sup-**ported populations of seal during the winter, and seal, walrus and **belukha** during spring.

Hunting for seals might occur throughout the winter at **Stebbins**, but sealing activities became intensive usually during March, April, and May. At this time, hunters traveled by **snowmachine** to the lead areas surrounding Stuart island, and extending east to about Egg Island, to shoot seals from the ice edge with high caliber rifles. Some hunters navigated skiffs between ice floes, searching for seals basking on the ice. During spring, both adolescent and adult bearded seals, ringed **seals**, and spotted seals could be taken, while ribbon seals were rare.

Beginning before the breakup of sea ice about May and continuing through **June**, walrus were hunted among the drifting sea ice **pack**. Groups of boats with between two and five hunters each searched for walrus in the waters to the north of Stuart Island and eastward to about Egg Island. Walrus were sighted by binoculars from vantage

points *on* Stuart Island, and quietly approached from downwind by boats, to be shot with high caliber rifles. Reportedly, during **early** summer, walrus occasionally hauled out of the water on the northern beaches of Stuart Island.

As on the Yukon **delta**, during May hunters harvested waterfowl for their families, generally in the low-lying coastal areas south of **Stebbins**, such as the **Kuiak River**, Point **Romanof**, and on Stuart Island. One or two buckets of eggs from waterfowl and sea birds, such as **pintail** ducks, seagulls, **murres**, and puffins, might be gathered within nesting areas along the coast of Stuart Island, and the cliffs to the north and south of **Stebbins**. Some households established spring camps for one or two days for conducting these activities.

As the sea ice became more broken, **belukhas** were taken in open waters between **Stebbins** and Stuart Island south to Point **Romanof**. In recent years, several **belukhas** have been taken by residents of the village as early as May. A sighting tower built near the **Pikmiktalik** River was sometimes used for spotting **belukhas**. **Belukhas** were pursued by boats, harpooned, and then shot **while** they **pulled** the **hunter's** boat. The meat and fat of **belukha** and walrus were **likely** to be distributed widely among kinship relations and friends of the hunters.

A major fish resource of the **Tapraqmiut** not found on the Yukon River delta was herring. Large runs of herring spawned along the rocky beaches surrounding **Stebbins** just after southern Norton Sound coastline

became **ice free**. In recent **years, the** runs had begun **the** second week **of May**, continuing. into **middle June**. **Other years, the** herring runs occurred **later into** summer. **The Tapraqmiut** harvested herring with **small** mesh set nets placed perpendicular **to** rocky beaches a **few** yards from **shore**.

Herring were shaken from the nets into an open **skiff** primarily by men and delivered at the volcanic sand beach **of the village for** processing by women. Herring were gutted and woven by the women into long strings **of** braided grasses, gathered and **dried the previous fall**, and hung **to** air dry on **fishracks**. A household attempted to put **up** enough strings of dried herring to last the **family the entire** year as a major food **source**. Most **commonly**, dried **herring** was eaten dipped **in seal oil**. **Herring** roe sacks frequently were removed and **either frozen in** plastic **bags, dried**, or preserved in brine. Strings **of** dried herring produced at **Stebbins** and **Scammon Bay** became distributed widely among **Kwikipagmiut** communities of the **delta**, usually as gifts **along** kinship **networks**, but **also** commonly as trade items on **local markets**, or exchange items at **potlatches**.

In 1980, a commercial fishery was opened for the **sale** of herring roe **along** southern Norton Sound. As **Stebbins** has been a 'cash poor" **community**, the development of a herring fishery was viewed **with high** hopes by the **Stebbins** people. In 1981 about a dozen **families** purchased on credit **7.3 meter**, open herring boats powered by 150 **to** 200 **horsepower** engines from the **Tapraqmiut** Corporation, in order to more efficiently

harvest herring for commercial sale. During the **1981** season there were three 24-hour open periods for commercial herring.

Generally during May and June households gathered several bags of kelp covered with herring roe from the beaches of Stuart Island. 'Roe on **kelp**' was eaten fresh, dipped in seal **oil**. Surplus was frozen in plastic **bags**.

Before the initiation of the limited entry permit system for commercial salmon fishing on the Yukon River, about one-half of the **Stebbins** households established **fishcamps** on the Yukon delta for the purpose of harvesting subsistence and commercial salmon. **Stebbins fishcamps** frequently were located along the middle passes, and their commercial fish sold at **Acres'** Camp. However, for a variety of reasons, most **Stebbins** households were **unable** to obtain commercial salmon fishing permits, and thus were 'frozen **out**' of the commercial **salmon** industry. Currently, only seven households owned commercial permits. During 1980 and 1981, these households established summer **fishcamps** for harvesting salmon, generally from June through August at **Apoon and Okwega** Passes. By locating along north pass, the **Stebbins** fishermen took advantage of the unusually strong salmon runs through the north mouths in recent years.

Many **Stebbins** families without commercial salmon permits established **fishcamps** for the harvest of subsistence salmon nearer to **Stebbins** or fished for salmon from the winter village. Generally, families set nets for salmon after the diminution of the herring runs in June and

typically harvested fish from June through August. A large number of **fishcamps** were located near the traditional **village** site of **Pikmiktalik** along the **Pikmiktalik River**. Other **fishcamp** sites were located at Point **Romanof**, the mouths of the **Nunavolnuk** and **Kuiak** Rivers, **Sourdough Point**, and **Stuart Island**. Nets for kings and chums generally were placed perpendicular to the coastline near the mouths of rivers, intercepting salmon migrating along the coast. Nets for **chum**, **pinks**, and **cohos** at times were relocated along the rivers south of **Stebbins** to harvest runs traveling upriver. As on the delta, most of the salmon were **cut, hung, air dried**, and smoked.

During late spring and **summer**, **small** starry flounders and **sculpins** were caught in nets set for herring and **salmon**. Both **fish** species frequented the **Stebbins** coastal **vicinity** throughout the **year**. A few families dried **sculpin** and **flounder**, but most families retained only enough for a few meals of fresh fish and did not keep the remainder. Both varieties of fish were considered too **small** and bony to compensate for preservation **labor** requirements.

Along the rivers south of **Stebbins** during **summer**, several fish species could be taken in moderate **numbers--sheefish**, broad **whitefish**, round **whitefish lush**, **trout**, and **grayling**. Families with **fishcamps** along these waters typically utilized **small** quantities of each type of **fish**.

During August many **families** gathered berries on **Stuart Island** and in the tundra south of the village to Point **Romanof**, some households

establishing berry camps for a few days. As on the delta, varieties included **salmonberries**, blackberries, blueberries, and **lowbush cranberries**. At this time, families frequently set nets to harvest a **large** late summer or early fall run of Bering **cisco** in small sloughs and coastal rivers. A net set for a few hours sometimes would take hundreds of fish. One or two families used cheesecloth seines to harvest "**needlefish**" (sticklebacks) abundant during August.

From mid August until the freezeup of sea ice marked a second period of intensive sea **mammal** hunting. Adolescent bearded seals, ringed seals, and spotted seals were hunted from boats in open water surrounding Stuart Island, and south along the coast to the **Pastolik** River mouth. Seals were shot and harpooned from skiffs generally holding a two-man crew. Concurrently, **belukhas** could be captured in the same areas. Fall seal meat frequently was dried; the fat was rendered into oil for winter use. Following freezeup, bearded and ringed seals still were occasionally taken from ice pack breathing holes. Spotted seals were rare during late fall and winter months. As on the delta, adult bearded seal hide was used for the soles of boots and for thong strips used as binding for **sleds** and snowshoes. The skins of ringed, spotted, and young bearded seals were used as material for boots, parkas, rugs, and other handcrafted items.

Fall also marked a second period of waterfowl hunting from Stuart Island, south along the coastal tundra to Point **Romanof**. During this time, large runs of saffron cod **were** harvested from coastal rivers and

sloughs with **short gill** nets of about **3-inch** stretch **mesh**. A few **families** set basket traps for round whitefish. Saffron cod were harvested throughout **late fall** and into winter. **After freezeup**, large quantities were taken by hooking through the ice. **Smelt** also **could be** taken at this **time**, but were utilized primarily as bait for saffron cod. **Before freezeup**, about a bucket of blue clams and mussels might be dug at low tide from the **beaches** near **Stebbins** by **families**, enough to 'provide variety to the **diet**."

Winter and spring marked relatively **slack** periods for fishing and hunting **activities**, as **on** the **Yukon** delta. Some hunters harvested fur bearers such as **fox**, **beaver**, **otter**, and **an** occasional mink in the areas south **and** west **of** the **village**, especially **along** the **Pikmiktalik River**. Harvest techniques were similar **to those** of **Kwikipagmiut** communities. **Unlike** delta **communities**, **Stebbins** people did not maintain nets or **traps** under the ice for **fish** during **winter**, except **for** a **few** **blackfish** traps on the tundra **near** the village.

From about January through March, **small** groups of hunters periodically might make hunting trips by **snowmachines** south into the **Andreafsky** Mountains in search of moose. Based from hunting camps, these **excursions** might take from several days to a **week**, and cover the area from the **Gosolvia** River south to the headwaters **of the** **Pikmiktalik**. Hunters from **Pilot Station** **and** **St. Mary's** occasionally were encountered hunting in the same region. As **on** the **delta**, the **one or** two moose taken by the

group typically were divided and distributed widely within the winter village.

Stebbins Corporation maintained herds of domestic reindeer, one which grazed on Stuart Island, the others in the Andraefsky Mountains. By and large in 1980-1981, these herds were left unattended. Reindeer were not supposed to be killed without corporation permission and reportedly were occasionally allowed to **be taken for** special events or sale at the local store. Reportedly, in recent years the herd on Stuart Island was being utilized at very low levels. The Andraefsky Mountain herds were in a semi-wild state, and according to certain **Stebbins** residents, were mistaken for caribou by hunters from other communities.

During winter, **Stebbins** families primarily utilized food products put up during spring, summer, and fall, supplemented by staples purchased at the two village stores and a few hares and ptarmigans. With the approach of March, and the start of seal hunting for fresh meat and oil, the annual round of fishing **and** hunting activities began anew its yearly cycle.

Marketing and Wage Employment

The second major sector of the regional economy during 1980-1981 which complemented fishing and hunting for local **consumption**, was the "**market**" sector, or "**commercial**" sector. Engaging in wage and market

activities was not a historically new component in the Kwikpagmiut economy, but existed even in the earliest historic accounts of the Yukon delta (Wolfe, 1979). An expansion of fishing for salmon and trapping and hunting for fur bearers for market sale has occurred since historic contact. This expansion is attributable to two factors: the emergence of export markets for salmon and furs outside the region, and increased local demands for imported goods. Increasing reliance on imported fishing and hunting equipment? especially fish nets, boat motors, and snowmachines, has elevated the importance of the market sector of the Kwikpagmiut economy.

The "subsistence" component of the economy (fishing, hunting, and trapping for local consumption and exchange) and the "commercial" component (production for sale on external markets) were well integrated by the Kwikpagmiut during 1980-1981. "Subsistence" and "commercial" pursuits were frequently not discrete or separate activities. The production of salmon for export sale or local consumption required the same equipment and could be done simultaneously. The hunting and trapping of fur bearers often was engaged in while checking traps and nets for fish species. Furthermore, the 'subsistence' and 'commercial' activities were rarely antagonistic or contradictory. In fact, they commonly supported one another. Fishing and hunting for local consumption and trade required a flow of cash capital; fishing for market sale, and wage work, commonly provided the source of this capital. The most successful producer in the economic system was one who brought in a steady monetary income and reinvested a portion of it into fishing

and hunting for local consumption. In this manner, the two sectors became mutually supportive (see Wolfe, 1979).

The major sources of monetary income on the Yukon delta were commercial salmon fishing, seasonal wage employment, **fur** sales, and income assistance. At **Stebbins**, where only seven households held commercial salmon permits, an emerging source of monetary income was commercial herring fishing. Each fishery is described in general terms below, while harvest statistics are presented in Chapter 4.

The largest and most consistent source of monetary income to the study area was the sale of commercial salmon. During 1980 there were twelve commercial processors of salmon operating on the lower Yukon River. Most of the salmon was processed as a fresh or frozen product; smaller quantities were canned or hard salted. Two of the commercial processors were owned by local native corporations--the Yukon Delta Fish Marketing **Co-op**, Inc., at **Emmonak**, and the Azachorak Corporations Village Cannery at Mountain Village. These two corporations, and the **others** to a lesser extent, provided seasonal wage employment to residents of the region, in addition **to** income from salmon sales. Each corporation-owned processor estimated it employed from 60 to 80 persons at peak production during the summer. About 80 percent of the employees were local residents at the Emmonak facility; about 20 percent at the Mountain Village processor. Other employees were drawn from other local **communities**, such as **Hooper** Bay, **Chevak**, and Kuskokwim River villages. Processor employees in general were young adults.

The larger buyers of salmon operated as lending institutions for commercial salmon fishermen. Most loaned out money, fuel, or equipment (such as nets, motors, or parts) at the beginning of the season as operating capital for a fisherman. It was estimated that on the average, a fisherman might take between \$1,000 to \$2,000 in loaned equipment and supplies before the salmon season began. Fishermen paid off these loans with salmon earnings.

There were 403 commercial salmon gill net permits owned by members of the six study communities of the lower Yukon delta (Districts 334-10, 334-20, 334-30), out of a total of 686 registered in the three districts (ADFG Annual Management Report, Yukon Area, 1980). As indicated earlier, most fishermen used set or drift gill nets, from skiffs between 17 and 25 feet in length, powered by outboard motors (35 to 55 horsepower), without gill net rollers or power reels.

On the average in 1980 in the lower Yukon district, king salmon sold for \$23.41 per fish, chums \$1.66 per fish, and cohos \$2.32 per fish. The 1980 commercial catch on the lower Yukon River was 143,853 kings, 950,355 chums, and 7,488 cohos, sold for an estimated value of \$4,962,559 or an average of \$3,234 per permit holder. This comprised about 75 percent of the total 1980 Yukon River fishery output. For the entire Yukon River, gross value of salmon sales to fishermen was \$6,703,100; wage income from salmon processing was \$1,475,000; for a total of \$8,178,100. The wholesale value of the salmon was

, \$16,757,700. (Figures were derived from the ADFG Annual Management Report, Yukon Area, 1980.)

For most households, commercial salmon income represented the largest and most consistent source of money. As shown in Chapter 4, for a sample of 88 households, commercial **salmon** earnings comprised 45.8 percent of their annual monetary income, or **\$8,026** per household, during the period June 1980 to May **1981**.

The commercial herring fishery at **Stebbins** was relatively new in 1981, being in its first few years of operation. Herring was sold for its roe to floating processors which moved north along the western Alaska coast with spring herring migrations, buying fish within various fishing districts. During **1981**, processors sometimes brought fishermen with them to harvest herring. These nonlocal fishermen were perceived by some resident fishermen as unfair competition for a local resource. Some residents expressed a desire that the district have limited entry restrictions to protect the earnings of local fishermen.

It was reported that average earnings for local fishermen who fished commercial herring at **Stebbins** during 1980 was between \$2,000 and \$3,000. Of the twelve sampled **Stebbins fishermen** discussed in Chapter 4, average earnings for the four **who** sold commercial herring was \$1,318. During 1981 the average earnings for fishermen probably increased. Fishermen were adjusting to the system of open periods and several had purchased on credit 7.3 meter open boats from the **Stebbins** Native Corporation which allowed larger production capacity. One

fisherman reported that he earned **\$7,800 during** the three 12-hour open periods **in 1981**, \$5,000 which would **go toward his** new **\$15,000 boat**. Fishermen by and **large** expressed satisfaction **with** the development of the commercial herring fishery. **Stebbins** has been a **"cash-poor"** community in recent **years**, especially because many families had been denied commercial salmon limited entry permits within the **Yukon delta** district and no longer could fish commercially during summer. Herring sales at **Stebbins** held the promise of becoming a relatively consistent source of income for the community.

Seasonal employment was a second **source of income for** many families in **the Yukon delta** region. Job opportunities **on the Yukon delta** were generally **of** a seasonal nature. **The** most common sources **of** employment were **in** commercial salmon processing mentioned **above**, or in **construction work**, such as ASHA and **BIA-HUD housing**, Alaska village development **projects**, and regional high **school** construction. **Other** sources of employment were in city council government, **city government**, retail **stores**, **regional schools**, and the BIA educational system.

Paid employment frequently was integrated with commercial fishing and food production for **local consumption**, although at times this entailed scheduling conflicts. **If** a person's employment **hours** were relatively inflexible then other economic activities had to be conducted around them. Some **forms of employment**, such as **city government**, allowed more flexibility. Such positions might be **filled** during **closed** commercial salmon **periods**, and vacated **during** open fishing periods. Some

households avoided scheduling conflicts by having one household member **work**, while others fished and hunted.

The eighty-eight sampled households described **in** Chapter 4 averaged \$7,878 in paid employment during the period June 1980 to May 1981. **The** wage income comprised 40.7 percent of their **annual** earned monetary income. The average wage income for the sample probably is higher than the delta as a whole, as is discussed in Chapter 4, because households with wage employment probably were disproportionately represented in the sample.

The other sources of income were fur sales and Federal and State income assistance. Fur sales provided on average about **\$1,000** to a household, although some trappers earned considerably more. Red fox and **mink** were the **region's** primary marketable pelts. The most common form of income assistance was food stamps. Families frequently qualified for food stamps during winter months, when sources of monetary income disappeared. The other common form of income assistance was aid to dependent children. Of the eighty-eight sampled households discussed in Chapter 4, fur sales comprised 5.7 percent of their annual monetary income, while income assistance comprised 9.5 percent during the period June 1980 to May **1981**.

The Cost of Living on the Yukon Delta

Maintaining a consistent **source** of monetary income was essential because **of the high cost of living on the Yukon delta. Major costs** included technological items used **in food production, oil and gas for fuel, and food.** The high costs can be illustrated with a few case examples.

During 1981 fuel for boats was selling **for \$2.08** to \$2.50 per **gallon unmixed (\$3.00 per gallon mixed at Alakanuk in late July 1981).** During a fishing season, a commercial drift netter **might** expend about ten 55-gallon drums of fuel, or about **\$1,155** if purchased at \$2.10 per **gallon.** Heating **oil** cost \$98 or \$102 per 55-gallon **drum.** One **Alakanuk family** estimated the following **costs** for **heating and electricity during** a year: stove oil, sixteen drums at \$102 per drum; **propane,** four drums **at \$99** per drum; electricity **9 winter months at \$75** per month, and **3** summer months at \$52 per month; **totalling \$2,859** per year.

Maintaining a **full** complement of fishing and hunting equipment incurred substantial payments. In 1976 it was estimated that owning and main-**taining** a wooden **boat, 35-horsepower motor, snowmachine,** nets for **kings, chums, sheefish, and small whitefish, .22 rifle, .222 rifle,** and shotgun **would** cost **\$2,133** per year (Wolfe, 1979). This was figured by depreciating the **equipment's current** market **value by its life expect-**
tancy, plus annual maintenance **costs.** Recalculated with 1981 prices,

the cost to own and maintain a full complement of fishing and hunting equipment **totalled** about **\$3,648** per year.

The high food prices at stores in the bush of Alaska are well known. Table 3 illustrates prices for typical food items at a store in **Emmonak** in 1981. Meat products averaged about \$4.62 per pound. (See Chapter 4.)

Because of high costs of imported foods, most families were forced to fish and hunt for food. The limited monetary incomes of a household were not sufficient to enable a **family** to live solely on items purchased from local stores. The most efficient use of limited cash income was to invest a portion into equipment and operating costs for fishing **and** hunting. This money, coupled with a person's labor, produced a higher food return than was possible if an equivalent amount were spent on imported foods (Wolfe, 1979). **For most families on the** Yukon delta, this was the only viable strategy for survival.

Effects of the Commercial Fishery

The commercial export fishery for salmon has developed gradually in the Yukon delta region. As documented by **Pennoyer**, et al. (1965), commercial fishing for salmon was introduced during 1918 when a floating cannery was operated at Andreafsky (St. **Mary's**). A below-normal upriver salmon catch during 1919 was attributed to unregulated commercial fishing and led to a curtailment of salmon fishing for export sale

Table 3

FOOD PRICES AT EMMONAK, JUNE 1981

<u>FRESH FROZEN MEAT</u>	<u>PRICE/LB.</u>	<u>CEREAL PRODUCTS</u>	<u>PRICE/LB.</u>
Chicken legs	\$2.91	Flour	\$.62
Sliced bacon	4.09	Rice	1.06
Beef hearts	4.15	Pasta	1.21
Pork spare ribs	4.69	Pilot bread	1.55
Boiogna	4.70	Corn flakes	2.81
Beef tongue	5.09	Quaker oats	1.47
Salami	5.30	Sandwich bread	1.33
Chuck roast	5.55		
Stew beef	5.65	<u>CANNED VEGETABLES</u>	
Pork chops	5.75	Pork and beans	.80
Beef top round	6.55	Peas	1.01
T-Bone steak	9.65	Corn	.99
New York steak	11.89	Green beans	.98
		Tomatoes	1.07
<u>CANNED MEAT</u>		Carrots	.89
Beef stew	1.70	Chili with beans	1.70
Corned beef hash	1.97		
Meat balls	2.23	<u>CANNED FRUITS</u>	
Vienna sausage	3.04	Applesause	1.19
Light tuna	3.82	Peaches	1.17
Spare	3.95	Pineapple	1.14
Sardines	6.36	Grapefruit	1.25
		Pears	1.30
<u>OTHER PROTEIN</u>		<u>BEVERAGES</u>	
Cheese	3.29	Coffee, ground	4.00?
instant dried milk	2.57	Tea	8.70
Canned evap. milk	.95	Tang	2.22
Eggs, dozen	1.85		
Peanut butter	3.25	<u>FRESH FRUITS AND VEGETABLES</u>	
		Oranges	1.39
<u>OTHER PRODUCTS</u>		Apples	1.59
Sugar	.91	Potatoes	.82
Margarine	1.59	Tomatoes	3.09
Crisco shortening	1.63	Lettuce	1.59
Salt	.42	Carrots	1.29
		Bananas	1.59

between 1925 and 1931. After **1932**, commercial **sales** of **salmon** to outside buyers was reintroduced and gradually expanded under a **monitored** program. The largest commercial catches and sales of salmon have occurred during recent years (ADFG Annual Management Report, Yukon Area, 1980).

The development of commercial **salmon** fishery has occurred in association with other changes in the economy and culture of the region. Some of these associated changes are outlined below--changes **in** demography and the mixed subsistence-market economy. Without firmer historical data, one cannot with confidence document the magnitude of these changes, nor attribute them solely to the development of commercial fishing. Nevertheless, it is probable that these changes in the economy and culture were influenced by the presence of commercial fishing.

First, it is probable that centers of population and locations of commercial salmon processors have exerted reciprocal influences. The largest historic summer population densities occurred along the south pass of the Yukon due to large salmon runs in that area. It was logical that many early commercial firms tended to locate canneries, **salteries, tenders,** and floating freezer ships there also. As commercial firms offered markets for fish and opportunities for seasonal wage employment, they represented a further attraction to the vicinity for fishermen and seasonal workers. This may have led to larger summer populations due to immigration to the vicinity, and perhaps a greater consolidation of the area's winter population. Current firms were

located nearby **large** winter **communities**--Yukon Delta Fish Marketing at **Emmonak**, **Bering** Sea Fisheries and **Schenk** Seafood **Sales, Inc.**, near **Emmonak**, Whitney **Fidelgo** Seafoods near **Alakanuk**, **Azachorak** Corporation Village Cannery at Mountain **Village**, and **Boreal** Fisheries near St. Mary's. Reportedly, the winter population of the north pass (**Kotlik** and historic **Chaniliak** and **Pastolik**) over time have established summer **fishcamps** closer toward **commercial** firms to **enable** fishermen to **sell** fish. Similarly, several fishermen from **Stebbins** and **Scammon** Bay **travel** to **the** Yukon **delta** area to commercial **fish**. This **is** not to say that commercial fish processors were the primary causes **of** the consolidation trends of the summer and winter populations. Other institutions such as public **schools, churches, retail** stores **also** attracted **people** and perhaps were of' greater importance.

The commercial fishery **also** caused a certain degree **of** summer immigration **from** outside the region, although not **nearly** to the extent of the fishery at Bristol bay. The Yukon delta fishery manpower predominantly were of **local** origin during 1980-1981. Three of the largest firms (Bering Sea fisheries, Inc., Whitney **Fidelgo** Seafoods, and Schenk Seafood **Sales, Inc.**) imported a major portion of their work forces. Some workers in the other processors as mentioned **previously**, came **from** outside the **region** for **summer** employment. Other summer immigrants were **Fish** and Game biologists monitoring and managing the **fishery**, and Fish and **Wildlife** Protection officers.

A second category of effects of the development of the **commerical** salmon fishery are economic changes. As mentioned previously, the **commerical** fishery has become a constant source of monetary income to the area. For most households, the money was used for both investment capital into subsistence fishing and **hunting**, and as money for **pur-** chasing basic supplies such as imported food, clothing, heating oil, and other household goods. The large output of subsistence foods in the region today (documented in Chapter 4) was supported by the development of income from commercial fishing.

The commercial fishery offered limited seasonal wage employment opportunities. Processing jobs such as hauling, **cutting**, icing, or canning salmon primarily attracted young **adults** in the late teens and early twenties, especially females. Assembly line processing jobs were not considered to hold as high prestige as fishing nor did they pay as much. The Village Cannery at Mountain Village reportedly had to hire nonlocal workers because summer fishing attracted most of the local labor force. Adult men tended to hold the managerial and supervisory positions in the **firms**. Collector boats generally were piloted by Young adult men. As most jobs related to the commercial buying and processing of fish did not offer as much potential income as fishing, most were held by persons who could not **commerical** fish, especially persons without commercial limited entry permits. It can be predicted that these limited job opportunities will be more in demand in the future as the **region's** large population of children reaches adulthood

without opportunities for many to **obtain** commercial limited entry permits.

One potential limitation **with summer** wage employment **was** that a person was tied to the winter village during summer, These workers were not as free **to** move to summer **fishcamps** as persons without such employment. **A worker's** time also was taken up **by** remunerative **work**, restricting a person's ability to **catch and** process salmon for subsistence uses. **In general,if** workers were unmarried young **adults**, these restrictions on mobility and time did not reduce a householders capacity to subsistence **fish** during summer. As illustrated **in** the eases **in** Chapter 2, some households at **fishcamp left** children at the main **village** working at commercial firms. Another strategy **was for** men to **fish** at a **fishcamp**, **while** the remainder of **the** household remained **at** the winter **village**. **Thus, while** a household could maintain its subsistence output, there was some cost **in** the form of temporary **separation of** household members. When an **adult** married and/or assumed a **major role in** the harvesting and processing of salmon for the household **unit**, the ability to coordinate the work demands of summer wage employment with those of subsistence fishing becomes increasingly difficult. **It** seems likely that **older** married adults tended **to quit** processing **jobs** because *of this competi-*
tion with the subsistence needs of the **family**.

Most **income** from the commercial fishery entered the regional economy through the fishermen **with** commercial fishing permits who caught **salmon** for **sale to** processors. As indicated **earlier**, commercial **salmon**

fishing had become well integrated with the historic pattern of fishing and hunting for **local** consumption. Fishing was a traditional summer economic activity and fishing for **commercial** sale did not represent an occupation competing with or redirecting the summer economic focus of producers.

A major influence of the commercial salmon export industry on the subsistence fishery has been in terms of increased regulations of salmon fishing. A complex system of regulations to limit commercial harvests has supplanted the traditional autonomy of the Yukon delta fisherman. Previously, the times fished and quantities taken were self-regulated by a production unit, usually consisting of an independent nuclear or extended kinship group. Under present regulations, the previously independent **Kwipagmiut** fisherman was drawn into a larger system whose components, still the producing kinship groups, were interrelated. The harvest level of the entire system was monitored and regulated by state fish and game personnel. The harvests of a neighbor could affect **one's** own by influencing short term quotas and the lengths and times of open fishing periods.

Since the 1930s, the **Kwipagmiut** salmon fishing activities have been constrained by legal regulations. Fishing regulations have placed limits on the size of commercial catches and lengths of open fishing periods. Before 1961, fixed quotas were established to set a ceiling on the seasonal take of commercial salmon for export. Quotas were eliminated in 1961 for a more flexible system of scheduled weekly

fishing periods. During 1980 to 1981, fishermen were cognizant that open fishing periods had shrunk over time. During 1981, fishing was restricted to only two 24-hour open periods per week for most of the season. Whereas in the past subsistence fishing could occur at any time, now it was restricted to 48 hours a week.

The schedule of periods has tended to mold fishing activity into relatively short bursts of concentrated effort rather than moderate effort extended over a longer time frame. As it currently operated, the short time periods seemed to give advantage to fishermen capable of rapid mobility and short term, high level labor expenditures. Rapid mobility allowed fishermen to relocate from unproductive to more productive sectors of the river during an open period. Drifting was the preferred harvest method for a highly mobile fisherman if river conditions permitted. Set net locations fostered sedentism (see Chapter 8). One negative aspect of high mobility and drifting as a technique was increased monetary costs in gasoline and equipment wear in comparison with set netting. Thus, potentially higher harvests were offset to some extent by increased expenses.

The shorter open periods clearly have influenced summer residence patterns of some households, as illustrated in Chapter 2. Within certain households, only male fishermen established residence at fishcamps during open periods, returning to the winter community during closed periods. In other households, considerable movement occurred

between summer **fishcamps** and winter communities during extended **closed** fishing periods.

Other regulatory constraints in addition to fishing periods included restrictions on **gill** net mesh size, net lengths, and net locations. By and large, these regulations seemed to be understood and followed by most fishermen. Nevertheless, increased regulation has **led** to explicit comparisons of local **fishermen's** perceived interests with outside interests. Poor fishing seasons commonly were attributed by fishermen to fishing regulations, especially to closed periods which allowed what were perceived to be substantial runs of fish to escape upriver,

Geographic Patterns of Resource Utilization

Utilization of local resources of the land, rivers, and the sea was the foundation of the economy of the Yukon **delta** region. This section presents information illustrating some of the geographic locations of harvest efforts by a sample of **Kwikapmiut** and **Tapraqmiut** households during the period June 1980 to May 1981. The purpose of this section is to describe in general terms some of the geographic domains utilized by the people of the Yukon **delta** region in economic production,

Information concerning the geographic locations of fishing, hunting, trapping, and food gathering activities was gathered during systematic discussions with a sample of Yukon delta households (see Chapter 4 for sample characteristics and selection procedures). As part of extended

discussions **about fishing, hunting, trapping,** and food gathering activities, household heads were asked **to indicate on United States Geological Survey topographical maps areas in which they fished or hunted for** particular food resources during **the** previous year. This information has been compiled and summarized in **the** following maps to illustrate areas utilized by particular individuals **in** certain economic activities during the previous year. The information **should** not be considered a complete, or exhaustive **depiction of land, river, and sea use patterns** by **people** in the region. Instead, the maps **only** illustrate some of the fishing and hunting locations of a **sample** of household heads, and their **families,** during a one-year period. According to the reports of residents, certain **fishing, hunting, and trapping** locations commonly change from year to year. Consequently generalizations made from this limited data base must be considered tentative and merely suggestive of **land, river, and sea use patterns** in the study area. Mapping of resource uses stretching farther back than one year might reveal substantially wider **land** use patterns, as might mapping of future resource use patterns longitudinally.

Salmon Fishing Locations

The general areas within which **salmon** was harvested by fishermen **from Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins** during the summer of 1980 are depicted **in Figure 6.** The figure illustrates that the entire length of the Yukon River within **the** study area, from the coast upriver about 100 **miles,** was fished to some extent

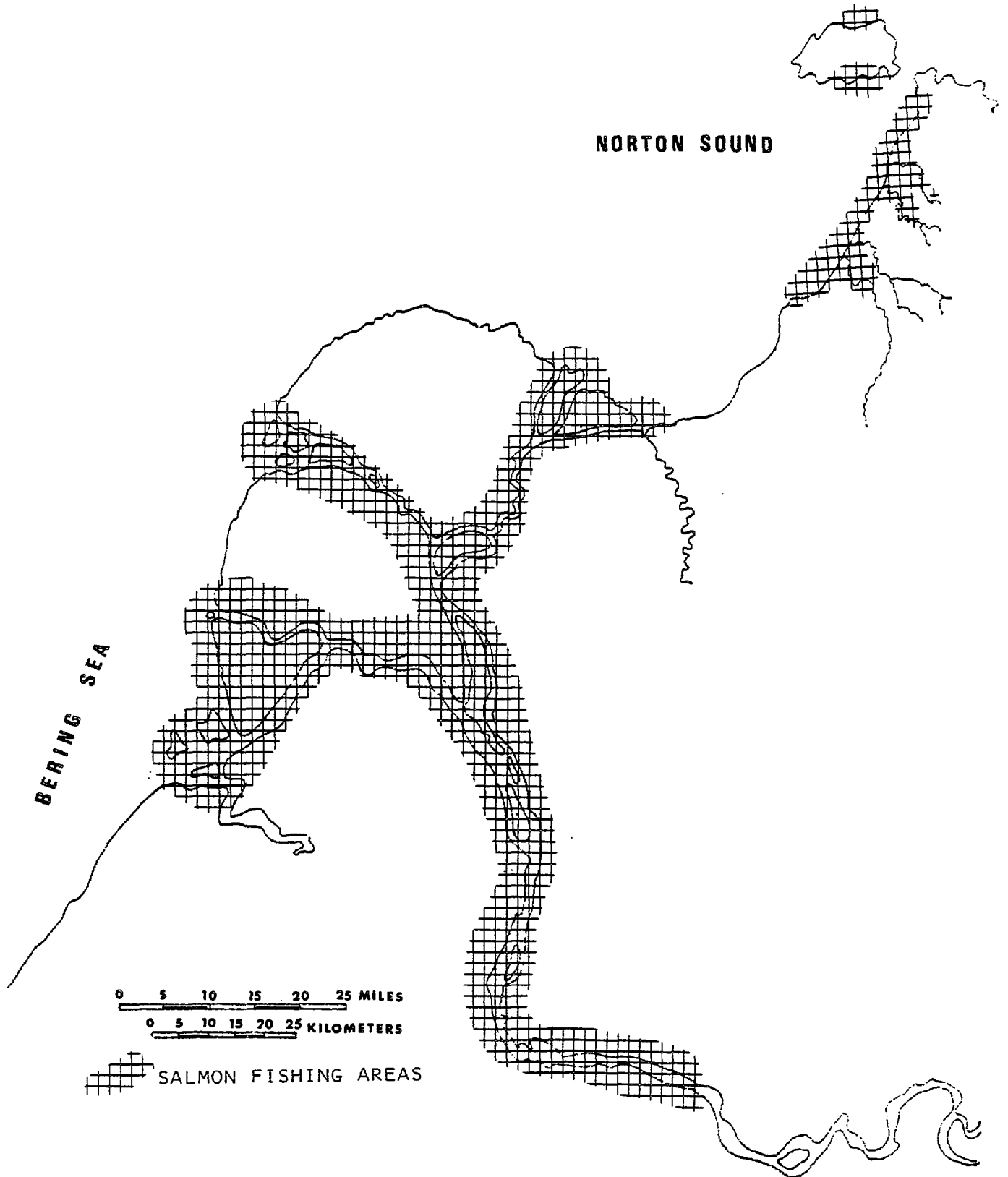


Figure 6. Approximate areas for salmon fishing during 1980 by residents of Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins

for salmon. As discussed in Chapter 2, the region's population dispersed during summer months along the banks of the main rivers, sloughs, and distributaries of the delta to harvest migrating salmon. Fishing effort typically occurred near a fisherman's fishcamp; thus the locations of fishcamps are good indicators of the areas fished. Nets were set at the mouths of the delta's three major passes, the Kwikluak, Kwikpak, and Apoon, and smaller passes, Kwemeluk, Alakanuk, Kwiguk, Kawanak, and Okwega. In past years, the Bugumowik Pass was also fished. Drifting gill nets was more frequently done upriver away from the coast, especially along the main river upriver from the head of the three main Yukon delta passes.

Fishermen from Stebbins placed nets along the coastline of southern Norton Sound, from about Point Romanof north to Stuart Island. Nets were placed along the coastline of Stuart Island as well. Rivers harvested for salmon in this region included the Pikmiktalik, Nunavulnuk, Kogok (Nunakok), and Kuiak.

It should be mentioned that salmon fishing near the mouth of Black River (Kipneak) by Scammon Bay fishermen, and fishing upriver from the study area, are not depicted in Figure 6.

Seal Hunting and Belukha Hunting

Two major geographic patterns existed for seal and belukha hunting in the region, a "fall" pattern and a "spring" pattern, depicted in Figures

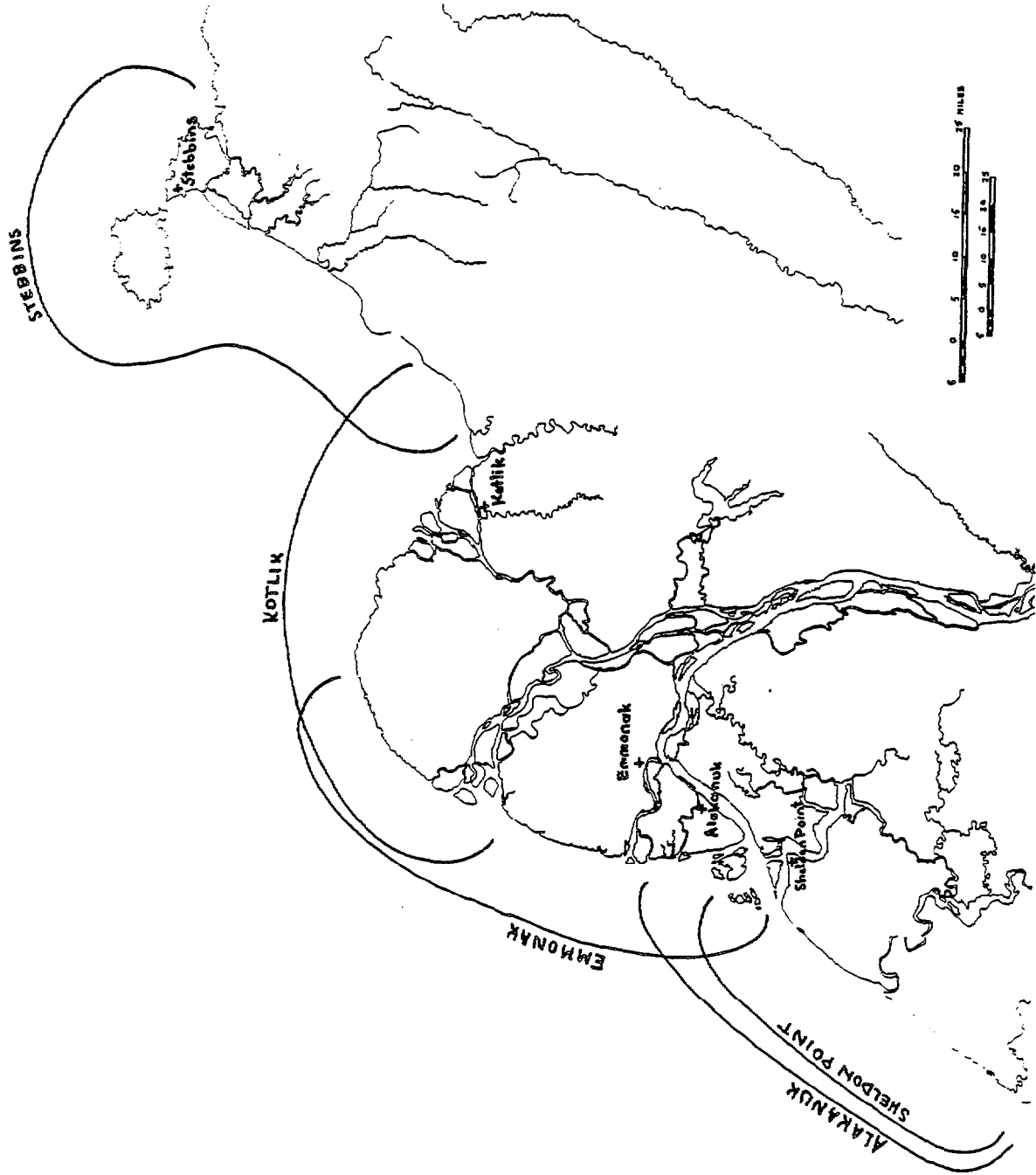


Figure 7. General fall seal and belukha hunting areas during 1980 for hunters from Alakanuk, Emmonak, Kotlik, Sheldon Point, and Stebbins, from a sample of 72 households

7 and 8, respectively. During late summer and fall, before the freezeup of the Yukon or coastal waters, hunters searched for seals and belukhas by boat along the coasts surrounding their winter communities. The general areas covered during "fall" are shown in Figure 7. In general, Stebbins hunters covered the area from about Egg Island southwest to the Pastolik River mouth, including the area surrounding Stuart Island. Kotlik hunters typically hunted from about Coffee Point west to the middle mouth. Emmonak hunters covered the area from north of middle mouth south to Flat island. Some Emmonak hunters traveled as far as Black River to hunt. Alakanuk hunters searched for sea mammals from just north of Alakanuk Pass south to the mouth of the Mukunoaliwik River. Sheldon Point hunters covered the area from about Flat Island south to the Mukunoaliwik River. Searching for sea mammals frequently took hunters 10 to 15 miles from shore, beyond the sight of land.

In addition to these coastal waters, seals were harvested in the Yukon River. Mountain Village hunters watched for seals swimming in the rivers, and during fall, frequently traveled to the coast to hunt seals. Of sixteen households questioned, nine captured seals during 1980--two on the main Yukon River, three at middle mouth, two at Kotlik, one at Scammon Bay, and one at Hooper Bay (see Chapter 7).

During late winter and spring, hunters for seals usually traveled directly out from their winter villages onto the shore-fast ice pack to open lead areas. Seals were harvested along the edge of the ice pack, as depicted in Figure 8. The edge of the fast ice area varied, but

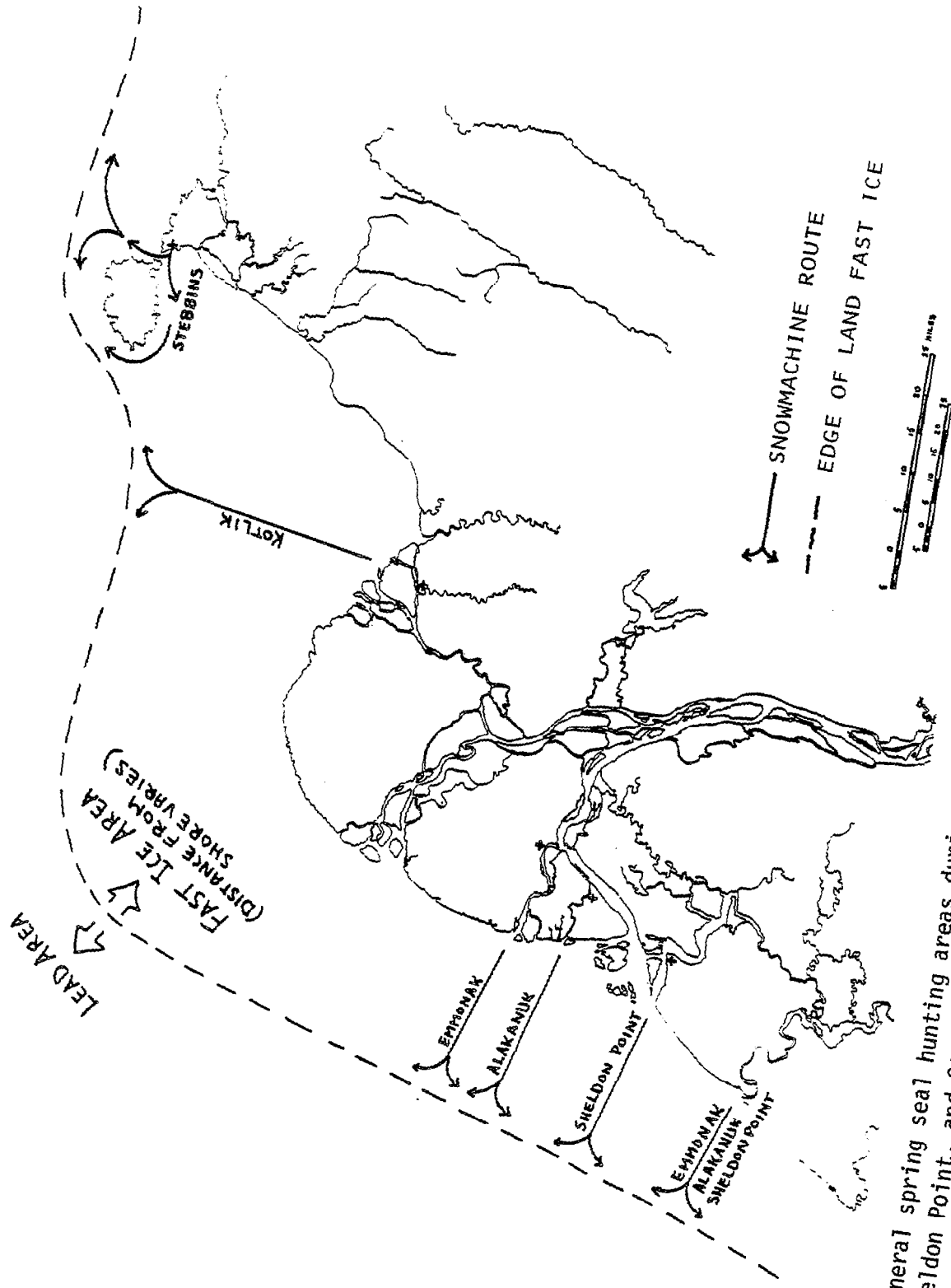


Figure 8. General spring seal hunting areas during 1981 for hunters from Alakanuk, Emmonak, Kotlik, Sheldon Point, and Stebbins

hunters stated that distances were not uncommonly 30 to 40 miles from the Yukon delta coastline. Stebbins hunters usually did not have to travel as far to encounter open water. During spring, hunters from Emmonak, Alakanuk, and Sheldon Point sometimes searched for seals off the mouth of Black River.

Non-salmon Fish Species

Figures 9 to 17 depict the fishing locations for certain non-salmon fish species for the period June 1980 to May 1981, of a sample of households from each winter community. The map notes general locations where a net, trap, seine, or other fishing gear was utilized at some point during the previous year by a household. Most fishing effort for non-salmon fish species occurred near the winter villages. Exceptions included pike fishing near Kusilvak Mountains (Figure 16), and whitefish fishing along the Black River (Figure 14 and 17). In general, nets for sheefish, smelt, lamprey, and burbot were used in the main Yukon River passes; nets for broad whitefish were placed on rivers or sloughs draining into the main Yukon (except at Mountain Village where they were placed on the main river); nets for small whitefish were placed on or near small rivers draining into the ocean (except again at Mountain Village); and blackfish traps were set in tundra lakes and streams.

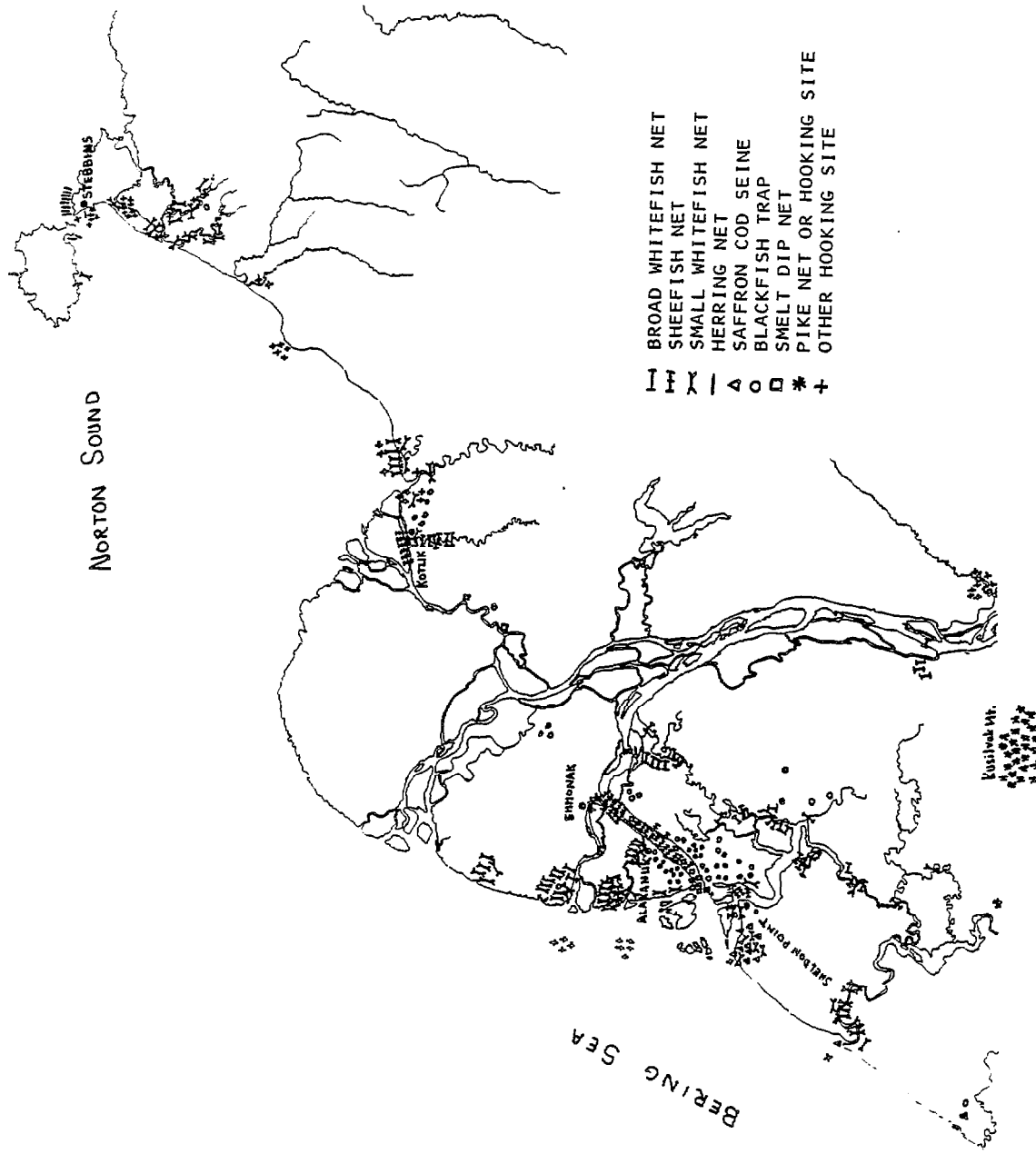


Figure 9. Fishing locations for non-salmon fish species, June 1980-May 1981, based on a sample of 88 households from Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins. (Mountain Village locations partially shown. See Figures 10-17.)

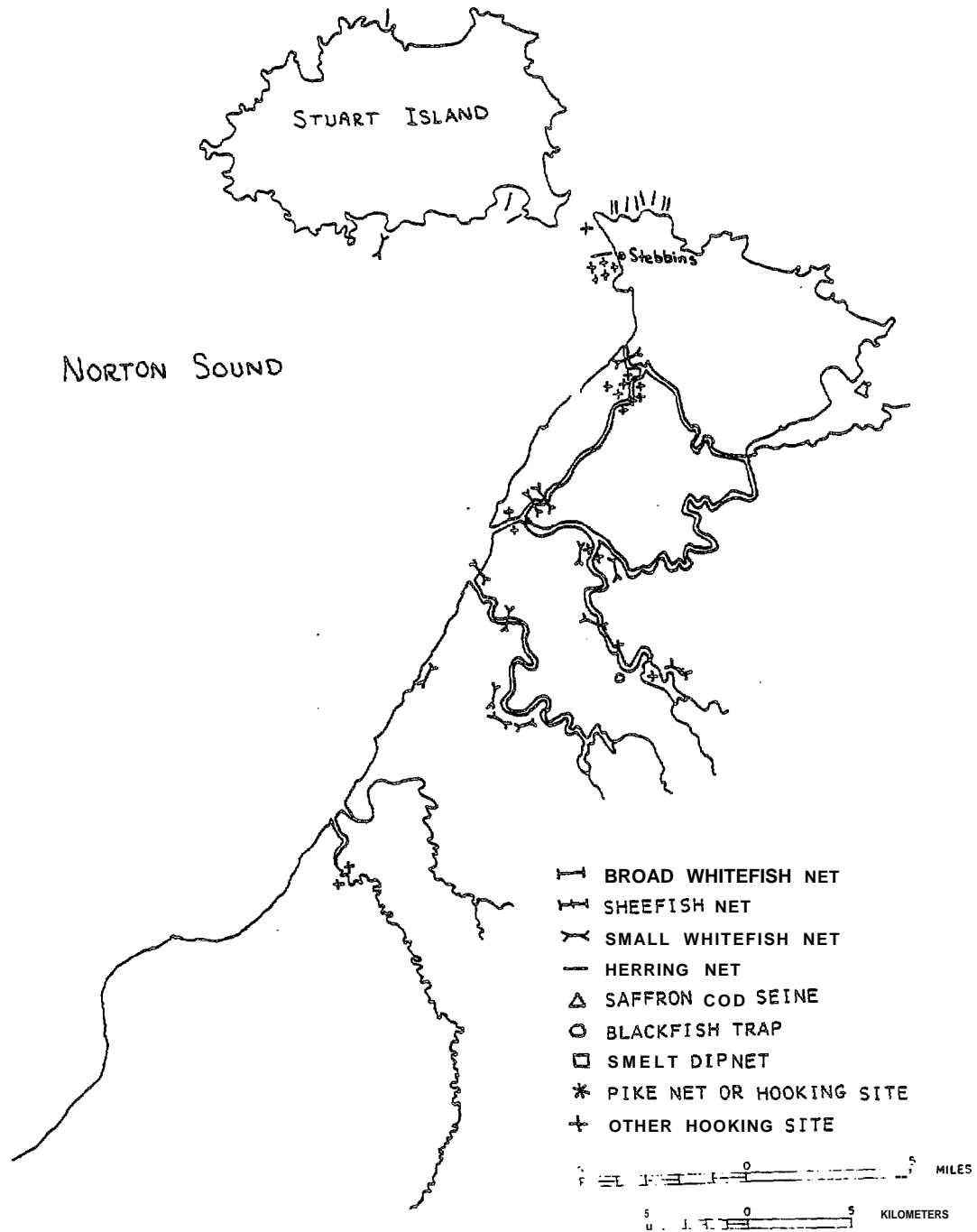


Figure 10. Fishing locations for non-salmon fish species, June 1980-May 1981, of a sample of households from Stebbins (n=12)

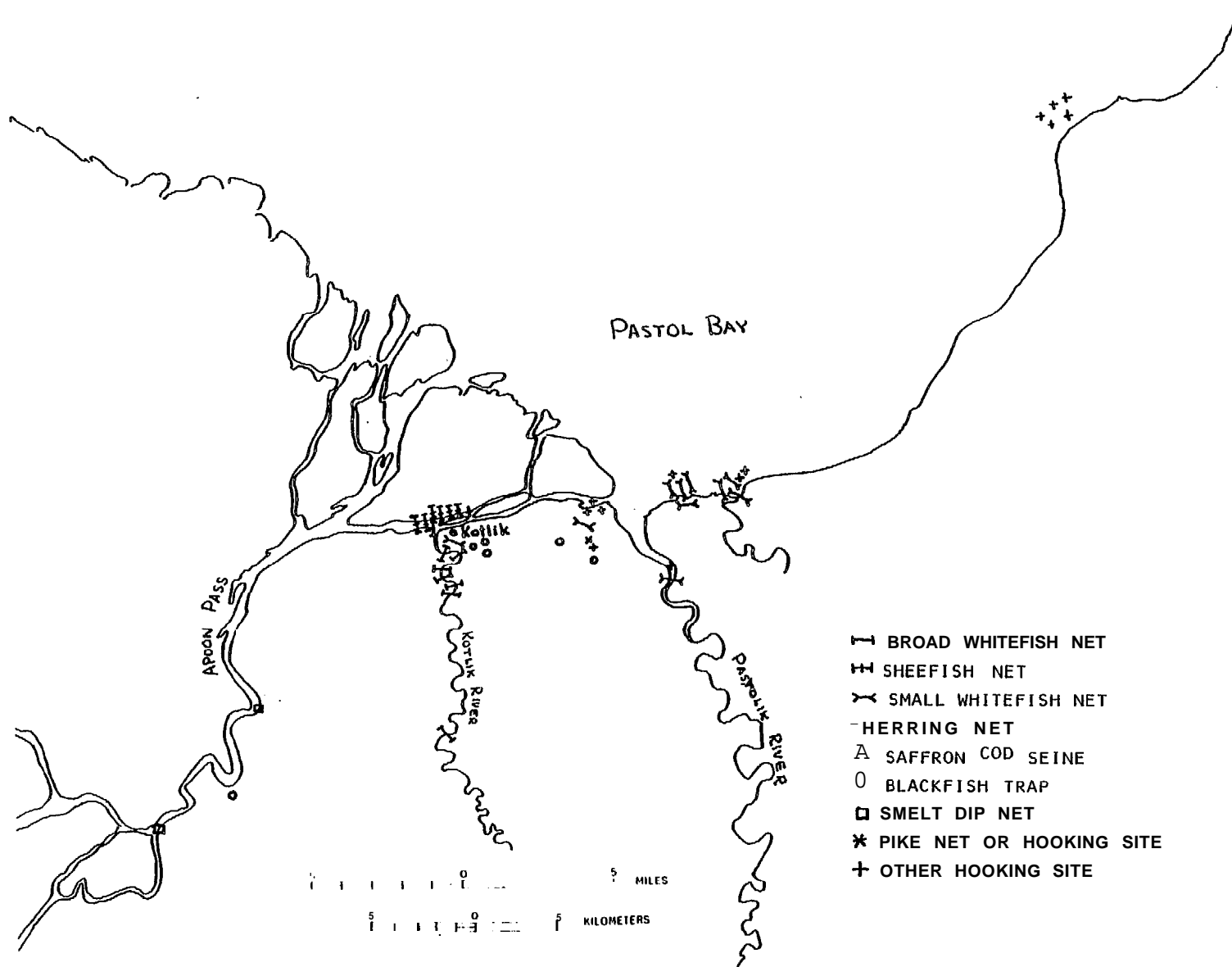
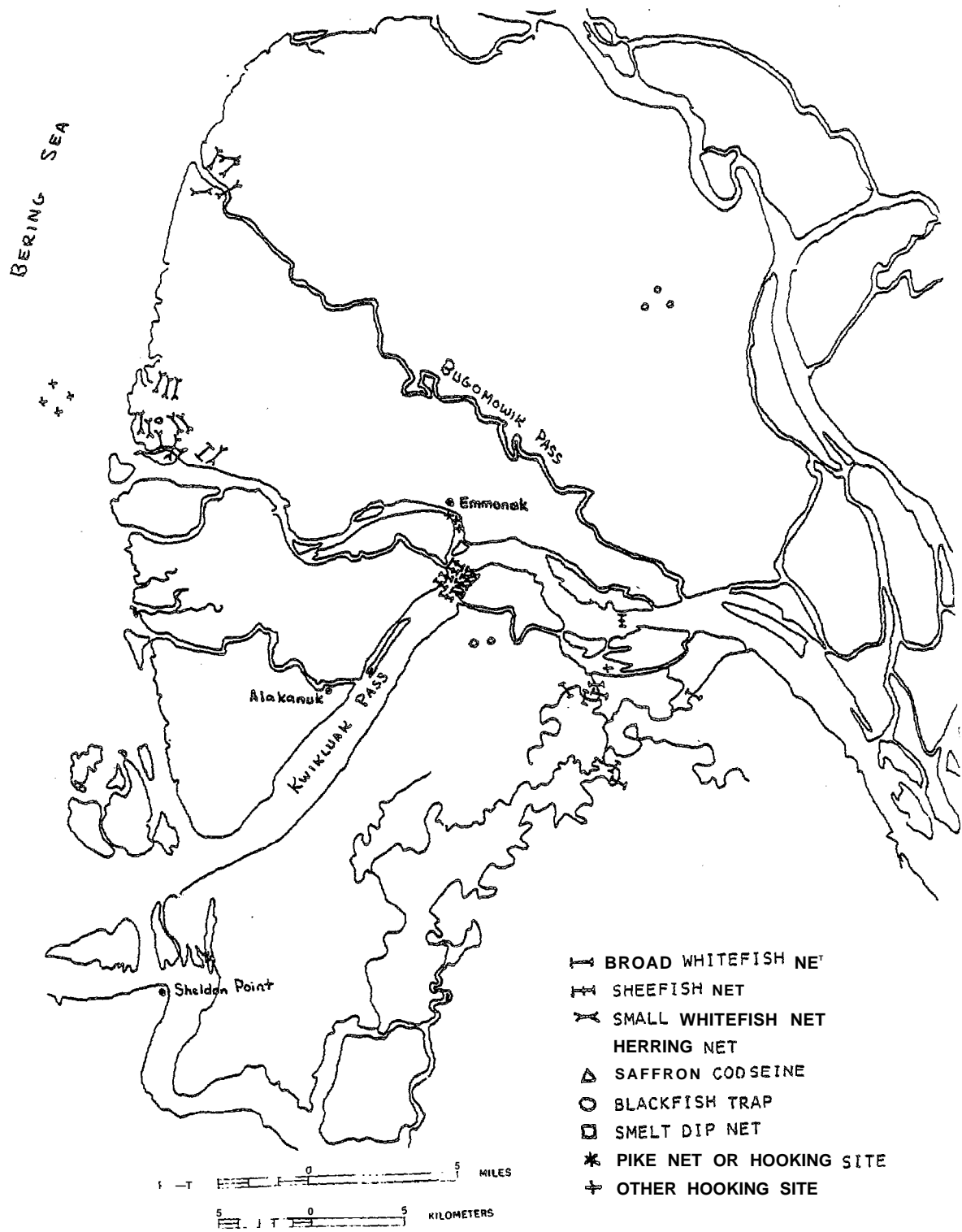


Figure 11. Fishing locations for non-salmon fish species, June 1980-May 1981, of a sample of households from Kotlik (n=14)



June 1980-May 1981,
 Figure 12. Fishing locations for non-salmon fish species,
 of a sample of households from Emmonak (n=18)

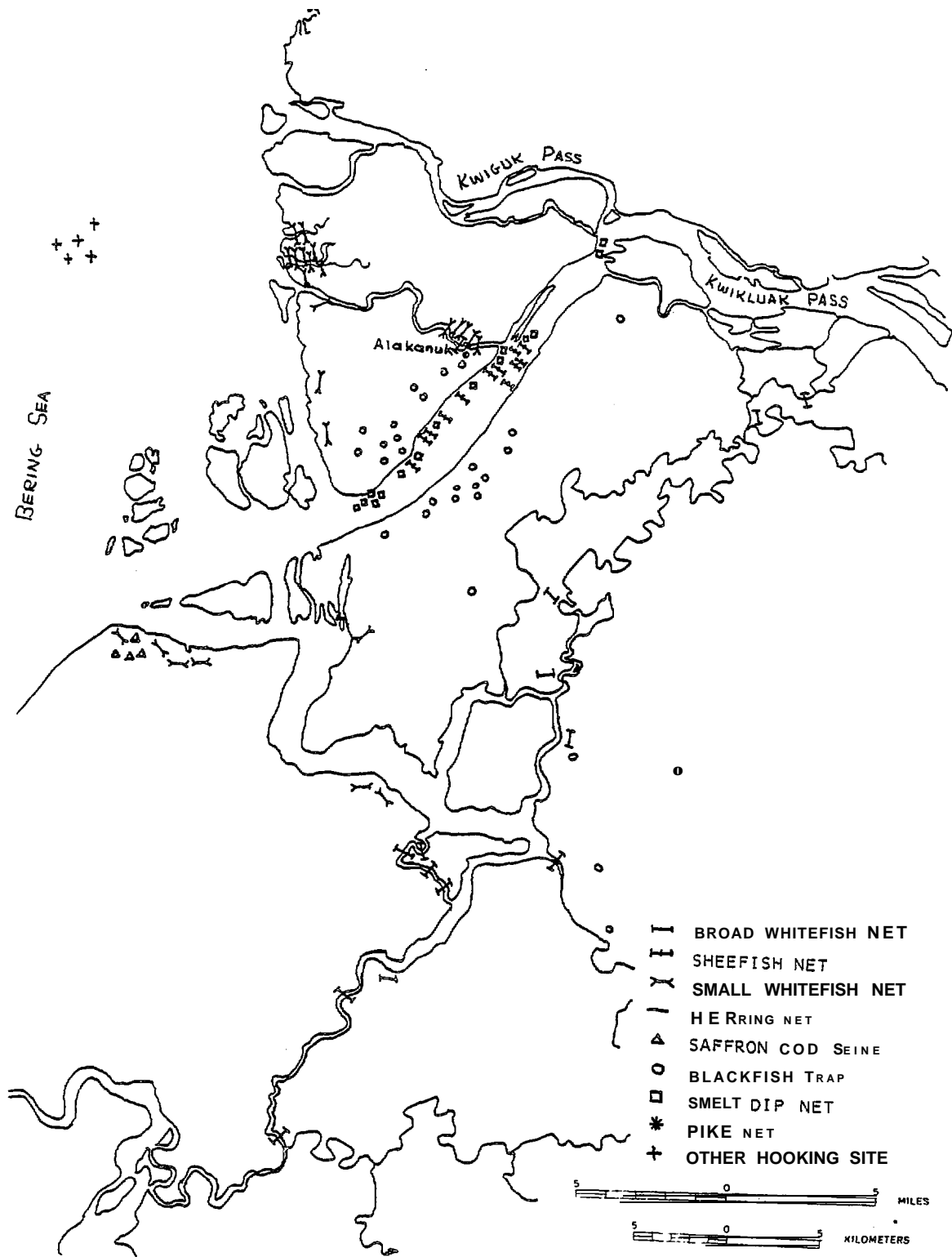


Figure 13. Fishing locations for non-salmon fish species, June 1980-May 1981, of a sample of households from Alakanuk (n=21)

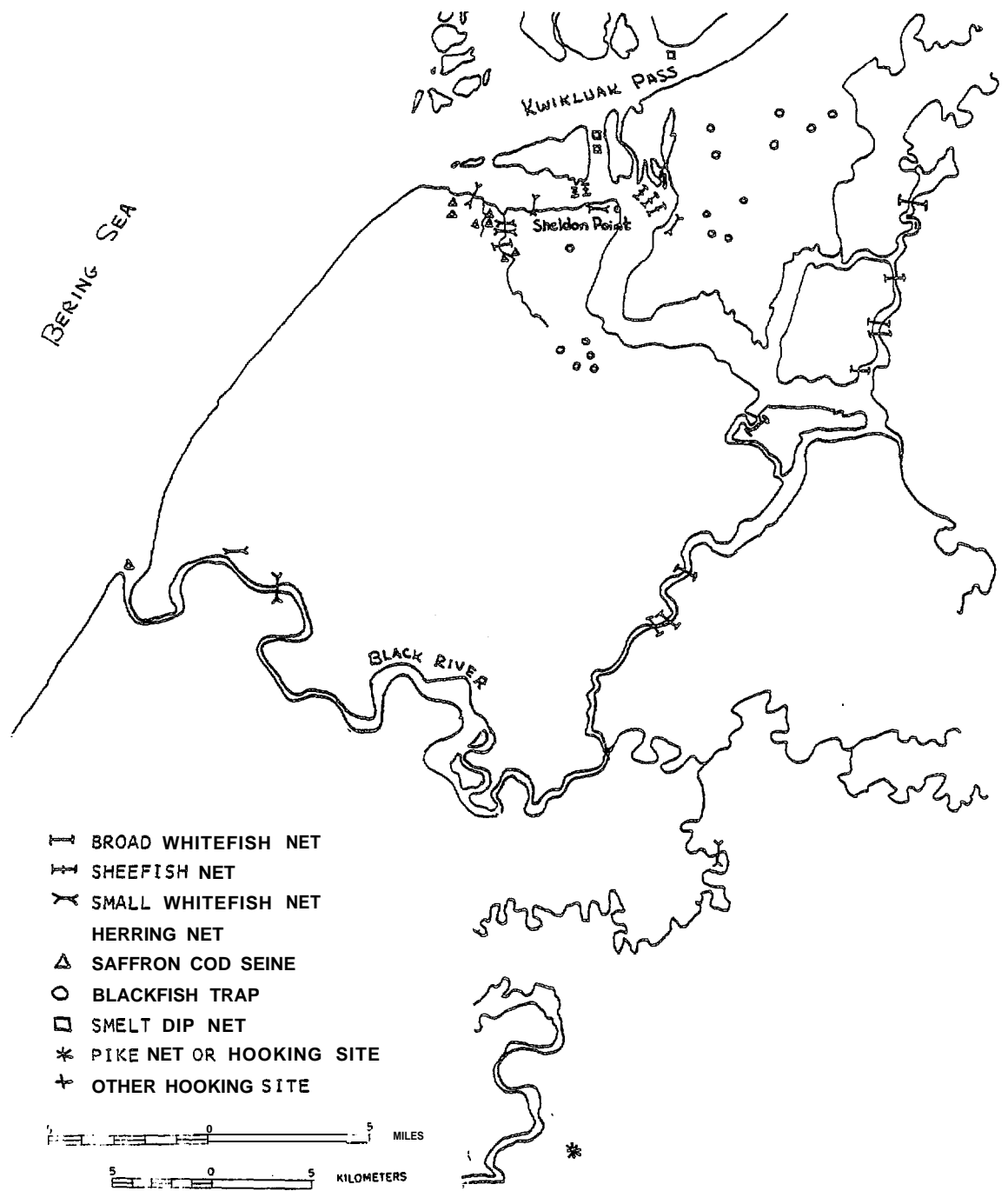


Figure 14. Fishing locations for non-salmon fish species, June 1980-May 1981, of a sample of households from Sheldon Point (n=7)

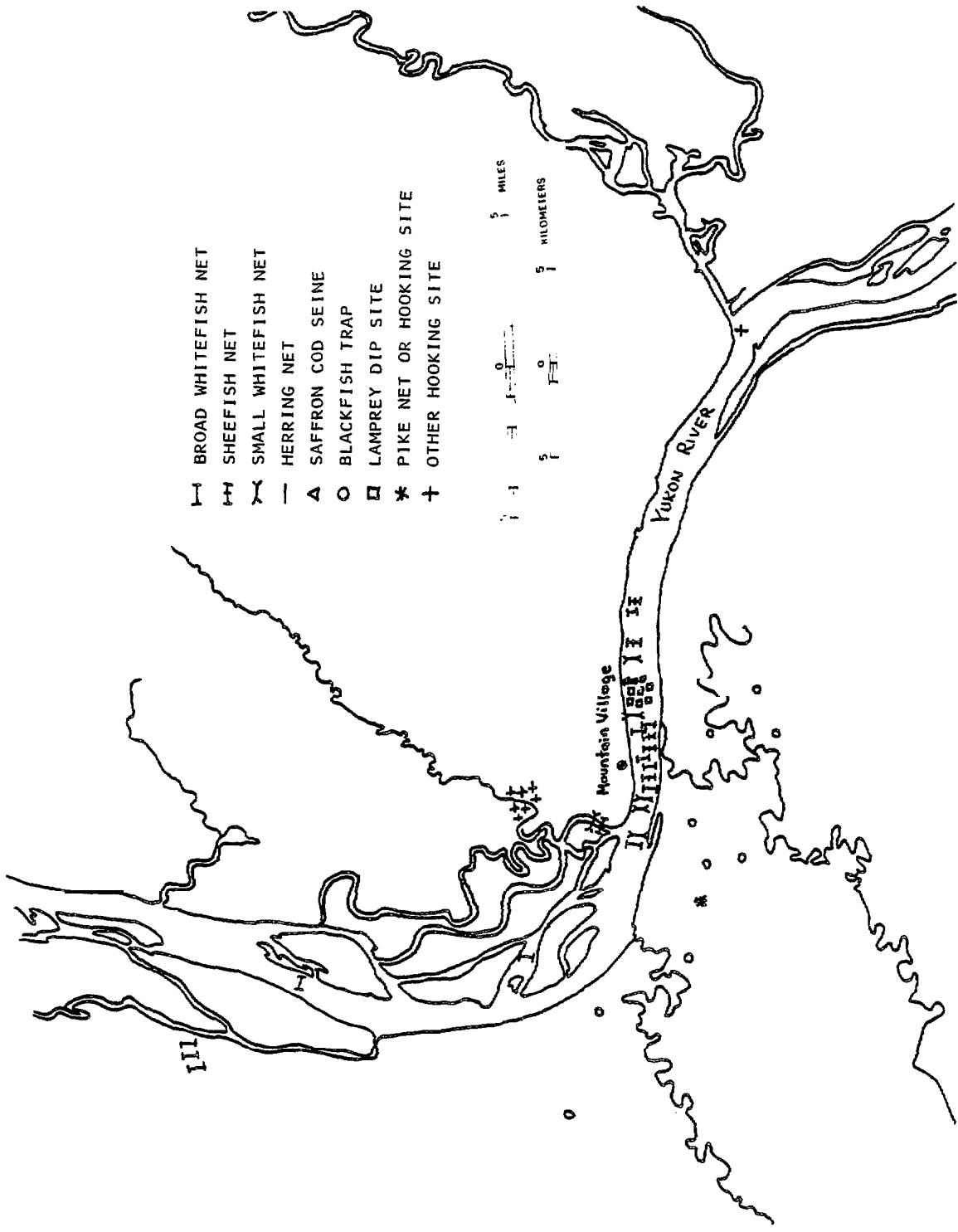


Figure 15. Fishing locations for non-salmon fish species, June 1980-May 1981, of a sample of households from Mountain Village (n=16)

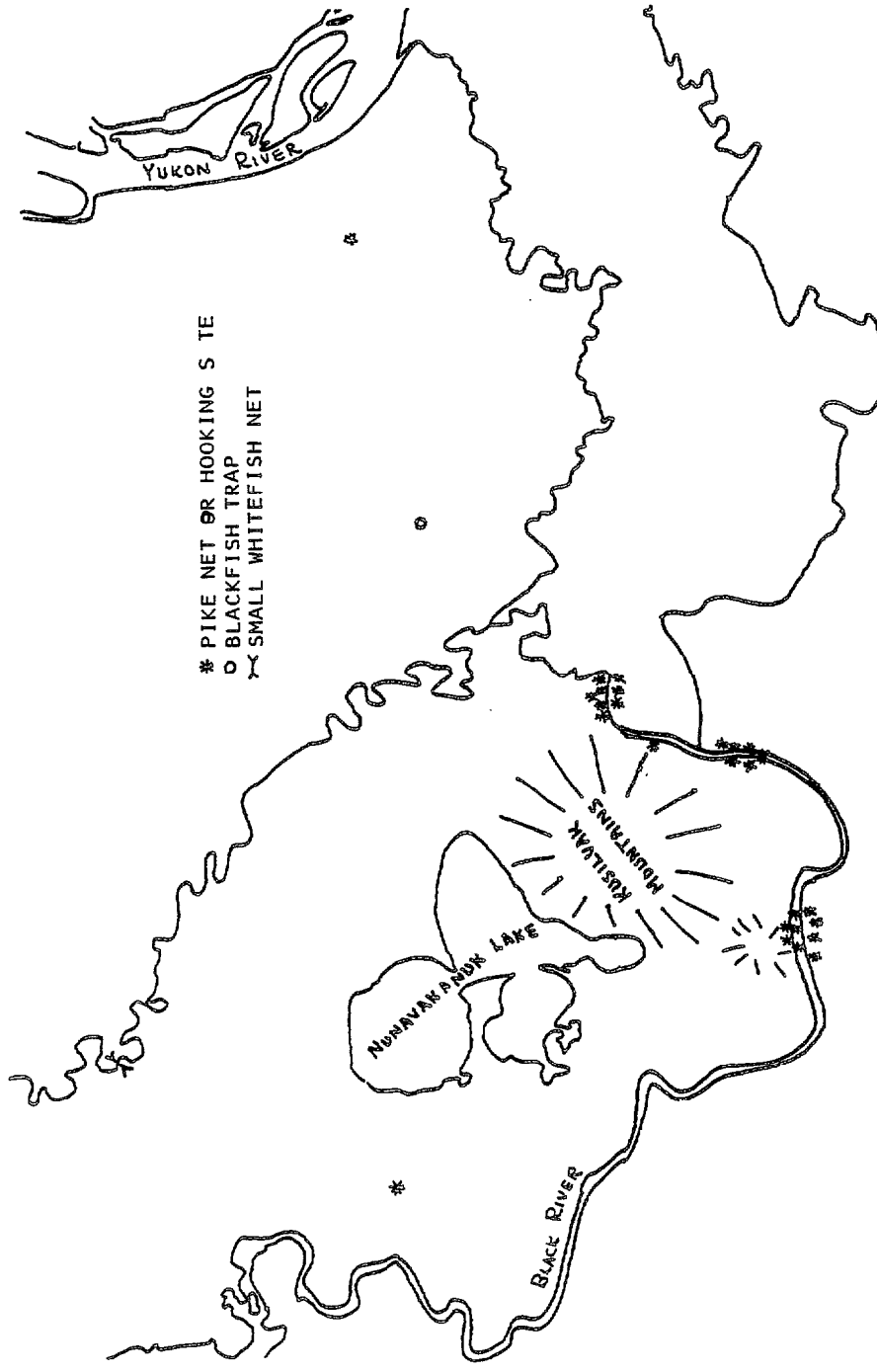


Figure 16. Fishing locations for non-salmon fish species in the Kusilvak Mountains region, June 1980-May 1981, of a sample of households from Emmonak, Alakanuk, Sheldon Point, and Mountain Village (n=62)

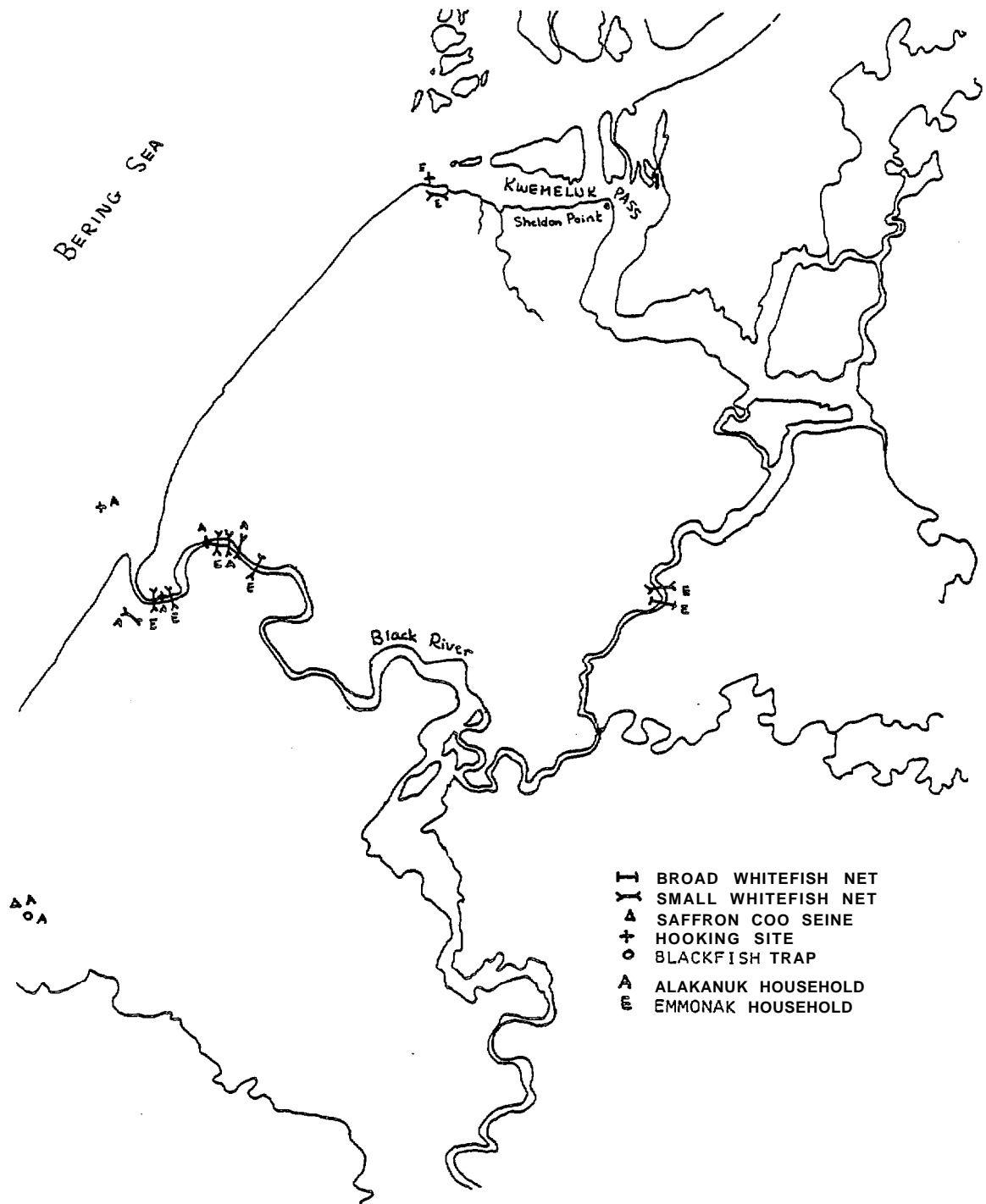


Figure 17. Fishing locations for non-salmon fish species, June 1980-May 1981, not depicted in Figures 10-16.

Waterfowl, Land Mammals, and Fur Bearers

The **hunting** areas for waterfowl **land mammals**, and **fur** bearers could not be depicted adequately on maps from the methodology utilized in this study. During 1980 to 1981, **Kwikipagmiut** and **Tapraqmiut** hunters typically hunted these resources over large and variable areas within the region. Precise boundaries of these economic activities were not easily identifiable on topographic maps, so it was considered inappropriate to attempt to map them. **In general**, waterfowl **land mammals**, and fur bearers were hunted by **Kwikipagmiut** throughout the **lowlying** areas of the Yukon **delta** region. This encompassed an area bounded by the **Black** and **Kasunok** Rivers to the south, **Paimiut Slough** to the east, and the **Andreafsky** Mountains to the north. Hunting for **land** mammals at times brought Yukon **River** residents into the **Andreafsky** Mountains. **Waterfowl**, **land** mammals, and fur bearers were harvested by the **Tapraqmiut** of **Stebbins** on **Stuart Island**, the **lowlying** coastal tundra from **Stebbins** south to about **Point Romanof**, and the **Andreafsky** Mountains to the south, including the **Gosolvia** River drainage, east fork of the **Andreafsky River**, and the upper reaches of the **Pikmiktalik**.

Geographic Characteristics of Resource Utilization

Despite the limitations of the geographic data in terms of **sample size** and **time depth**, some tentative generalizations can be advanced concerning the geographic patterns of resource use in the **Yukon delta** area.

1. Collectively, the fishing and hunting activities of the six villages in the study area covered the entire Yukon delta region. From the areas utilized by the sample of households during June 1980 to May 1981, apparently most or all of the lands and waters of the Yukon delta region were utilized for the harvest of economic resources at one time or another during the year.

2* Several important economic resources within the region were harvested directly from or near to ocean waters. These resources included king, chum, and coho salmon; herring; bearded, ringed, and spotted seals; **belukha** whales; and saffron cod.

3. Other **important** economic resources were harvested from land areas or waterways within the coastal fringe of the Yukon delta. These resources included **sheefish**, Bering **cisco**, **burbot**, broad whitefish, **blackfish**, migratory waterfowl, sea **birds**, mink, muskrat, and land otter.

4. Seal hunting activities, especially during spring, were conducted frequently 30 miles out into the ocean. This suggests that conceptualizing the economic region as being bounded by the coastal shoreline is incorrect. The actively utilized economic region includes land-fast ice and lead areas extending out from the shoreline 30 to 40 miles.

5. Because of their geographic **ranges**, most **major** economic activities in the region were **influenced** directly by conditions within the **region's oceanic, riverine, and** coastal **tundra** environments. Changes occurring within these environments **could** be expected **to** have direct and immediate effects upon the major economic! activities of the region.

CHAPTER 4

SUBSISTENCE AND COMMERCIAL HARVESTS IN THE YUKON DELTA REGION, JUNE 1980 - MAY 1981

As described in Chapter 3, the **Kwikipagmiut** economy was a diversified and flexible pattern of fishing, hunting, and marketing activities. The **Kwikipagmiut's** primary food resources, king and chum salmon, locally supplemented with seal, **belukha**, waterfowl, whitefish, and other fish **species**, were harvested for both local consumption and market sale. The **Tapraqmiut's** economy in addition included the harvesting of herring, littoral sea products such as seabird eggs, clams, and roe on kelp, and walrus. In the contemporary economy, the hunting, fishing, and marketing sectors were interdependent: success in one sector facilitated success in the other for producing households.

This chapter provides quantitative data that illustrate the high dependence of the **Kwikipagmiut** on the fishing, hunting, and marketing of local resources from the land, rivers, and sea. The chapter presents harvests by a sample of households for local consumption and exchange and for export sale during a year's **period**, from June 1980 to May **1981**. These data should complement the general descriptive information on the **Kwikipagmiut** economy within the previous chapter. Whereas Chapter 3 described the general seasonal round of economic activities, this

chapter estimates actual **levels** of economic output for a single **year's** time **by a** sample of households.

A cautionary note must be sounded before **the** quantitative information is presented. The seasonal round of economic activities within the **Kwikipagmiut** region was neither a certain **nor** invariable pattern. From one year to the next, the relative abundance of important migratory species such as **salmon**, seal, and whitefish cannot be predicted with any assurance. Nor can the vagaries of weather **which** may curtail **or** disrupt harvesting and storage activities **be** predicted, **Consequently**, the types and quantities of resources taken by a household **typically** vary yearly. When one resource **fails**, others have **to** be taken in **larger** quantities to **make** up deficiencies. A **producer**, by **necessity**, had to remain somewhat flexible and opportunistic **in** his economic pursuits.

The period June 1980 to May **1981** was an atypical year for the Yukon **delta** study area in one central respect. **The** locations and strengths of the 1980 **salmon** runs were unusual. As is discussed **later** in this **chapter**, abnormally large runs of salmon **entered** the Yukon River through the middle and north **passes**, while correspondingly smaller runs entered through the south passes. Consequently for certain communities like **Kotlik** and Mountain Village, **salmon** harvests reportedly were unusually **high**, while at **other** communities like **Alakanuk** and **Emmonak**, **salmon** harvests reportedly were **poor**. The **relative** success of commercial and subsistence salmon fishing during summer undoubtedly influences a household's subsistence fishing and hunting choices the remainder of **the**

year. Because of the unusual salmon harvests for certain families during the summer of 1980, one might expect uncommon patterns of **utili-**zation for certain other resources. There currently does not exist enough data to depict how harvest levels of salmon influence harvest levels of other kinds of resources, or of other economic decisions of producers in the Yukon delta region. A variety of theoretical **hypothes-**es can be **advanced**, but assertions about causal interactions would be mere speculation until more complete data have been collected on the economic systems in the region.

Thus, the harvest figures for the sampled households during June **1980** to May **1981** should not be taken to represent a fixed index or measure of food and monetary output for the **Kwikipagmiut** region. The quantities of food harvested may be typical of food harvests some years, but not typical for harvests other years. Only longitudinal information can demonstrate the degree of variation in production output from year to year in the region. The substantial degree of variation between communities on the delta for the study year provides ample support for assuming a cautionary stance in interpreting economic data representing only a single year's activity.

Methodology

The goal of this portion of the study was to generate some systematic information concerning subsistence harvests by households from each of the six study communities. Some quantitative estimate of the amounts of

food produced by families within the region was a desired end. Given **the** time restraints of the **study**, a retrospective design based upon **verbal** reports of household heads **was** chosen **as** a feasible data **gather-**
ing approach. A sample of households was selected for **systematic, in-**
depth questioning **concerning** food output during the past. **year**. The sample was selected in this manner. A **complete** list of households within each community was developed from one **or** several residents who were knowledgeable about their community and its **fishing, hunting,** and marketing economy. The **local** experts were directed to indicate which households they felt should be spoken with concerning fishing and hunt.
ing in this community. The reason presented was for gathering accurate and complete information on fishing and hunting in the area.

The researcher attempted to contact and speak with each of the **house-**
holds indicated. From all **appearances**, some of the households represented persons currently involved in fishing **and** hunting to a **signifi-**
cant degree, **while** others represented persons considered knowledgeable about fishing and hunting, although perhaps not currently involved in
it, such as elderly men and women. **In** addition to contacting these households other households were consulted selected to represent as broad an age and income range as possible **within the** community. This
latter group comprised a **sample** of convenience. **Using** this selection **approach**, the researcher set a **20** percent **sample of** households within each community as a projected **goal**.

Table 4 shows the number and percent of households identified and contacted within each community. AS can be seen, out of about 425 identified households, 88 received in-depth questioning about fishing and hunting the past year representing a 20.7 percent sample. Community samples ranged from as **low** as **16.7** percent at Mountain Village, to a high of 30.4 percent at Sheldon Point. Table 5 depicts the means and standard deviations for household size and age of household head for the sampled households. Mean ages tended to be in the mid to late **40's**; mean household sizes were about six persons per household.

As was discussed in Chapter 1, the non-random selection of the sample of households cautions against generalizing harvest and income data to **typify all** other households in the Yukon delta area, or generalizing data to represent an estimate of total harvests in the region. The selection technique probably injected certain biases into the sample composition and distortions in the harvest data. First, the average age of sampled households heads is probably higher than the average age of household heads for the region. Production outputs of particular food species are affected by age, as is discussed in this chapter, so the relatively older sample of households heads will influence the average output **levels** for particular species. Second, relatively successful households in the economic system are probably overrepresented in the sample. Successful households are those which produce comparatively higher subsistence and monetary incomes than others in the community through a combination of factors such as skill, hard work, job opportunities, good health, and good fortune. By being overrepresented in

Table 4

SAMPLE OF HOUSEHOLDS INTERVIEWED FROM COMMUNITIES
OF THE YUKON DELTA REGION

Community	1980 Population		Estimated Number of Households		Percent Interviewed
	Native	Total	Identified	Interviewed	
Alakanuk	491	522	90	21	23.3
Emmonak	517	567	100	18	18.0
Kotlik	280	293	56	14	25.0
Mountain Village	539	583	96	16	16.7
Sheldon Point	98	103	23	7	30.4
Stebbins	316	331	60	12	20.0
Combined Communities	2,241	2,399	425	88	20.7

Table 5
 CHARACTERISTICS OF SAMPLED HOUSEHOLDS

<u>Community</u>	<u>Household Size</u>		<u>Age of Household Head</u>	
	Mean	Standard Deviation	Mean	Standard Deviation
Alakanuk	6.6	2.4	47.7	12.9
Emmonak	4.5	2.7	49.3	14.4
Kotlik	6.7	3.0	42.1	9.7
Mountain Village	5.4	3.4	50.6	16.2
Sheldon Point	6.0	3.7	46.6	12.8
Stebbins	6.3	2.4	45.9	15.5
Combined Communities	5.9	2.9	47.3	13.7

the **sample**, this may distort the average output **levels** of certain resources. The **extent** of these distortions may not **be clearly** understood. until a **more** complete sample of **less** successful households is systematically surveyed. **However**, one distortion probably **is** an over-estimate in the average household income **from wage employment**, as **is** discussed further **in** the chapter. The sampled households probably contained a disproportionately **larger** number of wage earning members in comparison with other households **in** the community. Because of **this bias**, ranges and standard deviations are provided for **the** monetary **income** data. These potential **biases** and distortions must **be** recognized when interpreting the data (**refer** to Chapter 1 discussion).

Household Harvests of Fish and Game
Resources, June 1980 - May 1981

The mean household harvests of fish and game resources of **88** sampled households from June 1980 to May 1981 are presented **in** Table 6. Household harvests are expressed as pounds dressed **weight**, representing pounds of edible food product. Mean harvests are summarized by community. The percentage of households harvesting particular fish and game resources are presented **in** Table 7.

Table 6 illustrates that households were **highly** dependent upon **local** food resources harvested from **the land** and sea during 1980-1981. Average food output **per** household **for local** consumption and **exchange** purposes **were** as follows: **Alakanuk, 4,821** pounds; **Emmonak, 2,759**

Table 6

MEAN HOUSEHOLD HARVESTS OF SELECTED FISH AND GAME RESOURCES, JUNE 1980-MAY 1981*

<u>Fish</u>	Alakanuk	Emmonak	Kotlik	Mountain Village	Sheldon Point	Stebbins
Subsistence king salmon	480	359	301	385	1,543	1,276
Subsistence chum and coho salmon	824	659	667	982	3,159	1,190
Commercial king salmon	1,894	2,885	9,152	4,376	1,701	0
Commercial chum and coho salmon	5,350	4,899	13,485	11,381	7,972	0
Subsistence herring	0	0	0	0	0	1,113
Commercial herring	0	0	0	0	0	2,196
Bering cisco	164	147	171	38	103	63
Broad whitefish	122	66	145	834	48	9
Sheefish	353	321	460	395	943	19
Blackfish	998	215	142	347	1,386	0
Saffron cod	68	36	41	0	181	247
Smelt	23	0	30	0	6	0
Pike	67	82	7	367	240	0
Burbot	56	47	19	88	20	0

Table 6--CONTINUED

<u>Fish</u>	Alakanuk	Emmonak	Kotlik	Mountain Village	Sheldon Point	Stebbins
Other fish	0	0	0	63	4	1
TOTAL SUBSISTENCE FISH	3,155	1,932	1,983	3,498	7,633	3,918
TOTAL COMMERCIAL FISH	7,244	7,784	22,637	15,757	9,673	2,196
TOTAL FISH RESOURCES	10,399	9,716	24,620	19,255	17,306	6,114
<u>Sea Mammals</u>						
Bearded seal	280	54	339	70	490	420
Spotted seal	107	53	79	46	289	56
Ringed seal	188	85	134	7	335	292
Belukha	233	233	150	0	350	700
Walrus	33	0	0	0	0	560
Sea Lion	13	0	0	0	0	0
TOTAL SEA MAMMALS	854	425	702	123	1,464	2,028
<u>Land Mammals</u>						
Moose	273	179	204	402	238	60
Caribou	0	0	29	0	67	0
Otter	4	0.3	5	4	10	0
Mink	17	2	30	4	27	0
Hares	108	51	108	82	46	45

Table 6-CONTINUED

	Alakanuk	Emmonak	Kotlik	Mountain Village	Sheldon Point	Stebbins
<u>Land Mammals</u>						
Beaver	28	6	27	26	20	0
Muskrat	35	19	74	170	37	4
Bear	0	0	0	13	0	0
TOTAL LAND MAMMALS	4 6 5	257	477	701	445	109
<u>Birds</u>						
Geese	145	6 7	144	30	111	152
Ducks	42	35	33	18	40	74
Cranes	38	11	37	7	32	70
Swans	72	21	26	14	30	13
Ptarmigan	51	11	27	28	29	11
TOTAL BIRDS	347	145	267	97	242	320
TOTAL SUBSISTENCE FOOD HARVEST	4,821	2,759	3,429	4,419	9,784	6,375
TOTAL COMMERCIAL FISH HARVEST	7,244	7,784	22,637	15,757	9,673	2,196
TOTAL SUBSISTENCE AND COMMERCIAL HARVESTS	12,065	10,543	26,066	20,176	19,457	8,571

*Of 88 sampled households, by community: harvests expressed as pounds dressed weight, representing pounds of edible food product.

Table 7

PERCENTAGE OF SAMPLED HOUSEHOLDS HARVESTING SELECTED SPECIES,

JUNE 1980-MAY 1981

	Alakanuk	mmo	Kotlik	Mountain Village	Sheldon Point	Stebbins
(subsistence)	100.0	72.2	85.7	93.8	100.0	75.0
Salmon (commercial)	71.4	83.3	100.0	87.5	100.0	0
Herring (subsistence)	0	0	0	0	0	83.3
Herring (commercial)	0	0	0	0	0	33.3
Bering cisco	85.7	83.3	100.0	31.3	66.7	75.0
Broad whitefish	53.4	44.4	50.0	81.3	66.7	8.3
Sheefish	61.9	61.1	78.6	68.8	83.3	33.3
Blackfish	71.4	55.5	42.9	62.5	83.3	0
Saffron cod	42.9	27.8	42.9	0	66.7	91.7
Smelt	42.9	0	14.3	0	33.3	0
Pike	42.9	55.6	35.7	93.8	83.3	0
Burbot	52.4	27.8	50.0	68.8	50.0	0
Lamprey	0	0	0	69.2	0	0
Seal	71.4	50.0	100.0	56.3	100.0	100.0

Table 7-CONTINUED

	A. akanuk	Emmo	Kotlik	Mountain Village	Sheldon Point	Stebbins
Belukha	23.8	22.2	14.3	0	33.3	41.7
Walrus	5.8	0	0	0	0	41.7
Sea Lion	9.5	0	0	0	0	0
Moose	28.6	16.1	21.4	50.0	33.3	8.3
Caribou	0	0	7.1	0	16.7	0
Otter	33.3	11.1	28.6	25.0	33.3	0
Mink	66.7	22.2	35.7	37.0	50.0	0
Hares	85.7	77.8	92.9	75.0	100.0	50.0
Beaver	28.6	22.2	28.6	37.5	16.7	0
Muskkrat	71.4	61.1	71.4	68.8	100.0	41.7
Geeze	85.7	88.9	92.9	87.5	83.3	91.7
Ducks	85.7	.9	85.7	81.3	100.0	83.3
Cranes	71.4	44.4	85.7	31.3	66.7	83.3
Swans	66.7	27.8	50.0	37.5	83.3	33.3
Ptarmigan	81.0	55.6	92.9	81.3	83.3	58.3
Wage employment	57.0	83.3	8.7	62.5	100.0	75.0
Food stamps	47.6	16.7	7.1	43.8	66.7	50.0
Other income assistance	47.6	27.8	35.7	62.5	16.7	41.7

pounds; **Kotlik, 3,429** pounds; **Mountain Village, 4,419** pounds; **Sheldon Point, 9,784** pounds; and **Stebbins, 6,375** pounds. That is, at **Alakanuk**, the sampled households produced an average of **4,821** pounds of edible food during the period June 1980 to **May 1981**. As household sizes varied among families and villages, the following figures represent average food output per person: **Alakanuk, 733** pounds; **Emmonak, 612** pounds; **Kotlik, 510** pounds; **Mountain Village, 822** pounds; **Sheldon Point, 1,397** pounds; and **Stebbins, 1,006** pounds. That is, at **Alakanuk**, the sampled households produced **733** pounds of edible food for each household member during the period June 1980 to **May 1981** (see **Table 8**).

Collectively, for the six study villages in the Yukon delta region, average food output per household for local consumption and exchange purposes was **4,597** pounds dressed weight during June 1980 to May 1981. Average food output per household member was **783** pounds dressed weight.

In addition to harvests for local use, the sampled households sold substantial quantities of salmon and herring on export markets. The average harvest of commercial salmon per household during the summer of 1980 was **Alakanuk, 7,244** pounds; **Emmonak, 7,784** pounds; **Kotlik, 22,637** pounds; **Mountain Village, 15,757** pounds; and **Sheldon Point, 9,673** pounds. Collectively, this averaged **10,447** pounds of salmon per household for the five villages, sold at an average market value of \$7',966. The average harvest of commercial herring sale of the sampled **Stebbins** household in 1980 was **2,196** pounds, sold at \$439 on export markets.

Table 8

MEAN HOUSEHOLD SUBSISTENCE HARVESTS BY COMMUNITY*

		Alakanuk	Emmonak	Kotlik	Mountain Village	Sheldon Point	Stebbins
Subsistence Output per Household	Mean	4,821	2,754	3,429	4,419	9,784	6,375
	Range	371-	477-	604-	336-	3,838-	1,296-
	Standard Deviation	14,343	5,982	8,616	10,525	26,090	14,334
		3,612	1,620	2,213	2,984	8,222	3,935
Subsistence Output per Household Member	Mean	733	612	510	822	1,397	1,006
	Range	92-	148-	76-	112-	707-	259-
		1,495	2,614	2,154	4,682	3,266	3,082

*Of 88 sampled households during the **period** June **1980-May 1981**; harvest expressed as pounds dressed **weight**, representing pounds of **edible** food product.

These commercial fish harvests represented **about 4.5 percent of a** household% total earned monetary income.

Mean monetary incomes per sampled household for **the** period June 1980 to May 1981 are presented as **Table 9** and **Table 10**. As **can be seen**, of the **total monetary income**, 90.5 percent was **earned**, whereas 9.5 percent came from food stamps and other forms **of income** assistance. Of the earned monetary **income**, 41.5 percent was from commercial fishing, **5.7 percent from commercial sale of furs**, 40.7 **percent from wage employment**, and 2.6 percent from retirement **and** Social Security benefits.

There was substantial variation in monetary income **levels** between **households and** between **communities**. As is shown in **Tables 9 and 10**, there were extreme **ranges** in monetary **incomes**. For instance, at Alakanuk mean monetary income from commercial fishing was **\$5,269**, yet **income** ranged from \$0 to **\$16,065** with a standard deviation of **\$5,092**, showing great dispersion about the mean. Thus, mean incomes **should only** be interpreted in conjunction with sample ranges and standard deviations. Mean incomes should not be taken to represent incomes from a 'typical' **household**. This would lead to spurious conclusions, such as that a 'typical' household received **\$1,087** in income assistance **and** **\$746** in food stamps **while** earning **\$17,512** in commercial **sales of fish and furs**, wage **employment**, and retirement (**Table 10**). **Actually, only** a certain number of households received income assistance and food stamps **and this income** has been averaged across **all** households. **In a like manner**, the **relatively** higher monetary income **levels of** a few households tend to **raise**

Table 9

MONETARY INCOMES PER HOUSEHOLD BY COMMUNITY AND SOURCE*

community		Commercial fish	Commercial furs	Wage Employment	Retirement	Food Stamps	Other Welfare	Total Income
	Alakanuk (n=21)	Mean	\$5,269	\$1,180	\$5,718	\$307	\$1,277	\$1,149
	Range	0-				0-		\$5,350-
	S.D.	\$16,065	\$4,000-	\$23,130	\$3,580	\$5,124	\$6,860	\$33,071
		\$5,092	\$1,386	\$7,508	\$976	\$1,809	\$1,920	\$8,128
Emmonak (n=18)	Mean	\$5,521	\$580	\$11,999	\$255	\$232	\$981	\$19,496
	Range	0-			0	0-		\$1,434-
	S.D.	\$34,320	\$2,680	\$36,600	\$3,000	\$2,438	\$6,270	\$52,166
		\$7,852	\$865	\$10,970	\$779	\$625	\$1,842	\$13,102
Kotlik (n=14)	Mean	\$19,716	\$2,219	\$7,587	\$231	\$56	\$892	\$30,701
	Range	\$1,600-		0-		0-		\$10,600-
	S.D.	\$37,198	\$9,300-	\$20,171	\$3,240	\$780	\$8,660	\$50,256
		\$11,196	\$2,712	\$6,401	\$866	\$208	\$2,283	\$12,482
Mt. Village (n=16)	Mean	\$11,103	\$1,156	\$5,154	\$613	\$622	\$1,159	\$19,807
	Range	0		0		0-	0-	\$5,000-
	S.D.	\$25,950	\$8,520	\$29,505	\$4,300-	\$4,520	\$8,664	\$50,760
		\$7,959	\$2,117	\$7,777	\$1,278	\$1,165	\$2,216	\$13,568
Sheldon Pt. (n=7)	Mean	\$6,216	\$1,719	\$12,970	0	\$1,842	\$1,150	\$23,897
	Range	\$2,670-		\$6,702-	0		0	\$11,972-
	S.D.	\$11,023	\$6,480	\$18,750		\$5,500	\$6,900	\$34,638
		\$3,311	\$2,479	\$5,613	0	\$2,274	\$2,817	\$8,985
Stebbins (n=12)	Mean	\$439	\$261	\$7,555	\$1,710	\$1,071	\$1,329	\$12,365
	Range		0		0	0		\$2,623-
	S.D.	\$2,000	\$2,180	\$16,150	\$11,220	\$5,352	\$8,640	\$26,190
		\$732	\$623	\$7,478	\$3,356	\$1,630	\$2,503	\$7,850

*Of 88 sampled households, for the period June 1980-May 1981.

Table 10

MEAN MONETARY INCOME PER HOUSEHOLD BY SOURCE

FOR SIX YUKON DELTA COMMUNITIES COMBINED*

Mean Income per Household	Commercial		Wage		Total Earned		Total	
	Fish	Commercial furs	Employment	Retirement	Income	Stamps	Other Welfare	Income
Rate--	\$8,026	\$1,101	\$7,878	\$507	\$17,512	\$746	\$1,087	\$19,345
	0-	0-	0-	0-	0-	0-	0-	\$2,623-
	\$37,198	\$9,308	\$36,600	\$11,220	\$52,166	\$5,500	\$8,664	\$52,166
Standard Deviation	\$9,172	1,810	\$8,393	\$1,551	\$12,673	\$1,411	\$2,101	\$12,418
Percent of Total Earned Income	45.8	6.3	45.0	2.9	100.0	--	--	--
Percent of Total Income	41.5	5.7	40.7	2.6	90.6	3.9	5.6	100.0

* Of 88 sampled households from Alakanuk, Emmonak, Kotlik, Mountain Village, Sheldon Point, and Stebbins, for the period June 1980-May 1981.

the mean incomes of the sample as a whole. The wide variability within income levels and sources of income points out that it would be conceptually difficult to depict a 'typical' household on the Yukon delta which allegedly represented some majority of households.

It must be noted that the salmon earnings of the sampled households at **Kotlik** is abnormally high for this community, or for any community on the Yukon delta. The 1980 salmon season was **atypical**, as is discussed later in this chapter, so the 1980-1981 monetary income of the **Kotlik** sample clearly presents a distorted picture of most years. Dividing the income of **\$19,716** by a factor **of three** **would** more **closely** approximate usual average salmon earnings for this community.

Placing a monetary value to food harvests for personal use poses thorny theoretical problems. As the products do not legally circulate on local **markets**, their market values are not determinable. Using the values of these products elsewhere also is unsatisfactory. However, one assumption can be made that if the food products were not harvested by the **family**, then food 'substitutes' would have to be purchased from local stores at **local** market prices. A second assumption can be made that imported canned and frozen meat, **fish**, and poultry were the nearest 'substitutes' to the **meat, fish, oil**, and waterfowl obtained locally. (Most local residents insisted that meats like beef and ham were not equivalent to products like seal meat and Canada goose.)

Imported canned and frozen **meat, fish, and poultry** sold **at** the Alaska Commercial Company **store at Emmonak** for about **\$4.62** per pound (see 'Table 11). This comprises an average of **17** items. The two most and least expensive items were not included in **the** mean--beef stew at **\$1.70**, corned beef hash, **\$1.97**, T-bone **steaks, \$9.65**, and **New York** steaks, **\$11.89**. These prices **are for** products which, at times, included bone weights.

If these assumptions are **accepted**, then the 4,597 pounds dressed weight of food resources taken **locally would** cost a household **\$21,238** if the household had to purchase 'substitutes' at a **local store**. This **is** more than the mean annual earned monetary **income** per household **in** the Yukon **delta region**, which was estimated **at \$17,512 for** the sampled households.

It is clear from these **figures** that most households subsisted on food and monetary income from several sources. A household typically sought to diversify its production efforts to achieve some combination of 'fishing and hunting **for local** consumption and distribution fishing and trapping for commercial sale, and wage employment. A household rarely if ' ever subsisted on food or monetary income from one source **only**. The income which usually could be made from one sector **of** the **economy**, such as wage employment **or** fishing **for local consumption**, usually was **insufficient to** support a household. A **failure** of income **from any sector of** the economy typically created substantial hardships **for a family**, as **will be** seen in the following community comparisons.

Table 11

MEAT. , FISH, AND POULTRY PRICES,
 ALASKA COMMERCIAL COMPANY STORE ,
EMMONAK, JUNE 16, 1981

Price Per Pound

Beef Stew	\$1.70
Corned Beef Hash	\$1.97
Meat Balls	\$2.23
Chicken Legs and Thighs	\$2.91
Vienna Sausage	\$3.04
Light Tuna	\$3.82
Spare	\$3.95
Sliced Bacon	\$4.09
Beef Hearts	.\$4.15
Pork Spare Ribs	\$4.69
Bologna	\$4.70
Beef Tongue	\$5.09
Salami	\$5.30
Chuck Roast	\$5.55
Stew Beef	\$5.65
Pork Chops	\$5.75
Sardines	\$6.36
Beef Top Round	\$6.55
T-Bone Steak	\$9.65
New York Steak	<u>\$11.89</u>
Mean price per pound, excluding two least and most expensive items	\$4.62

Community Comparisons

The harvest **levels** summarized above demonstrate the regional **populations'** high degree of reliance on fishing **and** hunting **for local use** and commercial sale. The figures also illustrate differences between **communities** during the study year in fishing and hunting **outputs**, both in terms of **total harvests**, and the relative size of harvests for **particular** species. **As** stressed in Chapter 3, the economic patterns **for** each community within the Yukon **delta** area were somewhat unique. A food resource might play an important **role in** the **local** economy of d yet occupy a relatively **less** important position in the economy of another **village**. Such differences make it difficult **to** generalize about the economy of the region as a **whole, or to** generalize about the effects of potential changes in **the** resource base **or** general economic climate **on** a community's economic situation. The following discussion points out some of the differences in harvest outputs between communities evident within the quantitative estimates of food production.

Ecological Adaptations

In general, harvest **levels** of particular food products reflected a community's geographic location. This **is** illustrated by **Table 12**, which depicts mean harvests **within** general resource categories **per** household by community. Communities **along** the seacoast with greater access to the sea harvested larger numbers **of** sea mammals than the one **inland** community of Mountain Village. **Stebbins**, the coastal Norton

Table 12

ECOLOGICAL ADAPTATIONS OF THE ESKIMOS OF THE YUKON DELTA REGION*

	Inland Yukon River		Coastal Yukon River			Coastal Norton Sound	
	Salmon Fishing	Salmon Fishing	Yukon River	Salmon Fishing and	Herring Fishing, Salmon Fishing,	Small Mammal Hunting	Adaptation
	Adaptation	Small Sea Mammal	Hunting	Adaptation	Small Mammal Hunting	Adaptation	
	Mountain Village	Alakanuk	Emmonak	Kotlik	Sheldon Point	Stebbins	
Salmon	17,124 (84.9)	8,548 (70.8)	8,802 (83.5)	23,605 (90.6)	14,375 (73.9)	2,466 (28.8)	
Herring	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3,309 (38.6)	
Other fish	2,131 (10.6)	1,851 (15.3)	914 (8.7)	1,015 (3.9)	2,931 (15.1)	339 (4.0)	
Sea mammals	123 (0.6)	854 (7.1)	425 (4.0)	702 (2.7)	1,464 (7.5)	2,028 (23.7)	
Land mammals	701 (3.5)	465 (3.9)	257 (2.4)	477 (1.8)	445 (2.3)	109 (1.3)	
Birds	97 (0.5)	347 (2.9)	145 (1.4)	267 (1.0)	242 (1.2)	320 (3.7)	
Total	20,176 (100.0)	12,065 (100.0)	10,543 (100.0)	26,066 (100.0)	19,457 (100.0)	8,571 (100.0)	

Sound community, harvested the most, 2,028 pounds of sea mammals per household, representing 23.7 percent of their total output. The coastal **Yukon River** communities (**Alakanuk, Emmonak, Kotlik, Sheldon Point**) harvested between 425 and 1,465 pounds of sea mammals per household, representing between 2.7 and 7.5 percent of their total output. **Mountain Village**, an inland Yukon River community with less access to the sea, harvested 123 pounds of sea mammals per household, or 0.6 percent of their output. This is not to suggest that sea mammals were unimportant to Mountain Village residents. **Indeed**, Table 7 shows that 56.3 percent of the sampled households at **Mountain Village** had some member who hunted sea mammals. The other households received seal oil and meat as gifts or trade items from relatives and friends along the coast, as is discussed in Chapter 7. **Seal oil** was considered an essential food product by most surveyed households at **Mountain Village**.

Conversely, harvests of land mammals were highest at the inland community of **Mountain Village**, where they totalled 701 pounds per household, 3.5 percent of their total output. Coastal Yukon River communities were intermediary? harvesting between 257 and 477 pounds of land mammals (1.8 to 3.9 percent of their total output), while **Stebbins** had the lowest output with 109 pounds (1.3 percent).

Salmon was the principal resource harvested by Yukon River communities from 8,548 to 23,605 pounds per household representing 70.8 to 90.6 percent of their output. These figures represent total salmon output for local use and market sale. **Stebbins'** salmon output was less at

2,466 pounds per household, or 28.8 percent of their output. By contrast, Stebbins harvested herring as another principal **resource--3,309** pounds per household or 38.6 percent of their output.

An unheralded, but significant component of the economic output of Yukon River communities was non-salmon fish species, including Bering **cisco, sheefish**, broad whitefish, **blackfish**, and saffron cod. All five Yukon River villages harvested between one and three thousand pounds dressed weight per household of non-salmon fish. Currently, none of these fish were sold on commercial markets by the sampled households (a small market for broad whitefish and sheefish was developing in Anchorage, but in 1981 was providing small incomes for only a few fishermen on the main Yukon River). Consequently, these non-salmon fish catches comprised a substantial portion of a **household's** food supply .

All six communities harvested moderate quantities of waterfowl, varying from about 100 to 350 pounds per household and comprising from about 0.5 to 3.7 percent of **family's** total output. Although comparatively small within the total output, the waterfowl were a highly valued component of a family's yearly food supply. As shown in Table 7, over 80 percent of the sampled households attempted to procure some quantity of waterfowl for the year.

From these statistics, the economy of the **Kwipagmiut** near the Yukon delta can be classified as a **"Yukon** River Salmon Fishing and Small Sea

Mammal Hunting **Adaptation.**" This means that the **central** base of the regional economy was **the** harvesting of **salmon** (primarily **king, chum, and coho**), and **small sea** mammals (primarily **ringed, bearded, and spotted seals, and belukha**). The economies of the communities of **Alakanuk, Kotlik, Emmonak,** and Sheldon Point represented coastal variants of this general ecologic adaptation? whereas the economy of Mountain Village, represented an **inland** variant.

The economy of the **Tapraqmiut** at **Stebbins** can be classified as a "Coastal Norton Sound Herring Fishing, **Salmon Fishing,** and **Small Sea Mammal Hunting Adaptation.**" This means that herring was an essential part of their **local** economy in addition to **salmon** resources and small sea **mammal** resources. **Also,** sea **mammal** harvests **played** a comparatively **larger role in** the community's economy **than within the** economies of the **riverine** Eskimos.

These designations do not **imply** that other food resources were less important. In fact, non-salmon fish **species,** migratory **waterfowl,** land **mammals,** and wage employment represented substantial **and,** to the **Kwikpagmiut** and **Tapraqmiut,** essential components of a household's yearly income. **Salmon,** sea **mammals,** and herring were central **to** the regional economy **in** that the extent and nature of **other** economic **pur-**suits frequently pivoted on the relative success **of** the **salmon,** sea **mammal,** and herring harvests.

Economic Insecurity

Comparisons of community resource harvests for a single year graphically portray the economic insecurities inherent within a mixed economy of fishing, hunting, and marketing activities. The residents of the south pass communities of **Alakanuk** and Emmonak considered 1980 to have been a poor year in terms of salmon production whereas residents of **Kotlik** and Mountain Village considered 1980 to have been excellent. **Alakanuk's** and **Emmonak's** outputs of 8,548 and 8,802 pounds of salmon per household were one-half of Mountain Village's output and almost one-third of **Kotlik's** output for the same year. In general, salmon fishermen along the south pass reported that after expenses they made little monetary income from commercial salmon sales in 1980; many reportedly went into debt for the season. Commercial salmon sales at **Alakanuk** and Emmonak were \$5,269 and \$5,521, compared with **Kotlik's** \$19,716 and Mountain Village's \$11,103 per household.

Environmental factors played a primary role in the poor year along the south pass and good year along the north pass. For the last few years, and for some as yet unaccountable reasons, large numbers of salmon have entered the Yukon River through the middle and north passes. Correspondingly smaller salmon runs have entered through the south passes. Consequently, south pass fishermen have experienced significant **reductions** in salmon output in recent seasons; north pass fishermen have experienced an unexpected prosperity.

These fluctuations in salmon output are illustrated by **Figure 18 and 19, which** portray **commerical** king and chum **salmon** catches at **the three mouths** of' the Yukon delta--south **mouth, middle mouth, and north mouth--** based on commercial fisheries harvest **sales** tickets (**data from ADFG Annual Management Report, Yukon Area, 1980.** Appendix Tables **5, 7, and 12**). South mouth harvests were made primarily by fishermen from **Alakanuk** and **Sheldon Point,** whereas harvests at **middle** mouth and north mouth were made primarily by fishermen **from Kotlik** and **Stebbins** (with a few fishermen from **Emmonak**). Figures **18** and **19** demonstrate substantial fluctuations from year to year **in catches in** these **subdistricts, pri-** **marily** due to variations in run strength **and timing of** runs and open **periods,** and not due to variations **in** harvest effort by fishermen. For **instance,** certain years, such as **1969, all three** passes yielded above average king catches. **Other years, such as 1973,** south mouth fishermen made king catches markedly above average **while** middle and north mouth fishermen made catches markedly **below** average. The overall pattern during the past 15 years of harvest statistics is that average catches at south mouth have greatly exceeded average catches at middle and north mouths. Compared with this overall **pattern,** 1980 was an abnormal year. Middle and south mouth king and chum catches were at or near all-time **highs,** while south mouth catches were near the **lowest** points of **the past 15 years.**

The unusually high middle and north pass harvest can **be** illustrated further by comparing harvests by **Kotlik** fishermen **during** 197% and 1980. Eight fishermen surveyed at **Kotlik in 1976** sold a **total** of 44,940

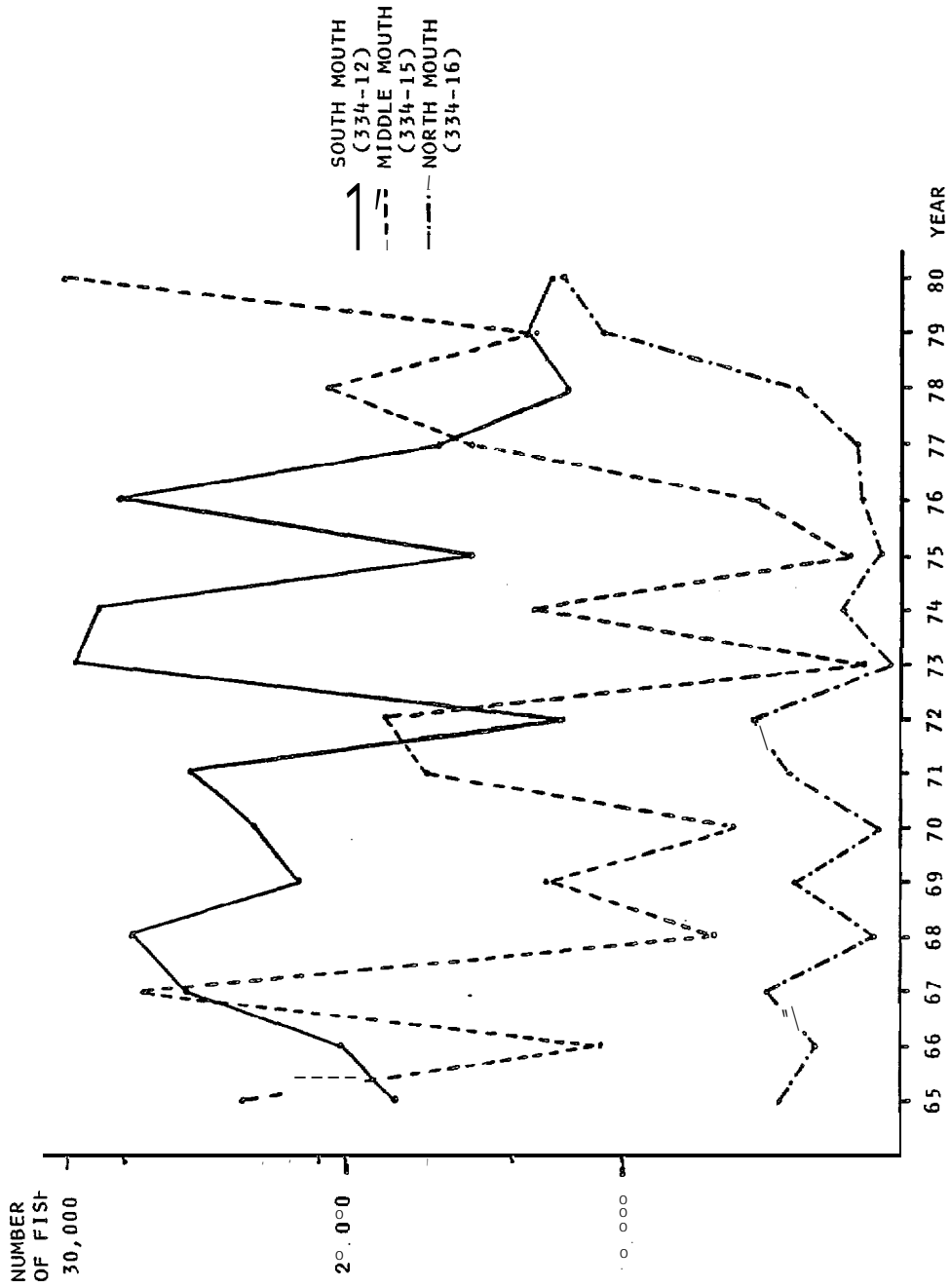


Figure 18. Commercial king salmon catches by statistical area, 1965-1980. (From ADFG Annual Management Report. Yukon Area. 1980. Appendix Tables 5 and 7.)

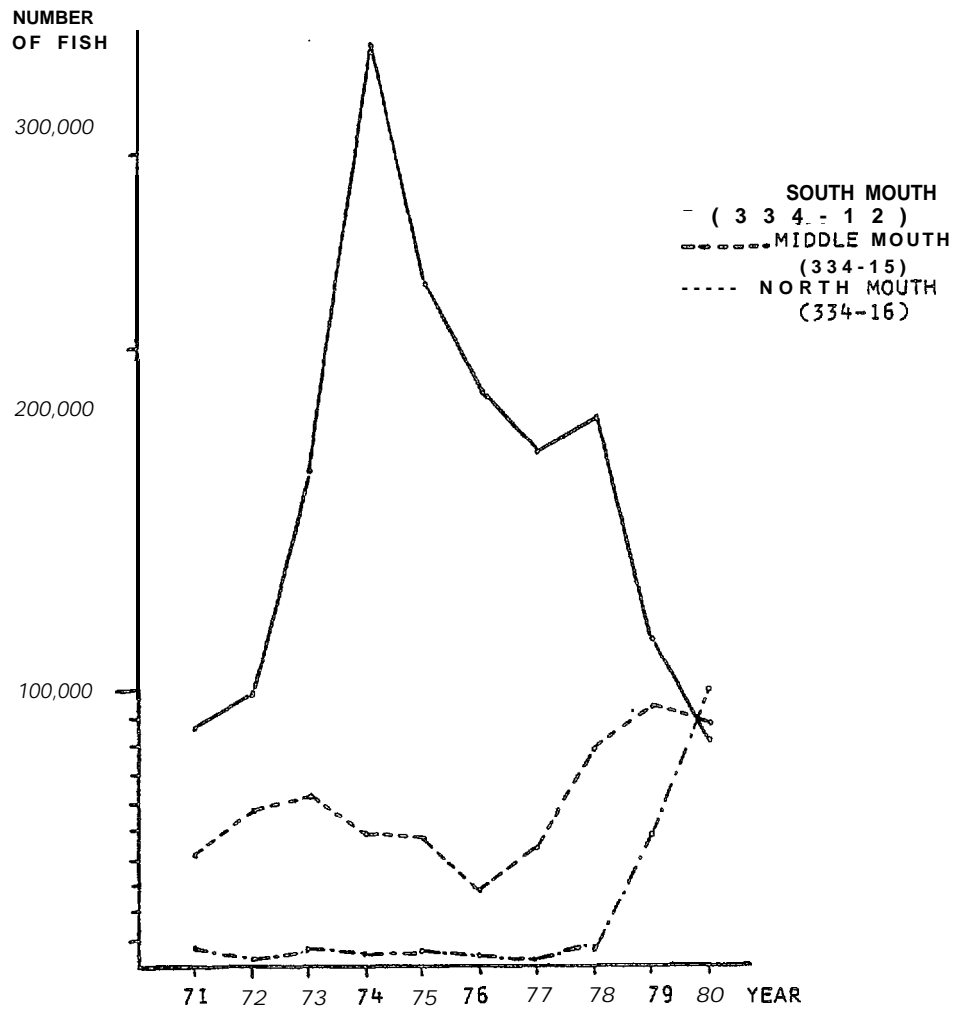


Figure 19. Commercial chum salmon catches by statistical area, 1971-1980. (From ADFG Annual Management Report, Yukon Area, 1980, Appendix Table 12.)

pounds of kings, **chums**, and coho salmon (Wolfe, 1979). In **1980**, the same eight fishermen sold 188,716 pounds of salmon, representing an increase in commercial **salmon** output of **320 percent**. Clearly, the 1980 salmon harvests at **Kotlik** and correspondingly high monetary incomes from commercial salmon sales (Tables 6, 8 and 9) must be considered atypical for this community.

Other sources of insecurity besides ecological fluctuations in the size of salmon runs also affect the regional economy. As previously mentioned, seasonal and annual variations in resource levels of other food species place constraints on food production by a household. For example, seal harvests during the study period (June 1980-May 1981) were considered to be relatively average; however, some years seals are relatively less abundant and harvest levels are depressed. The berry season of the study year was considered extremely poor in most areas of the delta. By contrast, salmon berry harvests were considered high during the late summer of 1981. Poor weather, water, and ice conditions during harvest periods also can reduce harvest levels. Spring and fall sealing are activities particularly vulnerable to variations in weather, water and ice.

External market and price conditions outside the control of local residents commonly affect the region's economy. Recent inflationary rises in the costs of gasoline have tended to restrict the mobility of fishermen and hunters with limited cash **reserves**, which in turn restricts certain types of subsistence pursuits. Increased equipment costs fore-

stall the purchase and repair of equipment by certain producers.

Fishing and hunting is constrained by equipment **failures of** boat motors and **snowmachines**. Low market demand **for salmon** can depress the **value of** commercial salmon to local **fishermen**, as occurred **for** chum salmon sales during 1980. Prices for chum averaged between \$.20 and \$.28 **per** pound during 1980. Low external market demand for salmon severely affects the Yukon delta economy dependent on a single export resource.

Seasonal fluctuations in the availability **of** goods from **retail** stores affects most communities of the **delta**. The **"bare-shelf syndrome"** is a common experience within retail **stores**, especially during winter and spring. Communities report running **low on**, or completely out of **products like** gasoline, spare **snowmachine parts**, and certain types of **ammunition** required for hunting. Goods may **be** rationed at these times to households. Food products **like flour**, canned **milk**, and other staples at **times** are **unavailable**, so **stores** cannot **always** be **relied** upon to have food on the shelves.

The flow of income from government-supported projects and programs also cannot be relied upon as a consistent economic source. Community development projects providing seasonal employment **in** constructions such as in **housing, schools, and public water facilities**, are generally periodic and short-termed. Federal programs **like CETA and** food stamp assistance typically expand and contract with changing government administrations and philosophies. Accessibility to income assistance by needy families reportedly **is** affected by the **skills** and case **loads**

of local social workers. All these factors influence the economic solvency of particular households from year to year.

Diversification in the economic production of **Kwipagmiut** households has been a traditional strategy for dealing with periodic shortages within one or several resources. Households rarely specialize in one economic pursuit, but instead plan to invest labor and capital into several forms of production. If decreases in output occur in one source of subsistence or monetary income, then an intensification of effort in another area of production may yield increased output to help offset the decrease. Longitudinal data were not generated from this research to demonstrate these compensatory production strategies over a series of seasons. However, it is likely that **Alakanuk** households had to increase food output for certain local fish and game species during the June 1980 to May 1981 season to offset the poor commercial **salmon** earnings and curtail **output** of other capital-intensive hunting efforts. For instance, one household head reported no waterfowl harvests during fall of 1980. When queried, he replied he chose to spend his small salmon earnings to purchase heating oil rather than expend them in harvesting birds. Similarly, it is likely that the "wind-fall" salmon profits of certain **Kotlik** households during the summer of 1980 affected their subsequent pattern of production outputs. Suspected interrelationships must await empirical support. It seems probable that a flexibility between economic options traditionally has enabled the **Kwipagmiut** to be successful in the face of short-term environmental and economic instabilities.

Over the long term, sustained reductions in particular local fish and game resources might entail significant economic and social costs. Reduced commercial salmon earnings over the long term might result in increases in state and federal welfare subsidies to the Yukon delta region. Of course, not all programs of income assistance are influenced by household income levels, but some, like the food stamp program and aid to families with dependent children, do consider income criteria. As shown in Table 9, the Alakanuk sample with a \$1,893 per capita earned income in 1980 received \$2,426 in per capita income assistance from state, federal, and private sources; the Kotlik sample, with its \$4,431 per capita income (primarily due to successful salmon harvests) received only \$947 in per capita income assistance. These may suggest a potential relationship between long-term reduction in local resource levels and increased welfare dependency.

The human costs of increased welfare dependence in terms of reductions in psychological and social well-being, of course, cannot be calculated in monetary terms. The next few chapters describe how fishing and hunting activities were integrated into the social order of the family and community during 1980-1981 within the Yukon delta study area. They suggest that long-term reductions in particular resources might lead to changes in the social order with possible attendant psychological costs .

CHAPTER 5

KINSHIP SYSTEMS AND THE ORGANIZATION OF GROUPS AND NETWORKS FOR FOOD PRODUCTION AND EXCHANGE

Production and exchange of goods in the **Kwipagmiut** economic system during 1980-1981, to a large extent, occurred within groups and networks of people recruited and organized through principles of kinship. The main functional units of food production on the delta, the primary economic "**firms**," were groups of persons putatively based on familial relationships. Most hunting, fishing, and gathering activities occurred within groups of people closely interrelated by the principles of kinship. In addition to production, the exchange and distribution of many economic goods also took **place** between networks of relatives. Therefore, to understand the organization of economic groups on the Yukon delta, one must understand how the **Kwipagmiut** figure kinship relations.

This chapter presents a preliminary description and analysis of the **Kwipagmiut** kinship systems as they appeared in 1981. This description is preliminary to a discussion of the actual organization of particular production groups and exchange networks in Chapters 6 and 7. The analysis of kinship here should be regarded as tentative, to serve as a basis for further research into the socially significant aspects of the **Kwipagmiut** economic system. **Social** behavior can be organized and

understood at multiple levels, some openly **public**, others subtle and cryptic. This analysis **only** begins to tap the most **public** aspects of **Kwipagmiut** kinship, and how it was used to structure certain forms of human activity.

Definition of Special Terms

Research on kinship in anthropology has produced a specialized theoretical vocabulary. As some of these terms may be relatively unfamiliar to persons outside the **field**, definitions of certain terms are provided prior to the discussion to assist the reader.

1. **Affinal** relationship: A relationship by **marriage**.
2. **Bilateral descent**: Descent relationship recognized by persons of a social group as deriving from both **the male** parent and **female** parent equally (as opposed to "**unilineal**" or "**unilateral**" descent which is descent recognized from one parent and not the other).
3. **Consanguineal relationship**: A relationship by birth or descent from a common ancestor.
4. **Cross cousin**: A person related to ego as **father's sister's** child or mother's brother's **child**.
5. **Descent**: The principle of being derived **from** (coming down from) a person or **line** of persons considered ancestors.
6. **Ego**: A hypothetical person chosen as a point of reference for discussing a kinship **terminological** system.
7. **Nepotic kin**: Person related to ego as **sibling's** children ("**nephews**" and "**nieces**").

8. **Parallel cousin:** A person related to ego as **father's brother's** child or **mother's sister's** child.
9. **Terminological system:** A system of ideas whose elements are named categories which are interrelated by a set of principles. A kinship **terminological** system is *a* conceptual system whose elements are named categories of persons (such as "aunt," "niece") which are linked by a set of principles (such as "descent" and "affinity") .

Kinship as a Conceptual System

In this chapter, a kinship system is regarded as a logical conceptual system relating named categories of persons. A kinship system is a set of ideas about how types of people are interrelated. The system of linguistic symbols and abstract ideas exists more or less as public knowledge within a society. As with most realms of cultural knowledge, it is expected that some individuals know the kinship system well, while others know only portions of the system.

Kinship systems are utilized by persons to structure social realities. People are placed within the limited number **of** known social categories of the kinship system. Once categorized in this **manner**, the distance and degree of significance of persons in relation to others can be estimated. The quality of conduct between two individuals may be anticipated depending upon the types of behavioral expectations associated with the social categories.

The methodology for eliciting kinship systems utilized in this study was derived from Leaf (1972), which approaches kinship as a system of definitions conveying social information rather than a system of basic "kin-types" transcribed from a set of genealogical relationships. The product of this methodology is a "kinship map," a basic pattern of definitions of a terminological system, representing a more or less complete set of categories for any person's relations,

A "kinship map" is a pictorial representation of a kinship terminological system. The picture depicts how the named categories of persons (the "kin" terms) are related to one another by principles of descent and affinity. It is like a "road map" which is used to trace a route from one geographic location to another. With the kinship map, a person can trace a route from a hypothetical person ("ego") taken as a point of origin to all other kin terms in the system. That is, the map can be used to trace the interconnectedness of one kinship category with any other in the terminological system. A correctly drawn kinship map confers some degree of competence in using kinship terms. By placing a real person in the position of ego, one can discover what that person should call another in a social group by tracing a route on the map from one person to the other through intermediary kinship links.

Kinship Systems of the Yukon Delta

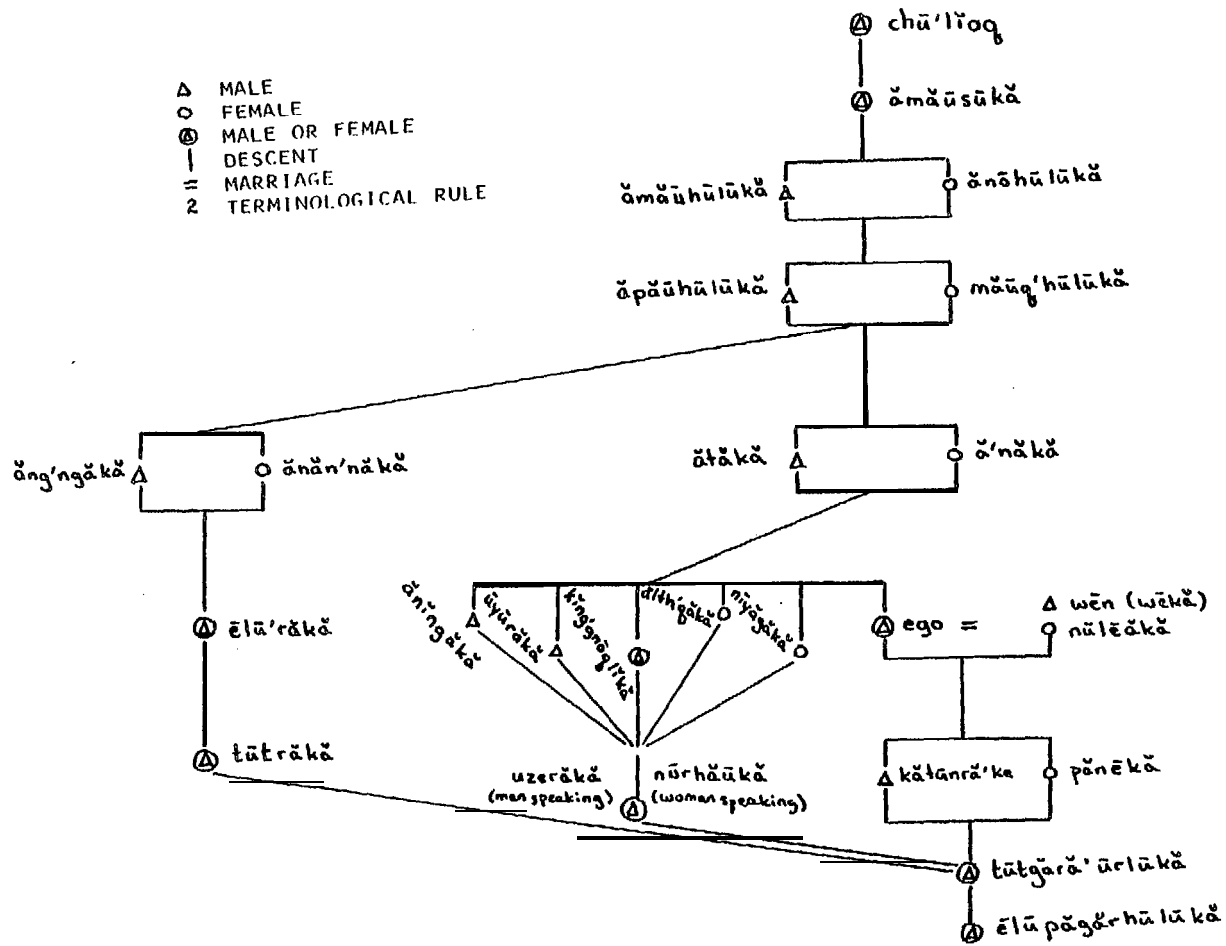
At least two systems of Yupik kinship terminology were being utilized by the Kwikpagmiut in 1981. These were in addition to the wide use of

American kinship terms in address. The terminological system elicited from key respondents at Alakanuk, Emmonak, Sheldon Point, anti Mountain Village is depicted in Figure 20, while the system elicited at Kotlik and Stebbins appears in Figure 21.

Differences and similarities in these two kinship maps are readily apparent. Why these two systems should appear on the delta are matters for further research. For convenience of discussion the kinship system at Alakanuk, Emmonak, Sheldon Point, and Mountain Village will be called the 'southern system' in reference to its representatives predominant location, while the system of Kotlik and Stebbins will be called the 'northern system.'

Both southern and northern systems were similar in their treatment of ego's direct lineal kin relationships. Lineals were divided according to the principles of generation and gender. In the ascending line, lineals were distinguished by sex for three generations. In the descending line, they were distinguished by sex for only the first generation.

It is notable that both systems did not distinguish paternal line of relations (ataka) from the maternal line (a'naka). The relations' of either "side" were considered equivalent. In traditional kinship theory, the kinship systems thereby incorporated 'bilateral' descent reckoning; that is, descent was traced equally through either the "maternal" or "paternal" side.



II (Kotlik, Stebbins)

Figure 21. Yukon delta kinship terminology, "northern system"

The southern and northern systems differed **in** the way collaterals were named and traced. All the terms **of** the northern system were **incorporated** within the southern **system, but** the **latter** identified a **larger** number of kinship categories frequently based upon the gender **of** the addressee or the gender of intermediary linking relations. The northern system either did not acknowledge these additional terms as categories of kin relations? **or** recognized the terms but defined them in some other way. Consequently? the northern system was the less complex of the **two**, and also the **closer** to the American English **terminological** system.

The northern system distinguished five sibling **terms**, based on gender and **relative age**: aningaq (older male sibling), uyuraq (younger **male sibling**), althaq (older female sibling), and niyagaq "(younger **female sibling**). The term king'ngoqliq referred to younger **siblings**, either male or female, although most frequently it was used in reference to younger **male** siblings. **Siblings** were reckoned as offspring of **ego's** parents.

The northern system designated two terms for collaterals of **parent's** generation: ang'ngaq ("uncle"), and anan'naq ("aunt"). As with **lineals**, collaterals of maternal and paternal sides were viewed as equivalent. Children **of parent's siblings** were designated by a **single term**, eluraq ("cousin").

Collaterals one generation below ego were consolidated in this manner. Children of siblings were called uzeraq if ego were male, and nurhauq

if ego were female. Some respondents did not recognize the term uzeraq, but only acknowledged the term nurhauq. Children of eluraq ("cousins") were termed tutraq. At the second descending generations children of collaterals were merged into ego's descent line, becoming tugara'urluq ("grandchildren"), this term also designating children of ego's children. The term elupagarhuluq three generations down represented a terminus of the kinship map ("great-grandchildren," translated literally as "underwear," because, it was explained with a smile, by the time one has elupagarhuluq, a lot of underwear has been gotten into). The upper terminus of the kinship map actually was at amausuq at the fourth ascending generation ("great-grandparent"). The term above that, chuliaq, translated as "forerunners?" or "ancestors," and was not properly a kinship term.

The northern **terminological** system seemed to fit within the classical "Eskimo type" kinship terminology described by Murdock (1949). The formal features of the "Eskimo type" terminology were bilateral kinship reckoning, differentiation of "siblings" from "cousins," and differentiation of "uncles" and "aunts" from parents. In these respects, the northern system resembled the American English **terminological system**, which is also of the 'Eskimo type.'

The southern system differed from the northern system primarily in its treatment of collaterals. As can be seen in Figure 20, parents' siblings were divided into four classifications, those of the same sex as either parent conceptually closer than those of a different sex as either parent. This is illustrated by the interesting characteristic

that children of **father's** brother and **mother's** sister were regarded as equivalent to children of parents (**ego's** siblings]. Children of **father's** sister and **mother's** brother were regarded as separate from parent's children. That is, according to traditional anthropological kintypes, "parallel cousins" were terminological siblings, whereas "cross cousins" were terminological cousins.

Children of ang'ngaq (mother's brother) and achaqa (father's sister) were distinguished from each other by gender, and received different designations depending upon ego's gender. Thus, four terms for "cross cousin" existed. Four nepotic terms (terms for sibling's children) also were used, distinguished according to the sex of ego's siblings. Some respondents only acknowledged two nepotic terms, useraq and nurhauq, claiming the other two terms (ganquiaraq and anqiaq) were Kuskokwim designations.

The consolidation of collaterals into direct lineals also occurred somewhat differently from the northern system. Children of cross cousins were conceptually equivalent with children of siblings (one generation below ego). Children of nepotic kin were conceptually equivalent with children of children (grandchildren, two generations below ego).

As is apparent, the southern terminological system used by the Kwikpagmiut did not correspond with Murdock's classical "Eskimo type." It resembled more closely the classical "Iroquois type," whereby cross cousins were differentiated from parallel cousins, the latter

frequently classified with sisters. In several respects, the southern system resembled **the terminological** system of the Nunivak Islanders as described by **Lantis** (1946), in which parallel cousins were classified as siblings, cross cousins distinguished from siblings, older siblings distinguished from younger siblings, with four separate terms for **parents'** siblings, four **nepotic** terms, and two terms each for grand-parents and grandchildren. It diverged from the Nunivak system in several respects, especially the four terms for cross cousins and the five terms for siblings.

Affinal relationships are depicted in Figure 20 as a set of rules. As can be **seen**, the term for **"in-laws"** marrying into **ego's** family was **chagin**, referring **to** persons marrying **ego's** siblings or **ego's** children. If the in-law were male, marrying **ego's** sister or **ego's** daughter, one called that person **nung'ngauq**. If the in-law were female, marrying **ego's** brother or **ego's** son, the term used **was okohaq**. **Ego's** in-laws through his **spouse's** side were called **chakiaq**, referring to **ego's** spouse's parents and siblings.

Some additional aspects to the southern system were these. Although **eluraq** referred to a man's **male** first cross **cousin**, it **also** was used in reference to any **"distant"** male relative of **ego's** generations and hence connoted the meaning of **"friend."** Literally, **eluraq** translated 'friend **like a brother.**' Similarly, **nuleachungaq** referred to a **male's** close female first cross cousin, or to any 'distant^{if} **female** relative of **ego's** generation. It translated 'dear little **wife.**' Its reciprocal address term, **wechungaq**, translated **"dear little husband."** It was notable

that, as a general rule, cross cousin marriages were considered a union too close to ego, and so were prohibited. Siblings of grandparents could be called by the terms for grandparents. One technique used was adding the surname to distinguish between persons, such as "apauhuluka Smith." Because of this lateral inclusion, conceivably children of "grand uncles" could be reckoned as types of kin relations.

In the northern system, the term ataq referred to "step father," not father's brother. In the southern system, it could refer to either. In the northern system, elungaq referred to a female "friend," not a kinswoman. Men married to two sisters addressed one another as aqcheq.

Kinship Principles

How a kinship system relates to other social phenomena, such as marriage rules, residence rules, composition of residential groups, allocation of labor, distribution of power, and so forth, are matters for empirical research. Anthropological research has shown no one-to-one correspondence between the structural principles of a terminological system, and the organization of social groups and human behavior. An indepth analysis of kinship principles used in guiding human action and organizing social groups was beyond the scope of this study. Nevertheless, some tentative hypotheses can be advanced concerning the Kwikpagmiut kinship systems from the theoretical and empirical evidence gathered within other societies.

In general, the principle of bilateral descent creates a kinship system which is ego-centered. That is, the set of persons recognized as kin by one individual is usually different from the set recognized as relatives by another individual. Only for young siblings is the sphere of relations identical. Within other descent systems (such as **matri-**lineal and **patrilineal descent**), frequently a set of recognized kin is identical for a number of individuals. Thus the kin set is relatively stable while individuals move in and out of membership. Within the ego-centered system the individual becomes the point of reference around which the set is constructed. **Thus**, the individual and not the kin set is primary.

The ego-centered set of kin has been referred to as a **"kindred"** in the theoretical literature, a term which is used in two senses. In one sense a "kindred"^{cf} has been used to refer to the entire set of persons one recognizes as relatives (**Balicki**, 1970). Accordingly kindred refers to a relatively extensive conceptual entity and not a tangible grouping of persons. Rarely does an individual ally with all one's recognized kin to create functioning groups. The kindred represents **all** the potential relatives one might **ally with**, of which many may never be utilized. In a second **sense**, **"kindred"** has been used to refer to a smaller set of kin regarded as particularly **"close"** to **ego**, such as parents, siblings, aunts and uncles (**Schusky**, 1972). Accordingly, kindred refers **to** the set of relatives an individual at times does **ally with** to form groups which perform particular **functions** and tasks. Bilateral descent systems have been found to be associated with functional kindred groups which are relatively **small**, transitory, and

variable in composition compared with non-ego-centered **social** groupings based on unilateral kinship principles or **groups** based upon **nonkinship** principles **such** as by contract. **In** the absence **of other** structural **principles**, a society may entrust considerable responsibilities **to** kindred **groups**, such as child **rearing**, food productions and political leadership. As a functional **entity**, a kindred may be manifested as a small household cluster composed **of** nuclear or extended kin relations. It has been suggested that bilateral descent and **small** functional kinship groups are particularly **adaptive for** hunting and gathering economies which frequently **place** a premium **on** high capacity **for** geographic mobility and low population densities.

A bilateral descent system **also** has **the** characteristics of ' flexibility **in** relating persons by descent. **Theoretically**, twice as many **people** are available as relatives under a bilateral descent system than under **unilineal** descent, as persons from both the paternal and maternal sides are considered equivalent relations. **The** potential **for** flexibility **in** group formation is thereby increased. **Theoretically**, more **people** are available from which to draw work associates. **Again**, this may be adaptive to environments requiring flexibility in relatively **rapid**, short-termed linking **of** persons for meeting certain socially significant tasks.

A kinship system **which** makes fine differentiation among **close** relatives at the same generation suggests some importance **placed** upon these relationships. The differentiation of siblings **in** the **Kwikipagmiut** system is by sex and birth **order**. This suggests that perhaps

functional roles within the kindred are allocated by age and sex criteria. The group of female and male siblings may be central to **the** organization of the social system.

The southern system for classifying parallel cousins as siblings potentially increases the number of persons considered "**close**" by ego. This may increase the capacity for individuals to create alliances among close, allegedly 'trustworthy' persons for types of activity. It also suggests that two or more brothers or groups of sisters may create long-term alliances, whereby their children come to recognize themselves as closely related. It has been found that Iroquois cousin terminology is often associated with **matrilineal** systems of social **organization**, especially where the ownership of land is entrusted to a **matriline**. However, the southern system of the **Kwipagmiut** in 1980-81 did not equate father's brother and mother's sister with the parental statuses, and so did not represent a bifurcate merging system like the Iroquois **terminological** system.

All these suggestions are purely speculative until more information has been collected concerning the use of kin relationships in **Kwipagmiut** society. Historically, **Kwipagmiut** communities were organized around the **kaseaq**, the fire-bath community house occupied by men, and separated from individual domestic units occupied by a woman and her children. How the traditional **kaseaq** organization was related to the kinship **terminological** system is still unexplained.

Generational Differences

It is important to note that the kinship system depicted above **represented** the **terminological** system known by members of the current oldest generation (generation **one**). Middle aged and young adult respondents (generations two and three) by and **large** did not describe their **Yu'pik** kinship terminology in the same manner as the oldest generation. As a **rule**, the younger the respondent the more confused the person was about the meaning of kinship terms **at** the **"edges"** of the **terminological** map. **In** particular, there was confusion concerning the proper designation of cross cousins, nieces and **nephews, and lineal** kinship above and **below** two generations. What this meant was that the terms for the **"closest"** relatives (**parents, siblings, and children**) **were** relatively **clear** and unambiguous; terms for more distant relatives were **"fuzzy."** Quite often a younger respondent **would** recognize a term (**like eluraq**) but not know its social referent, **He** might even use the term in addressing individuals without knowing precisely the genealogical **link-**ages to the person justifying the designation.

The generational differences in the knowledge of **Yu'pik** kinship terms may reflect **acculturative** influences or **simply** age-related phenomena. Some **older Kwikpagmiut** ascribed to **the acculturative** explanation and expressed dismay that younger **people** were not learning to speak **Yu'pik properly**, but instead were **using** English terminologies. As **one** elder put **it**, 'young people get their **father's sister** and **mother's** sister mixed up **nowadays."** At **Emmonak**, the **Yu'pik** kinship system was being introduced as high **school** curriculum to counteract this perceived

trend. If the acculturation explanation is true, it becomes an interesting question about the ways the traditional **Yu'pik** terminology is becoming changed by Anglo-American influences.

However, generational differences may reflect only expected age-related differences. It may be that expertise in kinship knowledge traditionally was the purview of the eldest generation. One acquired more knowledge and experience with kinship terminology with age, so that during **one's** later years, the "**full**" system became known. If this were so, it is interesting to question the role of distant kin relations in **Kwikipagmiut** culture for the middle generations, when these individuals have not fully mastered the techniques for integrating persons using distant kin terminology.

As a final note, the northern system may represent an **acculturative** stage of change in kinship terminology. The north pass people have received more intensive social contact, being closer to the historical regional trade center of St. Michael, than were the south pass **Kwikipagmiut**. If so, perhaps the north pass **Kwikipagmiut** at one time held the southern system, which had changed to resemble the more classic 'Eskimo **type**" congruent with American English terminology. In support of this hypothesis is the apparent fact that Stebbins **people**, who originated from the Nelson Island area which also utilized a variant of the southern system, currently were using the northern terminology. Such a shift may reflect **acculturative** changes.

An alternative explanation is that the **northern terminological** system was historically **old**, and represented the kinship system of the **Pastoligmiut**, the immediate ancestors of the people of **Kotlik**. If so, the **Pastoligmiut** may have been organized by a different kinship system than the south pass and main river **Kwikipagmiut**, posing an interesting question concerning social adaptation. If the kinship system to the north of **Pastolik** also represented the classical Eskimo type (as suggested by **Burch**, 1975), then **Kotlik** lay at the division between **traditional** kinship systems. In support of this view, elderly **Kwikipagmiut** respondents stated clearly that differences existed in **Yu'pik** kin terms on the Yukon delta. Older respondents frequently stated that, "this is how we do it **here**, but at so-and-so they do it differently; you must ask them to **find** out how it is done over **there**." These statements suggest that, like the dialectic differences that existed on the delta, differences between kinship terminology had developed **within** the region over a **long** time period.

CHAPTER 6

THE ORGANIZATION OF SALMON FISHING

The production of salmon, the region's primary food resource and marketable **product**, usually occurred within groups whose members were related by kinship. In the social systems of the Yukon delta, there was no radical separation of remunerative work activities and family life as frequently occurs in urban industrial societies. Rather, the economic pattern of fishing and hunting activities was organized around and within kinship groups. The primary economic **"firm"** during 1980-81 was a group of persons related through the principles of kinship presented in Chapter 5. The harvesting and processing of salmon was conducted within this set of relationships. The division of labor frequently occurred along lines of age and sex within this group. The proceeds from the cooperative production activities were shared within the economic family unit.

This chapter provides case examples of groups organized for the purpose of harvesting and processing salmon. The cases illustrate production organized along lines of kinship, as opposed to a set of secondary relationships based on contract. The cases were chosen to represent a wide range of variation in the composition of the salmon production groups. As will be shown, the social systems on the Yukon delta

allowed for flexibility in the recruitment of members to economic groups.

Production for Personal Use and Sale

In 1981 there existed two types of production units in the salmon fisheries of the Yukon delta--the **kinship-based fishing** and processing unit and the non-kinship-based fish buying, processing and marketing unit. The kinship-based **unit**, to be described in this **chapter**, was the most common. It comprised a group **of persons**, usually related by kinship **ties**, who combined **labor** and material resources in the harvesting, processing and selling of salmon. **The** non-kinship-based firm comprised a group of persons organized as a business, not a family, to **buy, process, transport, and sell salmon** to external markets outside the **region**.

This chapter will not describe the organization of the commercial fish buyers and processors on the Yukon **delta**, except to note their relationship with the kinship-based production **units**. In the **lower** Yukon River districts, there were thirteen main commercial operators in 1980, located primarily near Emmonak on the south **pass, and** near Mountain **Village** on the main **river**. As described in Chapter 3, two **of** the firms were owned and operated by **local** native corporations from Emmonak and Mountain **Village**; the others were based **from** outside the region. The firms engaged in buying salmon from independent **fishermen**, and processed it for **sale**, either as a **frozen, fresh, canned, or salted**

product. The processed salmon and roe were transported from the region by airplane or barge. Employees of the commercial firms worked for wages. The firms employed persons to buy, transport, and process fish, but not to harvest salmon. The firms bought salmon caught by independent fishermen who usually operated from one of the kinship-based production units. Fishermen were independent from the commercial firms in that they **were**, theoretically free to sell salmon to any of the **commercial** buyers operating in the vicinity. A significant proportion of persons employed by the **commercial** firms were local residents. Theoretically, these firms were composed of a collectivity of persons working for the firm and receiving individual reimbursement for **personal** effort, distinct from fellow employees. Income received in connection with the commercial fishery in fact tended to be viewed this way, that is, as the sole asset of the individual. Wages earned by a person cutting or transporting fish typically were described as "his own" income, not the automatic possession of a kinship-based **unit**. Similarly, salmon caught and sold to a commercial buyer was frequently viewed as an individual transaction separate from the kinship-based production unit. Income from the sale of commercial salmon was personal income. Members of a household typically did not know the commercial salmon earnings of other household members. Also, as will be illustrated in the following **cases**, persons fishing together usually divided profits from **commercial** salmon sales among themselves, even if closely related within the kinship-based group. Thus, the harvest and processing of salmon for external commercial markets were organized

along different principles than salmon production **for** personal use within family-based firms.

The Kinship-based Production Unit

A kinship-based salmon production unit could operate from a winter **village**, a **fishcamp**, or a combination of **each**, as described in Chapter 2. The size of the production unit **varied**, from a single individual up to a group of several dozen persons. A complete production **unit**, **however**, had **at** least one or two persons **to** harvest **salmon**, and another one or two persons to **cut, dry**, and smoke the **fish**. Harvesting and processing comprised complementary **roles**. A discussion of these **roles** follows **later in** the chapter. **It** was exceedingly rare for the **person** who harvested salmon **to** be the person required to process the **salmon** also.

The members of most **salmon** production groups were recruited through kinship principles. The group cooperating in harvesting and processing usually was a cluster of persons related through the kinship system. Not only were members recruited by kinship **principles**, but the group was perceived to be a kinship group. The response to the **question**, "What is the **Yu'pik** term for the **people** who **live** and work together at **fishcamp**?" usually was **elakitraet**, which means "**family**" or "**relatives**." A group perceived as representing "**family members**" therefore **consti-**tuted a central economic unit within the **Kwikipagmiut** and **Tapraqmiut** cultures. The people termed **elakitraet** who **lived** and worked together

at **fishcamp** will be called a "kinship group" for the remainder of this chapter.

The elakitraet living and working together at a **fishcamp** (the kinship group) frequently comprised one or more household units linked by birth or marriage. A household was defined as a group of persons who resided in a separate dwelling at the winter community. Variations existed in how households were related, but usually the kinship group at **fishcamp** comprised a pivotal household of a father, mother, and **children, plus** one **or** more households of married sons or daughters. Another common organization was two or more households of siblings.

It is important **to** note that **fishcamps** frequently contained more than one kinship group. That is, several kinship groups frequently shared a **fishcamp** location. At times these groups could trace some kinship connections, but frequently no kinship ties were demonstrable. While sharing a single **fishcamp**, separate kinship groups frequently functioned as separate production units. That is, they possessed separate facilities for processing fish (racks, smokehouses), and harvested and processed fish for separate caches at the winter community. Nevertheless, cooperative pooling of fish harvests and labor commonly took place among all residents of a **fishcamp**. Members of different kinship groups frequently assisted one another as gestures of friendship, especially for companionship and assistance during periods of heavy workloads.

Accordingly, the social organization of **salmon** production **units** evidenced a high degree of flexibility. Salmon fishing was not locked into invariant structures. Rather, persons joined together **for** cooperative effort when such alliances appeared advantageous, building the associations with the flexible principles of bilateral descent and affiliation, or if no close kinship relationships were **traceable**, through concepts of friendship. A cooperating group most frequently comprised a shifting cluster of persons tracing bilateral descent ties and their spouses and children. Certain clusters apparently persisted over several years as fishing units. **Others** were relatively transitory groups, changing in composition **from** year to **year**, sometimes week to week.

The variation **in** the composition of **salmon** production kinship groups **is** illustrated in the following case examples. The cases have been selected to show some of the range of organizational possibilities inherent within the structural principles **of** the **Kwikapagmiut** and **Tapraqmiut** culture.

Case 1. This case illustrates a summer **fishcamp** composed of a single nuclear winter household. At camp were the **44-year-old** head of the **household**, his **wife**, four of his six **children**, and his **wife's sister's daughter**, who was visiting. This camp had been at the same location **for** exactly 20 years. **Originally**, when the household head established **residence**, the camp was occupied **by** his wife's **uncle** and **three households** from St. **Mary's**. With the appearance of commercial **buyers** around

Mountain Village, these four households now fished from camps nearer St. Mary's. Now his household fished from the camp alone. Both he and his son, who also had a commercial permit, harvested salmon for **commercial** sale and subsistence use. The money earned by the son belonged to him, and did not become part of the **father's** earnings. Similarly, another son worked at the winter village that summer, earning money also for himself. The head of the household and his son brought fish to camp to be cut by his wife, with help of the children. The processed fish became **part** of the household's food cache, which was shared by everyone in the household including the sons (see Figure 22).

Case 2. This case represents a **fishcamp** composed of three winter households, all related, from two different villages. The focal household at this **fishcamp was composed** of a 51-year-old male, his wife, and three children (one adopted) living at home. Previously, his camp was located about 15 minutes away, near his **wife's brother's fishcamp**, but he moved to its present location 12 years ago. The two other households at the camp included his married son, daughter-in-law, and granddaughter, who maintained a separate residence at the winter community; and his married daughter and her husband, who lived at another winter village (see Figure 23).

The 25-year-old married son was just establishing himself at his **father's fishcamp**. That summer he was building a tent frame and furniture next to his **father's** tent. At the **time**, his wife and **child** were at the winter village, preparing to move to camp when he finished. The

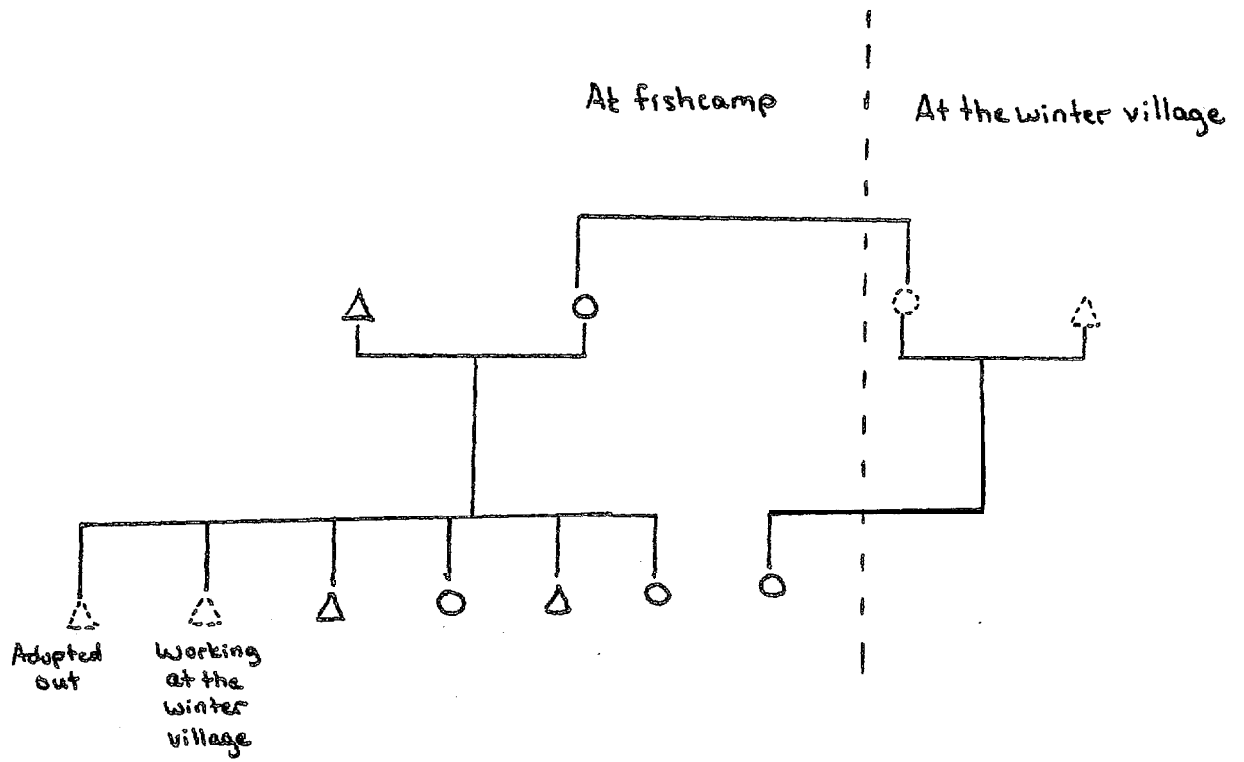


Figure 22. Fishcamp composed of a single nuclear household

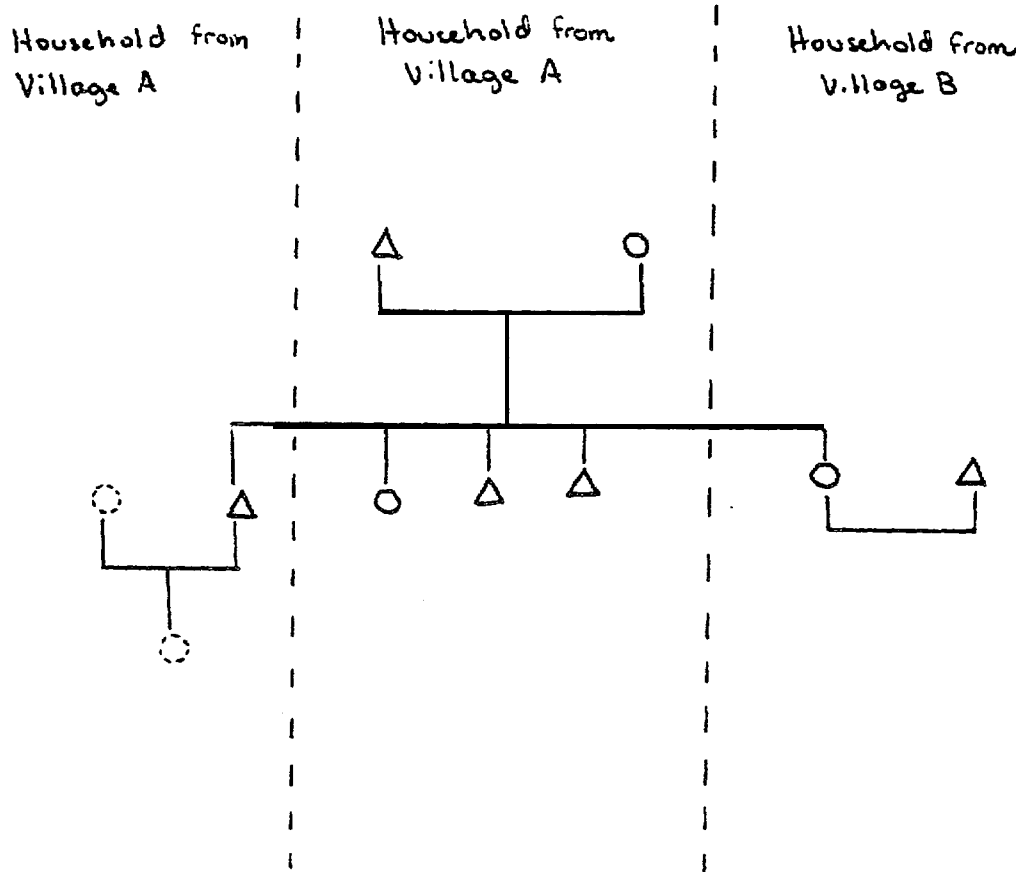


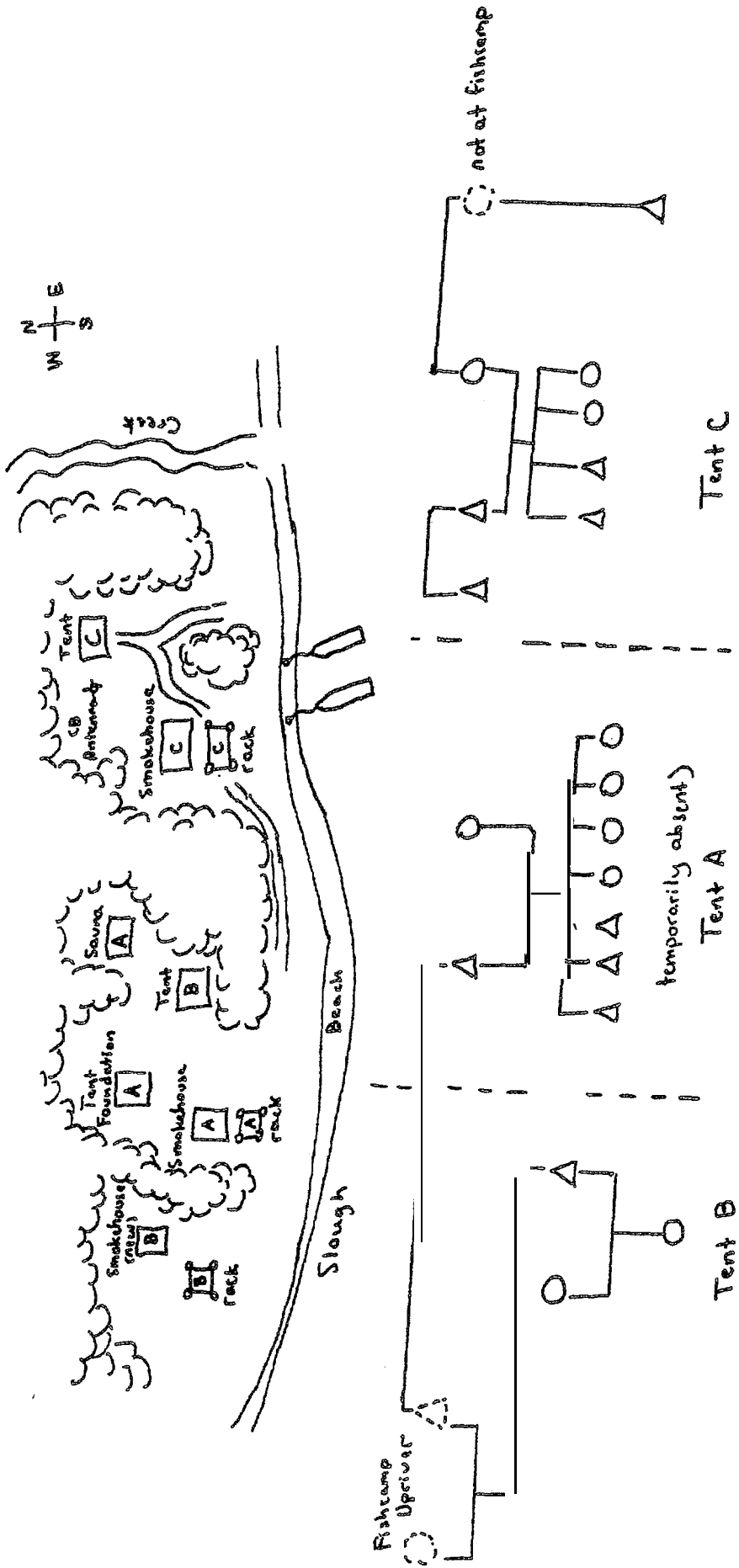
Figure 23. Fishcamp composed of three households from two villages

married daughter and **her** husband had **not** yet **built** separate tent facilities.

The 51-year-old father fished for salmon with his married son, and an unmarried son who still lived at home. Together in **1980**, they caught about 1,200 kings and 2,000 chums and silvers **for** sale. Income from the sale of the salmon was split three ways between them. By **contrast**, **salmon** put up for home use by the women **at** camp (37 kings and 270 chums) were not split three ways, but were kept in a common cache at the home of the father and mother. The married **son**, although maintaining a separate household drew **salmon** from the cache when needed. He stated that no one in the **family** needed to ask for permission to utilize food from the cache. The other household **at camp** caught and dried fish for use of their own household. **It** was stored at a cache in the other winter village.

Although pooling labor for salmon **fishing**, the father and married son primarily fished and hunted as separate units the remainder of the year. The father hunted seals in spring and fall with a partner 'related to his **wife**." The son hunted seals **in** fall and spring with two separate **partners**, "**friends**" his own **age**. The father set a net for **small** whitefish and set hooks for **burbot**. The son set his **father's** net for **small** whitefish at another time. Both hunted fur bearers **separately**, although **the** son gave the father his muskrats for **sale**. Father and son did hunt waterfowl in spring and **fall** together.

Case 3. This case illustrates a **fishcamp** containing three kinship groups each with its own tents, **fishracks**, and smokehouses (see Figure 24). The focal family group was not present when the camp was visited, his tent foundations bare and his racks and smokehouse empty. The 47-year-old household head of this family group was fishing **upriver**, planning to bring his household to **fishcamp** after the close of the commercial season to put up fish. At camp was the focal household's "**paternal nephew**" (his brother's son) and the nephew's wife and child. Previously, the 30-year-old nephew had been sharing the racks and smokehouse of his uncle, but he had recently constructed his own. The third kinship group was not closely related to the others. The 35-year-old head had fished from camps in that area for 19 years, making three moves during that time. He hoped this last location would be more permanent. Staying with him this summer were his wife, four children, his **wife's** sister's **son**, and his younger brother. He was grateful for his brother's presence, as he had sprained his back pulling fish. The brother was setting and picking the set nets as a registered helper in the meantime. His wife had been working at the winter village until the previous open period. Because of a heavy chum run which swamped the commercial buyers, he had been unable to **sell** several hundred chums he had caught. Rather than wasting the fish, he called his wife to camp to cut and hang them for the family's personal use. She complied, and consequently put her seasonal job with a local construction firm in jeopardy. At the time visited, the wife was cutting fish **along** the bank with her husband (she used the uluraq, he a straight knife). The husband's brother was out checking nets, and



Fi 24. Fishcamp composed of three households each with its own tents, racks, and smokehouses

delivering commercial fish to a tender moored nearby (this was at times a 3 to 4 hour wait). Two younger children were out gathering q'quqs, a type of root bulb gathered from the tundra, cleaned, and eaten "like potatoes." The fish they processed would belong to their own kinship group, as would the fish put up by their two neighbors at the camp.

Case 4. In this case, six households occupied a single camp location, with five tents, and three smokehouses (see Figure 25). The oldest household at this location, headed by a 37-year-old male, had been there about 12 years. Sharing the camp with him were his two younger brothers and their nuclear households. Therefore, the core of the camp structure was three brothers. The latest arrivals to the camp were two related households comprising 16 persons, all living within a single tent. This kinship group was not related to the three brothers in any close or direct manner. One household had fished the previous year at a fishcamp downriver, the other household had not been to camp in recent years. The sixth household at the camp was the second oldest brother's wife's parentis household, who were from another winter village than the other households. The households which shared smokehouses included the eldest brother's household with the newly arrived, unrelated extended family; and the second eldest brother's household with his wife's parent's household. The youngest brother's household used one smokehouse alone. From this camp, salmon was produced for five food caches, corresponding to each of the tents. Two of the sons of the newly arrived kinship group were helping the eldest brother commercial fish as licensed helpers.

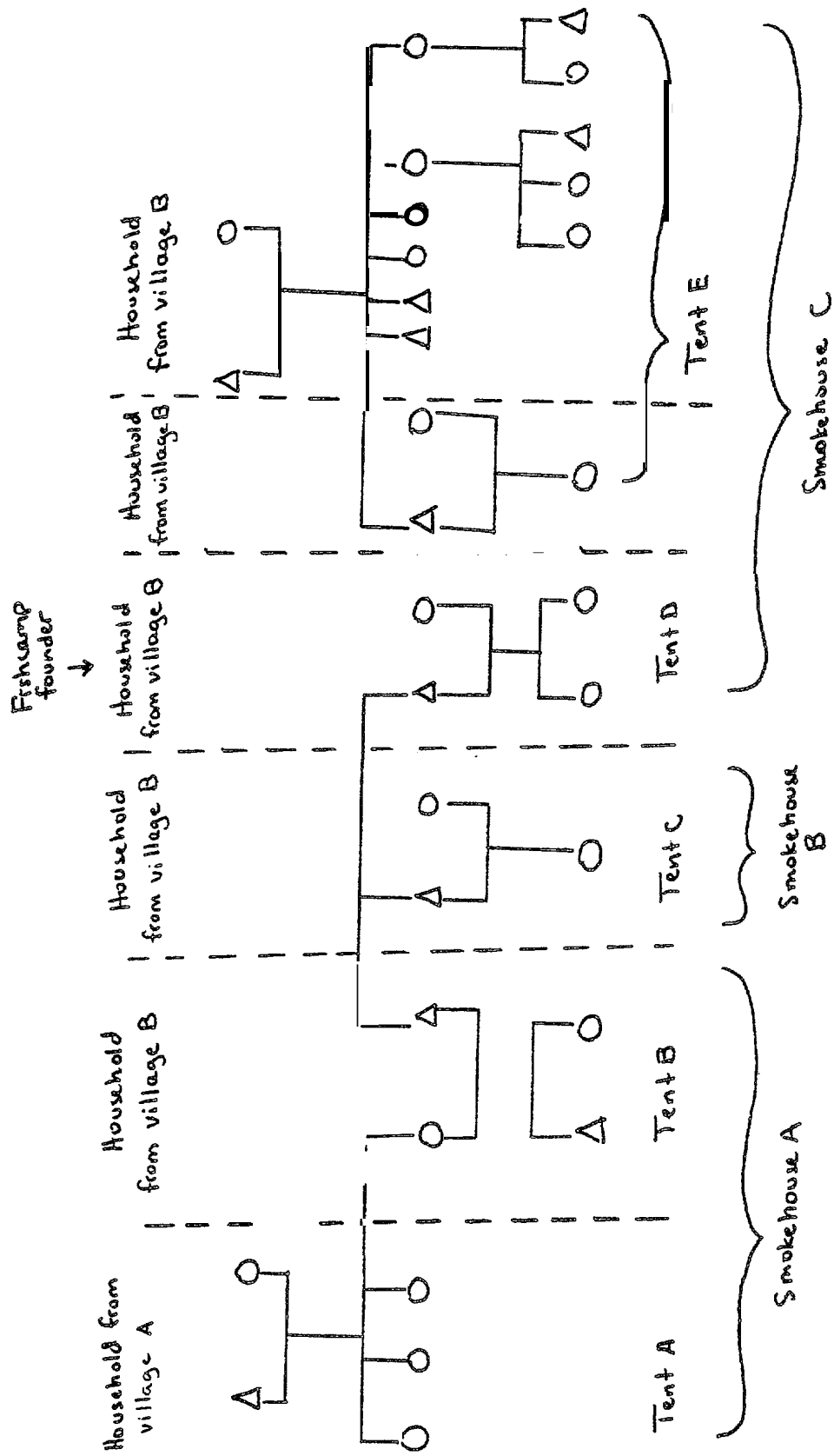


Figure 25. Fishcamp composed of 5 × households, using five tents and three smokehouses

Case 5. This camp was across the river from Case 3 (see Figure 26). The **fishcamp** was occupied by four households all related to one central household. Two households were composed of a daughter, her husband and children, the other was composed of a son, his wife and children. Thus, the cluster represents both **matrifocal** and **patrifocal** organization.

Case 6. This case illustrates the pooling of resources and the division of labor in salmon production within two households at the winter village. At the winter village, the two households resided in neighboring houses connected by pathways which ran to the riverbank and a common fish cleaning area. The two households shared in common fish drying racks, smokehouse, cache, and racks for **snowmachines**. A third house in the cluster was vacant; a sauna lay behind one of the houses (see Figure 27).

The focal **houshold** A of this kinship group was composed of a **61-year-**old man, his wife, two unmarried daughters, and two unmarried sons (the eldest in this household being 25 years old). The second household was composed of household A's married daughter, her 30-year-old husband, and two sons and a daughter. Thus, the male head of household B was attached to the household of his **wife's** parents.

For health reasons, the 61-year-old head of household A did not fish for salmon during 1980. In **1981** he had regained his health sufficiently to begin fishing the period **of July 2**, which was a month into

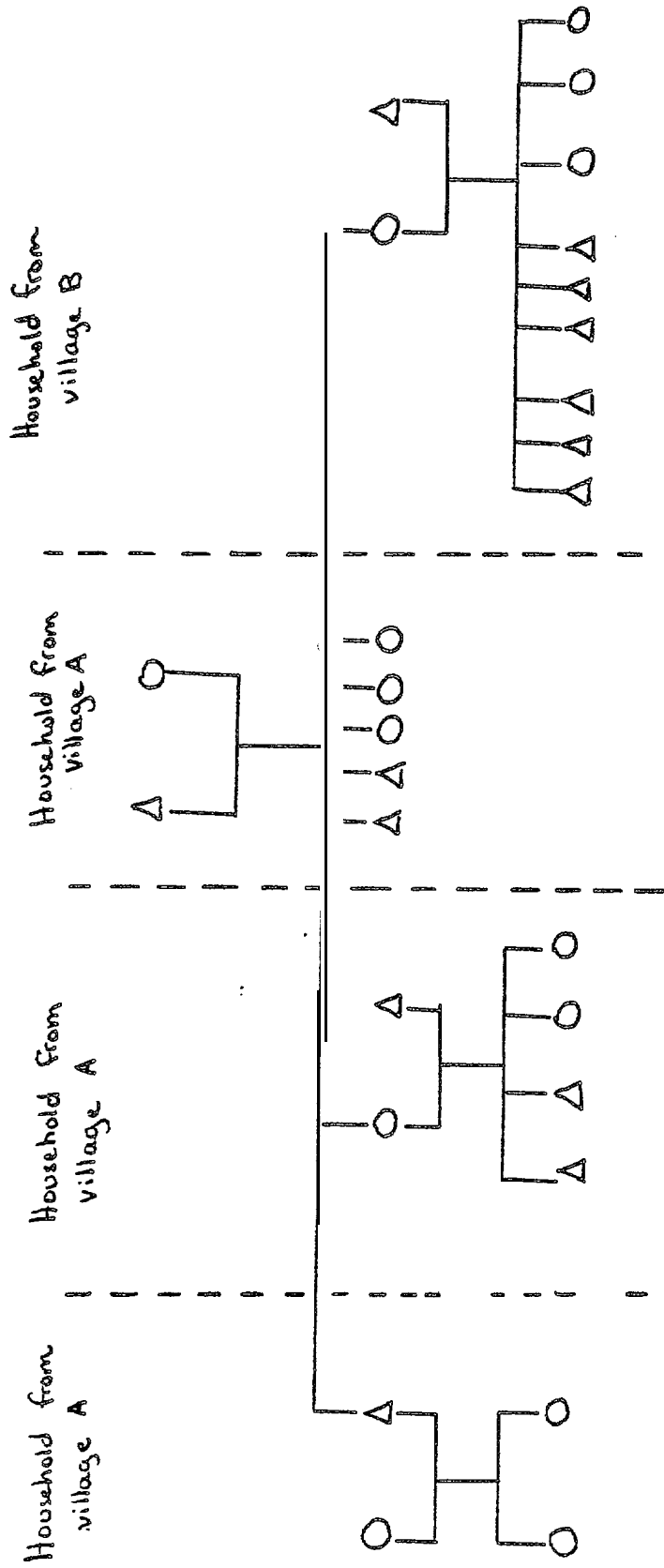


Figure 26. Fishcamp composed of four households from two villages

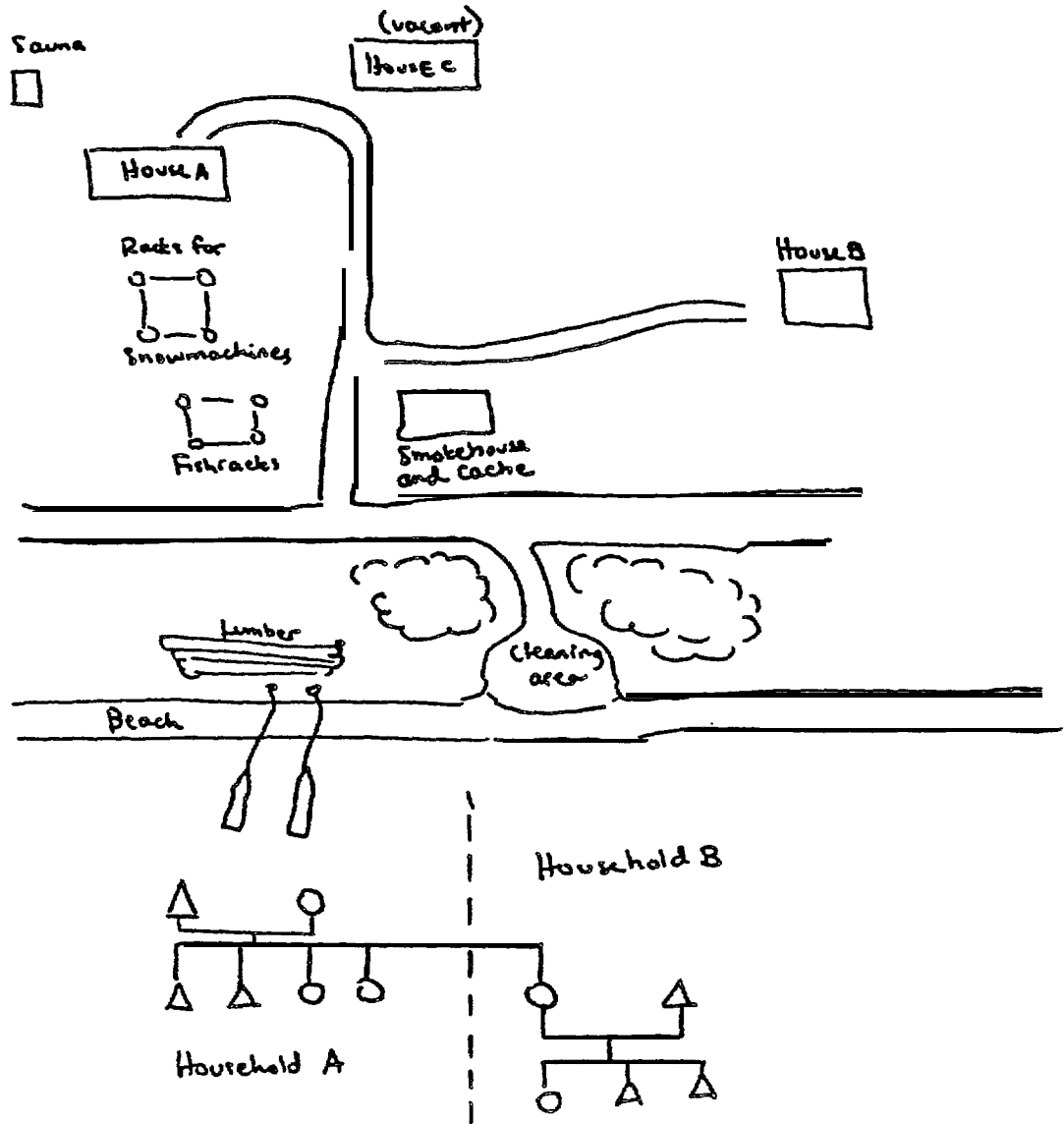


Figure 27. Cooperative group at a winter village composed of two households

the season. Last year his **25-year-old**, unmarried **son**, who had a commercial **license**, brought the household **salmon**, as did his 30-year-old **son-in-law** next door. The son fished at a camp near the **coast**, occupied **with "a buddy."** The **commerical** income from the **sale** of **300** kings and **300** chums and cohos "**belonged**" to the son; however, he helped out with the **family's** expenses throughout the year. **The** son-in-law fished from a **newly** established camp elsewhere near the **coast**, which had drying **racks**, but no smokehouse as yet. He sold **234** kings and about **2,000** chums and cohos to provide income for his own household. His wife and three children accompanied him to camp before **the** commercial season opened and subsequently during open fishing periods.

Household B began **drying** kings **for** personal use before the **commerical** season opened. The **fish** caught in set nets at several locations (**Casey's Channel, Blind Slough, and Tin Can Point**) were cut and hung to dry at **fishcamp** by his wife. The air-dried fish were brought back to the winter village to be smoked at the smokehouse of the kinship **group**. **At** times, the head of household B sometimes brought fresh, uncut **salmon** directly to the winter village, to be cut and dried both by his wife and wife's **mother**, dried on the father-in-law's **racks**, and smoked. **Thus**, both the son and son-in-law of the head of household contributed to subsistence fish stores. The same arrangements existed in **1981**.

When I visited on July **2, 1981, 4:00 p.m.**, I observed the following division of **labor**. The mother (household **A**) and married daughter (household **B**) were cutting chum **salmon** with uluraq at the cutting area

on the river bank. The salmon had been brought by the son-in-law (household B). As they worked, the head of household A arrived in his boat, filled with another **boxload** of chums he had caught. **He** left them in the boat and retired to the house. The two unmarried sons of household A were called from the house to haul the chums from the boat to the cutting area. The fish were first hung by the married daughter alone; then by the mother (household A) alone. Driftwood stacked along the beach was gathered by the father and sons of household A. Keeping the fire in the smokehouse going was the job of at least the mother and probably her children. The dried fish was held in common in the cache by the two cooperating households,

In this cooperating production group, neither young fishermen yet possessed a **"complete" fishcamp**. The unmarried son fished for his elderly parents, perhaps nearing a time of detachment from the household in the next 5 years or so. Currently, although keeping his own **commerical** earnings, he relied upon the labor and facilities of his parents and sisters to process subsistence fish, as well as to provide shelter, cooking, and other amenities.

The son-in-law was in the stage of developing his own **fishcamp** and independent production unit, but still relied on the facilities of the father-in-law as well as on pooled labor. Perhaps in time he will wean himself from this attachment, using his own rack and smokehouse solely, and relying on the labor of his wife alone in fish processing. However, centripetal forces keeping him involved with his **father-in-law's**

household included the obvious close personal relationship between mother and **daughter**, the close proximity of the houses (common yard and boat **landing**), and the poor **health** of the father-in-law.

It was not clear why this particular mother-daughter dyad worked as a production **unit**. There were other married daughters **at** the winter village, one living across the river. The **mother** mentioned with a sigh that she wished her children could live next door to **her**, in the third vacant house. The house apparently was to be occupied by her sister and **sister's** daughter instead. Probably the preferential arrangement **would** have been attaching another married **child's** household to the kinship group.

These cases should illustrate the variety of organizational groupings that existed in the harvesting and processing of salmon for personal use and commercial **sale**. The bilateral reckoning **of** kinship relations allowed for some of the flexibility in social group composition. Bilateral descent enabled **offspring** to be **linked** with relationships of either the paternal or maternal **side**. In addition to this, there appeared to be no preferential residence rules operating in relation to **fishcamp** location. At **times**, a household attached **to** the **husband's parent's camps**, at times the wife's **parent's camps**, and **still other times**, the household established its own **fishcamp** separately.

Within the social production **unit**, **labor allocation and** sharing of material resources also assumed a variety of **forms**. **In general**, **labor**

was frequently pooled in the production of salmon. However, food caches generally were held in common only by a parent's household and **parent's** children's household. It was unusual to see the sharing of a cache by two households of the same generation without the existence of the intermediary parental link. That is, while the households of siblings commonly pooled labor in salmon production, it was unusual for them to pool the product in a single **cache**. The households of siblings generally produced separate food caches. More distant relations also commonly pooled labor and resources, but rarely shared common food caches.

In conclusion, of particular significance is the fact that the economic and family systems were closely intertwined during 1980-1981. That is, the form of the kinship-based unit during summer frequently was adapted to the requirements of the major economic activity, fishing and processing salmon. Conversely, fishing and processing salmon was perceived to represent activities by family members and was organized following kinship principles. Economic activity, therefore, served to structure familial activities, and vice versa. This point is an important one, for modifications in the economic pattern of fishing and hunting would change the functional patterns of the basic kinship groups. Disruptions in the regional economy would represent disruptions of the **region's** central social groups.

The Functional Integration of Roles by Age and Sex

As is illustrated by the case examples of salmon fishcamps, the division of labor in subsistence activities commonly was allocated along sex and age lines. Whereas kinship criteria often were used in the recruitment of a group of people for cooperative work in food productions sex and age criteria frequently were considered in the allocation of specific occupational tasks or roles. Labor was partitioned into complementary functional roles enacted by persons of different ages and sex. The integration of functional roles was apparent in subsistence pursuits in addition to salmon fishing activities.

Sex-related Roles

Most fishing and hunting was performed by men, while women supplied essential support services in food processing for storage and consumption. By and large, male occupations included fishing with nets for salmon and non-salmon fish species; hunting for sea mammals, birds, and moose; and trapping. Females produced foods in the occupations of plant gathering, egg gathering, and jigging for fish. Female support occupations included cutting, hanging, and smoking fish; cutting small seals; preparing seal skins; plucking birds; meal preparation; and baking bread. Men commonly cut up large sea and land mammals for transport, and skinned and stretched pelts. Other male subsistence-related activities included boat construction, boat motor repair, net mending, and manufacture of harpoons, spears, and fish traps. Women

made parkas, winter and summer boots, and other clothing items from imported material. The craft industry, items for sale on outside markets such as baskets, earrings, throwing boards, wooden bowls and ladles, was small on the Yukon delta in comparison with other Eskimo communities to the south. In general, men operated boats and **snow-** machines when household members traveled. Women frequently were provided transportation by males when gathering plants or eggs.

None of these divisions of labor by sex was rigid. Almost all activities listed above were performed by men and women alike at times. Women and men commonly showed considerable skill in activities allegedly ascribed to the opposite sex. In the absence of adult males, adult females commonly ran a household and performed many of the activities related to fishing and hunting, such as setting nets and shooting birds. Similarly, a man at times substituted for a woman if she were absent, sick, **tired**, or pregnant. Both men and women assisted one another if workloads were large, or simply for the company each gave the other. Men and women teams in catching fish and hunting sea mammals were not uncommon.

Some residents claimed that the sexual division of labor was more strict in the past. However, others felt that even traditionally men and women performed each **other's** tasks as situations might dictate. Reciprocal roles among men and women thus appeared to be a convention which allowed considerable freedom in practice. Marriage in part was understood to be a method for a man and woman to form a complementary work unit.

Unmarried men commonly brought food to mothers or sisters for processing and preparation.

Age-related Activities

In addition to activities related to sex roles, performance of certain occupational tasks tended to be influenced by the age of the worker. Age commonly reflected a **person's** level of physical strength; skill in buntings fishing, and food preparation; knowledge of game and terrain; the nature of **social** responsibilities; and the ownership of equipment and operating capital. Persons of different ages with different **skills** and resources tended to support one another in production and exchange activities within kinship groups. **Large** food producers tended to contribute food to persons **whose** food **output** was relatively **smaller**, as is discussed in the next chapter. Skilled and capable fishermen and hunters tended to contribute labor **in lieu of** persons with reduced capacities within kinship groups. Knowledgeable persons contributed **counsel** and guidance to those less knowledgeable. And kinsmen with equipment and operating capital frequently utilized it for the benefits of those without.

Production responsibilities within a household were allocated among members in particular ways. Members of the youngest generation (birth to **early** teens) produced the **least** food directly. **Children frequently** accompanied parents and siblings in fishing and hunting activities but mainly as interested onlookers and learners and secondarily as workers.

The role of children in direct subsistence **ouput** was in the capacities of support services, such as carrying water for cleaning fish, scrubbing boats, assisting parent in **catching**, cleaning, and hanging **fish**, and meal preparation. By the early teens, persons have had direct experience with most subsistence-related activities. Adolescents and young adults increasingly participate in subsistence pursuits with age. Activities especially performed by adolescents and young adults included snaring rabbits, shooting **ptarmigan**, jigging fish, shooting muskrats and waterfowl, dipping smelt, assisting in catching and processing salmon, and working at seasonal wage employment. **Full** participation in a wide range of production activity generally occurred at about 30 years of age, this decade marking the most productive years of a male fisherman and hunter.

The shift in subsistence roles is suggested in Figures 28 and 30.

Figure 28 depicts subsistence outputs during June 1980 to May 1981 of males, by age, averaged within 10-year age ranges, for members of the sample households at **Alakanuk**. It shows the beginning of appreciable subsistence **ouput**s to be about the age of 15, increasing substantially during the 20's. Production output of a fisherman and hunter jumped markedly at about 30 years of age. The most productive decades for male hunters were between the years 30 to 59. After about 60 years, subsistence output dropped considerably. Nevertheless, significant food output continued into the last decades of a **person's** life.

Figure 30 depicts the output per household for the same **Alakanuk** sample by the age of the household head, averaged within 10-year age ranges.

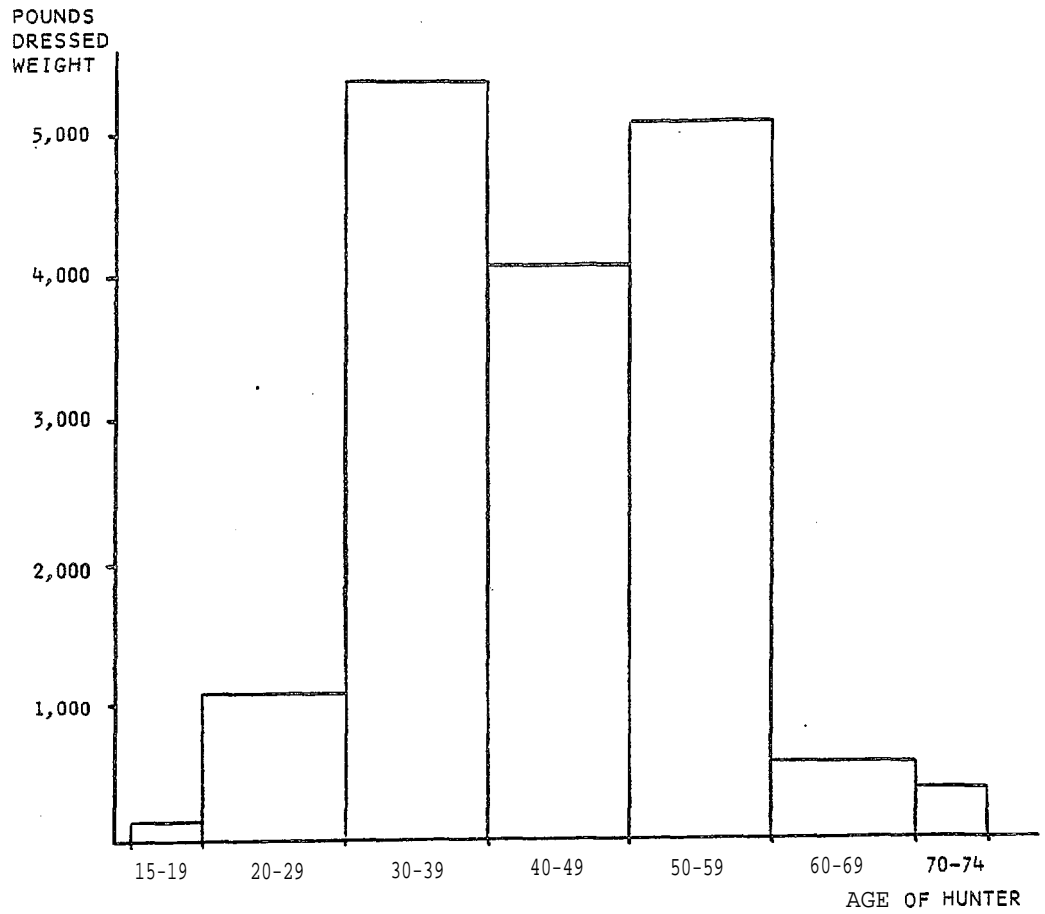


Figure 28. Subsistence output by age of hunter, Alakanuk.
(June 1980-May 1981, averaged within 10-year
age ranges.)

It shows that households with heads between 60 and 69 produced an average of **3,000** pounds dressed weight of subsistence foods. Comparing Figure 28 with Figure 30, approximately 500 pounds of this output was produced by the head of the household. Most food produced within these households was by unmarried males in the family **who** had assumed productive roles.

Within the prime middle adulthood **decades (30-59 years)**, subsistence activities also were affected by age. Most production of seal oil and meat was done by men in their **30's** at **Alakanuk** during 1980 to **1981** (Figure 29). Seal hunting was a relatively strenuous activity which offered challenges to a **person's** skill and strength, conditions which appealed to this **age** range. By contrast, most production of non-salmon fish species was done by men in their 50's at **Alakanuk** during 1980 to **1981** (Figure 29). Non-salmon fish species, by and large, were taken by set nets and fish traps during **fall** and winter, activities requiring moderate labor expenditures of which an older person would be capable. Waterfowl harvests showed relatively stable harvest levels across the middle **decades**, representing a third age-specific pattern. Thus, men of particular age ranges tended to specialize in the production of certain food resources and shared their harvests within the household group. Chapter **7** describes how substantial quantities of food also **flowed** between households groups as well.

Elderly persons in a community become less involved in direct subsistence production with advancing age, as shown in Figure 28. As is

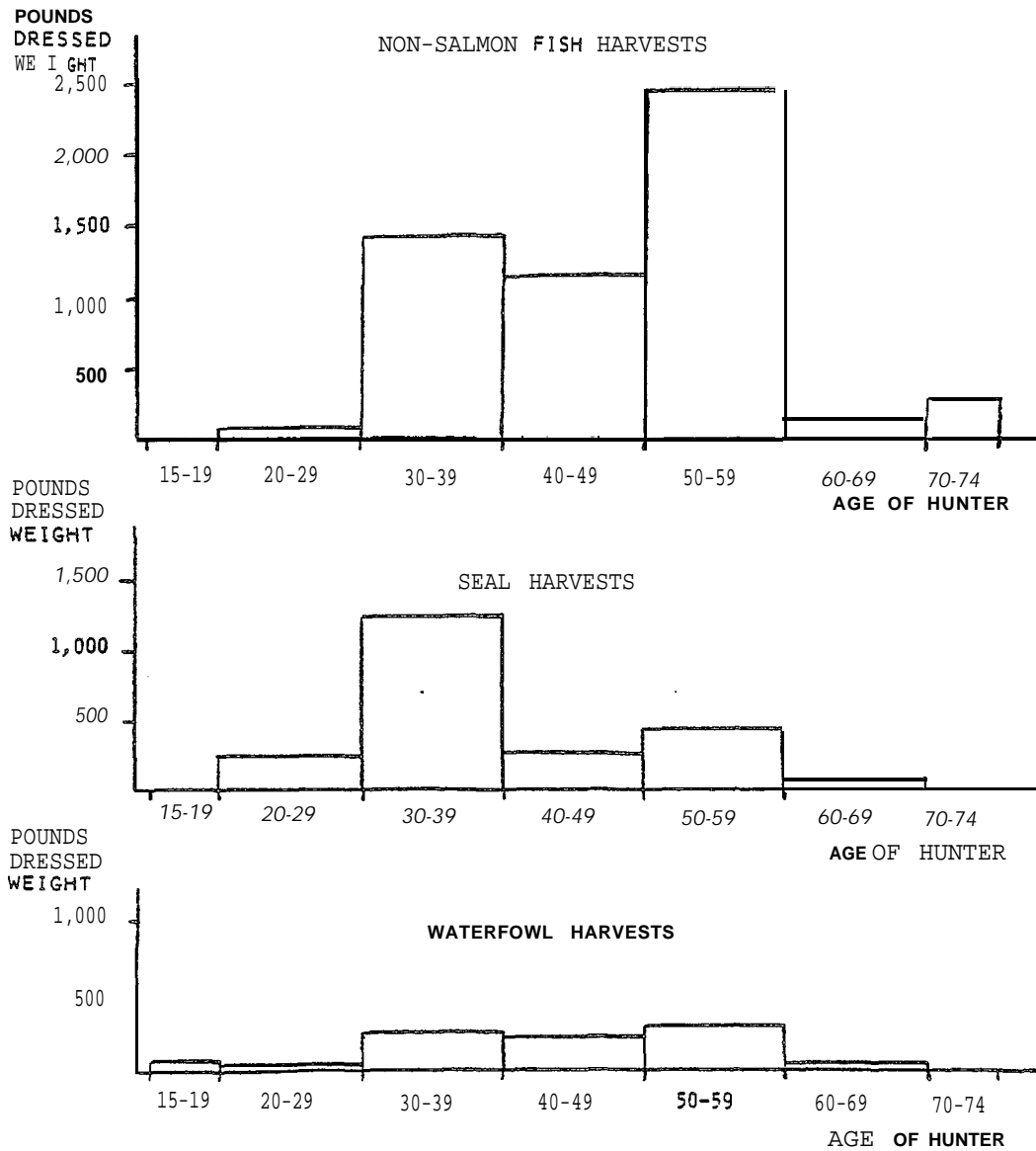


Figure 29. Subsistence harvests of non-salmon fish species, seals, and waterfowl, by age of hunter, Alakanuk. (June 1980-May 1981, averaged within 10-year age ranges.)

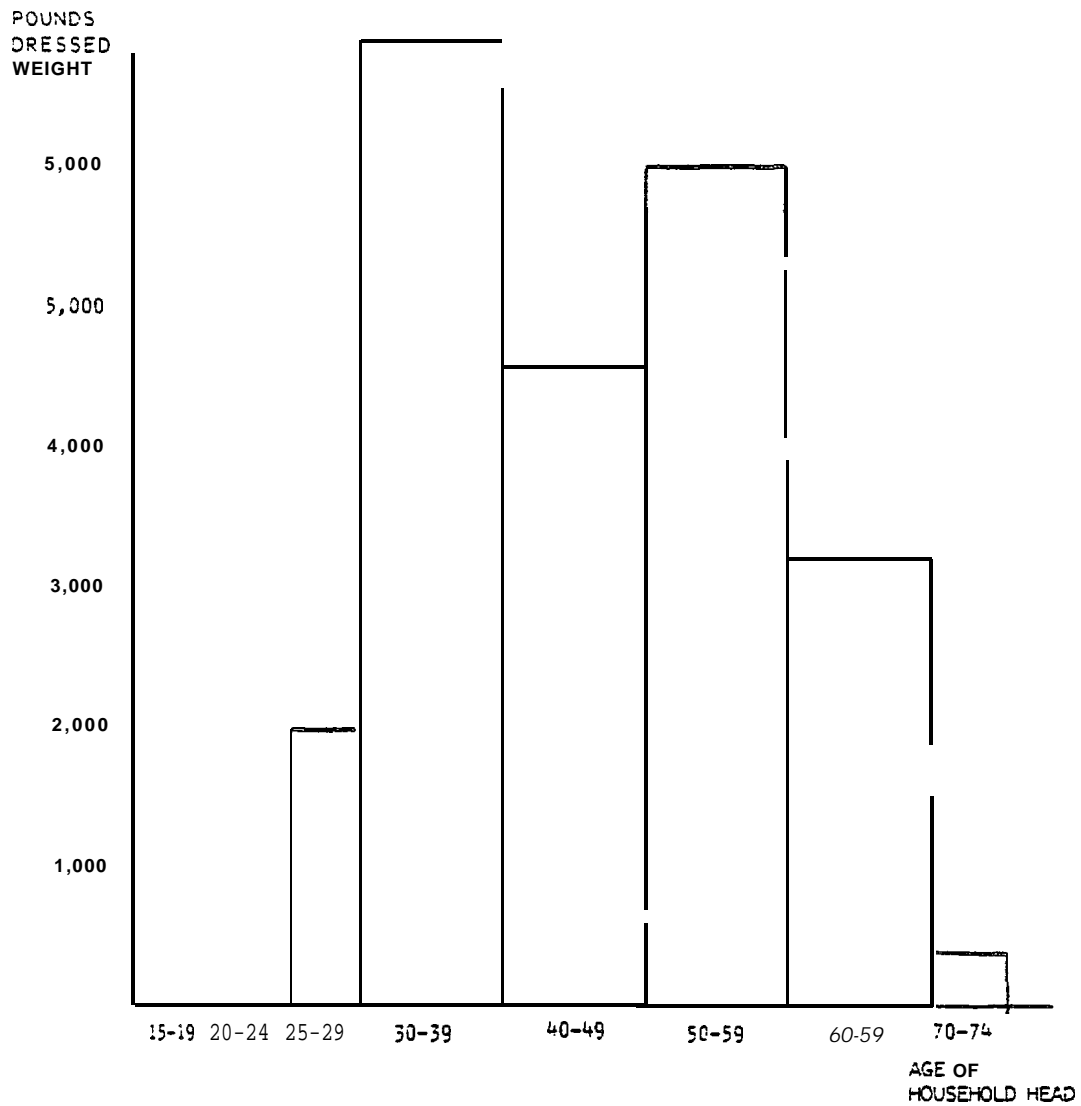


Figure 30. Subsistence output per household, by age of household head, Alakanuk. (June 1980-May 1981, averaged within 10-year age ranges.)

described in Chapter 7, children regularly supported parents with food produced within their own households. Nevertheless, elderly persons **often** continued to set nets and traps and **jig for fish during fall** and winter, snare hares during **winter**, and gather **plants** and berries **during summer**, despite substantial disabilities in physical function. Elderly men commonly provided support activities such as mending nets for younger sons and crafting spears, **harpoons**, and traps. Frequently grandchildren accompanied the elderly in **their subsistence pursuits**, assisting in transportation picking **nets**, hauling **fish**, and other support activities. **The elders in a** community were held in high respect for their past experiences and greater knowledge by younger **persons**, and were frequently consulted concerning fishing and hunting techniques strategies and locations. **Thus**, they participated indirectly **in** the production **of** food **in the** community.

It was hypothesized at the beginning of **the** research **that** the increased participation in wage employment **by children might** lead to an increased isolation of the elderly generation. **Cash** earnings did not seem to flow as readily within and between households **as** subsistence food income. Further, the elderly might be **less** able to contribute to the success of wage employment through wisdom **and** ancillary services **in** comparison with contributions **to** subsistence activities. **However**, general observations **during** 1981 **did** not seem **to** support **this** hypothesis. **By and large**, most **elderly persons'** houses were frequented by relatives and the elderly and their **children** seemed to participate in each other's affairs. Working at a wage occupation by children did

not seem to make any difference in this pattern. As of this time, data do not support the possible influence of increased participation in the market economy on the functional roles of the elderly.

CHAPTER 7

SHARING AND EXCHANGE OF FOOD RESOURCES

In addition to food production by fishing, **hunting**, and gathering **activities**, food resources were acquired by Yukon delta residents through systems of distribution and exchange. A significant portion of the food resources produced by a person **or family flowed** out to other individuals **as** items shared, **given, exchanged, and sold**. This **flow** of food products occurred extraneous to **retail** market channels. Food resources passed between **individuals, families**, and communities through traditional distribution and exchange activities.

Giving and receiving food were **basic** to **social** relationships within the culture of the Yukon **delta** in 1981. Food products flowed so frequently between individuals as a part **of** normal social interaction that it seemed doubtful that any significant social relationships existed without associated food transfers. Most sustained interaction between persons included the mutual exchange **of** food resources. **The** giving and receiving of food typically communicated a set **of** ideas and sentiments between the giver and receiver. That **is**, the biologically related act **of food** sharing expressed a **complex of** symbolic meanings concerning the structure **strength**, and **quality** of **social** relationships.

This chapter describes in general terms distribution and exchange activities within the Yukon delta study area in 1981. The information should be taken as suggestive of the types, magnitudes, and symbolic meanings of these activities within the cultures of the **Kwikipagmiut** and **Tapraqmiut**. More extensive research is required to validate the general statements made here. The study's short duration, and design calling for substantial movement between communities, mitigated against the systematic collection of information on systems of distribution and exchange. The types of information presented here represent **unsystematic**, qualitative observations on the giving and reception of food during the short field stay, interpreted with general verbal accounts by residents concerning the activities as they perceived them.

The design precluded quantitative data collection on exchange relations (cf., Johnson, 1978). Information on distribution and exchange based on an **informant's** retrospective recall was inadequate for constructing exchange patterns. Most individuals could not, and did not, keep track of food transfers, as the giving and receiving of food was so common a component of everyday relationships on the Yukon **delta**, and occurred so frequently in a variety of contexts. (As an analogy, it would be similar to asking an urban American to recollect the number of phone calls made and received, and with whom, **over** the past year, without referring to a phone bill.) Furthermore, keeping accounts of quantities of food given and received frequently was contrary to the spirit of the act, akin to evaluating the worth of **birthday**, Christmas, or wedding gifts in urban American culture. The types and flow of food

were not properly subjected to a rational calculus; a person **demonstrating** such knowledge revealed something concerning his understanding **of** the meaning **of** giving and receiving. A more **fruitful** methodology for describing this aspect **of Kwikpagmiut and Tapraqmiut** cultures **would entail** long term observations within a **single** social setting. Then it might be possible to trace the disposition of food products within a community--where foods went, who consumed **them**, and within which context. An understanding **of** the symbolic meanings **of** giving and receiving food **would** require a deeper understanding of the culture and psychology **of** the residents of the Yukon **delta**.

However, describing the distribution and exchange of food resources even in general terms is instructive. **It** informs that residents of the Yukon **delta** were interconnected **within** a network of relationships along which food resources flowed. Food rarely stayed solely within the **social** unit that produced **it**, but typically flowed out to others. Through the pattern of food **transfers**, all the communities of the delta were linked. Thus, the **delta's** economy must be understood from a larger regional perspective when considering the final disposition of economic goods. The alteration of food production in one sector of the **delta** might **hold** ramifications for other parts of the regional distribution network.

Examples of Food Sharing

Consuming food not produced by oneself was a common experience on the Yukon delta. The pervasiveness of food exchange is suggested in the following three case observations made during the summer of 1981.

Case 1. The researcher ate **his** first meal in the Yukon delta area in the late spring of 1981 with a family at **Stebbins**: dried broad whitefish and pike dipped in salt and peppered seal **oil**. The food was not produced at **Stebbins**, but had arrived by **plane** in a cardboard box, sent by the **wife's** parents from St. **Mary's**. The next night the **Stebbins** household enjoyed a meal of herring roe on kelp dipped in seal oil, received as a gift in a paper sack from a friend in the village who had picked it that day from the rocky coast of Stuart Island. The day following, mundug (raw **belukha** epidermis) dipped in seal oil was the main dish, given to the household by a successful hunter in the village. Thus, the **first** three consecutive evening meals for the researcher contained food products given the host household as gifts.

Case 2. An August hunt with two men from **Kotlik** and **Stebbins** yielded several ducks and one goose. The next evening the researcher noted that the birds were gone from the house. Upon inquiring, it turned out that half had been sent up the coast to the **Pikmiktalik** River to be given to the **Stebbins hunter's** parents and to his **father's** brother's **wife's** sister. Of the other birds, three were cooked and served to the **Kotlik hunter's** family (wife and four children), the remainder given to

his parents (who lived in **Emmonak**), and his **wife's sister** (Figure 31). In **all, the** waterfowl had been distributed among six separate households in **three** different **winter** villages. **The hunter** saw nothing noteworthy about the **birds' dispositions, and** wondered at **the researcher's** attempts to trace them.

Case 3. During an interview with the head of an **Alakanuk** household it was mentioned in passing that the household had received the following foods : **smelt** from his mother's brother; dried chum from his mother; waterfowl from his **wife's** father; moose from his brother; ringed seal from his **sister's husand**; and bearded **seal** as **pieces** shared during a hunt. **He** in turn had provided **blackfish**, saffron cod, and arctic hare to each of the households. When **I** produced a **flow** chart of these transactions? the household head was unimpressed (Figure 32). From his assessment, the chart nowhere approached a complete depiction of the food he received or gave the past **year**; he had shared a greater range of food types with a wider sphere of' persons.

Although anecdotal, these incidents suggest the frequency and complexity of food exchange and illustrate the variety of foods involved. The cases seemed typical of the kinds of food transfers that occurred **daily** among residents of the **delta**.

Food resources were **given and** received *in a number of culturally* defined contexts. Three primary categories of sharing are briefly discussed and illustrated below: food given as unsolicited gifts

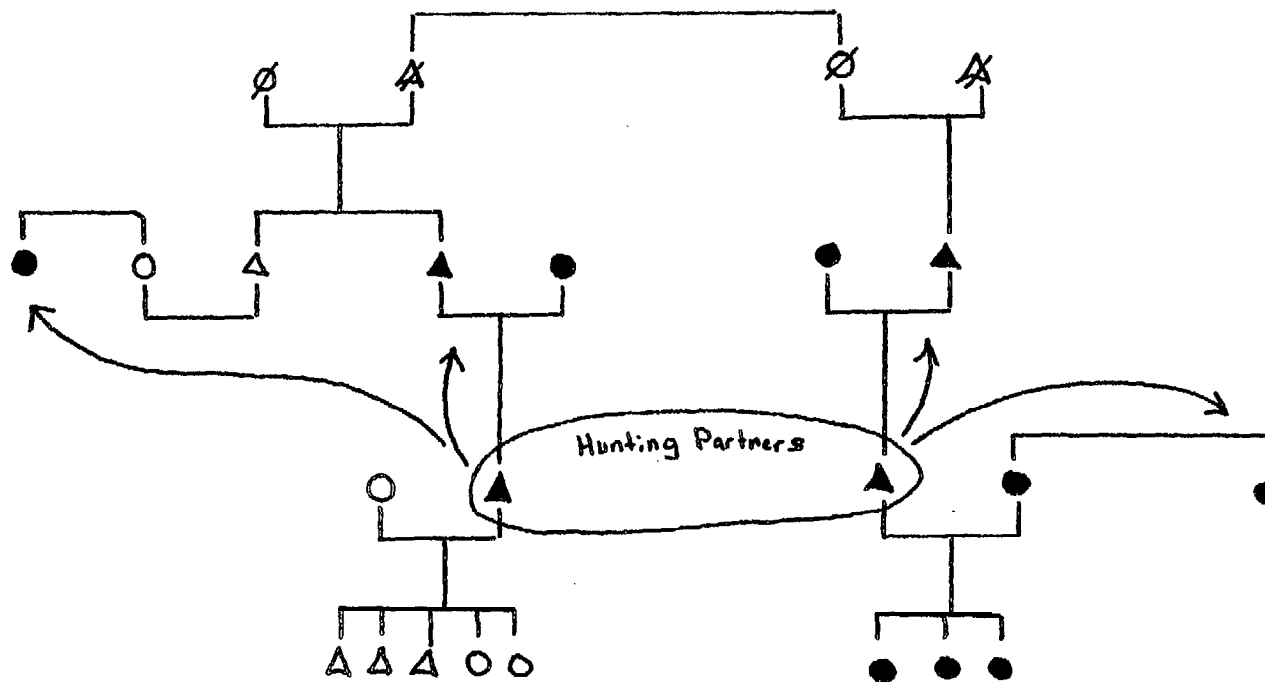


Figure 31. The distribution of waterfowl from a hunt. (Darkened persons receiving birds.)

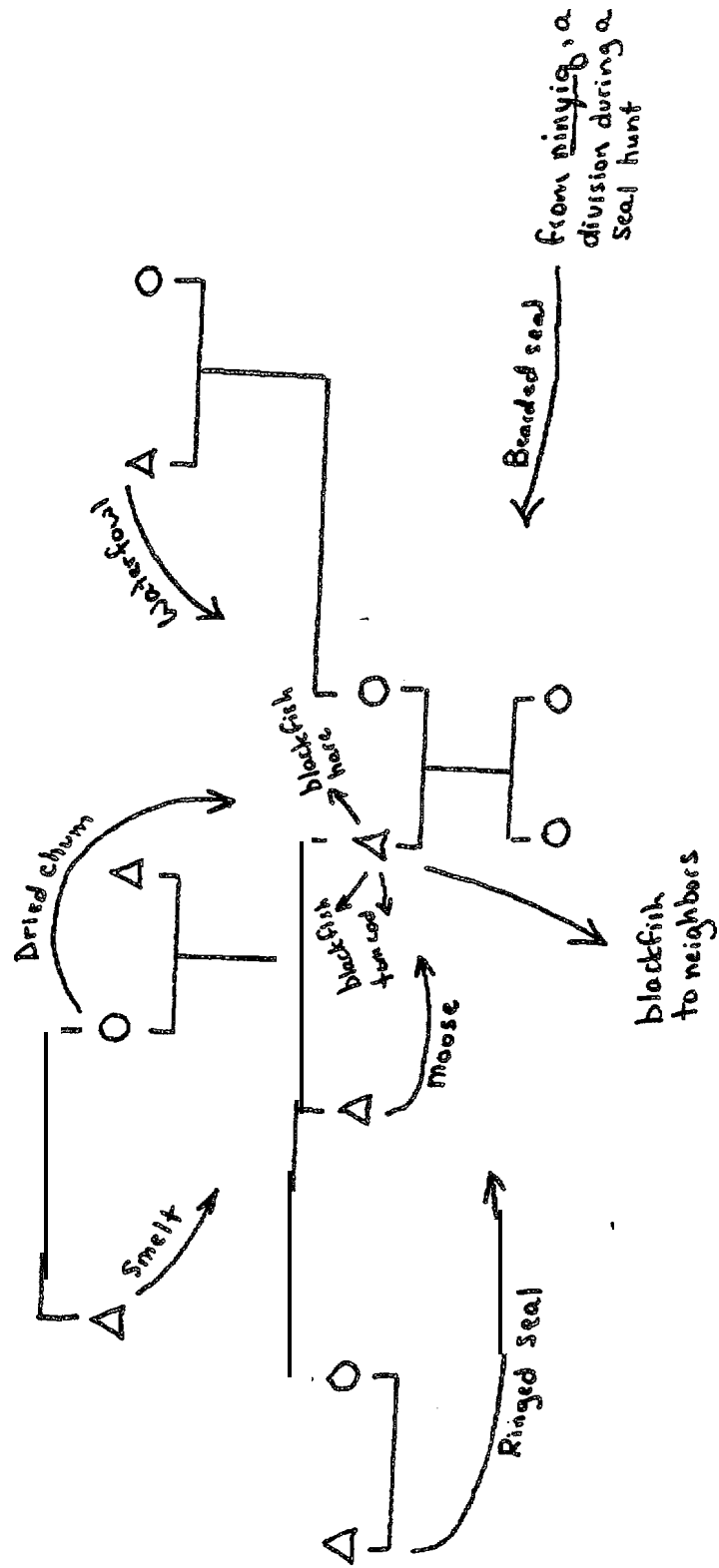


Figure 32. Examples of food distributions among a group of households

(chigiq, biyoqtuq, tufqaq); food exchanged or sold as economic goods (navolhotuq, tungyiaq); and food shared among members of one's close family. Finer distinctions among these cultural forms of food distribution and exchange must be left for future research.

The Giving of Food (Chigiq)

Giving food resources as an unsolicited bestowment or gift, termed chigiq, 'as a **major social category** Of food sharing activities" Chigiq. means "to give" in a **broad**, generic sense. A number of food transfers between individuals were understood as representing this form of sharing. Probably all the food distributions mentioned in the cases above were examples of chigiq.

It was said that to chigiq food was common practice. Sharing food items this way reflected some cooperative spirit held between community members toward one another. Decreases in this form of sharing were perceived by some residents as an indicator of negative change within communities of the delta. The statement, "**people don't** share as much as they used **to**," was meant to characterize perceived deteriorations in the quality of social relationships within communities. The validity of this statement of course could not be determined. It was clear, **however**, that food was shared frequently, and sometimes in large quantities during 1981.

Apparently any type of food product, unprocessed or processed, could be shared. Chigiq meant that the food was unsolicited by the receiver and purportedly incurred no obligation by the receiver to reciprocate. Further, a giver normally did not keep account of the things shared this way. To some, however, receiving such food items did imply an obligation: one middle-aged woman stated that, when someone "chigiqed" her something, she always wanted to pay it back. Supporting this position, apparently indigent households disrupted the spirit of the practice of chigiq. One might stop "chigiqing" with persons who never worked although able and who, as nonproductive members of a community, lived off the proceeds of others. This suggests that between certain able-bodied individuals some balance was expected in the exchange of food products over time.

When asked to discuss principles underlying chigiq, a range of general statements were elicited, suggesting a framework to the pattern of giving. As general rules, these could be summarized into the following guidelines: 1. One shared with parents extensively. 2. One shared with elderly neighbors, ensuring that they "had the things you had." 3. One shared with relatives. 4. One shared with neighbors one was personally close to, and got along well with. 5. One shared with neighbors one did not get along well with (to keep relationships from deteriorating further]. 6. One shared if one had "a lot of something that other people did not have a lot of." 7. One shared the year's first catch of a species. 8. One shared if there was a possibility that a food might be wasted if it were not shared. These statements

indicate that sharing at times was understood to symbolize a type and quality of social relationship between persons. Kinship relations defined appropriate networks along which food flowed. Close friendships were associated with food transfers. And food symbolized respect for the social position of the elderly. The statements also indicate that sharing was motivated by a desire to meet perceived needs of individuals who might not have access to certain types of food, such as the elderly who could not hunt or fish for themselves. **While** meeting needs, sharing also assuaged possible resentments among community members over disparities in personal possessions or good fortune.

Additional examples of food transfers observed during the summer of 1981 illustrate these general principles beyond the cases already presented. During early July, the chum runs peaked along the south pass of the Yukon River. Commercial fish processors were inundated with **fish**, fishermen waiting up to 3 hours to sell catches. Capacities were eventually reached, and buyers turned fishermen away who had fish to sell. Reportedly, this situation usually occurred at least once during a commercial season. Rather than waste the fish taken that period, many fishermen brought the unsold catches to the winter villages, and gave them away to individuals. While cutting salmon for drying, one family reported that the fish had come from a **"cousin."** Over 200 chum had been given, which were too many for the household to process, so they in turn gave salmon to a **sister's** family. A second household reported that salmon they were cutting had come from

"friends." This represented chigiq, the giving of surplus to those with fewer resources, so as to avoid waste.

The sharing of large mammals, such as belukha, bearded seal, and moose, was similar. Because of their large size, the meat and oil might not be utilized by a single family. For instance, one hunter from Sheldon Point killed two belukhas during early summer, bringing the whales to the winter village for distribution. When not everything was used, the remaining meat and fat was taken to relatives and friends in Alakanuk and Emmonak, although this required expenditures of time and money, so that the belukha would not be wasted. In a like manner, a middle-aged man killed a belukha during the spring near Stebbins, bringing it to the beach. Anybody coming clown to the beach to help out, or simply to watch, received some, the hunter deciding which portions. Afterwards, the man took portions he had retained around the village to the "elderly folk who were not fortunate enough to be able to hunt."

The Exchange of Food as an Economic Good

Traditionally within the cultures of the Yukon delta, food resources were exchanged as economic goods. Historical sources document large exchange networks for the trade of belukha oil, seal oil, caribou and reindeer skins, seal skins, woodware, dried salmon, whitefish, and furs between Yukon River communities during the nineteenth century (Wolfe, 1979). By and large, the volume of food products exchanged as economic goods has decreased within the region since about the 1920's. The last

major local trade involved dried fish for dogteams. Nevertheless, a small volume of food resources still were exchanged and sold as economic goods within the Yukon delta region during 1980-1981.

The terms for this type of food exchange were navolhotuq and tungyiaq. Navolhotuq referred to the exchange of one economic good for another, or what has been termed "barter." As explained by residents, if another person has an item one needs, one may offer to exchange something for it. If the goods are viewed as equivalent in value, the "swap" is transacted. Tungyiaq referred to the trade of goods involving some form of currency. If an item is sold for money, then this was tungyiaq.

Both forms of exchange occurred on the Yukon delta with local food resources. It is important to distinguish these traditional types of trade from the regulated "commercial" trade of food resources. "Commercial" trade of salmon and furs occurred between a licensed buyer and a resident fisherman or hunter for the purpose of export to outside markets. Navolhotuq and tungyiaq involved trade within local markets. The major difference then was the location and size of the market and in most, but not all cases, the nonlocal origin of the buyer. External market demand for products such as commercial salmon and furs potentially was larger than the region's capacities for sustained supply. Because demand potentially exceeds supply, the volume of commercial sales has been subject to regulation from sources external to the delta region to ensure that overproduction in the short term did not deplete

the resource base **in the future**. By **contrast**, demand for food products on **internal, local** markets historically has **never** been **large** enough to outstrip **local** supply. The relatively **small** population and ubiquitous **range** of most food resources have limited **local** market demand **for** food and material products. The internal market was essentially **self-regulating**. It would be extremely unlikely that an internal market demand would develop for a local resource which **would lead** to short term over-production for local trade which threatened the resource base. Consequently, traditional **barter** and trade on **local** markets has not required outside **regulation**, as has the **"commercial"** sale of salmon and **furs**.

As **with chigiq**, potentially any food resource **could be** exchanged through **navolhotuq** and **tungyiaq**. In **practice**, commonly only a few products actually were exchanged on **local** markets in 1981. Seal oil was a major resource exchanged between coastal residents and main river residents. Seal oil was perceived by many main **river Kwikpagmiut** to be an essential component of their diet. Most exchange occurred after fall seal hunting. As one hunter described it, **seal oil** and **munduq** was **"swapped"for "upriver things,"** such as **wolf skins**, **wolverine skins**, **moose meat**, and even groceries. If currency were **involved**, the **value** of **seal oil** increased **with** distance from the **coast**, prices ranging from **\$30** to **\$70** for 5 **gallons** of seal oil or the quantity derived from one **whole carcass** of a spotted or ringed seal. Moose meat was a **major** item that was traded **downriver for seal oil**.

The other major item exchanged was dried salmon, especially king salmon **strips**, or barrels of dried chum. **Commonly, a** small number of families during summer put up one or two extra barrels of dried salmon for exchange later on during the winter. For one reason or another, such as paid employments illness, or **indigency**, certain persons found themselves without adequate salmon supplies during winter. These individuals might buy these small surpluses offered on the local market for about \$9 per pound in 1980. The substantial cost of processed **salmon** during winter compared with the costs to a person to process **one's** own supply during summer restricted this trade to a relatively low **volume**, nothing comparable to the sale of salmon as dog food in the **1920's** and **1930's**.

Periodically, other food items were offered for exchange as economic goods. **Sheefish** taken on the delta 'at **Kotlik** or **Emmonak** sometimes were exchanged at **Stebbins** during **winter**, bringing \$4 to \$5 apiece in 1980. Broad whitefish also were exchanged in limited quantities this way. Sometimes attempts to create a **local** market proved unsuccessful. During the spring of 1981 it was reported that an entrepreneur from **Stebbins** brought a boatload of herring to **Kotlik** for sale. No one would purchase them as economic **goods**, so he ended up giving them away (**chigiq**). Apparently, enough herring was received at **Kotlik** through traditional channels of sharing to defuse the development of a local herring market.

Regional Patterns of Distribution

Certain food resources were **only produced within certain** sectors of the Yukon delta region. Through chigiq, navolhotuq, and tungyiaq they **flowed** to other sectors, creating distribution patterns linking communities within the region. Herring was one such resource. Herring was not harvested within communities of the Yukon **delta**, but within two communities adjoining the **delta--Stebbins** and **Scammon Bay**. Strings of dried herring commonly were distributed **along** exchange networks throughout the communities of the Yukon delta region. When queried about dried herring hanging in their **caches**, households commonly replied that **it** had been sent to them **by** relatives or friends from **Scammon Bay or Stebbins**.

Smelt and lamprey were two other resources with restricted harvest ranges. **Smelt** primarily were harvested **by** households **along** the south pass of the Yukon for a **few days in early** summer. Lampreys were harvested along the main river from Mountain Village sometime after **fall freezeup**. Both resources flowed **from** their **points of** harvest to other sectors of the region. **People on** the lower Yukon stated they **always** knew when Mountain Villagers were catching **lampreys**, as lampreys began appearing in the households of **coastal** communities through exchange networks. Both **smelt** and lamprey were considered **exceptionally rich in oil**, such that a **family could not consume large** quantities. **It** made sense to give them away so many families possessed **small** quantities.

It has been mentioned previously that **sheefish** and broad whitefish caught on the main Yukon River commonly flowed along exchange networks to **Stebbins**, where these fish species were less abundant. Other food resources that frequently were traded within delta communities included **blackfish**, saffron cod, spring seal, moose, and when caught, caribou. A relatively smaller percentage of households made an effort to harvest these species. **Thus**, the catches of the few households often were distributed to others in the community. For these species, the food resources of a village at times were supplied by a few individuals.

As indicated earlier, probably the most widely distributed product with the largest volume was the oil of seals, moving from downriver to upriver communities. To document the sources of seal oil for one upriver community, the fifteen households interviewed at Mountain Village were asked where they received seal oil the previous year. This information is summarized in Table 13. As can be seen, all fifteen households procured seal **oil** in some manner. Nine households (60 percent) had members who successfully hunted seals, two along the main river, three at middle mouth, two at north mouth, one at **Scammon Bay**, and one at Hooper Bay. Nine households received seal oil procured by someone else, four from persons in Mountain Village, one from **Emmonak**, one from **Kotlik**, two from **Scammon Bay**, one from **Chevak**, and one from Hooper **Bay**. Seven transactions were described as 'gifts,' four others described as **"trade."** The giver or trader was described as either **"relative," "friend,"** or **"neighbor."**

Table 13

SOURCES OF SEAL OIL FOR
FIFTEEN MOUNTAIN VILLAGE HOUSEHOLDS

No.	<u>Place Hunted</u>	<u>Place Received From</u>	<u>Relationship</u>	<u>Gift or Trade</u>
1	..	Emmonak	Wife's Sister's Son	Gift
	--	Emmonak	Wife's Mother's Brothers Daughter's Son	Trade
2	Hooper Bay	--	--	--
	--	Hooper Bay	Not determined	Trade
3	Kotlik	--	--	--
	--	Scammon Bay	Wife's Parallel Female Cousin	Gift
4	Main River	--	--	--
5	Middle Mouth	--	--	--
6	--	Mt. Village	Friends	Trade
7	Scammon Bay	--	--	--
8	Kotlik	--	--	--
9	--	Chevak	Friends	Gift
	--	Chevak	Friends	Trade
10	Middle Mouth	--	--	--
11	--	Mt. Village	"People in town"	Gift
12	--	Kotlik	<u>Eluk</u> , "second or third cousins"	Gift
	--	Mt. Village	Wife's Adopted Sister's son	Gift
13	--	Mt. Village	"Neighbors"	Gift
14	Middle Mouth	--	--	--
	--	Scammon Bay	Not determined	--
15	Main River	--	--	--

The table illustrates the variety of channels through which seal oil was obtained at Mountain Village, reflecting the flexible options within local systems of distribution and exchange. Apparently some coastal residents served as regular suppliers of seal oil to relatives and friends upriver. One Sheldon Point man said he regularly brought seal oil upriver during fall to 'distant relatives' at St. **Mary's**, Pilot Station, and Russian Mission. Last year he distributed four spotted seals and several jars of seal oil among them as gifts brought to their homes (biyoktuq). Another **Alakanuk** man reported he always brought seal oil upriver while moose hunting in fall, which he gave to the persons he bought boat fuel from at St. **Mary's**. Regular patterns of distribution apparently *were* not conceived as representing institutionalized "exchange partnerships" as occurred in other parts of Alaska. The transfers of food occurred as one type of interaction among many between individuals or groups allied on the basis of kinship and friendship principles.

Sharing Within the Close Family

Probably the most common form of food giving on the delta was one for which no **Yupik** term could be elicited--the sharing of food among members of **one's** close family. In some **sense**, this did not seem to be a **flow** of goods at all. Close kinsmen frequently were perceived as holding in common food resources, frequently contained within a family food cache. Consequently, the food was not conceived as circulating

between separate units, but **as being** consumed within a single social unit.

As mentioned in Chapter 6, **several** closely related households might share a common **cache**. The kinship **group** frequently resembled a constellation of households composed of parents with married sons and daughters. The cache usually remained **in** the household of the parents. Members of such a network **could** take food from the cache when needed. Respondents indicated that this was done without the need for obtaining permission. **In** practice, sometimes notices **of** intent **or** requests were **made**, such as sending a young boy to the **father's** parent's house with the **instruction, "go tell** grandma we need some **strips."** The young boy might visit 'grandma' and receive instruction **or** assistance **in** procuring the food from the family's cache. **All** varieties of **locally** produced foods **were** shared in this manner.

In general, each household linked in this manner contributed food to the common cache. As was discussed in Chapter 3, the contributions frequently differed by age of the contributing member. As a general **rule**, sons contributed more **seal** and **belukha** to the family cache than elderly parents. Harvesting sea mammals required greater expenditures of strenuous **labor** and money than other food products. **Elderly** parents contributed more non-salmon fish species such as **Bering cisco, sheefish, herring, saffron cod, blackfish,** and broad whitefish. Non-salmon fish **species** required **low level labor** expenditures stretched over a **long** time frame and were less capital intensive. They were pursuits at

which an older household head could be successful. Women contributed labor in the preparation of food products for storage and consumption, as well as in gathering plants, eggs, and fish from jigging. Salmon and herring were products utilizing a combination of efforts.

Sharing Meals

Visits by a person to **another's** home on the Yukon delta typically were accompanied with the sharing of food. It was a common practice to offer a visitor tea or coffee in the first few minutes of a visit. If visitors stayed longer than an hour, or if the visit coincided with customary eating times, then they were commonly invited to share in a meal. Dried fish, seal **oil, pilot** crackers, and homemade bread would be produced and eaten. If others were eating or drinking in the home visited, it was seen as polite to join, and somewhat awkward to refuse. For instance, on one occasion a household head who was drinking tea remarked to a visitor, 'Won't you have some tea; I feel uncomfortable being the **only** one having tea **here.**' Sharing food seemed to facilitate **social** interaction, representing a form of mutuality among partakers.

Visiting another's house at the winter village for **fishcamp** was a favorite and frequent **pasttime** of the people of the **delta**. Consequently, as most visits entailed sharing food, the amount of food distributed during visits was substantial. Large numbers of people might be fed on occasion. At **times**, an entire family from a fishcamp might be passing through a winter village, and stop at the home of a

relative or friend. If the travelers had been on the river for a while, then the hosts commonly prepared hot drinks and a full meal for the guests. In one home near the end of the commercial season, families traveling from two fishcamps coincidentally stopped at the same house to visit. The house was filled with adults, children, and infants, many sitting on the floor. Although visitors numbered more than twenty, food was provided to all.

When the number of people visiting was more than could fit in the kitchen area, people were accommodated by eating in shifts. One common practice was for the older men to eat first, followed in turn by the older women, and finally the young adults and children. If visitors arrived and no food was readily available, then individuals might be hurriedly sent to a cache, or to a local store, to procure food. Such trips to the store might result in substantial expenditures of money.

Visitors passing through on business frequently were fed and housed by relatives and friends. This especially happened if a meeting or ceremony (like a potlatch) was being held at the winter village, drawing people from the region. Sometimes lodging was provided for several days or weeks. A person might stay with a family while working at a seasonal construction project or at a fish processing facility in the village. If a visit were protracted, it was considered proper for arrangements to be made for the person to contribute food or income to the family to help lessen the cost of upkeep. Otherwise, the food given by a host to a visitor was viewed as a gift. Implicit in the

giving, however, was the knowledge that such hospitality would be reciprocated by the guest at his own **households, should** the hosts visit. In all probability, over time the gifts of food and lodging between visiting persons balanced out. If so, the gifts may be viewed as a type of balanced reciprocity over time.

Other Forms of Sharing

Other cultural categories of food sharing also existed on the delta. The precise referent to these types of giving and receiving must await further research, however. Some of these forms are briefly mentioned **below.**

Biyotuuq was a form of giving like chigiq. Biyotuuq referred to the bringing of food over to another person's house to be given. Like chigiq, it was done at the **giver's** initiative. Usually the giver brought the food himself. One generally did not biyotuuq with close relatives, but with persons outside the sphere of relatives. It was said that no obligation was incurred about returning or reciprocating the gift. As an example, if a person caught a **belukha**, and brought it over to another's house as a **gift**, this was biyotuuq.

Tufqaq was similar to biyotuuq, except it referred to the process of inviting someone over to **one's** house to share food. Tufqaq implied the thought of wanting to have someone **over** to give: "I was thinking of

you when I made this meal." Chegeliq was said to refer to the actual sharing of the food at the person's house, acting upon the invitation.

Ninyiq referred to the division of bearded seal and **belukha** among several cooperating hunters following the kill. Ninyiq more or less occurred according to a set of cultural rules, which varied somewhat by community. The hunters of some communities reportedly did not follow ninyiq conventions, unless perhaps an older, traditional hunter were present. If no rules were followed, then the person who killed the bearded seal or **belukha** took the portions he desired, leaving the remainder to be claimed informally among others present. To illustrate ninyiq rules, the traditional guidelines for dividing the meat of a bearded seal at Alakanuk was reported as the following: bedaq (first harpoon), back and rib section, the head, side flippers, the skin, and portions of the fat; gelutuq (second harpoon), intestines and chest section; igutuq (third and fourth harpoons), one leg with first rib to each hunter; kuiyuqtuq (oldest person), the tail bone and pelvis, or it may go to the third and fourth harpoonist. For dividing the blubber, the fat was laid out and a transverse cut made at the shoulder blades, and a second cut made laterally on the dorsal side, trisecting the fat. The left side piece was cut into strips, the width depending upon the number of people present. The first three strips went to the second, third, and fourth harpoonist; the remainder was given out by the first harpoonist to others present, perhaps by age. The first harpoonist received the rest. The heart, liver, and kidneys commonly were roasted and eaten on the beach. Cultural rules for dividing **belukha** were some-

what different. These conventions, when followed, ensured that certain participants in a seal or whale hunt received shares in the kill. Small seals were not subject to ninyiq rules.

Food was given out in a number of ceremonial and religious contexts as well. During winter **potlatch** ceremonies food and other items were commonly distributed among visitors. There existed several types of gift giving, such as gifts presented by one family to others attending the **potlatch** in commemoration of a son or daughter dancing in public for the first time; gifts commemorating the killing of a particular animal or the gathering of certain food products by a son or daughter (the first kill of a young person of each species was distributed to community members, the hunter receiving none of it); and gifts **collected** by members of one village and distributed from a pile by older ceremonial leaders to visitors from other villages. **Potlatches** occurred in reciprocal pairs between communities. During the study period, **Stebbins** and **Kotlik** engaged in regular **potlatches**, as did Emmonak and **Alakaunk**. People from other villages attended these **potlatches** as well. Gifts of food and other items commonly were given at other holiday festivities also, such as Easter and Christmas. One **traditional** Christmas custom was for close relatives to give gifts on a plate or bowl accompanied by agutuq, a food prepared in fish, oils, and berries. A messenger was sent to **tell** a family to come get the bowl; the receiver returned the plate to the giver with more agutuq and reciprocal gifts.

The Meaning of Food Sharing

The above discussion should illustrate the complexities involved in describing the movement of food products among individuals and families on the Yukon delta. Food was given and received within a number of culturally defined contexts. Some of these exchanges clearly appeared to be part of local economic activities of the region (navolhotuq, tungyiaq). Other exchanges more properly occurred as examples of "non-economic" activities. Certain categories of sharing symbolized the form and quality of social relationships. Food transfers commonly expressed close relationships between kinsmen and friends. Other gifts symbolized cultural values, such as respect for the elderly, hospitality toward travelers and proscriptions against wastage of food. Yet other food exchanges were part of a set of ceremonial and religious systems embued with complex cultural and personal meanings.

Clearly, in certain contexts food resources no longer were "just foods" or "just given and received." Food became a media for communication. Transfers of food between persons conveyed a number of symbolic messages, messages concerning personal sentiments structural relationships in the social order, and cultural complexes entailing beliefs and values. Such findings should not be surprising. Food procurement central to the biological survival of a social group, commonly becomes infused with deep symbolic associations by humankind.

By implications, changes in the pattern of food resources probably affects more than economic systems of production and market exchange. Within the cultures of the Yukon **delta**, changes in resource procurement would be felt in social relationships as well. Seemingly? no enduring social ties or interaction existed without the giving and reception of food. One might predict that disruptions in the flow of local food resources might produce changes in the expression of social relationships, between young and old, parent and child, neighbors and communities. The flow of food between individuals was a primary symbol of close personal sentiments and social order within the community. Decreases in the giving and receiving of food might symbolize the antithesis.

CHAPTER 8

CULTURAL CONCEPTS OF RESOURCE UTILIZATION

The patterns of resource utilization within the Yukon delta region during the early 1980's had been **shaped** by distinctive cultural rules concerning an individual's right to **fish, hunt, trap, and collect** within particular geographic **areas**. These cultural concepts pertained to a **person's** right of access to particular resource **areas**, the right to harvest and use **the** resources of that **area**, and the right to exercise control over the **area** and **its** products. It is important to recognize that at the time of the study there existed at **least** two bodies of rules pertaining to use rights--those rules constituted by **legislative, judicial, administrative,** and other governmental **agencies**, and those rules developed by the residents of the Yukon **delta** themselves. The first set of rules, frequently created through formal public procedures for the most part external to the delta **region**, were recognized as **valid** legal regulations by representatives of the Western cultural institutions from which the **rules** derived. The second set of rules were developed by the fishermen and hunters **within** the Yukon **delta** region through a less **formal, consensual process**, probably over a relatively **longer** period of time. By and **large** they were recognized as **valid** cultural proscriptions and prescriptions by **the region's**

residents, although not formally recognized as such by formal legal authorities.

This chapter describes some of the endogenous cultural ideas concerning use rights over land and sea resources within the Yukon delta region. These cultural rules guided an individual's conduct in fishing, hunting, trapping, and collecting activities. In several significant ways the rules differed from the exogenous cultural ideas codified within traditional Western jurisprudence. Specifically, it is argued in this chapter that access to, use of, and control over resources of the land and sea traditionally were not conceptualized by the **Kwikipagmiut** in terms of real property and exclusive ownership. The notion that an individual or corporate group could own a resource area (ownership in the sense of holding exclusive rights to possess, **enjoy**, and dispose of it as real property) was not a traditional cultural concept within the region, and still was not a common one in the early **1980's**. By contrast, **Kwikipagmiut** cultural concepts generally allocated partial use rights within an area to particular social categories of persons. The use rights were allocated along several criteria, including prior **use**, **kinship**, and regional affiliation. The cultural rules differed among resources, such that access to salmon fishing areas followed principles different from those guiding access to moose hunting areas. Similarly, the cultural rules differed by locale, so that use of resources close to an occupied settlement differed from use of resources distant from a population center.

The discussion that follows should not be considered an explication of Eskimo jurisprudence concerning land and sea resource use in the Kwikpagmiut region. Such a treatise would require substantially more research and information. Instead, it is only a partial description of patterns of resource use observed in the 1980's in the Yukon delta region. From these observed use patterns, and through discussions with residents certain general cultural rules or principles were extrapolated. These cultural rules should be regarded as tentative, and form a basis for subsequent inquiry. Further research should provide a more complete description of actual use patterns, an elicitation of Yu'pik terminology reflecting the abstract cultural principles, and a corpus of actual cases whereby conflicts in resource use were dealt with by the social groups utilizing the principles of ethnojurisprudence. Further research also might examine the interface of indigenous and exogenous legal systems concerning resource use.

Spatial Arrangements of Harvest Efforts

All societies must deal with the issue of potential conflict among alternative users of a finite natural resource. As resource areas are not unlimited within geographic space, the rights concerning access to these resource areas must be defined so that resources are allocated in some manner among members of the social group. A set of consensual conventions specifying rights of access have been developed within the Yukon delta region by the Kwikpagmiut. These rules pertained to an

individual's right to **fish, hunt, trap,** and collect within particular areas.

As with most cultural rules guiding human action, these conventions were not codified within an explicit set of written law. Nor were they frequently verbalized by fishermen and hunters. Nevertheless, at a tacit, implicit **level,** the cultural rules were more or less understood by the residents of the Yukon delta. They regularly guided individual conduct in fishing, hunting, and other daily activities by the force of custom and a variety of social sanctions. When followed, the rules helped to reduce social conflict which might arise from competition among group members. They also served an ecologically adaptive function by regulating unlimited access to harvest areas that might irreparably delete a renewable resource.

Before the rules are discussed, the spatial arrangements of harvest efforts, the resultant product of these rules, are described below. The mapping of fishing and hunting activities of residents of the Yukon delta region during the period June 1980 through May 1981 (Chapter 3) revealed distinct clustering of harvest efforts for certain species. In practice, people tended to locate summer **fishcamps** in areas close to others from their winter village, and distinct from areas occupied by persons from other villages (see discussion in Chapter 3). Overlap of **fishcamps** occurred at the boundaries of these areas, especially at the head of the passes and Aproka Pass. As fishermen tended to drift or

place set nets close to **fishcamps**, fishing effort **in** general occurred within "village **use areas**."

Similarly, hunting for seals and **belukha** tended in practice to occur within coastal areas extending out from winter villages. These sealing areas utilized by members of a particular village overlapped considerably at their **boundaries**, especially at south mouth where three winter villages are found in close proximity. **Indeed**, the area utilized by Sheldon Point residents seemed to **fall** within the boundaries of the area hunted by **Alakanuk**. **In addition**, Mountain Village residents frequently traveled downriver in the late **fall** to hunt **seals** within **all** coastal areas.

Net placement sites for non-salmon **species**, generally harvested from winter through **spring**, tended to cluster closely around the winter village. An exception was set netting and hooking sites for whitefish and pike on tundra streams south of **Kwikluak Pass**, especially **along** the Kipniak and **Akulurak** Rivers. These areas were shared by residents of several villages, including people from **Scammon Bay**, **Hooper Bay**, and **Chevak**. Set net placement sites for non-salmon fish species in general were not identified with a particular **user**. **However**, they occasionally were when a person had used a **stream or lake** location for **long** periods of time. This especially might **happen** with regards to **blackfish** trap locations.

As briefly discussed in Chapter 3, salmon set net placement sites, and salmon drifting areas next to a fishcamp tended to be used primarily by the members of the nearby fishcamp. Some salmon fishing sites not near a fishcamp, especially sites within eddies, also were identified with particular users. It was considered improper for a fisherman to set a net in, or drift close by, an eddy or stretch of river known to be regularly used by another individual. Use of the area properly occurred upon invitation or granted request by the individuals currently using the eddy or drifting site. Unoccupied salmon harvest sites tended to be open for common use on a 'first-come' basis, at the beginning of each fishing period. These areas frequently were stretches of river far from winter settlements, such as the middle passes and heads of passes, and along the coastal channels.

Hunters frequently traveled long distances to hunt and trap land mammals. Hunters from coastal villages regularly traveled upriver in September to hunt moose and caribou in the sloughs and mountainous regions near Pilot Station and Russian Mission. Similarly, hunters frequently fanned out from their villages in winter by snowmachine, covering large domains in search of fox, mink, otter and beaver. Detailed information on trapping locations was not gathered in this study. However, from general information it appeared as if trapping areas resembled sealing areas with hunters from a particular village using certain preferential areas, overlap occurring at the boundaries of the regions. Within these areas some trappers, especially older residents, ran traplines year after year. Such traplines in general

were known and respected by other **trappers**, although complaints about tampering were heard occasionally. Apparently **most hunters and trappers** of fur bearers did not establish regular **traplines**, preferring to utilize a larger, more variable area for fur bearers.

Waterfowl and berries were two **other** resources harvested over **large** areas. During fall, families frequently traveled long distances in procurement of **salmonberries, blueberries, blackberries and raspberries**, which during some years grew **in** limited areas **in** the region. The **fall** and spring hunting of waterfowl similarly might take hunters long distances.

These spatial regularities reveal **a** complex patterning to resource harvest efforts **in** the **Kwikipagmiut** region. For certain resources, "**use areas**" seem to have developed associated with **particular** villages (fishcamp regions, sealing and **belukha** hunting areas, areas for taking non-salmon fish species, and perhaps fur harvest areas). For other **resources**, there appears to have developed a region-wide use pattern (moose, waterfowl, berries, and certain fish species **like** pike and broad whitefish). Within the use areas associated with a **village**, specific sites might be associated with particular families **for** harvesting certain species (especially **salmon** set net sites and drift net **sites**, trapping **lines**, and perhaps **blackfish** trap areas). **However**, for other **species**, there appeared to occur no individually identified use sites (non-salmon fish **species, seals, birds, plants**). Areas distant from a winter village frequently were used by hunters from a

variety of winter villages (especially the Black River and Kwikluak Mountain area).

Principles Regulating Land Use Patterns

At first glance, clustered activities might be interpreted as representing the **"territory"** of a village or a family, or perhaps the land **"owned"** as 'property' by a village or family. This would be a mistaken interpretation. Both territorial and property concepts were **inappropriate** for understanding geographic regularities in resource use. Most **Kwipagmiut** themselves were insistent about this. When queried directly, **Kwipagmiut** by and large denied that winter villages or other groups of people possessed **territories**, in the sense that they held sovereignty or jurisdiction over particular fishing or hunting areas, granting or denying access to the resources of that region. They also denied that villages or groups of people **"owned"** fishing or hunting areas as property. That is to say, in general the **Kwipagmiut** would not endorse the notion that individuals or groups held exclusive rights to possess, enjoy, and dispose of an extent of land or water within the **Kwipagmiut** region, in exclusion of other **Kwipagmiut**.

It was significant that the concepts of 'territory'^a and **"property"** were utilized by **Kwipagmiut** in certain contexts. Most commonly, these concepts were utilized when discussing the conveyance of land to the regional and village corporations following the specifications of the Alaska Native Claims Settlement Act of 1971. The concepts **also emerged**

when discussing **native land** allotments under Bureau of Indian Affairs regulations? the limited entry permits **for** commercial **salmon** fishing of the State Limited Entry Commission, and the rights to **oil** development on **delta lands** and the offshore continental **shelf**. In these **contexts**, the **land, water,** and resources were discussed as **if** they might be divided into **estates**, the right **of use**, control, and disposition belonging to a specified group. And as can be **expected**, delta residents demonstrated different degrees of sophistication in their **handling** of these legal issues. **Thus**, in contexts where the **Kwikpagmiut** interfaced with Western legal institutions **the ideas of "territory"** and **"property"** were utilized for conceptualizing **land** and sea resources.

Nevertheless, when discussing the day-to-day **fishing** and hunting activities of **Kwikpagmiut** individuals and **groups**, terms like **"property," "territory," "ownership,"** and **"jurisdiction"** were rarely **conveyed**, and frequently expressly refuted. Apparently in the ordering of **fishing** and **hunting** activities among **themselves**, another set of **principles** or **rules** was utilized. As stated **earlier**, these concepts were not codified in any manifest form. **If** they were reified as abstract **rules**, the concepts **might** coalesce into five general principles: the principles of **"participatory use," "geographic affiliation," "deference to first-users," "kinship affiliation,"** and **"optimization."**

The Principle of Participatory Use

"Participatory **use**" of an area for fishing, **hunting**, trapping, or collecting refers to two ideas. First, areas and their resources can be "**used**" by individuals or groups, but not owned. "**Usufruct**" approximates this idea, the right to use or enjoy the products of an estate not belonging to oneself. However, from the **Kwikipagmiut** standpoint no one else owns an area either. According to this traditional perspective, there are rightful occupants and users of a region of land and **water**, but no rightful owners.

Second, 'participatory" alludes to the idea that an occupant rarely hunted or **fished** in an area **alone**. Generally one "**participated**" with others in the pattern of life activities of a region. The associates who mutually shared an area included other people as well as animals, fish, birds, plants, and for some **Kwikipagmiut**, certain intangible senscient beings and forces. Each living entity might be a rightful occupant of a region, with some entitlement to engage in its daily round of occupations. Properly, a fisherman or hunter was mindful of, and showed cautious respect toward, the others with whom he participated in daily pursuits.

The Principle of Geographic Affiliation

The determination of the persons who **could** claim rightful occupancy and use of an area was determined by at least three other principles. The

first was a 'principle of geographic **affiliation.**" According to this **principle,** a person held a right **of** access to any **region** with which he **could** demonstrate a perduring **social** identity. **The** geographic **naming** conventions **of** Eskimo social groupings embodied **this** principle. As previously mentioned in Chapter 2, the people **living** within a certain geographic region typically derived a social identity from that area. A Yu'pik root designating some natural feature of a **region,** such as a **river, lake,** or type of **land,** was combined with the **affix, -miut,** 'people **of,**" to symbolize the social identification of a group of **people** with the land of occupancy. As **an** example, Kwikipagmiut referred to the **"people of Kwikipak,"** that **is,** the **"people of the big river."** Magagmiut, the traditional **"tribal"** group directly south of the Kwikipagmiut, meant **"people of the tundra flats."**

In some respects, regional designations were similar to Western **politi-**
cal designations like **"American"** and **"Canadian."** By claiming to be an **"American,"** one makes claim to certain rights and privileges held by other 'Americans," but not necessarily by citizens of other political states. One right is **a** right to a **"speedy trial."** For the Kwikipagmiut, a central right which could be claimed was access to resources within **one's** region of geographic affiliation. **However,** the **social** identification with the Yukon River did not provide the right of **"ownership"** to the Kwikipagmiut, any more than an **"American"** can claim to own **"America."**

Further, like the concept of **"American,"** a person acquired geographic affiliations at birth. By being born at a particular place, and by dwelling there, one became identified with it. **Consequently, "geographic affiliations"** were frequently closely associated with 'kinship affiliations," discussed in Chapters 5 and 6. At birth, one received at least two social identities: one with a set of kinsmen (**"family," elakitraet**), the other with a geographic region within which the kinship group usually resided. The two were not synonymous, however, as one could be a **Kwikipagmiut**, yet maintain kinship affiliations with people from another region, such as the **Hooper** Bay area.

Terms for geographic affiliation occurred at several levels of contrast. The higher order contrasts referred to large **"regional groups,"** called "tribes" in the literature. Below that, social identification could be **established** with smaller areas within the region, such as **Kwikluagmiut**, referring to persons living near **Kwikluak** Pass (the **"people of the funny little river"**), or **Kipniagmiut**, those living near the Kipniak River. Similarly, the people of each subarea could be identified with yet smaller subregions, like **Alakanagmiut** and **Niliragmiut**, which referred to winter villages and seasonal camp locations. There seemed to be no limit as to the size of the subregion or group which could be linked socially. During 1980-1981, the **Kwigamiut** referred to a solitary person living at the site of Kwiguk.

The principle of geographic affiliation provided a flexible system which could be used to justify access to and use of resources within a

Relatively wide area. At its **greatest extent**, the principle opened up **for use the entire region from Russian Mission to the coast to the residents of all Kwikpagmiut villages**. It was this principle which allowed for **Kwikpagmiut to travel** long distances within **the region** to fish and **hunt**. During **1980-1981**, harvest patterns for **moose, seal, waterfowl** and berries were guided in part **by this principle**. Hunters from **lower Yukon river** communities traveled **upriver in September** to **hunt** moose around Russian Mission and **Pilot Station**, but not above **Holy Cross**. Holy Cross lay **at the boundary of the region, indeed, at Yuit boundaries**, as this marked the start of **Dene'** settlements (Athapaskan Indians). **Reciprocally**, Mountain Village hunters commonly traveled **downriver in August** to harvest **seals along** the coast. The hunting of waterfowl **occasionally** led persons near to distant **communities, as did** the gathering of **berries**. There seemed to **exist** no overt resentment **about** the practice of residents of one village **buntings fishing, or collecting close to another village**. When **queried**, most **people** stated that they **did** not mind. A **reason** frequently provided was that these people needed food **for their** families.

The Principle of Deference to First-Users

As **can** be seen, the principle of geographic affiliation potentially opened up the resources **of the entire lower Yukon region for use by all Kwikpagmiut**. How then were harvest practices managed so as to **avoid** conflicts among alternative users of limited resource **areas**? The principle of 'deference to **first-users**' was one mechanism **for**

allocating delimited areas among users. According to this principle, a person or group of persons using an area first were viewed by others as holding priority over its resources. This meant that persons using an area first (in temporal sense) were deferred to by persons who came subsequently to use an area. It was considered polite, or socially correct, not to intrude upon an area occupied or being utilized before one's arrival.

The principle of deference is most easily explained through some case examples illustrating the principle in use.

Case 1. Early in the 1980 fishing season a young fisherman arrived at **Emmonak** extremely excited and pleased. He had located an **ideal** site for his set net, an eddy where the current played the net perfectly. When he described the location of this eddy in response to questioning by other fishermen, he was informed that the site had been used last season by another person living in **Emmonak**. The young fisherman was crestfallen. There had been no red buoys yet placed in the eddy, or nets piled along the shore, so he had thought the site was 'unoccupied.' He left greatly disappointed, in search once again for a set net site.

This case illustrates two things. First, that properly a person deferred to another who could demonstrate prior use to a fishing site. There seemed to be no question in the young **person's** mind of his proper recourse. Second, a set net site could be "**occupied**" even without

tangible evidence of an occupant. Simply the knowledge held within the community that on previous occasions a person had used a place was sufficient. proof of **occupancy** and use.

Case 2. A woman from Mountain Village was picking salmon berries with her brother on a large hillside several miles from the winter village. The **hill** was a traditional berry picking area for the **Azochoragmiut** (people of Mountain Village), as evidenced by several tracks which wind **along the hill's top**, worn into the soft tundra **from** generations of use. As the woman **slowly** circled the **hill** gathering berries, she came into sight **of** two women of another berry group from Mountain **Village**, who had been circling the **hill** from the opposite side. Although she had spotted the second **group**, they as yet had not seen her. "Oh," she exclaimed **softly**, 'we had better **turn back**. Those **ladies** might not come this way to pick if they see us **here**.'" She quickly moved back out of sight on the opposite side of the **hill**.

In this **case**, like the **first**, a potential user of a resource area deferred to another user who was perceived as having been at the area **first**. In this **instance**, 'first' referred to being in a location at the moment the second user arrived. **If** the berry **picking** group had not been **present**, the opposite **side** of the **hill would** have been open **for** the **woman's** use. Interestingly, the **reason** provided **for** deferring to the first group of pickers was that they might **do** the same. The **result** of this principle mutually applied is that two hunting or gathering parties attempt to avoid contact with one another in a general resource

area. This regularly occurred with fall seal hunting groups. If a person hunting seals along the coast spotted another boat or cluster of boats hunting together in the distance, a typical recourse was to change direction away from the other hunting group. If a boat approached a cluster of boats, then another set of principles would have to be invoked to integrate the newcomer into the hunting **party** (such as WinShip affiliation," or the principle of ninyiq, the customary rule of dividing sea mammals taken within a hunting group).

The conventions for claiming driftwood is a final illustration of the principle of **deference** to first users. During spring breakup, driftwood frequently was deposited **along** the banks of the rivers and sloughs of the delta. The driftwood was collected for firewood and building material by the residents of the lower river who had no easy access to forests. One convention held that a person who found a cluster of driftwood along the river could mark it with a vertical stick, a pile of logs, or a short piece of rope, thereby claiming the right to return at some later time to cut and transport the wood to the winter village. The stick or rope announced to others that someone had already been there and discovered the wood. It was proper that the wood be **left** for that first person to use. The **result** of this practice was somewhat **novel**. Driftwood logs for miles around a winter village would display small, seemingly non-utilitarian pieces of rope, inexplicable signs of human activity for someone unaware of their symbolic message.

The Principle of Kinship Affiliation

Because of **first** use primacy, **areas like trapping lines, eddies, and drifting** locations commonly became identified with particular **users**. In **actuality**, the area **was** identified with persons and **their** close kindred. **It was** considered appropriate **in Kwikpagmiut** culture that close kin relations share resources, **such** as a common food **supply, dwellings,** and fishing equipment. **For the closest kin** relations like parent-child or husband-wife, mutual sharing **of** resources might occur without the obligation of asking permission. **For** more distant **relations,** sharing **could** be an acceptable **practice,** but **only** if agreed upon by the two parties. **To be correct,** a distant kin relation did not presume upon another person **for** resources **without first gaining** permission. Such requests were said **to be usually** granted.

Kinship affiliation allowed **one** mechanism whereby access **could** be gained **to** a resource area customarily used by another. Because **of** this **principle,** persons fishing and hunting *together* within a particular area commonly were linked by some kinship tie. The principle commonly influenced upriver seal hunters coming down **to** the coast, and **downriver** moose hunters traveling **up**. Frequently **an individual would choose** an area to hunt **in** which he had a relative. **At times, the hunter would** reside at that **person's** house or **camp,** making it the **base for operations.** The kin relation might accompany the hunter **in his** harvest efforts. Some persons avoided hunting in areas **where he** perceived no close relations. That **is,** one avoided **hunting** near strangers or even

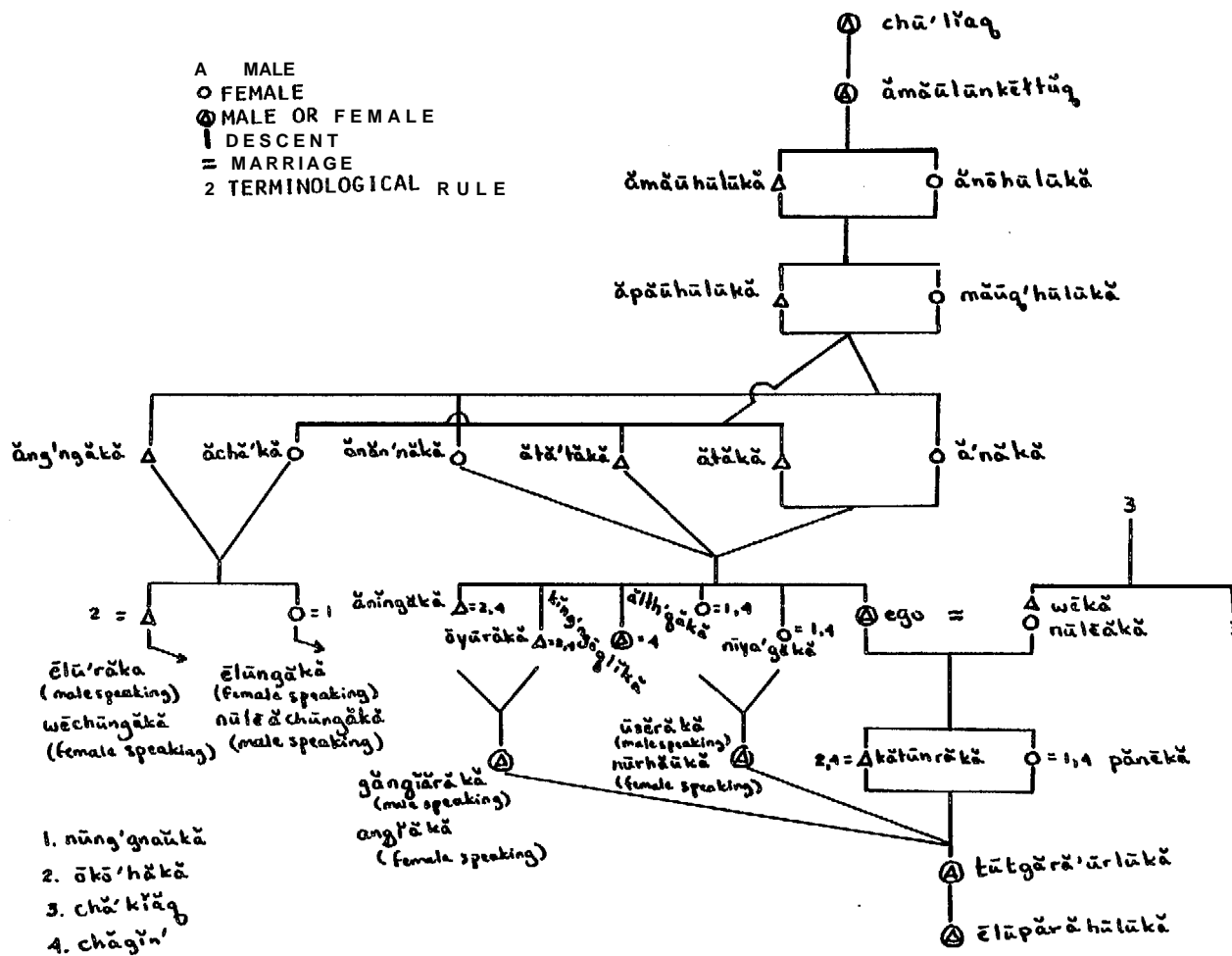


Figure 20. Yukon del ta ki nshi p terminology, "southern system" (Atakanuk, Emmonak, Sheldon Point, Mountain Village)

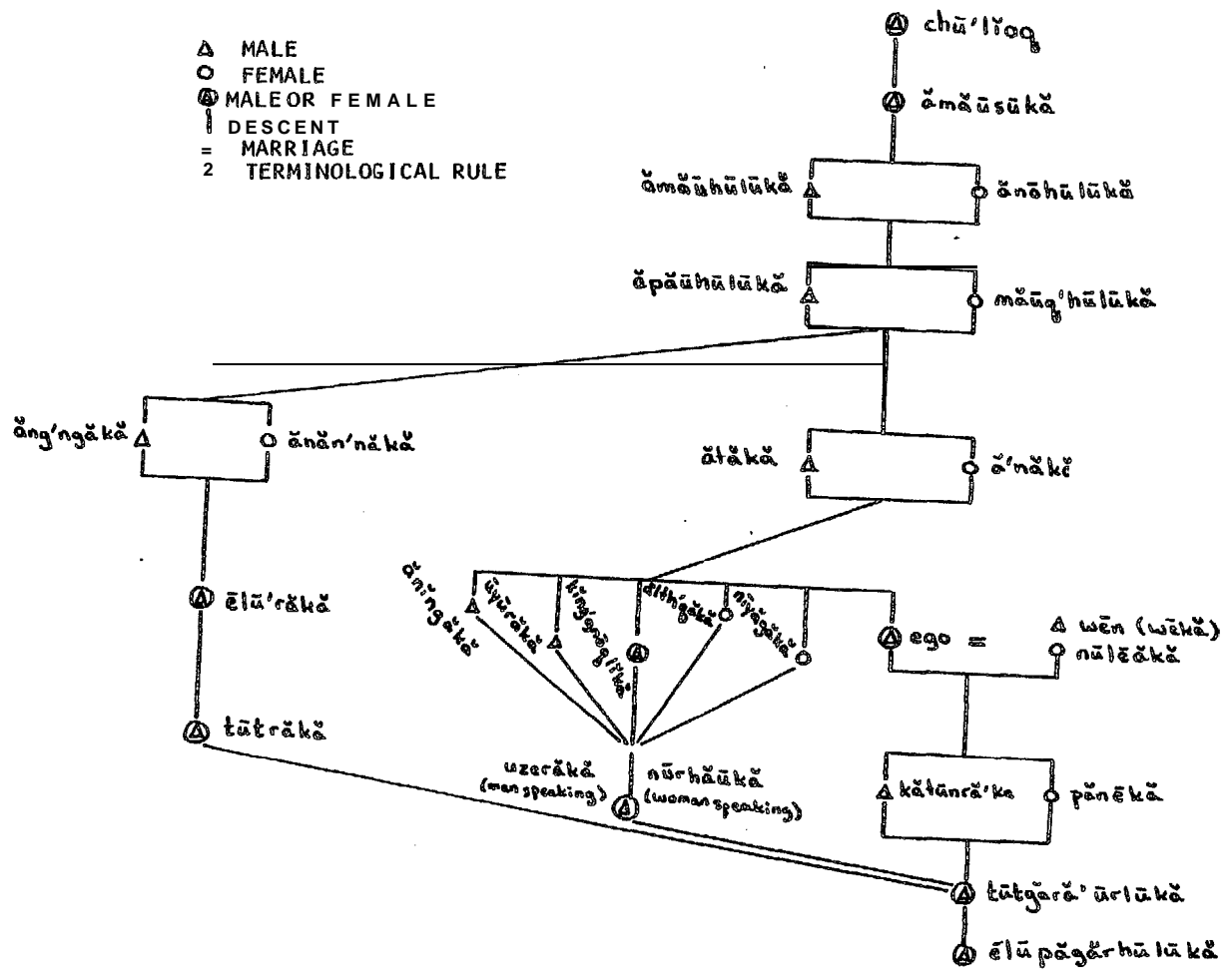


Figure 21. Yukon delta kinship terminology, "northern system" (Kotlik, Stebbins)

acquaintances. Purportedly, one could not be guaranteed a favorable response from such persons. Kinship ties could establish the basis for that trust.

In addition to establishing trust between mutual users of an area, the outsider gained the expertise of the resident to whom he attached himself. Hunters generally knew their home base well, and could share this knowledge and experience with novice hunters. There seemed to be a tendency for hunters who harvested resources in distant areas to choose to hunt **in** the region of their birth, or the areas of their **parents'** birth. For example, a hunter near Hamilton, upon questioning, was found to have had a father from that vicinity who had taken his son to his home base to hunt. The use of kinship principles to gain access to an area had double rewards for a hunter. It provided a sense of security knowing one hunted with a 'close' and **"trustworthy"** individual. And it offered expert assistance in the procurement of food resources.

Optimization

The final **principle** regulating land and resource use was simply **"optimization"** of one's effort and material investment. Other things being **equal**, of two resource areas, a hunter usually chose to harvest the **least** expensive for **one's** returns. This drive toward efficiency meant that hunters commonly chose to harvest resource areas close to their homes over resource areas farther away. **Travel** represented costs in

time, effort, and **fuel**. Most hunters **strove to** minimize these **costs** per return **if** possible.

This principle probably accounts **for the** clustering of certain **activities** near **the** winter villages. **For fairly** ubiquitous food species like **blackfish** and **sheefish** alternative resource areas existed. The areas closer to home were chosen over those more distant when one had the option. **It** is interesting to note what occurred in areas far from occupied settlements offering uncommon resources. Pike at **Kusilvak** Mountains **and** caribou and moose in the **Andreafsky** Mountains represented **such** resources. The dearth of permanent residents mitigated against first use tenures. Being at the margins of a regional group diluted **the** claims of regional **affiliation**. Such areas were generally **open to all users**. Thus **people** from several **communities** and even **different** regional groups could be found harvesting resources in these areas.

The five principles outlined above are sufficient to explain the geographic trends in resource use displayed by the **Kwikipagmiut** during 1980-1981. Harvest efforts grouped about **the** winter village, such as non-salmon fish harvests and **fall** scalings probably resulted from a **desire** to minimize costs relative to returns. The **mutual** avoidance of unrelated users in the same area tended **to** keep these spheres of activities somewhat separated. Access to areas **with** scarcer resources **could** be justified with **the** concepts of regional and kinship **affiliation**. **However**, deference was given to **prior** users of a resource **area**. Apparently, in this manner participatory use by members of a regional

group traditionally was regulated without relying on the concepts of ownership and property.

CHAPTER 9

OIL DEVELOPMENT IN NORTON BASIN

AND THE YUKON DELTA ECONOMY:

IDENTIFICATION OF PROSPECTIVE ISSUES

A major purpose of this study was **to** develop **a** baseline description of **the** economy **of** six Yukon **delta** communities. As outlined **in** Chapter **1**, this information was considered to **be** essential as **input** to **policy** decisions concerning the possibility of' oil development **in** Norton Basin. Offshore exploration **and** development **of** oil **in** Norton Sound **is** seen to **hold the** potential for impacts **on** the **people** on the **Yukon delta**; **yet** without even baseline information concerning the economy **of** the Yukon **delta**, **these** impacts **cannot be** assessed. **This** study **was** conceptualized to begin to **fill** the 'information **vacuum**" surrounding the Yukon delta residents.

This study **was not** conceived to **be** an impact **analysis**, but a descriptive account **of** the regional economy as it existed currently. **However**, the **study's design** included **"the** identification of key **Yukon delta issues** **regarding** land, sea, and resource **allocation**, perceived **and actual** **conflicts** between existing resource users **and/or** allocations and perceived **real or** potential disruptions to the existing subsistence systems of the Yukon delta." That **is**, the design **included the**

identification of possible conflicts arising within the Yukon delta region as a result of petroleum exploration and development.

In response to this study objective, this chapter identifies some of the potential issues surrounding petroleum development in Norton Basin. These issues emerged as significant primarily from discussions with residents of the Yukon delta region during the summer of 1981. It was found that oil development was a topic of considerable concern to the Yukon delta population. The following represents a summary of the primary concerns voiced by residents of the delta.

Percieved Threats to the Regional Economy

As has been illustrated in previous chapters, the economy of the " communities of the Yukon delta comprised a flexible pattern of fishing, hunting, and marketing activities based upon the utilization of local resources from the land and sea. The economy, and consequently the society and culture of the region, has evidenced great vitality and historic continuity to a **large** extent because of the enduring stability of the **region's** resource base. Except for caribou, historically there have been no serious or permanent reductions in the **region's** fish and game resources. Further, favorable political climates and markets have enabled the region's population to successfully utilize their rich ecology. Elsewhere it has been argued that the mixed, diversified economy of fishing, hunting, and marketing activities on the Yukon delta likely should continue, barring three potential threats: disruption of the base of natural resources, inflationary equipment costs outstripping

earned monetary **incomes, and easy access to state and federal income assistance** (Wolfe, 1979:266-270). Petroleum development portends the reality **of the first two threats**, through the potentialities **of** environmental degradation and disruption **of** species migration **patterns**, and increased inflation rates.

Environmental Degradation

The degradation of the **region's** ecology of animals and **plants** over the short or long term **could** disrupt the region's base **of** economic resources and aspects of the regional economy and culture. **Of all** the issues raised by **the** Yukon delta residents, this was primary. The **people** of **the** Yukon **delta** recognized a **direct** causal relationship between **resource levels** and their society and **culture**. They **also** expressed that the destruction of the fish **and** game resources **could** mean the destruction of themselves **as** a people. One Emmonak resident **put it simply and to the point:** 'If fishing and hunting **disappears, so will these people."**

The primary historic resources of **the region** derived from the **ocean** and waters of **the coast--salmon, herring, seals, belukha, sheefish, Bering cisco, broad whitefish**. Degradation **of** these waters **might** diminish the quantity and quality **of** these essential resources. **Damage** to the environment was recognized **by** residents **in** several aspects **of** oil development: increased boat **traffic** in coastal and **riverine** waters causing increased **noise** and pollution **from diesel** discharges; **scarring** of the landscape **with the** construction of **rigs** and support facilities; water and land pollution due to drilling effluent; water and **land**

pollution due to oil seepage or spills; and barriers **to** migration routes following construction of islands **or** transportation corridors. All of these represented to residents significant threats **to** the region's economic base.

The **Kwiwkpagmiut** and **Tapraqmiut** understood their relationship with the land and sea and its resources to be a sensitively balanced **system**. Unusual conditions within this balanced system, such as atypical ice conditions, weather changes, or topographic modifications, were known to be frequently followed by reductions in fishing and hunting outputs. **As** hunters and fishermen who relied on the products of the sea and land for **survival**, any unusual alteration in the environmental balance was viewed with extreme apprehension and frequently fear. It is little wonder that the overwhelming opinion among the Yukon delta people was **to** avoid disrupting the perceived sensitive balance in their relationship with their natural surroundings.

It was perceived that if the **region's** resource base were disrupted, there existed no other viable economic alternatives for the **region's** people. Salmon and herring were the **region's** only renewable and marketable resource. Without the sale of salmon and herring, the main flow of monetary income into the region **would** be cut.

The major sources of food in the region derived from local fish and game resources, as demonstrated in Chapters 3 and 4. It was **percieved** that a failure of these food products would change a predominantly

self-sufficient people into a society dependent upon state and federal subsidies, welfare, and food stamps.

The fabric of social life was woven about the seasonal round of fishing, hunting, and marketing activities, as illustrated in Chapters 5 and 6. It was expressed that if families were bereft of these self-sustaining and meaningful economic pursuits, the organization of family and community might be disrupted.

The Yukon delta people perceived these relationships to be true. Given the perceived potential risks to their entire way of life, it is little wonder that, of the 88 households systematically interviewed from the six Yukon delta communities during May through August 1981, 86 stated their opposition to petroleum development in Norton Sound.

Increased Inflation Rates

It has been argued here and elsewhere (Wolfe, 1979) that the regional economy on the Yukon delta was viable because the "subsistence" component (fishing, hunting, and trapping for local use) and the "commercial" component (production for sale on external markets) were interdependent and mutually supportive. The cash from product sales (salmon, herring, furs) and wage work provided households with the cash capital which supported fishing and hunting for local consumption and exchange. Because of the inherent limits set on commercial earnings by the finite potentials of the Yukon River salmon resources and the differential access to limited entry permits, most households could never be

supported solely by commercial fishing income. Consequently, most families invested a substantial part of their cash income into equipment to enable them to fish and hunt for personal consumption and local exchange.

One perceived threat to this mutually supportive **"mixed"** economy is inflationary equipment costs. If the costs of maintaining and operating production capital (such as boats, motors, **snowmachines**, gill nets, gasoline, repair costs) exceeds income from commercial fish sales and wage work, then regional production **would** be in serious jeopardy. The household "firm" could no longer profitably afford to **harvest local** resources for sale and family use.

Up to this point', inflation rates have not outstripped rises in income on the Yukon delta. However, it was perceived by some residents that oil development might create such a damaging inflationary period. Petroleum firms might compete with **local** buyers for the goods and services existing within the region. Inflationary prices have been predicted as following this competition (**Ellanna, 1980**). If store prices jumped substantially, residents on relatively fixed monetary incomes might be unable to afford the material products to successfully harvest local resources. The result might be a drop in commercial and subsistence output within the region.

Inadequate Knowledge and Technology

The perceived threats to the regional economy were increased by what was perceived by Yukon delta residents as an inadequate knowledge base and inadequate technology of petroleum developers. By and large, the Kwikpagmiut and Tapraqmiut believed that outsiders do not have an adequate understanding of the region's ecology to enable them to explore and develop oil resources safely. Nor was it thought that petroleum developers possessed the technical expertise to explore and develop oil resources safely. The Kwikpagmiut expressed concern especially about ice conditions, flooding, ocean currents, and effective cleanup.

Ice Conditions

The Kwikpagmiut along the coast of Bering Sea and Norton Sound reported that frequently the sea ice pack fractured and built up into large ice formations, sometimes 50 to 60 feet high. These mountains of ice reportedly were created and moved about by the extreme forces of tides and winds. The mechanisms creating these conditions were not known precisely by the Kwikpagmiut, but the potentially destructive consequences were. Grave doubts were expressed that a drilling or pumping structure could withstand the force of these moving ice formations. By and large, residents were unconvinced that a technology existed to deal with these ice conditions. Some respondents argued that a drilling platform should be placed inactivated within Norton Sound for

several years **to** assess the potential damage **to** it by ice before actual drilling commenced.

Fall Floods

The **Kwipagmiut** expressed concern about the potential destructiveness of an oil spill during a period of high fall flooding. Reportedly, the Yukon delta periodically was subjected to extensive flooding during fall due to a combination of high tides and winds. Most **lowlying** tundra areas at this time were inundated. **Older** residents reported witnessing the entire area south of **Alakanuk**, from the mouth of the Black River to **Kusilvak** Mountain, under water. An oil spill under these conditions would not remain **localized**, but potentially be spread over an area of several hundred square **miles**. Residents wondered if oil developers had plans for dealing with cleanup **over** such a large area.

Ocean Currents

Several residents expressed doubts that scientists understood the complex currents of Norton Sound in order to predict the danger of oil land falls. As an example, a group of **Kotlik** hunters became adrift on **ice** several years ago; from **Kotlik**, they drifted to within sight of **Nome**, reversed, and drifted southeast, eventually making a **landfall** on Stuart Island. This indicated to them that currents in Norton Sound did not move **solely** in one direction. Oil caught within these complex currents might be transported in unpredicted directions.

Cleanup

The Kwikpagmiut questioned whether oil could be adequately cleaned up from the tundra of the delta. To their minds, oil absorbed by tundra would be continuously released into the riverine systems over a long time period, with negative impacts on vital fish species such as sheefish, Bering cisco, broad whitefish, and salmon smelt. Burning oil-impregnated tundra as a cleanup measure was considered an absurd solution, a mark of the ignorance and insensitivity of the oil developers toward the regional ecology.

"Risks Without Benefits"

To certain respondents oil development in Norton Sound made the Kwikpagmiut assume substantial risks without the prospects of accruing any benefits. These residents questioned whether any benefits would be derived from oil development for the local people, such as royalty income to local communities and employment opportunities suited to the skills and cultural needs of residents. Other residents believed some system of damage payments should be instituted to provide restitution to the local people in the event of environmental and resource damage.

Negative Acculturative Impacts

Of concern to many interviewed residents was the prospect of socially negative outside influences entering the local communities. Increased alcohol and substance abuse frequently were mentioned as results of

interaction between local residents and seasonally employed outsiders. Others recognized the increase in alcohol and substance abuse to be symptomatic of' more subtle, stressful changes created by the uncontrolled contact with outsiders. Rapid culture changes in value orientations, aspirations, and goals were viewed as negative consequences of increased contact. The central issue appeared to be what measures would exist to insulate rural communities from the negative influences of outside, seasonal workers.

Cultural Survival

There **were** some residents on the Yukon **delta** who **placed** the issue of oil development within a higher conceptual framework. To them, the central issue was the survival of cultural groups.

From this perspective, the people of the Yukon delta were viewed as having developed over a span of several thousand years a unique and viable culture, a culture that had successfully adapted to severe challenges imposed from its surroundings. As a culture, it had successfully entered the modern historic **era**, adapting to a wide variety of new external conditions. Despite periods of severe **epidemics**, it had maintained its population levels. In response to new political and religious climates, it made internal adjustments in social organization and beliefs. As a group, these people had never suffered military defeat, but had maintained a sense of identity and personal control. Their relationship to the lands and seas upon which they have depended for survival had never been disrupted or dispossessed. As innovative

fishermen and hunters, they had incorporated new technologies to increase the efficiency of their fishing and hunting economies. Over the past century, they had integrated easily into an external market economy. In the chronicles of Native American cultures, the history of the peoples of the Yukon delta was a story of successful adaptation. Currently, the way of life on the Yukon delta was prospering in the modern era.

Could this unique way of life continue to coexist with others in the modern era? To some residents, offshore oil development raised the question by potentially pitting one culture against another. Simply stated, the conflict was this: The Kwikpagmiut and Tapraqmiut of the Yukon delta based their cultural survival upon the continued use of local food resources of the land and sea. The urban, industrialized economies outside the Yukon delta based their existence upon the use of petroleum products. Oil development thus symbolized a conflict between cultures at the level of essential resources. The development of oil which might benefit one way of life could destroy another by destroying its essential resources. The petroleum which has helped perpetuate the historical development of one culture, in the process of extraction, could curtail the historical development of another.

When viewed this way, the issue of petroleum development becomes translated into higher social and ethical questions. It becomes an issue of the rights of survival of two groups of people and two ways of life.

To the **Kwikipagmiut** and **Tapraqmiut**, there was no doubt about answering the ethical question. From their perspective the cultures of the Yukon delta, their own **cultures**, provided a way of life full of value and meaning. It had been, and could continue to be, **a** good way of life for the Yukon delta people. To their minds, the culture should survive. Of course, knowing so intimately their own way of life, their assessment could be no other. Accordingly, if **oil** development threatened the very basis of the culture by threatening its land and sea resources, then, to these groups, there should be no oil development. The **Kwikipagmiut** and **Tapraqmiut** would seek to preserve their **culture**, even at the risk of denying petroleum to outside **cultural systems**.

During the summer of 1981, certain residents of the Yukon delta spoke about oil with a quiet kind of disappointment and resignation. The cultures of the Yukon delta seemed so small in comparison with all the cultures outside, they reasoned. It seemed inevitable that the interests of large groups would win out over the interests of so **small** a group of people.

There were **others**, however, who expressed a quiet hope and optimism. The cultures of the Yukon delta had successfully endured and prospered **over** thousands of years. Such strong cultures could be expected to continue to survive in the future. Reasonably, some equitable and just solution to the **oil** issue could be found.

BIBLIOGRAPHY

- Alaska Department of Fish and Game. 1980. Annual Management Report. Yukon Area. Anchorage, Alaska. 146 pp.
- Balikci, Asen. 1970. The Netsilik Eskimo. Natural History Press, Garden City, New York. 264 pp.
- Burch, Ernest S. 1975. Eskimo Kinsmen. West, St. Paul.
- Ellana, Linda J. 1980. Bering-Norton petroleum development scenarios and sociocultural impacts analysis, Volume I. Technical Report Number 54. Alaska OCS, BLM, Anchorage, AK. 455 pp.
- Ellana, Linda J. 1980. Bering-Norton petroleum development scenarios. Sociocultural systems analysis, Volume II. Technical Report Number 54. Alaska OCS, BLM, Anchorage, AK, 251 pp.
- Johnson, Allen W. 1978. Quantification in cultural anthropology. Stanford University Press, Stanford, CA. 231 pp.
- Lantis, Margaret. 1946. The social culture of the Nunivak Eskimo. " Transactions of the American Philosophical Society, ns. Vol. 35, Pt. 3, 153-323.
- Leaf, Murray J. 1972. Information and behavior in a Sikh village: Social organization reconsidered. University of California Press, Berkeley, CA. 296 pp.
- Murdock, George Peter. 1949. Social structure. Macmillan, New York.
- Oswalt, Wendell H. 1967. Alaskan Eskimos. Chandler Publishing Company, San Francisco, CA. 297 pp.
- Pennoyer, Steven, Kenneth R. Middlemton, and Melvan E. Morris, Jr. 1965. Arctic-Yukon-Kuskokwim Area Salmon Fishing History. Alaska Department of Fish and Game, Information Leaflet No. 70, Anchorage, AK. 51 pp.
- Ray, Dorothy Jean. 1964. Nineteenth century settlement and subsistence patterns in Bering Strait. Arctic Anthropology. 2(2):61-94.
- Schusky, Ernest L. 1972. Manual for kinship analysis. 2nd Edition. Holt, Rinehart and Winston, New York. 99 Pp.

Wolfe, Robert J. 1979. Food production **in** a Western Eskimo population. Ph.D. Dissertation in Anthropology, University of **California**, Los Angeles. 302 pp.

Zagoskin, Lavrentii Alekseevich. 1967. Lieutenant **Zagoskin's** travels in Russian America, 1842-1844. Edited **by Henry N.** Michael. University of Toronto Press, Toronto.

APPENDIX A

Glossary of Terms for Selected Food Species

Utilized on the Yukon Delta or Stebbins

<u>English</u>	<u>Scientific</u>	<u>Local Terms</u>
Arctic grayling	<u>Thymallus arcticus</u>	chulukbowuk tuluqpak
Arctic lamprey	<u>Lampetra japonica</u>	ngumugiyuq ngumugazuq
Alaska whitefish Lake whitefish	<u>Coregonus nelsoni</u> <u>Coregonus clupeaformis</u>	chinek'liq nuqiya (small ones) nuq'liq
Belukha (white whale)	<u>Delphinapterus leucas</u>	st'oaq (or istoaq) munduq--belukha epidermis
Bering cisco	<u>Coregonus laurettae</u>	imuqbinruq small whitefish
Blackfish	<u>Dallia pectoralis</u>	ima'ngaq chun'geq
Broad whitefish	<u>Coregonus nasus</u>	kaurtuq nuqiyak (small) kaurkiachalguq (small)
Burbot	<u>Lota lota</u>	maniginuk lush
Dolly varden	<u>Salvelinus malma</u>	egathluqbiaq
Duck (generic)		ootgaq
Least cisco	<u>Coregonus sardinella</u>	etuleaq
Northern pike	<u>Esox lucius</u>	qusulik chuqfuk k'shuliq
Pacific herring	<u>Clupea harengus</u>	egauthluk'biq egauthloauk 'buq kaultuk--herring eggs on kelp

<u>English</u>	<u>Scientific</u>	<u>Local Terms</u>
Round whitefish	<u>Prosopium cylindraceum</u>	kassiaq nuqiyaa
Saffron cod	<u>Eleginus gracilis</u>	egauthluk egauthloaug
Chum (dog) salmon	<u>Oncorhynchus keta</u>	kanyetnuq kamiknuk nulkbiq oqoqliq (fall chum) okokliq (fall chum)
Coho (silver) salmon	<u>Oncorhynchus kisutch</u>	kaukiuq oqokliq kugge'yuk
King (chinook) salmon	<u>Oncorhynchus tshawytscha</u>	dogiuqfug chiuktuk chaqilukfuk
Pink (humpback) salmon	<u>Oncorhynchus gorboscha</u>	chulqbuq juqbuq humpies
Salmon, salmon eggs, fermented		imlauq
Salmon, color turned or hook nosed		daliyuk
Salmon, easy drying		kaukezuk
Sandhill crane	<u>Grus canadensis</u>	ngutraq
Sculpin		
Slimy sculpin	<u>Cottus cognatus</u>	kiyokobauq
Coastrange sculpin	<u>Cottus aleuticus</u>	kanaufbuk
Prickly sculpin	<u>Cottus asper</u>	bullheads devil fish Irish lords

<u>English</u>	<u>Scientific</u>	<u>Local Terms</u>
Seal		
Bearded seal	<u>Erignathus barbatus</u>	mukluk--generic term alemeguk--adults oogeruk--adults (Stebbins) muklasuq--small mukluk ammirtaq--less than a year old angiyoktiq--adolescent
Ring seal	<u>Pusa hispida</u>	niiyiq
Spotted seal	<u>Phoca vitulina</u>	ezo 'riq
Sheefish	<u>Stenodus leucichthys</u>	cheliq cheuq
Smelt		
Pond smelt	<u>Hypomesus olidus</u>	kozout
Rainbow smelt	<u>Osmerus mordax dentex</u>	chiquaulk koziq chevokoliq
Snowshoe hare	<u>Lepus americanus</u>	makaquq
Starry flounder	<u>Platichthys stellatus</u>	nautakanuk nat'honuk
Swan (generic)		nguguyuq
Three spine sticklebacks	<u>Gasterosteus aculeatus</u>	koahulq needlefish
Trout (generic)	<u>Salmo sp.</u>	chuluqpauq egauthlukbuq
Willow ptarmigan	<u>Lagopus lagopus</u>	akazereaq

APPENDIX B

RESOURCE CONVERSION FACTORS

<u>Resource</u>	<u>Dressed Weight</u>
Seal, bearded	140.0
spot ted	56.0
ringed, fall	46.0
ringed, winter	63.0
Belukha	700.0
Walrus	560.0
Salmon, king	15.9
chum	4.9
coho	4.8
Sheefish , coastal communities	8.0
Mountain Village	5.5
Broad whitefish	
coastal communities	2.0
Mountain Village	4.0
Small whitefish	.75
Saffron cod	.75
Herring	.4
Burbot	4.5"
Pike	2.3
Ducks	1.5
Geese	5.0
Crane	10.0
Swan	10.0
Moose	715.0
Hare, arctic	5.0
snowshoe	2.5
Beaver	15.0
Otter	3.0
Muskrat	.75
Mink	2.0
Ptarmigan	1.0