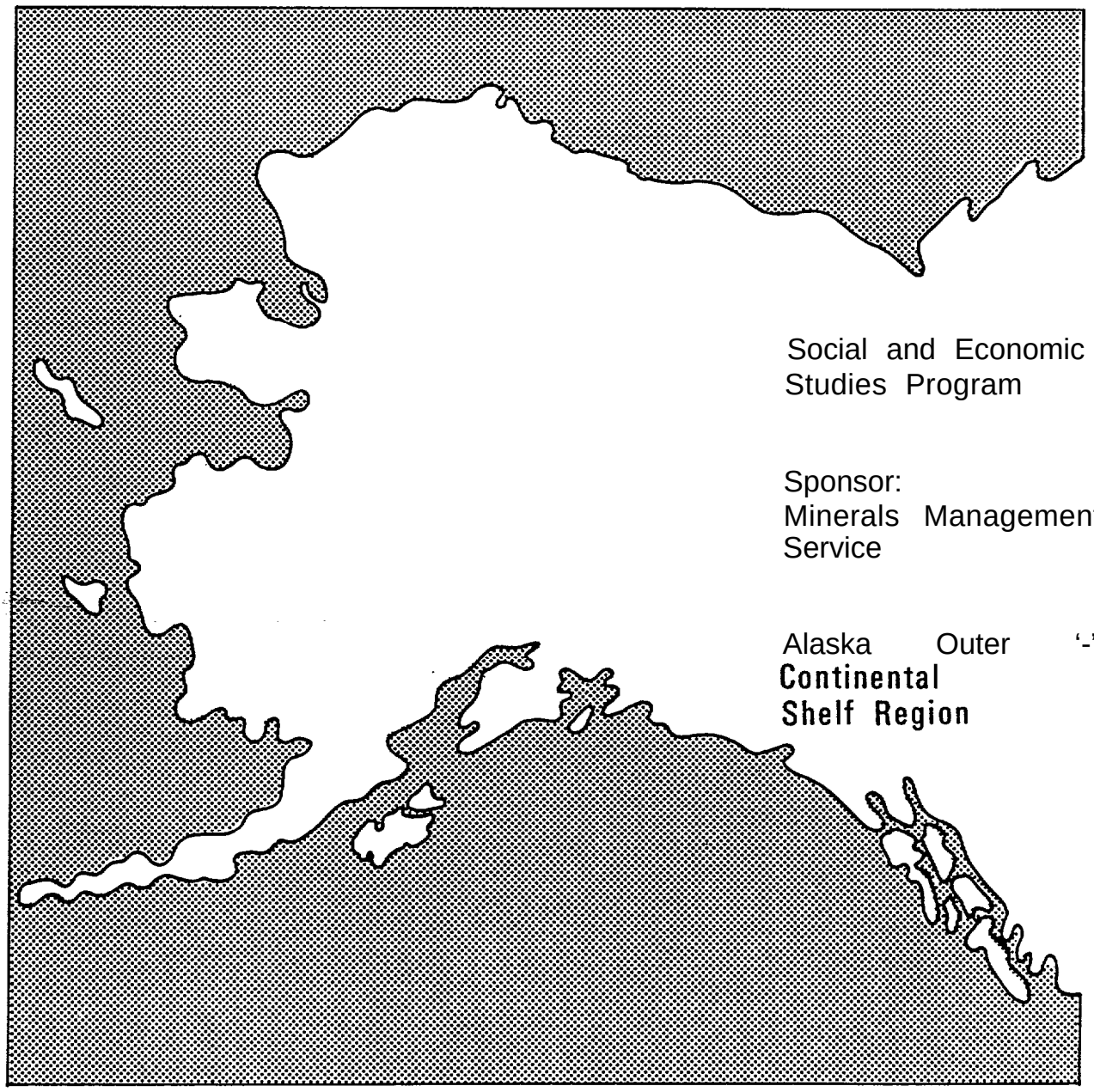
Technical Report
Number 89



Social and Economic Studies Program

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EFFECTS OF RENEWABLE RESOURCE HARVEST DISRUPTIONS ON SOCIOECONOMIC AND SOCIO-CULTURAL SYSTEMS: ST. LAWRENCE ISLAND

Contract No. AA851-CT1-59 / 29024

Technical Report Number 89

Effects of Renewable Resource Harvest Disruptions on Socioeconomic and Sociocultural Systems: St. Lawrence Island

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ACKNOWLEDGMENTS

While the ultimate responsibility for the contents of this report belongs to the John Muir Institute and its research personnel, any successes attributed to the report are the result of the cooperation and aid provided by the people of St. Lawrence island. Without their willingness to share information, check the accuracy of their information with others, and guidance in locating appropriate informants, the project would have been doomed to failure.

Fortunately, the villagers of both Gambell and Savoonga were open and friendly, giving freely of their time and knowledge. Their help went far beyond providing information, extending into the personal realm as well. They helped with obtaining housing, transportation, water and helped us overcome many minor difficulties encountered while adjusting to and living in a new and often harsh natural environment. In spite of the cultural differences, and in spite of the demands on their time by the ever inquiring research team, we were welcomed and made to feel at home.

So many residents of the two communities supported the research effort it is impossible to acknowledge each individually without a fear of unintentionally omitting some. Thus, we would like to thank each and every member of both Gambell and Savoonga for their help. Although we did not speak with every resident directly, al contributed to this report, even if indirectly.

However, this acknowledgment would not be complete without specific mention of the village governments. The City Councils, Indian Reorganization Act Governments, and Village Corporations of Gambell and Savoonga provided aid to the research effort above and beyond what one

would normal y expect of elected officials, In addition to sanctioning the research project and vouching for the research team, they made contacts, served as informants, and helped locate potential Native field workers.

Final/y, we must acknowledge the important contributions made by the Native field workers. Their efforts made the project work. Not only did they supply their own knowledge, they obtained information from other villagers, village organizations and documents, they helped tailor the research to fit the unique characteristics of the villages as well. Out of fear that they would be blamed for any errors that occur in this report, we have omitted their names. Any error contained herein are the sole responsibility of the authors. Nevertheless, we wish to express our gratitude to them for their enormous contribution to the project. They have earned our undying gratitude and a hearty “thanks” goes out to all of them.

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CHAPTER I

INTRODUCTION

A full and complete ethnography of St. Lawrence Island is obviously impossible given the time, economic and methodological restrictions imposed by the research contract (Contract AA851 -CT1-59). The goal of this research is of necessity more restricted, focusing upon those aspects of St. Lawrence Island Eskimo life which are likely to be altered should there be changes in the availability of renewable natural resources.

It is possible, even likely, that non-subsistence activities occurring in and planned for the waters surrounding St. Lawrence Island, as well as on the Alaskan mainland, have affected and will continue to affect the islanders' access to marine and terrestrial food supplies. The numbers of bowhead and minke whales, Pacific walrus, seals, fish, birds, land plants and sea plants may well change as a consequence of non-subsistence activities undertaken by individuals and groups not indigenous to the island. Modifications in the subsistence harvest can reasonably be expected from several ongoing and planned actions, including commercial whaling and fishing, increased sea traffic for other reasons, mining operations, federally-imposed whaling quotas, the United States' 200 mile territorial limit, federal and state fishing regulations, and the enactment of the Alaska Native Claims Settlement Act (1971) .

The proposed Outer Continental Shelf (OCS) lease sales in the north Bering Sea represent yet other possible changes in the subsistence harvests of St. Lawrence Island. Lease sales for Navarin Basin, St. George Basin and Norton Sound, because of their proximity to St. Lawrence Island, signify potential hazards to the recurring natural

resource base upon which islanders depend. Offshore oil and gas structures, oil spills, noise, odors, ship movements and other human disturbances are all events which could modify both the spatial distribution and quantity of available marine and terrestrial species.

The aim of this project is to analyze the current and immediate past uses to which renewable natural resources have been and are continuing to be put by the Eskimos residing on St. Lawerence Island. In order to accomplish this task and provide an ethnographic baseline against which to judge future conditions it has been necessary to collect a vast amount of information. Data has been collected on family and kinship structures, political institutions, economic activities, religious affiliations, population, resources utilization categorized by species, and a wide variety of topics important to understanding the potential impacts of offshore oil exploration activities on the social and cultural systems of the island.

The information collected and analyzed in this study will provide the baseline for determining the magnitude and extent of any future disruptions to the naturally-occurring resource base which presently sustains St. Lawrence Island Eskimos. There is a reasonably high probability that there will be significant disruptions in the availability of one or more subsistence species given the number of Alaska outer continental shelf lease sales planned for the near future. Between 1983 and 1987 there were 15 lease sales planned for the region (Blanchard, 1983:25). The recently revised lease sale schedule calls for at least 10 lease sales, several of which can potentially impact the marine mammals, fish and bird populations of St. Lawrence Island.

The most likely to directly impact islander subsistence activities are Federal Outer Continental Shelf Lease Sales 89 (St. George Basin, April,

1985), 100 (Norton Basin, December, 1985), 107 (Navarin Basin, March, 1986), and 101 (St. George Basin, April 1987). Lease Sales 92 (North Aleutian Basin), 97 (Diapir Field) and 109 (Barrow Arch) , while some distance from St. Lawrence Island, also have the potential to adversely impact native subsistence activities on the island. While still further away, it is not inconceivable that Lease Sale 99 (Kodiak) could negatively affect the subsistence activities on the island. While the amount of air, noise and visual pollution will increase at least arithmetically with the number of lease sales, from the perspective of the subsistence resource species, the impact may increase exponentially. That is, while the noise or odor of one passing ship might not alter the behavior of sea mammals, e.g. , walrus, several ships might force them to relocate. In any event, the likelihood of negative impacts from offshore exploration and other activities increases with the amount of activity, whether the increase is arithmetic or exponential.

Research Methods and Design

The full range of scientific research techniques were not available for this project because of strictures imposed by the research contract. Office of Management and Budget (OMB) regulations forbid the use of formal interview schedules or structured questionnaires with more than nine people in any study funded by an agency of the federal government, without explicit prior approval by OMB. The Alaska GCS Office contract (AA851-CT1-59, p. 6) specifically forbade obtaining OMB approval. Moreever, surveys and statistical analysis requiring formal methods of data collection were not desired by the OCS Office (Contract AA851-CT1-59, p. 6).

The OMB regulation forbidding the use of interview schedules or structured questionnaires without approval, and the OCS ban of seeking OMB approval precluded the use of scientific surveys. With survey techniques, a large and representative sample of village residents would have been asked the same questions on a variety of topics. Such a procedure would have guaranteed the validity of generalizations from the sample (random) responses to the island as a whole. That is, the probability of error in generalizing from a random sample to the entire population would have been known. External validity would have been improved at the same time.

Further, survey techniques would have allowed a statistical comparison of responses to two or more questions so as to determine the extent to which variation on one question was accompanied by variation on another question. This same procedure would have permitted a first approximation of causal and intervening variables, although theoretical considerations and multiple, over-time measurements would have been necessary for a complete determination of causal and intervening variables.

The absence of multiple measures of the same variable over time presents yet another research difficulty. Because most of the data are synchronous, hence time-bound, and because the archival data are too meager to provide comparable data from earlier times, it is impossible to provide rigorous statements about future conditions. Time-bound data cannot provide valid generalizations about the future. Thus, this ethnographic baseline is nothing more than an empirical statement of "what is," and cannot provide a causal explanation of "what must be." It should be noted that even with multiple measures the problem of induction to the future is not satisfactorily solved, but would remain an approximate solution.

Data Collection

Three data collection methodologies were employed in obtaining the ethnographic information, but they all focused upon the same issue: the relations among the harvest of renewable resources and the significant elements of St. Lawrence Island culture. The use of three methodologies provided information relatively more valid and reliable than would have been provided had only one data collection procedure been followed. In terms of internal validity (Did X "cause" Y?) and reliability (Can the results be replicated?), the use of three methodologies provides information superior to data collected only by survey research techniques.

Anthropological observations. Direct observations of the daily activities of St. Lawrence Islanders provided one of the three data sets obtained. Anthropological observations include not only information on what people do, such as butchering a whale or eating muktuk, but also consist of observing and recording what people say. Non-directive conversations with villagers, overheard conversations between villagers and attendance at public meetings were the sources of the data. In a general sense, then, the anthropological observations were made while participating in and observing village life.

The data were collected between the first of February and the third week of August, 1982, by three field researchers, several native research assistants and the senior researcher for the project. The senior researcher spent approximately four weeks on the island making observations during March, April, May, and July. Insofar as the native field assistants had lived virtually their entire lives on the island, their observations were not limited to the slightly over six-month-long observations period, but extended back over one-half century in two

instances. Their recollections were used extensively throughout the research period. Sometimes the native field assistants served as informants, at other times they collected new data. In both capacities they proved to be invaluable to the success of the project. Without the native field workers the new information collected would have been only a small fraction of what was ultimately collected.

Many of the observations made during the research period were focused. Existing scientific literature about St. Lawrence island, as well as literature about other ethnic groups scattered in time and geography, indicate that specific acts, technology, ideas and sentiments are crucial to understanding the harvest of naturally-occurring resources and family subsistence practices. The researchers asked open-ended questions about such items while helping with hauling out walrus boats, observing the butchering of a bowhead whale, collecting bird eggs, checking gill nets. fishing with rod and reel, or other routine village activities. As a result of such focused but unstructured questioning, along with the expertise of the native field assistants, hunting and fishing areas were mapped, wildlife species necessary for subsistence identified, household composition and kinship networks mapped and a host of other information collected.

Other observations were unstructured and unanticipated, amounting to discoveries in some instances. The native field investigators were especially helpful in pursuing the significance of these discoveries, placing them into the context of island life.

The two types of observations, those guided by expectations provided by the scientific literature and those unanticipated, were obtained from open-ended questioning and simple observation. Some of the observations supported the expectations while others cast doubt on them. Still others

amounted to discoveries of behaviors which were not expected and prompted new inquiry. Public statements by village residents regarding problems and issues confronting the villages provided several discoveries and directed queries in a new direction.

Anthropological observation is the most crudely empirical of the three observation methodologies utilized, but that is its strength. These observations made in conjunction with participation in village activities, be it institutional, familial or subsistence, provide the richest possible understanding of village life. Phenomena are often discovered from these data that could be discovered in no other way. Subjective understanding, beyond impressions, accrues to the observer and allows that person to interpret relationships and actions observed with other -data collection techniques.

The weaknesses of anthropological observations are obvious. The data are synchronous--observations are recorded at a single 'point in time--and hence, inadequate for inferring change. The data so obtained are prone to reactive arrangements, that is, they are subjective, not benefiting from the controls ideally (but seldom in fact) applied to structured interviews and random sampling. One can never be certain that what was seen was what happened or what prompted the happening. As with structured interviews or questionnaires, one cannot be certain that what was heard by the field worker was what was said, or what was heard by the informant was understood in the way it was intended, or that the informant withheld or distorted the information for some reason. Finally, anthropological observations are not easily analyzed and do not yield easily to formal analysis.

Protocol observations. The second data collection methodology used was protocols. Unlike structured interview schedules, the protocols were open-ended, consisting of sets of topics rather than specific questions. They were administered in conversations without concern for the sequence of topics, thus eliminating the redundancy so often encountered in informant-directed discussions. The goals of the protocols were to determine the organization and activities of village institutions. As used here, institutions refer not merely to churches, schools and other formal organizations, but include all patterned and recurring social interactions. Thus, whaling and walrus crews, and family structures fall within the purview of institutions. The institutions of interest included the economy, polity, religions and helping services as well as patterned subsistence activities.

Of special importance were topics regarding two important institutions[4]: household structures and kinship networks. Household data were collected on income, subsistence harvests and harvest distribution through kinspeople, affines and friends. Kinship data were collected on how respondents were integrated with village, regional, state and federal agencies.

The strength of protocol data can be best illustrated by comparing them to anthropological observations. Unlike anthropological observations, protocol observations allow for repeatable comparisons among families, among institutions, and between families and institutions on a variety of topics. Generalizations from protocol data are thus somewhat more valid than anthropological observations.

Protocol observations also have weaknesses. Because they are synchronous measurements, they are inadequate for making inferences

about change. Protocol observations also have weak construct validity, since it is not always obvious what conceptual structure explains the data. However, it should be noted that questionnaires and interview schedules typically demonstrate even weaker construct validity, tending to trivialize the link between a phenomenon and its measurement. This is especially the case when Likert-type or forced choice scales are used.

Even though restricted in focus, protocol observations can be understood and connections among data can be interpreted from the understanding that accrues through anthropological observations. Thus, a narrative develops from the interplay between the understanding acquired through anthropological observations, and information culled from protocol observations, even though protocol observations, as administered here, do not allow for formal, multivariate, statistical analysis.

Archival observations. Village level data were collected from a number of existing sources, including contract research reports supplied by state and federal agencies and Kawerak. The best single source of information about St. Lawrence Island was provided by Hughes (1960), but quantification was largely absent. Other useful sources of island information was contained in two U. S. Department of Interior publications (1977, n.d.) where quantification was also lacking, and a doctoral dissertation on Gambell by Burgess (1974).

By and large, time-series data on island residents are scarce or when available, incomplete. More importantly, the further back in time the data go, the less certain one becomes about the accuracy of the data. Furthermore, what little time-series and other data are available frequently do not address exactly the same questions addressed by this research project, and comparisons can yield weak conclusions at best. Nevertheless

when archival data from an earlier time can be meaningfully compared to present-day data, some inferences about change over time can be supported. In essence, archival data are used to confirm or disconfirm generalizations about changes encountered on the island.

Triangulation. While each of the three data collection methodologies is flawed individually, when evidence from two or all techniques support the same conclusion it increases the validity of the conclusion. For example, anthropological observations appear throughout this report as explanatory narrative and as anecdote. The hypotheses generated from anthropological observations cannot be tested deductively, because measurement occurred at only one time. Furthermore, the small number of respondents, and the fact they were not randomly selected, makes generalizations about the villages hazardous. When combined with an analysis of protocol observations, however, the rich basis of understanding obtained from anthropological observations takes on an added dimension.

The focused responses obtained from the protocol observations allow an evaluation of similarities and differences among respondents within a village. In short, the generaiizations tentatively arrived at from anthropological observations can be compared with the individual-level data obtained from the protocol observations, either supporting or rejecting the initial hypotheses. Following the guidelines of the OCS contract, formal statistical analysis beyond descriptive statistics has not been employed to evaluate variation among variables. However, descriptive statistics alone have demonstrated variation while confirming or rejecting the hypotheses derived from anthropological observations. The quantifiable, objective nature of the protocol observations compensates for the weaknesses of the anthropological observation data.

Neither protocol nor anthropological observation data sets support inferences about change because both are synchronous. Yet, remembrances by the native field assistants as well as the recollections of elder members of the community provide support for some hypotheses about the nature and amount of change. When all of the above evidence is combined with the meager archival evidence, there is significant support for several hypotheses regarding change, even if much of the support is qualitative rather than quantitative. Unfortunately, support for hypotheses is not equivalent to scientific proof; such hypotheses must be treated gingerly and with caution.

Sampling. Insofar as OMB regulations rendered random sampling trivial, other, and somewhat less satisfactory, sampling techniques were utilized. Where possible, network sampling was utilized. That is, protocol and anthropological observations were directed to members of some network, e.g. , sharing, kinship, political or hunting networks. By following the network,' a degree of representativeness was obtained which could not be guaranteed with haphazard or availability sampling techniques. Network sampling is analagous to stratified sampling in that greater representativeness can be obtained with smaller samples than would normally be necessary.

Unfortunately, network sampling was not always possible. This was especially true for the research in Savoonga. OCS contract requirements placed researchers in the village during the time most villagers were in fish camps. Roughly two-thirds of the Savoonga residents were out of the village during the time of the field work. Thus network sampling was not possible, and availability sampling became necessary. Availability sampling represents a loss of representivness and one must therefore treat the

data from Savoonga carefully. Fortunately, however, the results obtained in Savoonga so closely match the results obtained in Gambell, that a reasonable, though not the only conclusion that may be reached is that the Savoonga sample was representative, even though it was neither a random nor a network sample. The fact that the data sets from the two villages are so alike gives ample reason for assuming that representativeness was achieved in the Savoonga sample and there is little reason for mistrusting the results obtained in Savoonga.

Furthermore, insofar as there is a large degree of consistency between the data sets collected in Savoonga and Gambell, and insofar as earlier research endeavors have provided results which are generally consistent with the results obtained in 'this study, there is no reason for assuming that the evidence obtained in this study is either unreliable or invalid. In fact, the vast number of anthropological observations collected by team members lead to the conclusion that the data is both valid and reliable, even though no formal measures of validity or reliability were possible. '

Procedures

On December 23, 1981, letters were sent to the leaders of Gambell and officials of Kawerak (the Bering Straits non-profit corporation). The letters explained the purpose and duration of the research project, and sought permission to undertake the study in Gambell. Follow-up telephone calls were made by the senior researcher to these leaders to clarify the goals of the research, answer any questions that they might have and obtain suitable housing for the field researcher. Permission to do the

study was granted by the leaders of Gambell in January, 1982, and housing for the field researcher was arranged.

Prior to his departure for Gambell, the field researcher was given extensive training regarding the goals of the research as well as the appropriate techniques to be employed in the data collection. This training was provided by the project's principal investigator. Additionally, the field researcher read the pertinent social science literature, both non-academic (gray or fugitive) literature and formal academic literature. The field researcher also received several days of instruction on the peculiarities and problems of conducting research in the Arctic from an experienced Arctic researcher. The latter training was conducted in Anchorage just prior to the field researcher's trip to Gambell.

The OCS contract called for the field researcher to remain in Gambell for six months. Money was provided for the field researcher to hire one native research assistant. The original research plan called for the senior researcher to spend a week in early March with the field researcher, answering questions and generally overseeing the project, while at the same time making independent anthropological and protocol observations.

Unfortunately, on the first of March the field researcher tendered his resignation, effective immediately. The senior researcher instructed the now-terminated field researcher to arrange for the storage of all of the research materials in Gambell, i.e., pens, books, stamps, files, maps, paper and the snowmobile. He was also instructed to mail all of the field notes and observations not already in the hands of the senior researcher. All of the requests by the senior researcher were satisfied. A letter was immediately sent to the village leaders informing them of the turn of events, even though most of them knew. The letter outlined a new course

of action, and a meeting between the senior researcher and community leaders was suggested for March 17.

Weather in Nome delayed the flight to Gambell, but two days after the proposed date the meeting was held. However, between the time of the letter informing the leaders of the field researcher's resignation and the meeting, representatives of the City Council, Native Corporaton and I RA Council jointly agreed that the IRA Council would assume the responsibility for "over-seeing" the activities of the proposed research agenda. The i RA Council also agreed to act as liaison between the project and the villagers, including the other two governmental groups.

During the meeting with the IRA Council, it was agreed that the project served not only the needs of the OCS Office, but also served the needs of the people of Gambell. The "project was viewed as both necessary and important for Gambell's future well-being. Project information, to be supplied in the final report, would provide data not readily accessible to local decision-makers, providing the community with information with which they could make informed decisions concerning the future growth and/or development of the island. it was further agreed that the residents of' Gambell should play a larger role in the project. IRA Council members felt that some of the research could be undertaken by qualified local residents. The research experience to be gained by local residents was perceived to be potentially useful in the future when Gambell might find it necessary to collect new information about the village, information necessary for future planning or decision-making. By engaging local residents for some of the research activity, and with the aid, advice and cooperation of the IRA Council, community cooperation would be enhanced, making for a better and more complete project.

Even with the improved eg timacy of the project provided by the cooperation of the IRA Council, the resignation of the original field researcher had cost the project valuable time. While the field researcher's field notes were available, his understanding, admittedly limited with only a month in the field, could not be readily transferred to a new field worker. Furthermore, it would require some time to locate another qualified field worker. Thus it was determined that the most expeditious means of preceding was to hire three part-time native research assistants. By working part-time, these native research assistants would be able to pursue many of their subsistence activities. Additionally, three native research assistants would be able to provide more information about the village and its inhabitants than one or two informants could, while providing validity checks on the information and recall of the others.

Notices of employment were posted at the government office building and the village store. Seventeen residents applied for the three positions without delay. The very next day, the senior researcher and the field researcher from the Unalakleet project began interviewing the candidates. Several of the candidates possessed the requisite skills and qualifications, and the top three were hired. Two of the new research assistants were men and one a woman. Their ages ranged from young to elderly. Each possessed slightly different abilities, all of which were necessary to the goals of the project. Eventually, one of the research assistants found that she could not meet her personal commitments as well as project demands and resigned, agreeing to serve as an advisor to the project as the need arose. Her position was not re-filled until later in the project when a person with her talents was needed.

The senior researcher and the field researcher from the Unalakleet project set about immediately to instruct and train the new research assistants in data collection techniques, alerting them to the issues of validity. The importance of collecting accurate and truthful information was stressed repeatedly. Between training sessions, the native research assistants acted as informed respondents, providing vast amounts of information about the village and its inhabitants. They ultimately undertook a wide variety of tasks, including mapping all occupied houses, diagraming household compositions, listing the several species of subsistence resources utilized by villagers, detailing the distinct products manufactured by residents, determining sources of income and a host of tasks best performed by those familiar with Gambell. After the senior researcher departed, the field researcher from Unalakleet remained in the village for several weeks to continue the training of the research assistants and make observations. Progress reports and field notes were mailed to the senior researcher on a weekly basis.

By the time the senior researcher and the new field researcher arrived at the end of April, much information had been collected and the research assistants were fully acquainted with most of their tasks and responsibilities. Under the guidance and direction of the new field researcher, research began in earnest on April 30, 1982. Because of the assistance of the I RA Council and the knowledge of the native researchers, there was no time lost in becoming familiar with the community. Productive activities commenced at once.

In the meantime, the Alaska OCS Office decided that Savoonga should be included as part of the research project. The senior investigator made the necessary arrangements and flew from Gambell to Savoonga where he

met with some of Savoonga's leaders. Informal discussions were held with a few of Savoonga's leaders, and the goals and purposes of the project were outlined. It was not until after an additional meeting in the first week of May, between the senior researcher and representatives of Savoonga's three formal governments and other interested persons, that approval for the project was granted. Like Gambell, leaders in Savoonga saw the advantages of the research for their village and island, and they too provided support and legitimation for the project.

Field work did not begin in Savoonga, however, until the fieldwork in Gambell was substantially completed. The senior investigator and field researcher moved from Gambell to Savoonga on the 10th day of July. Data collection in Savoonga continued until the 19th of August. Arrangements were made to interview prospective native research assistants who resided in Savoonga. The field researcher interviewed 15 applicants and 3 well-qualified candidates were hired. They, like their counterparts in Gambell, were male and female, covering the age spectrum. In order to expedite the process of training the new research assistants, one of the Gambell research assistants travel led to Savoonga where he remained for several days helping the field researcher train the new assistants. The Gambell research assistant, having kin who resided in Savoonga, was familiar with many residents and introduced several to the field researcher, an act which quickly provided the project and it's personnel with legitimacy.

The procedures and research activities undertaken in Savoonga mirrored to a large degree those undertaken in Gambell. The research assistants again provided invaluable information about their community, while collecting anthropological and protocol observations under the

guidance and direction of the field researcher. As before., the field researcher trained and guided the research assistants, made and recorded his observations, organized the data collected and began the long process of interpreting and explaining what he saw.

The differences between the research process undertaken in Gambell and the process undertaken in Savoonga are: (1) the OCS contract provided for only about six weeks of field work in Savoonga, and (2) the contract placed the field worker in Savoonga at the time most of the residents (roughly two-thirds) were not dwelling in Savoonga. July and August are the months when islanders traditionally move to their summer camps. The shortened data collection period arid the absence of respondents made the work somewhat more difficult to do, and raises questions about the quality of the data. However, because of the experiences in Gambell, the research proceeded much more rapidly. in Savoonga than it had in Gambell. Sources of information were known, if not always immediately available. Interpersonal ties made making appointments with prospective respondents easier, as did the support of the village governments. Community cooperation was high, and training the research assistants proceeded quickly. Overall, the time spent in Savoonga was extremely profitable, and the amount of information COllected, as well as the quality of the information, exceeded all expectations,

CHAPTER II

THE NATURAL ENVIRONMENT

At 171° 50' west longitude and 63° 38' north latitude (cf., Hughes, 1960:5; Environmental Services Limited, 1980a), the Northwest Cape of St. Lawrence Island is only about 22 miles from the International Date Line and tomorrow (see Figure 1). To the west, 39 miles of Bering Sea separates the Northwest Cape from Chaplino (Indian Point), U.S.S.R. (cf. , Hughes, 1960:5; Burgess, 1974:45). The Alaskan mainland is 124 miles east of the Northeast Cape (U.S. Department of Interior, 1977: 3), although the nearest point of continuous human habitation on the U.S. mainland is somewhat farther.

The Land

Roughly 100 miles long and 20 miles wide, the island encompasses around 1.2 million acres. Barren mountains which rise above 2,000 feet, tundra, small lakes and rivers cover the island's 1880 square miles (Burgess, 1974:45). In describing the island, Hughes has noted:

> The geological backbone of the island is volcanic although in the western end there are igneous and sedimentary formations. The central portion of the island (the Kukulgit Mountains) contains many volcanic cinder cones and fairly recent lava outpourings, some of these going down to the sea. Much of the terrain, however, is low and swampy, and there are wide stretches of tundra which support a subarctic flora. Inland lakes and lagoons spot the landscape in great numbers and many streams and rivers drain to the sea (1960:5).

Minerals

Even though some studies of the island's mineral deposits have been conducted (see U. S. Department of interior, n.d. : 171-172), little information about them is available to the general public. Existing

information indicates that the island contains molybdenum, copper, lead, zinc, silver and coal (U.S. Department of Interior, n.d.:172; Burgess, 1974:79). The extent. of mineralization and commercial value appears to be unknown, but islanders look to coal mining for domestic use as a possible means of reducing the need for cash incomes. Commercial coal development is not desired, but domestic use would eliminate or drastically reduce the need to purchase costly fuel oil, a commodity which absorbs a tremendous amount of cash income.

Climate

To anyone not raised near the Arctic Circle, the island's climate must be described as harsh. Many islanders agree with such a description. The cool, moist, maritime climate produces fog, rain and snow with great regularity. A Weather Bureau report in 1952 noted that there were approximately 32 days of clear skies per year (Hughes, 1960:5). Precipitation descends upon the island about 300 days per year (Environmental Services Limited, 1980a). with August providing the greatest amount of rain (2.6 inches) and December the greatest amount of snow (13.7 inches) (U.S. Department of Interior, 1977:9;n.d.:9).

At the two communities where weather measurements have been available, Gambell and Savoonga (see Figure 1), the recorded total annual precipitation is moderate, even though rain or snow falls regularly. Gambell receives an average of 15 inches per year. and Savoonga 10 inches per year. An average of 80 inches of snow falls in Gambell yearly, while Savoonga receives only about 58 inches per year (Environmental Services Limited, 1980a, 1980b; U.S. Department of interior, 1977:9; n.d.:9).

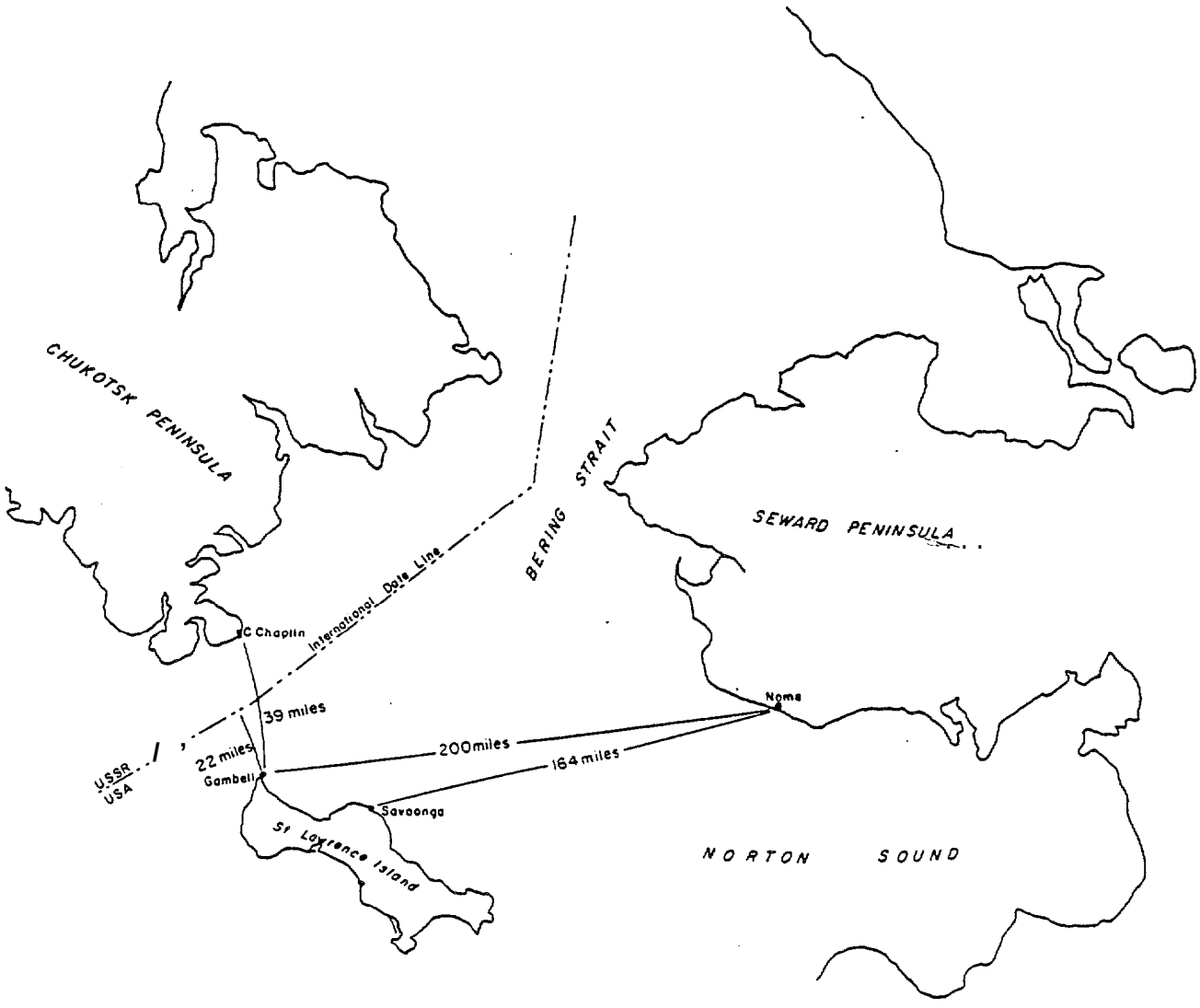

Figure 1. St. Lawrence Island and North" Bering Sea Region. (Source: From U.S. Department of Interior, Alaska National Interest Lands Conservation Act, December 2, 1980)

Like annual precipitation, temperatures on St. Lawrence must also be considered moderate, especially when compared with mainland areas of similar latitude. Wind and water currents moderate the air temperatures, even though the ice pack surrounding the island from mid-November through mid-May provides some continental weather characteristics. For example, in Gambell the winter temperatures average between 10° F and -2° F, with the lowest recorded temperature -30° F. In summer, Gambell temperatures average between 48° F and 34° F. Gambell's highest recorded temperature is 65° F (Environmental Services Limited, 1980a).

Temperatures in Savoonga follow closely those observed in Gambell. Winter temperatures average between 11° F and -7° F. The extreme low temperature recorded in Savoonga is -34° F. Summer in Savoonga is marked by temperatures averaging between 51° F and 40° F, while the highest recorded summer temperature is 67° F (Environmental Services Limited, 1980 b).

Even though temperatures on St. Lawrence Island are relatively mild, winds make human habitation more difficult than an examination of temperature records alone would indicate. Winds in the range of 100 mph have been recorded on the island (U.S. Department of Interior, 1977: 9), and the average wind speed for both Gambell and Savoonga is 18 mph. The more or less constant winds drastically alter the effects of relatively mild temperatures. A typical summer day of 40° F in conjunction with an average wind of 18 mph produces the cooling power of a temperature of about 22° F. On a winter day of -10° F and a wind of 40 mph, the wind chill equivalence is -70° F. Temperatures or wind chill equivalents of -25° F produce frozen flesh within one minute (Environmental Services Limited, 1980a]. Thus, with the persistent winds, human habitation is difficult and maintaining body heat is a major consideration for the islanders.

Land Mammals

St. Lawrence Island supports only a limited land mammal population: just seven indigenous species. The most populous is the tundra vole (Microtus oeconomus innuitus) which serves as the major food source for the arctic fox (Alopex lagopus lagopus) (Burgess, 1974:99, 102).

Arctic Fox

Before the coming of Europeans, the fox was a creature of minimal importance to island people. Foxes are not eaten, so, presumably, they were seldom hunted. With the whaling crews of the mid-1800s came a demand for arctic fox pelts. As might be expected, the price of pelts has varied over the years, but toward the end of World War I I the price of prime pelts reached about $35. In the years 1945 and 1946, fox pelts ' represented a major source of cash income to the islanders (Hughes, 1960:125, 194-195).

Arctic fox trapping remains a source of cash in 1982, with the average price per pelt remaining at what it was in 1945: $35. Numerous men and boys still pursue the elusive fox, but the overall economic benefits of trapping have drastically declined. Distances to trap lines are great, and the cash outlays for the necessary snowmachines, fuel and traps are large. The profitability has thus been reduced since earlier time. Further, traveling long distances during the winter is dangerous. Weather, distances to be traveled and market fluctuations have combined to make fox trapping hazardous to both person and pocketbook.

Reindeer

Domestic reindeer (Rangifer tarandus) were transplanted on St. Lawrence Island in 1900. through the efforts of Sheldon Jackson, a

Presbyterian missionary. Reindeer hides had been used prior to that time for a variety of garments, but they had to be obtained in trade with Eskimos from Siberia. The skins of reindeer fawns were especially prized because they were thought to provide the warmest winter parkas. With the reindeer came Lapp herdsmen who taught the islanders how to care for the reindeer (Hughes, 1960:14, 144-145). At the urging of Sheldon Jackson and William T. Harris, Commissioner of the Bureau of Education, in 1903 President Theodore Roosevelt signed an executive order designating the entire island as a reindeer station (U. S. Department of Interior, 1977:164-165). As we shall see, this executive order granting reserve status to St. Lawrence Island has had a profound effect upon the people of the island.

The original herd of '70 reindeer grew substantially through the first four decades of the century, providing islanders with both meat and skins. By 1940, some Eskimos estimated the herd at 10,000. However, between 1940 and 1948 the size of the herd declined precipitously, requiring that the slaughter of animals be ceased. There are still disagreements as to the cause of the decline in numbers, but several plausible causes are: (19 improper husbandry techniques, (.2) overgrazing, (3) unusually bad weather, and/or (4) excessive numbers slaughtered because of over-estimates of the herd size (Hughes, 1960:149-153; U.S. Department of Interior, 1977:165).

Today the island supports only about 200 reindeer, and this includes 20 newly transplanted animals obtained in the summer of 1982 from a herd in Deering. The annual reindeer harvest has been minimal for the past few years even though a strong market exists for reindeer meat in Nome as well as a general liking for reindeer meat by island people. There have been no reindeer harvested or hunted for the past two years. Many St.

Lawrence residents feel that the reindeer must be protected and used as a shield against reductions in sea mammal harvests resulting from oil and gas explorations in the Bering Sea. Studies are planned which will determine the optimal size of reindeer herd which the island's resources can maintain. Increasing the herd to optimal size should grant some protection from any future losses of subsistence resources. There are, clearly, too few reindeer to guarantee much safety at this time.

Birds

The avian population of St. Lawrence Island is both more numerous and more important to the human residents of the island than the land mammal population. The seabird colonies are the largest of any in the Bering Sea. Estimates range from 1,839,110 (Sowls, Hatch and Lensink, 1978:Map 93) to 2,700,000 (Starr, Kawada and Trasky, 1981 :14) seabirds. The latter estimate represents 63 percent of all seabirds in the northern Bering Sea-Norton Sound region (Starr, Kuwada and Trasky, 1981: 14). These estimates, while admittedly imprecise, provide some idea of the vast presence of seabirds. Nesting harlequin ducks (Histrionics histrionics) and common eider ducks (Somateria mollissima) are not included in these figures nor are estimates for resident peregrine falcons (Falco peregrinus) and gyrfalcons (Falco rusticolus).

Nineteen species of seabird nest on the island (see Table 1) , while many other seabird and waterfowl species pause at the island on their migratory journies. None, however, winter on the island (U.S. Department of Interior, 1977: 160). The species are so numerous, and the population so large, that each summer bird watchers from Alaska and the continental United States brave the rigors of island life to observe the

Table 1. Species and Numerical Estimates of St. Lawrence Island Seabird Colonies. [a]

Common Name	Scientific Name	Pop. Estimate
Crested Auklet	Aethia cristatella	517,000
Least Auklet	Aethia pusilla	1,003,000
Parakeet Auklet	Cyclorrhynchus psittacula	3,600
Palagic Cormorant	Phalacrocorax pelagicus	380
Dovekie[b]	Alle alle	x
Black Guillemot	Cepphus grylle	p
Pigeon Guillemot	Cepphus columba	450
Glaucous Gull	Larus hyperboreus	30
Herring Gull	Larus argentatus	x
Mew Gull[b]	Larus canus	x
Sabine's Gull[b]	Xema sabini	x
Black-legged Kittiwake	Rissa tridactyla	11,300
Common Murre	Uria aalge	300,000[c]
Thick-billed Murre	U ria lomvia	x[c]
Kittlitz's Murrelet	Brachyramphus brevirostris	x
Horned Puffin	Fratercula corniculata	2,100
Tufted Puffin	Lunda cirrhata	1,250
Aleutian Tern[b]	Sterna aleutica	x
Arctic Tern[b]	Sterna paradi saea	x

[a] Except where otherwise noted, the species and population estimates are from Sowls, Hatch and Linsink (1978 :Map 93). X denotes presence. P denotes probable presence. Scientific names are from Udvardy (1 977).
[b] Species observed by Starr, Kuwada and Trasky (1981:Map 5).
[c] Separate estimates for common and thick-billed murre are not available. The estimate for common murre represents the numbers for both species.

multitudes. Small businesses have sprung up to house, feed and transport the birder watchers.

The subsistence value of the several bird species is obvious. Birds provide not only flesh, but eggs as well. Large numbers of birds are taken with shotgun, net and hand by the men and boys of the island's two communities. In summer, bird egg collecting crews are organized and eggs are gathered from the cliffs, a rather dangerous endeavor reserved mainly for men and boys. At summer camps, eggs are collected by men, women and children from the banks of rivers and lakes. The species of the greatest subsistence importance, whether for flesh or eggs, are listed in Table 2.[1] These species provide substantial amounts of food for islanders, although in terms of the entire subsistence endeavor, birds and bird eggs represent only a fraction of the total.

Marine Mammals

Frozen over for roughly six months a year (mid-November until 'mid -May)., the Bering Sea provides habitat and sustenance for the vast bulk of the subsistence resources used by St. Lawrence islanders. Waterfowl and seabirds depend upon the sea for food and resting areas. Sea plants and small sea animals (Meinkoth, 1981) reside near the island's

[1] Some non-native Alaska experts have asserted that whistling swan, pintail, white-winged scoter, green-winged teal, Taverneris Canada goose, cackling Canada goose, pigeon guillemot, thin-billed murres and a variety of shearwaters are important subsistence species on St. Lawrence Island. However, neither native field workers who participated intensively in subsistence hunting nor other native informants mentioned these species. Direct observations by the field researcher and the senior researcher did not contradict the native reports. It is possible that the native informants did not distinguish between the varieties of Canada geese, but there is no reason to believe that these species constitute significant contributions to native diets on St. Lawrence Island.

Table 2. Bird Species Harvested on St. Lawrence Island. [a]

Common Name	Scientific Name
Ducks	
Common eider	Somateria mollissima ,
King eider	Somateria spectabilis
Spectacle eider	Somateria fischeri
Steller's eider	Polysticta stelleri
Harlequin	Histrionicus histrionics
Oldsquaw (Long-tailed)	Clangula hyemalis
Black scoter (Common)	Melanitta nigra
Surf scoter	Melanitta perspicillata
Northern shoveler	Anas clypeata
Geese	
Brant	Branta bernicla
Emperor	Phi lacte canagica
Snow	Chen caerulescens
Loons	
Common	Gravia immer
Red-throated	Gravia stellata
Cranes	
Sandhill crane	Grus canadensis
Gulls	
Glaucous	Larus hyperboreus
Herring	Larus argentatus
Black-1 egged kittiwake	Rissa tridactyla
Auklets	
Crested	Aethia cristatella
Least	Aethia pusilla
Parakeet	Cyclorrhynchus psittacula
Murres	
Common	Uris aalge
Thick-billed	Uris lomvia
Puffin	
Horned	Fratercula corniculata
Tufted	Lunda cirrhata
Cormorant	
Palagic	Phalacrocorax pelagicus

[a] Scientific names are from Udvardy (1977) Species and categorization of species were provided by native informants.

shores and are collected by the natives. Marine mammals, however, provide the major means of survival for islanders.

Polar Bears

Even though no polar bears (Ursus maritimus; Whitaker, 1980) reside for any length of time on the island, every winter several polar bears arrive from Siberia and mainland Alaska as the Bering Sea freezes. There are perhaps 20,000 polar bears worldwide (Davids, 1983), but their number are limited in the immediate vicinity of St. Lawrence Island. Nevertheless, they are vigorously hunted, and between 30 and 40 are taken annually. Although the use of rifles has lessened the danger, taking a polar bear remains the mark of a "real" hunter (Hughes, 1960:124).

The islanders use both the meat and skins of the polar bear The meat is eaten, but care must be taken in cooking it for, like pork, the flesh is host to Trichinae and undercooked polar bear meat can lead to trichinosis (Lentfer, 1978:2). Of greater importance than the flesh, polar bear hides are used for a variety of domestic articles. Skins are occasionally used for knee-length hunting boots, and the hair is used for ruffs on parkas and as decoration on mukluks.

The commercial value of polar bears for natives was drastically reduced with the passage of the Marine Mammals Protection Act of 1972 (P. L. 92-522). This act prohibits taking polar bears except by Eskimos, Aleuts or Indians who may take them for (1) subsistence purposes or (2) for creating authentic native articles or handicrafts, so long as it is done in a non-wasteful manner (U.S. Department of Interior, 1977: 158-159). With the act, guide service by St. Lawrence Eskimo guides for non-native hunters ceased, and with the guide service, a source of badly needed cash

income for a few erstwhile guides has disappeared. Too, the sale of polar bearskin rugs used to decorate non-native game rooms, and the sale of polar bear hair used by flytiers has presumably ceased.

Walrus

If polar bears are in relatively short supply near St. Lawrence Island, Pacific walrus are not (Obdobenus rosmarus divergens; Fay, 1981). Current estimates of Pacific walrus numbers are in the neighborhood of 250,000 (Lovell, 1982:6), with as many as 200,000 Pacific walrus residing in the Bering-Chukchi Seas (Fay, 1981 :6-7). Walrus represent the single largest source of animal protein for St. Lawrence islanders. A single bull walrus may weigh as much as 3,433 pounds, with males averaging about 2,679 pounds and females averaging just under 1,800 pounds (Fay, 1981:3).

Hunting for walrus begins as soon as the whale hunt concludes, April or May, and continues intermittently through the summer and fall. Walrus meat is one of the most preferred foods available to islanders; baby walrus are considered an even greater delicacy. In addition to its use as a food source, walrus provide skins that are used for a variety of domestic purposes. The hides of female walrus are split and used to cover the large skin-covered boats (angyaks) which are primarily employed for whaling. Intestines are processed to make ceremonial drums, raincoats and containers for storing berries, greens and fish.

Walrus, too, were included in the Marine Mammal Protection Act and, thus, only processed parts can be sold to non-natives. Guided sport hunts for non-natives by St. Lawrence guides have disappeared. So, too, has the pre-1 972 market for walrus hides which were used to make jewelry polishing wheels (U.S. Department of Interior, n.d.: 156). With the loss

of sport hunting and the market for walrus hides has come a concomitant loss in earned income for the islanders.

Nevertheless, the demand for carved walrus tusk ivory from the island remains high. St. Lawrence island carvers have a reputation of producing quality carvings. Gift, speciality and native handicraft shops throughout North America continue to purchase large quantities of carved ivory, as do individual consumers. Carved figurines of marine mammals, birds, dogs and Eskimos, as well as a variety of pendants and etched ivory objects bring in a substantial amount of cash income to the myriad island carvers. Pacific walrus, thus, supply direct subsistence necessities and a cash income. The latter provides payment for heat, lights, gasoline, hunting and fishing equipment, commercial clothing and some processed foods. The importance of the walrus is partially reflected by the fact that Savoonga refers to itself as the "Walrus Capital of the World" and holds a yearly Walrus Festival in early summer.

Seals

Bearded sea ls. The waters surrounding St. Lawrence- Island support four species of seals. Bearded or mukluk (see Hughes, 1960:108) seals (*Erignathus barbatus;* Burns, 1981b; Whitaker, 1980) abound in the Bering-Chukchi Seas, with the population estimated at 300,000 (Burns, 1981b:157). In the 12 years between 1966 and 1977, the United States harvested 21,405 bearded seals, with an average harvest of 1,784 per year. The Soviet Union has taken 31,870 bearded seals during the same 12 year period, with an average take of 2,656 per year. Whereas the United States' harvest has remained roughly stable throughout the period, the Soviet's harvest has declined markedly since about 1970 (Burns, 1981b:158).

Ribbon seals. While bearded seals are fairly numerous, ribbon seals (Phoca fasciata; Burns, 1981 b:154; Whitaker, 1980) are not so plentiful. Current estimates indicate that between 90,000 and 100,000 dwell in the Bering Sea, but their numbers are few around St. Lawrence Island. Correspondingly, relatively few are taken by island hunters. In fact, the yearly take by hunters from the United States is only about 100 (Burns, 1981a:99).

Spotted seals. The third species of seals found near St. Lawrence Island is the spotted or harbor seal (Phoca largha; Bigg, 1981:6; Whitaker, 1980:621). There are perhaps as many as 420,000 spotted seals inhabiting the Bering-Chukchi Seas (Bigg, 1981:6, 8). As we shall see in a later chapter, a sizeable number of spotted seals are taken by St. Lawrence hunters.

Ringed seals. The final seal species available to island hunters is the ringed seal (Phoca hispida hispida; Frost and Lowry, 1981). As with population estimates for all of the marine mammals, the estimates for ringed seals are very imprecise, but "current estimates indicate that perhaps fewer than 12,oOO ringed seals live in the Bering-Chukchi Seas (Frost and Lowry, 1981 :34). They are nevertheless hunted with some success.

Uses of seal. The four available seal species appear to be distributed rather evenly around St. Lawrence Island. They are taken from hunting spots which literally surround the island. Seal meat is consumed in quantity by virtually all islanders. Electricity and petroleum products have replaced seal oil lamps for light, heat and cooling, but seal oil is still used to season other foods and as a storage medium for other foods .

Seals, like walrus and polar bears, have been protected by the Marine Mammals Protection Act. As a result, their commercial value has

been dramatically diminished; skins cannot be sold unless converted into native handicrafts. A multitude of items for both home and commercial use are manufactured from seal skins. From the skins come such items as parkas, jackets, pants, mittens, gloves, boots, vests, caps, purses, belts and socks.

Less prosaic items such as balls and yoyos for children are also made from the seal skins, and the intestines are still made into raincoats and containers. Ropes used in walrus and whale hunting continue to be made from the skins of bearded seals, as are the soles of hunting boots. Infrequently, seals are skinned w thout splitting the breast and stomach skin, leaving the skin intact. In a sense, the seal is skinned from the inside, a process which is extremely tim consuming and difficult. The process, however, yields a sealskin poke which can be used either as a storage container or 'a float for marking seals, walrus and whales after they have been shot. The ready availability of plastic and rubber floats has rendered this traditional article somewhat obsolete, but they are still used by some islanders.

Whales

Bowhead whales. While four species of whales (bowhead, gray, minke, and beluga) ply the waters near St. Lawrence Island at various times of the year, the bowhead (Baleana mysticetus) is by far the most important to the islanders. The bowhead whale gives nutritional sustenance as well as contributing to social solidarity. At the same time, the bowhead is a continuing source of conflict and controversy.

Prior to the advance of European and American whaling ships into the Bering Sea, the bowhead supplied, perhaps, one-half of the winter food for Eskimos of the region (Marquette and Bockstoce, 1980:5) . It has been

estimated that before commercial whaling commenced in the middle-l 800s, the bowhead population numbered about 18,000 (Mitchell and Reeves, 1980:686). Commercial whaiing, which for all intents and purposes ended around the turn of the century, greatly contributed to the depletion of bowhead whale stocks.

There is considerable variation in the current estimates of the bowhead population. For example, in 1982 Lovell estimated the population at 2,300 (1982:2-3), while during the same year the International Whaling Commission estimated the population at 3,857 (international Whaling Commission, 1982) and Dronenburg, et al. estimated the population at " between 3,125 and 3,987 (Alaska Consultants, Inc. and Stephen Braund and Associates, 1983: 50). The variations in population estimates appear to be the result of the methodological problems surrounding the census, but political considerations cannot be ruled out as influencing the final estimates.

For our purposes, however, the precise number of bowheads in existence is not critical, even though the long-run importance of their numbers is not insignificant. It is enough to note that (1) there is considerable controversy surrounding the hunting of bowheads, the conflict based on the belief by some that bowheads are an endangered species, (2) reliable estimates of their numbers are not available and may never be and (3) bowhead whales are important to Eskimos for cultural and symbolic as well as subsistence reasons (cf. , Alaska Consultants, Inc. and Stephen Braund and Associates, 1983: 206ff).

The decline in bowhead numbers, and the presumed threat of the species' extinction, prompted the International Whaling Commission's (I WC) Scientific Committee to recommend a zero catch for the bowhead whale in Alaska (Mitchell and Reeves, 1980:687). But, the IWC did not impose the

zero quota on Alaskan natives; it limited Alaska's natives to a total of 18 landed or 26 struck bowheads (Mitchell and Reeves, 1980: 688).

St. Lawrence islanders have hunted the bowhead since before the time of Christ, circa 200 B.C. (Marguette and Bockstoce, 1980: 5). Traditionally, islanders report they have imposed their own limit on the bowhead take, desiring only four or five for each of the two villages. They did not always strike or land that many, but that was their goal. The IWC's imposed limit for St. Lawrence Island is four landed or six struck bowheads divided evenly between Gambell and Savoonga. Islanders believe this limit, roughly one-half of their perceived need, is far too low. Even so, they abide by the IWC's decision.

While walrus meat is highly favored by island residents, black muktuk (bowhead skin with subcutaneous fat), is the most prized of all food sources (cf. , Mitchell and Reeves, 1980:709). Whether bowheads' favored position is the result of its flavor, cultural importance or relative scarcity is not known, but it is a critical food to island people. Muktuk is a necessary item for special events: birthdays, homecomings, community get-togethers, the Fourth of July, Christmas and other holidays. It is so prized for its cultural significance that it is shipped by islanders to relatives on the mainland and throughout the continental U.S. As further evidence of muktuk's importance, a chartered plane waited on the Gambell runway while the first whale of the 1982 season was towed to shore and the butchering begun. Muktuk was freely given to one of the plane's occupants, an Eskimo from Barrow, who desired muktuk but did not want to wait until the bowheads arrived in the Beaufort Sea.

The cultural, as opposed to the nutritional, significance of the bowhead whale should not be underestimated, and three additional illustrations reinforce this contention. First, considerable prestige is

bestowed upon the captain, striker and crew of boats which successfully land bowheads. With the current IWC quota, a typical whale crew in Gambell must wait, on the average, 11 years for its "turn" to take a whale. Yet these crews anticipate and participate in the hunt, knowing that their probability of success is only modest inasmuch as when the limit is obtained, all hunting must cease. Nevertheless, they continue to hunt.

Second, after bowhead whaling begins in April, no walrus hunting is undertaken even if they are sighted until after the allowable number of bowheads are taken or until there are no more whales in the vicinity. The risk of frightening off a bowhead is too great. An opportunity of sighting an elusive bowhead is more important than the taking of a walrus or seal.

Finally, Gambell whaleboat captains host a Whale Carnival every July. The carnival is held on July 5th and is an adjunct to the annual Fourth of July celebration. Both celebrations feature traditional Eskimo games, replete with prizes for the winners of the various events. The Whale Carnival is viewed by islanders as a unique Eskimo holiday, an occasion for joy dedicated to the bowhead whale (see Chapter 1 I I for a more extensive discussion of the Whale Carnival).

Gray whales. Whereas bowhead whales pass near St. Lawrence island sometime in April or the early part of May, gray whales (Eschrichtius robustus; Rice, 1981) generally arrive during the summer months. Prior to commercial whaling, Rice (1 981) estimates there were perhaps 15,000 gray whales, but estimates only about 11,000 (±2,000) at the present time. Other estimates of the current gray whale population are somewhat higher, with Mitchell and Reeves (1980:704) putting their numbers at about 15,000 and Starr, Kuwada and Trasky (1981 : 14) estimating the population somewhere between 16,500 and 19,000.

In spite of assertions to the contrary (see Mitchell and Reeves, 1981:71 4), gray whales have not in the recent past been a major Eskimo food source, nor do they appear to have been heavily utilized in the historic past (see Hughes, 1960: 111-1 12; Marquette and Bockstoce, 1980:5). Between 1965 and 1969 there is no record of any grays being taken by U.S. hunters, and only 20 were taken between 1970 and 1976. The Soviets, on the other hand, take about 170 grays a year, on average (Rice, 1980).

St. Lawrence Islanders do not pursue gray whales with the same vigor with which they pursue bowhead whales. Only one or, perhaps, two grays are take per year, even though limits have not been imposed by the IWC. Gray whales are hunted with small crews using aluminum boats powered by outboard engines, unlike bowhead hunts which employ larger crews, skin boats and sails. Darting guns (harpoons with explosives attached) are not used on gray whales as they are on bowhead whales. Large calibre rifles are used instead. Perhaps the choice of weapons is the result of the greater danger posed by gray whales which have been " known to attack boats. The threat of a capsized or ruptured boat in the frigid Bering Sea makes the selection of a rifle, which can be used at some distance from the target, a rational choice over a darting gun which requires that the boat move alongside the whale for a strike.

The meat and muktuk of gray whales is consumed when they are landed, but islanders consider both to be inferior to the same items taken from a bowhead whale. Specifically, the muktuk from gray whales is thinner and therefore less desirable. In general, the products obtained from gray whales are not as important to the cultural and physical well-being of island people as the products obtained from' bowhead whales.

Other whales. Two other species of whales serve as periodic sources of subsistence products, the minke or piked whale (Balaenoptera acutorostrata; Hall, 1981) and the beluga or white whale (Delphinapterus leucas; Hall, 1981). These two species are hunted and taken only sporadically. The meat and muktuk are eaten, as with gray whales. Minke whales, however, are considered a delicacy by islanders. The thickness of minke muktuk is less than that of the bowhead whale, but that appears to be its only shortcoming.

Fish

The coastal waters, rivers and inland lakes of St. Lawrence Island contain numerous species of fish, and some species are found in significant numbers (see Table 3). Fish constitute a significant element in the diets of islanders. However, like birds, fish is essentially a supplement to the more basic diet of marine mammals. Islanders both enjoy eating fish and view it as a necessary change from the monotonous diet of marine mammals. Between 15 and 20 distinct species are regularly taken by island residents (see Table 4), but Doily Varden, arctic char, sculpin, tomcod and blue cod are perhaps the most frequently taken species. Since the imposition of the 200-mile fishing limit by the U.S., salmon runs have been perceived by islanders to have increased and more salmon seem to have been caught this past summer.

None of the fishing on the island is for commercial gain. Virtually all of the fish caught are consumed locally, with a few delivered to mainland relatives. The majority of the fishing is done during the summer at fish camps. Gillnets set in the rivers, bays and lagoons account for a

Table 3. Fish Concentrations in the Waters Near St. Lawrence Island. [a]

Common Name	Scientific Name
Pacific herring	Clupea Harengus Pallasi
Chum salmon	Oncorhynchus keta
Pink salmon	Oncorhynchus gorbuscha
King salmon	Oncorhynchus tshawytscha
Sockeye sa lmon	Oncorhynchus nerka
Coho salmon	Oncorhynchus kisutch
Grayling	Thymallus arcticus
Cisco	Coregonous sp.
Whitefish	Coregonous sp.
Sheefish	Stenodus leucichthys
Toothed smelt	Osmerus mordax dentex
Arctic cod	Boreogadus saida
Saffron cod	Eleginus gracilis
Shorthorn sculpin	Myoxocehpalus scorpius groenlandicus
Pacific sand lance	Ammodytes hexapterus
Yellowfin sole	Limanda aspera
Longhead dab	Limanda proboscidea
Arctic flounder	Liopsetta glacialis
Starry flounder	Platichthys stellatus
Alaska plaice	Pleuronectes quadrituberculatus

[a]Sou rce: Starr, Kuwada, and Trasky, 1981.

Table 4. Fish Species Harvested on St. Lawrence Island. [a]

Common Name	Scientific Name
Dolly Varden	Salvelinus malma
Arctic char	Salvelinus alpinus
Arctic grayling	Thymallus arcticus
Chum salmon (Dog]	Oncorhynchus keta
Pink salmon (Humpback)	Oncorhynchus gorbuscha
King salmon (Chinook)	Oncorhynchus tshawytscha
Sockeye salmon (Red)	Oncorhynchus nerka
Coho salmon (Silver)	Oncorhynchus kisutch
Pacific halibut	Hippoglossus stenolepis
Whitefish[b]	Coregonus sp.
Cisco[c]	Coregonus sp.
Smelt[d]	Osmerus sp.
Capelin[e]	Mallotus villosus
Eulachon[e]	Thaleichthys pacificus
Starry flounder	Platichthys stellatus
Prickly sculpin[e]	Cottus asper
Slimy sculpin[e]	Cottus cognatus
Pacific staghorn sculpin[e]	Leptocottus armatus
Sharpnose sculpin[e]	Clenocottus acuticeps
Fourhorn sculpin[e]	Myoxocephalus quadricornis
Arctic cod (Bluecod)	Boreogadus saida
Saffron cod ('Tom cod)	Eliginus gracilis
Burbot (Ling cod)	Lota lota

[a] Species information provided by informants. Scientific names are from Bailey, et al. (7960) and Starr, Kuwada and Trasky (1981).
[b] Informants tentatively identified round whitefish (Prospium cylindraceum).
[c] Informants tentatively identified Bering (Coregonus laurettae) and least (Coregonus sardinella) cisco.
[d] Informants tentatively identified long-finned (spirinchus thaleichthys), surf (Hypomesus pretiosus), and rainbow (Osmerus mordax) smelt.
[e] Tentatively identified by informants.

preponderance of the fish caught during the summer. Fishing from small boats with hand-lines and rods, as well as spin-fishing from the banks of the rivers, accounts for part of the catch. If the fish are running, spin-fishing from the river banks is a productive means of occupying the time between hunting for birds and eggs, and clearing the gillnets. Fish caught in summer are tied together in pairs and hung out to dry in the air or, infrequently, the sun.

In winter, islanders fish for several species of sculpin and cod. Winter fishing is especially suited for older men, older women and children, individuals unable to engage in the more rigorous and dangerous hunting activities. After chopping through the ice (three to five feet thick), hand-lines are used to jig for the fish. The fish caught are "quick" frozen merely by laying them on the ice. Crabs are often taken at the same time through another hole in the ice. Fish caught in both summer and winter provide necessary nutrition and a break from the routine fare of marine mammals.

CHAPTER III

THE SOCIAL ENVIRONMENT

Pre-History[2]

Archeologists generally agree that the native peoples of the Western Hemisphere did not reach the New World until 25,000 to 35,000 years ago (Spencer, et al. , 1977:6; Oswalt, 1973: 16). The weight of the archeological, zoological and geological evidence indicates that Asians crossed from Siberia to Alaska over a land bridge in the area of the Bering Straits. Glacial ice buildup during the Pleistocene period depleted the shallow waters of the Bering Sea, exposing the land. Most likely, the Asian migrants walked across the land bridge, presumably covered with tundra vegetation, in pursuit of game animals (Spencer, et al. , 1977:6). During the move to the New World these early migrants may well have paused, for greater or lesser periods of time, near what is now St. Lawrence Island. However, they did not remain. The ancestors of today's residents arrived at a much later time (Spencer, et al. , 1977: 8), sometime before the time of Christ. Archeological evidence indicates taht continuous habitation on the Northwest Cape goes back 2,300 years (Burgess, 1974:20, 59). The ancestors of the island's population represented an old maritime culture. Some of the original population

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[2] Burgess (1977), Ackerman (1976) , Bogojavlensky (1969) , U.S. Department of interior (n.d., 1977) and Hughes (1960) have collectively and/or individually discussed the early anthropology and archeology of the region. insofar as nothing new for this study is to be gained from another recitation of that literature, references will be limited to the summaries provided by these authors.

migrated north and east from the area around the Okhotsk Sea (Ackerman, 1976:27-28).

European and American Contact

Until the middle of the 1600's the historical record shows no European contact with the island's residents (Burgess, 1977:54). Dezhnev, a Cossack explorer, was probably the first European to sight the island and observe the people in 1648 (Hughes, 1960:7; Burgess, 1974:54). About 80 years later, the Danish explorer Vitus Bering sighted the island and proclaimed its European name, in honor of the day, August 21, 1728. Bering observed none of the residents however (Hughes, 1960: 7).

Other European explorers, including Billings, Synd, Cook, Kotzebue and Shishmareff, made their way through the area (see Hughes, 1960:8-10). By 1725 Russian maps of the Bering Sea included St. Lawrence Island, but accurate maps were not available until after Tebenkov's explorations of the area during the first three years of the . 1830's. As a. result of his journeys, Tebenkov published an atlas of the island area and an accompanying manual in 1852. The manual described not only the physiography of the island and the ocean depths, but noted the locations of 13 settlements scattered about the island's shores. He estimated the island's population at about 1,500 inhabitants (Burgess, '1974:23,55).

Tebenkov's atlas was published at about the time that commercial whaling was beginning in earnest on the Bering -Chukchi Seas. Prior to 1821, no European vessel had passed the Bering Straits, and until 1848 whaling had been restricted to waters below St. Lawrence Island (Ackerman, 1976:36). With the "newfound" waters and the decline of

Eastern whaling came commercial whaling ships. Along with the whalers came trading: baleen, oil, hides and ivory were exchanged for food, clothing and alcohol. Passing ships deposited disease as well as new technology. Wage labor, or at least the practice of selling one's labor was also introduced as Eskimos were hired by whaling vessels. By the 1860's people from St. Lawrence Island were serving as crewmen on whaling vessels. Eskimos were exposed to a new language, a new technology and new rules of acceptable social and work behavior. A new era was enveloping the island.

Alaska Territory

The United States purchased Alaska from Russia in 1867. St. Lawrence Island was included as part of Alaska, even though the people were geographically and culturally closer to Siberia than to mainland Alaska. [slanders involuntarily became part of the United States via a commercial transaction but not as full citizens. They became subject to laws they neither understood nor had a hand in making. It was not until 1924 that most of them had the right to vote.

With territorial status. the United States Revenue Service began patrolling the Bering Sea to enforce the law as it applied to the whalers and to supervise the native population (Bogojavlensky, 1969: 22). [t was the revenue cutter Corwin, under the command of H.L. I-looper, which first investigated reports of the famine of 1878-1879. Even though several observers reported on the effects of the tragedy (see Burgess, 1974:56, 64-69), the number of deaths and the causes of the famine remain conjectural I. The only thing certain about the event is that islanders continue to view it as the most significant event in the island's history.

Perhaps 1,000 of the island's 1,500 residents died during the famine, although some may have succumbed to the lesser famines which immediately preceded the great famine. Three villages appeared to have lost all inhabitants to starvation (Burgess, 1974:56). However, by the time of the Corwin's second voyage to St. Lawrence Island in 1881, the remaining population appeared to have recovered from the physical effects of the famine, without any significant aid from the U. S. government (Burgess, 1974:32, 64-65; Ackerman, 1976: 39). In an environment where survival is frequently dependent upon cooperative activities, it is not surprising that by 1881 most of the survivors had gathered in the single community of Gambell (Burgess, 1974:32).

Christianity

Permanent contact with St. Lawrence Island Eskimos was established not by the federal government, but by the Presbyterian church. A school and mission was established in 1894. V. C. Gambell was the first teacher-missionary on the island, and the community at the Northwest Cape (Sivokak) was renamed Gambell after his death in 1898. By the time Gambell arrived (1894), the five major population centers (Punuk island, Kialegak, Powooiliak, Kookoolik and Sivokak) had been reduced to just two, Gambell and Powooiliak. Shortly after the turn of the century, perhaps around 1915, the remaining residents at Powooiliak migrated to Gambell (see Burgess, 1974:31).

The Twentieth Century

Language

With V. C. Gambell and the Presbyterian church came formal education and the introduction of a new language: English. Perhaps, an isolated

individual or two had learned some English while working on a whaling crew or on the mainland, but the language spoken on St. Lawrence Island was Central Siberian Yupik (Krauss, 1974:40). .

Central Siberian Yupik is one of three Siberian Yupik languages and it has remained relatively unchanged for the past 160 years (Krauss, 1974:45; cf. , Jacobson, 1977:1). The only other Central Siberian Yupik speakers reside in seven villages on the Chukotsk Peninsula, U .S". S. R. This shared language speaks for the close ties between Siberian Eskimos and St. Lawrence Island Eskimos. Central Siberian Yupik and Alaskan Yupik, which is spoken on the Alaskan mainland from Unalakleet south, are mutually unintelligible. None of the branches of Siberian Yupik are intelligible to the majority of Eskimos from Unalakleet north and east through the Canadian arctic to Greenland. These latter Eskimos speak the other 'major branch of the Eskimo language, Inupiaq (Krauss, 1974: 40).

Central Siberian Yupik was not spoken in island schools until 1973 when a federally funded bilingual program was begun. The Eskimos, however, maintained direction and guidance over the program (U.S. Department of interior, n.d. :81). In spite of the fact that Central Siberian Yupik was not spoken in the schools until 1973, virtually everyone on the island continues to speak Central Siberian Yupik. Most islanders, except for a few of the elderly, are bilingual, speaking both English and Central Siberian Yupik. Villagers are proud of the fact that they have maintained their native tongue. Mainland Eskimos, many of whom no longer have the ability to speak Alaska Yupik or Inupiaq, admire the St. Lawrence Islanders because they have clung tenaciously to their language and traditions.

Island Communities

The influence of the Presbyterian church was not limited to formal education or spiritual advice. As we have seen, Sheldon Jackson, a former Presbyterian missionary and the General Agent in Alaska for the Bureau of Education, instigated the introduction of reindeer to St. Lawrence Island. More importantly, Jackson successfully lobbied to have the island declared a reindeer station in order to protect the new industry. The 1903 Executive Order, which designated St. Lawrence Island as a reindeer station, in effect gave the island reservation status. With reservation status went beneficial ownership of the island by the natives. The federal government retained title to the island in trust for the islanders, and the government assumed trust responsibilities for the well-being of the islanders as well as proper management of island resources,

With the introduction of reindeer to the island it became necessary to herd the animals, and reindeer herding camps were established at various locations around the island. The Eskimo herders, trained by Lapp herders, resided in several camps as they followed, guarded and directed the herd. For several years this pattern persisted, but about 1917 a new village, Savoonga, was established at what had been a herders camp (Hughes, 1960:14). The new community was to serve as a center for reindeer herding activities because it was closer to available feed.

Population

Savoonga is located on the north side of the island, about 48 overland miles from Gambell (Burgess, 1974:45). During the first decade after the establishment of Savoonga the population of the new community grew while the population of Gambell appeared to stabilize (see Table 5). Savoonga's

Table 5. Populations of Gambell and Savoonga, 1903 to 1982.

Village	1903	1910	1920	1929	1939	1950	1960	1970	1975	1980	1982[a]
Gambell	261	221	48	250	296	309	358	372	367	445	455
Savoonga	-	-	-	139	209	249	299	364	410	491	458

Sources: 1903, 1940, 1950, 1960 and 1970 from Environmental Services Limited, 1980a, 1980b; 1910, 1920 and 1930 from U.S. Department of Commerce, Bureau of Census, 1932; 1975 from Ellanna and Roche, 1975.

[a] Includes only Eskimos.

population continued to grow through the next decade, and by 1940 had become roughly two-thirds the size of the older community, Gambell. Savoonga's growth rate continued to outstrip Gambell's, until by 1970 the populations in the two communities were roughly equal. A 1975 census indicated that Savoonga was larger (410) than Gambell (367) (Ellanna and Roche, 1975), and the pattern was repeated in the 1980 U.S. Census (see Table 5). However, information collected in the summer of 1982 indicated the two communities roughly equivalent. Gambell had 455 native residents, while Savoonga had 458 native residents. Unfortunately, it is not clear whether the apparent changes from 1970 through 1982 are the result of births, deaths and migration or the result of flawed enumerations.

Native field workers provided a complete enumeration of all native residents in both villages. Gambell showed a population increase of 28 percent since 1970, growing from 356 residents to 455 residents. Savoonga increased 29 percent between 1970 and 1982, growing from 364 to 458. It should be noted that each village had about 10 non-Eskimo residents for at least 6 months of the year. Most of the non-Eskimos were teachers.

Except for one census year (1 920) , the populations of both villages have steadily increased from 1903 to the present (see Table 5). These increases have inevitable implications for the relationship between the human population of the island and per capita availability of naturally-occurring species. Either human populations must eventually stabilize, through iowered birth rates, higher death rates or migration, or there must be an inevitable decline in per capita access to natural resources.

Age distribution. Using native field investigators, village informants, Native Corporation records and teiephone calls to families whose age-sex

composition was in question, age-sex "information was obtained. A 40 percent sample in Gambell revealed that 39 percent of the Gambell population was under 15 years of age. A complete enumeration of Savoonga showed that 33 percent of the population was under 15 years of age (see Table 6). The figures for Savoonga indicate a decline in the number of children under 15 years old, from 47 percent to 33 percent of the population, between 1970 and 1982. In Gambell, the decline in children under 15 was from 41 percent of the population in 197o to 39 percent of the population in 1982 (cf., U.S. Department of Interior, 1977:24; n.d.:20).

Even though there has been a decrease in the proportion of the population of St. Lawrence Island which is under 15 years of age, that segment of the population remains proportionately larger than the same segment for the United States as a 'whole. The large percentage of the population under 15 reflects the relatively high birth rate, but ignores the yearly outmigration for which no hard data is currently available. It is known, however, that much of St.. Lawrence Island's outmigration is directed toward Nome, a community already facing a housing shortage.

Using only the population figures for natives, the average annual population growth rate for Gambell, assuming linear growth, is 2.3 percent. For Savoonga, the average annual linear growth rate is 2.4. Should this growth rate continue it could present islanders with serious population problems. Assuming an average annual growth rate of 2.35, the population of St. Lawrence Island would double in about 29 years, This means that increased harvests of subsistence resources or migrations to the Alaska mainland or increased participation in the cash economy or some combination of these would become necessary. Regardless of whether

Table 6. Population Distribution of St. Lawrence Island Eskimos by Age, Sex and Community of Residence, 1982.

Age Categories	Savoonga			Gambell			Total Population
	Males	Females	Total	Males	Females	Total	
Under 5	19	33	52	36	12	48	100
5-9	16	21	37	36	34	70	107
10-14	16	32	48	30	30	60	108
15-19	29	31	60	17	20	37	97
20-24	18	25	43	31	20	51	94
25-29	27	25	52	12	14	26	78
30-34	10	11	21	25	11	36	57
35-39	12	11	23	23	14	37	60
40-44	28	12	40	16	16	32	72
45-49	20	14	34	5	5	10	44
50-54	10	7	17	17	5	22	39
55-59	4	3	7	5	3	8	15
60-64	2	2	4	4	4	8	12
65-69	4	4	8	2	2	4	12
Over 69	5	7	12	3	3	6	18
Total	220	238	458	262	193	455	913

these alterations in population distribution and resource utilization are viewed as good or bad, they all represent changes to the current social structure.

Dependency. In Gambell, the proportion of people 14 years old and younger plus those persons over 65 years old amounts to 41 percent. This figure represents the dependency ratio, or the percent of the population that in most human groups depends upon the labor of others for their welfare and support. The dependency ratio in Savoonga is 34 percent. Both villages therefore have a relatively high dependency ratio, one which is much higher than the national average of about 25 percent, and which is much closer to populations with high growth rates such as Nigeria and India.

Dependency ratios can be misleading, for there is one factor which favors a youthful population: subsistence pursuits. In Gambell and Savoonga many boys engage in useful work by serving on whaling, walrus, bird hunting, bird eggs collecting and summer crews. Girls are indispensable in the management of many summer "camps and in the processing of subsistence goods in the home. The local schools (federal and state) recognize the importance of young islanders for many subsistence pursuits, making special efforts to see that youths are free to leave school during critical periods in order to lend a hand in the subsistence activities of their households. Thus, the presumed liability of a high dependency ratio in Gambell and Savoonga is not as serious as one might suppose since many of the youngsters 14 and younger contribute to the economic life of the villages.

Sex ratios. The sex ratio (the proportion of males to females) in Gambell was 1 while in Savoonga it was .92. These figures are similar to

the 1970 ratios of 1.3 for Gambell and 1.2 for Savoonga (U.S. Department of Interior, 1977:17-36). Trends in the proportion of males to females can make sudden switches. In 1970, Gambell had 18 males under 5 and 34 females. Our 1982 count showed a dramatic reversal: 36 males and 12 females. In Savoonga, the 1970 census showed 27 males and 20 females under the age of 5. Our 1982 count was 19 males and 33 females. It is difficult, therefore, to generalize about the sex ratios of the two villages from the 12-year period we have included in our comparisons. It may be that St. Lawrence Island sex ratios over long periods in the modern age will tend to balance (see U. S. Department of Interior, 1977:28; n.d.:25).

Government

The decision-making structures of Gambell and Savoonga have changed dramatically since the days when Savoonga was a reindeer herding camp. Prior to the consolidation of the population into the two extant communities probably two forms of social organization, sibs and demes, determined individual and community actions (see Hughes, 1958:11 46). With the merging of the several small communities into one or two larger " communities, a clan form of government emerged (see Chapter III). Clans still direct a large portion of the daily activities of islanders, but formal organizations, those with codified rules, have been imposed upon more traditional decision-making processes by state and federal legislation.

IRA Councils. In an attempt to overcome some of the harm to American Indians perpetuated by the General Allotment Act (Dawes Act) in 1887, Congress passed the Indian Reorganization Act (IRA) in 1934 (see Hass, 1957). The major features of the act were provisions for the creation of tribal governments and the cessation of tribal land alienation: between 1887 and 1933 about two-thirds of tribal lands in the

continental United States had been lost to non-Indians (Hass, 1957: 15). Unfortunately, the provisions of, the Indian Reorganization Act were not extended to Alaskan Natives until the passage of the Composite Indian Reorganization Act in 1936 (McBeath and Morehouse, 1980:13; U.S. Department of Interior, 1977: 128).

Because St. Lawrence Island had been designated as a reindeer station, the provisions of the Composite Indian Reorganization Act applied to the island. The residents of Gambell acted first, voting to accept an IRA form of government. An IRA Council consisting of seven members was duly elected in 1939 (U.S. Department of Interior, 1977:128-131). Savoonga elected its first IRA Council in 1940 (U.S. Department of Interior, n.d.:134-137). The effect of this new government form was to restrict some of the powers which had been vested in traditional social structures, i.e. clans (see Chapter III).

Each IRA Council has a President, Vice President and five Councillors. The Councils have broad powers which sometimes overlap with the powers of the Native Corporations. Most of the powers pertain to the protection and management of island resources, native customs and crafts. The IRA Councils of Gambell and Savoonga are chronically low on funds because of the meager sums that they collect or receive from grants. The native mercantile store in each village, Alaska Native Industries Co-operative Association (ANICA), and federal grants provide most of the money for IRA budgets.

City Councils. Other legislation, this time enacted by the state, continued the evolution of leadership and decision-making patterns on the island. Gambell became a fourth class incorporated city in 1963 under provisions of Alaska State law. Savoonga did not become a fourth class

city until 1969. Both towns automatically became second class cities in 1972 as a result of a revised municipal code (U.S. Department of Interior, n.d.:137). As incorporated cities, city councils were required and council members were duly elected. Both cities have seven member city councils headed by a mayor, as well as administrative personnel appointed by the councils.

The Gambell and Savoonga City Councils provide a variety of services, including fire and police protection, issuing business permits, controlling road developments within village boundaries and maintaining the airstrips. Under Alaska state statute they have taxing powers over local business. Each city council has enacted a sales tax, but at this time neither has imposed any other taxes within its realm of authority. Gambell assesses a three percent city sales tax, while Savoonga assesses a two percent sales tax. Under this structure, ANICA collects the vast majority of sales taxes generated in the two communities.

Other sources of income for the city governments come from state matching grants, special state grants for community improvements and a variety of federal grants, some of which are funnel led through Kawerak, the Bering Strait's nonprofit corporation. An example of this latter type of funding cooperation came in 1978-1979 when 55 houses were built on St. Lawrence Island with funds from the Bureau of Indian Affairs and the U.S. Department of Housing and Urban Development. Kawerak, Inc., served as the housing authority for the project (see U.S. Department of Interior, 1977; n.d.).

Gambell and Savoonga have received generous state grants for the development of new community facilities. The state's influx of oil revenues from energy related activities on the North Slope have greatly benefited

both of the island villages. These benefits should reach their peak in 1983 when the communities will receive new fire-fighting equipment., new community buildings for city offices, . recreation facilities, learning centers and libraries. In fact, state grants typically bring more money to city government than local tax revenues. State benefits to the people of Savoonga amounted to about $100 per person in 1981, and in 1982 they rose to about $190 per person. Gambell has received similar amounts. One major state grant will hopefully provide about $500,000 for the establishment of ivory cooperatives in Gambell and Savoonga. This grant could be awarded as soon as the final plans for the cooperatives are submitted and as soon as the plans are approved by appropriate state review boards.

Agreements with Alaska Village Electrical Co-operative, Inc. (AVEC) in Gambell and Savoonga provide some additional city funding. The city governments maintain the electrical generating facilities and collect charges from utility customers. In return for these services Gambell and Savoonga assess AVEC monthly service fees.

The monthly costs for electric power remain high, however, and the Gambell City Council has installed four windmills to generate electricity for residents of the city. The present charge is forty-seven cents per kilowatt hour, and Gambell is considering purchasing forty more windmills. The Savoonga City Council is also considering the purchase of windmills to generate electricity at rates lower than they are currently paying AVEC.

Native Corporations. The most recent alteration in traditional decision-making patterns resulted from the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971. Before land transfers or cash settlements to natives could be undertaken, ANCSA required that all native

villages form village corporations (see McBeath and Morehouse, 1980: 60). Both Gambell and Savoonga complied, incorporating as Gambell Native Corporation and Savoonga Native Corporation in 1972 (see U.S. Department of Interior, 1977; n.d.). The articles of incorporation specify that the board of directors of each village corporation must have at least seven members.

Rather than selecting other lands or participating in the Bering Straits Regional Corporation and receiving cash distributions, St. Lawrence residents elected, under Section 19(b) of AN CSA, to take fee simple title to both the surface and subsurface estate of 1,135,949.79 acres of St. Lawrence Island (Environmental Services Limited, 1980a). The reservation status of St. Lawrence Island was revoked by Section 19 (a) of the act, but islanders will receive title to their island. This condition was gladly accepted.

The villages thus chose to manage their own corporate affairs and to reject participation in the Bering Straits Regional Corporation. They also chose to reject any funds that would have been theirs through the $962,500,000 disbursement authorized by ANCSA" (see McBeath and Moorehouse, 1980: 60). The islanders' decision to accept fee simple title did, however, provide them with three and one-half times as much land as they would have received had they chosen to participate in the cash distribution. In 1976, the Native Corporations of both Gambell and Savoonga received $100,000 through Public Law 94-204 because of their joint decision to retain their former reserves (U.S. Department of Interior, n.d.:149).

The Native Corporations have ail the powers that any corporation possesses under charter with the Alaska Department of Commerce. The

responsibilities of the Native Corporations are similar to those of the IRA Councils: manage resources and ail activities related to resource use and protection. Essentially, the two Native Corporations own and control the natural resources of the island as well as control the future development of those resources. One Native Corporation cannot overrule the other. Stockholders in one corporation cannot own stock in another corporation. Shares were awarded equally to enrolled Gambell and Savoonga native people born before December 18. 1971. All shares are voting shares, giving shareholders the right to vote for members of the Board of Directors and receive dividends. The designated or apparent heirs of shareholders will inherit shares.

The Native Corporation shareholders will have an opportunity to sell shares to any buyers they choose in 1991. There is constant talk by Savoonga and Gambell residents about what should be done to best serve the most cherished traditions in Eskimo life on the island when these sales are possible. The dilemma is keenly felt and both Native Corporation Boards and IRA Councils discuss options open to the people when that important date arrives.

The people of Gambell believe that ANCSA places too much pressure on them to determine the disposition of corporate shares. The villagers realize that vast expertise and research are required to adequately protect future generations from the present generation's possible folly. Most of the leaders in the Gambell Native Corporation and the IRA Council believe that the people of the island must prepare for the future one step at a time, proceeding at their own pace. It appears that the Savoonga leadership concurs with this position. There have been several joint Gambell-Savoonga meetings with representatives from the two Native

Corporations and the two IRA Councils present. The purpose of these joint meetings has been to discuss planning in depth for 1991. There seems to be a general willingness to iron out this imminent problem without rancor, jealousy, haste, or quest for exclusive powers.

Village leaders assert that the elders of both communities did not and do not want to sell any sub-surface rights to the island to non-natives. The elders appear to want powers vested in the two village corporations to include prohibition against land ownership by non-natives. A prevalent and concurrent attitude is that vesting continued and concentrated powers in the Native Corporations as they are now structured runs the risk that some shareholders might sell their corporate shares in haste, creating havoc for any unified, all-Eskimo management plan.

There is also a general consensus that the villages should not jump into any large development schemes now or after 1991. A growing consensus is that island ownership should be transferred from the Native Corporations to the I RA Councils. Many believe the I f?A Councils, with their connection to the Bureau of Indian Affairs and trust status, can best answer the challenges of the future.

To add to the potential problems, the jurisdictions and interests of the three governmental forms (City Council, IRA Council and Native Corporation) frequently coincide; the potential conflicts over jurisdiction seem, however, to have been overcome without recriminations or bitterness. Generally, the three governments cooperate and function smoothly with one another. Finding the required number of officers to fill the posts seems to be more of a problem than the potential conflicts of interest. Each community has a minimum of 21 offices. No one in Gambell currently holds more than one office, but in Savoonga three individuals

hold offices with more than one governmental organization. Given the small size of the communities, this is not surprising.

These governmental structures appear, for the time being, to have served the people of the island well. To date, they have managed the essentials of government with relative ease. There are strains, however, on these governmental institutions and the people who run them. It would be naive to ignore them. The most pressing matters concern the demands placed on the elected officials themselves.

In Gambell and Savoonga there are 44 elected or appointed offices, 23 in Savoonga and 21 in Gambell. These positions are held by men in the large majority of cases, many of whom have previously held elected positions, Office holders face a dilemma that they understand quite well: t-low does an official provide his family with subsistence resources and still fulfill his community obligations? This dilemma is typically resolved with hard work. However, their first obligation is to the management of subsistence pursuits, and few elected leaders make pretenses to the contrary. Many elected officials are also boat captains and these positions of responsibility require enormous demands on time, money and organizational skills (see Chapter VI). These responsibilities are jeopardized by the onus of public service.

These same leaders frequently hold positions in the Alaska Walrus Commission, the Eskimo Whaling Commission, and the Bering Straits School District; they maintain close ties with Kawerak, membership in many other specialized organizations, and they attend conferences where new knowledge and techniques are acquired. Even with all the time-consuming and sometimes conflicting demands, public servants, although occasionally exasperated and often exhausted and over-worked, are generally willing to

serve. They feel a deep sense of commitment and obligation. Some men vow they will never again submit to a call to serve, but they often give in and run for office yet another term.

Many leaders take pride in their terms in office and they also realize that they form a core of leaders who rotate from one decision-making body to another. In this way they gain valuable experience and a broad perspective on the various interrelationships between the various institutions and the functions that are exclusive to each institution. Many public servants are respected for their positions within patricians and clan segments and for their many talents in hunting wisdom as well as for their knowledge of many matters that are of importance to the villages. Furthermore, leaders in each village are often closely related to leaders in the other village, a social circumstance that accounts for some of the mutual good-will in governmental affairs between the communities.

Leaders believe that the greater the number of local people who serve their institutions, the greater the social and political health of the communities. They believe that decisions grow out of an intimate and direct concern for the well-being of the villages. Leaders cannot make decisions on the basis of a simple means-end logic. They also take into account the protection and preservation of social values. Officials consider the values of sharing, mutual concern, and their dependence on the natural, organic resources of the island and the sea in any decision. The social structure of the patricians, clan segments and families which are also linked directly to natural resources are considered in any decision. All decisions are based on a holistic view of island society, not merely limited objectives.

While the demands are great, professionalism in government has come to Gambell and Savoonga. The city councils have professional managers who have been recruited locally. Those positions are specialized and are directed full-time to the tasks of good government. The IRA Councils and Native Corporations now have clerks, a further step toward specialization in institutional functions. "These recent innovations in government portend accelerated specialization which could eventually remove some of the generalized character of the present elected leadership. The roles inherent in the current government structure span government, kin and all the social functions described above which are currently embedded in the kinship structure and the organization of subsistence pursuits, Increasing specialization and professionalism may reduce leadership concern for the holistic, nature of island life.

Economics

As used throughout this paper, the concept of economy will be used as a generic term which refers to patterns of exchange, whether in the form of cash transactions or barter. Subsistence economy, on the other hand, refers to a more limited pattern of use and exchange. This pattern is based upon the capture, processing, distribution and use of renewable natu rat resources. These natural resources occur and persist without human planning, control or manipulation, Human activities can, of course, interrupt the growth, recurrence or even existence of these natural resources, but in the absence of man and his activities they will exist even if other natural events limit their growth or distribution periodically.

Subsistence economies can be distinguished from other economic forms by several factors in addition to the former's direct and intimate links to naturally recurring resources. First, there is no well-developed market

system. Middlemen (those responsible only for product distribution) are not inserted between the producer and consumer. Nor are there permanent locations or structures set aside for the exclusive purpose of exchange of goods. Second, while there are exchanges of natural resources among and between community residents, the exchange of processed or unprocessed resources for services is relatively rare. Third, in a subsistence economy, labor is a part of life, rather than a commodity to be bought and sold in the marketplace. Fourth, neither the resources that are extracted and produced, nor the labor that is required to extract and produce them, is converted to capital. Capital accumulation via savings of the renewable resources is not a primary motivator for human activity. Biological processes of spoilage and decay make the saving of renewable resources difficult if not impossible and the technological requirements necessary for overcoming biological processes are frequently too expensive or simply unavailable.

A fifth distinguishing mark is to be found in the distribution pattern utilized in subsistence economies. Distribution of the resource in subsistence economies is, for the most part, based upon family, extended kin and village networks. Goods are not exchanged or given to those outside of the established personal networks.

The absence of specialization within a‘ subsistence economy is a sixth distinguishing characteristic. A worker's productive activities are not limited to a single product or even species. In contrast to an assemblyline worker, subsistence requires several skills and end-products. A seventh and final factor, one closely related to the previous six, is the criterion that production activities are directly linked to procuring food and maintaining shelter. In a sense, then, this final factor elicits an image of

an individualistic economic structure, even though sharing with kin and others is extensive.

None of these seven factors in itself distinguishes subsistence from other forms of economy but together they provide criteria adequate for the task. Unfortunately, these criteria provide an ideal type conceptualization: one never found in reality. Any given economy would likely not exhibit all seven criteria. Thus, the conceptualization represents one end of a continuum--two dimensional or multidimensional--which represents a "pure" economic form designated as a subsistence economy. The following delineates the extent to which the St. Lawrence Island economy deviates from the ideal type of subsistence economy.

Wage income. It is often asserted that Eskimos throughout Alaska are engaged in a mixed economy: part cash and part subsistence (Mitchell and Reeves, 1980). While this may be the case, the economy on St. Lawrence Island is heavily slanted toward the subsistence end of the continuum. Granted, there are cash jobs available on the island. Excluding the National Guard, 62 jobs are currently being held by residents of Gambell and 72 by residents of Savoonga (see Table 7). Virtually all of these positions, however, are dependent upon federal and state monies. Sixty-nine percent of all Gambell jobs are in the public sector while seventy-four percent of all Savoonga jobs are in the public sector.

Jobs are relatively scarce on the island and are shared as equitably as possible. The village native governments attempt to distribute the jobs in the fairest way possible. For example, the city governments recruit people for work in the washeterias on the basis of need. The availability of jobs is extremely dependent upon legislative and executive decisions in Washington, D.C., and Juneau, Alaska. The people in Gambell and

Table 7. Gambell and Savoonga Wage Labor Jobs by Source, 1982. [a]

PUBLIC SECTOR		
Job	Gambell	Savoonga
Bureau of Indian Affairs	17	14
State Government (High School)	5	9
Public Health Service	8	5
I RA Council	1	2
Other Federal	3	3
City Government	7	19
Native Corporation	2	2
National Guard	36	26

PRIVATE SECTOR		
Job	Gambell	Savoonga
Retail Stores	4	4
Restaurants	0	2
Airlines	2	2
Alaska Native Industrial Co-operative Association (ANICA)	10	8
United Utilities	1	1
Alaska Village Electrical Co-operative (AVEC)	2	1

[a] These figures do not include non-Eskimos who are not married to Eskimo residents. There are very few jobs held by such people, almost all of which are in public education. Savoonga has 48 men and teenage males employed and 24 women and teenage girls for a total of 72 employed. (Excludes membership in the National Guard.) Gambell has 38 men and teenage males employed and 24 women and teenage girls for a total of 62 employed. (Excludes membership in the National Guard.)

Savoonga are certainly aware of these realities and this awareness plays a major role in their desire to protect at almost any cost the subsistence portion of their economy.

Both villages are far from major markets and centers of production. Except for the highly productive subsistence pursuits which yield great quantities of food and raw materials, the economic activities of the island villages are largely confined to the public service sector. Primary production wage labor jobs are non-existent and private sector service jobs are few.

The 134 full-time and part-time wage labor jobs held by natives at the time of the fieldwork amounts to about one-half of one job for each household. Very few households have more than one job-holder. Many jobs are held by teenagers whose incomes are at best supplements to budgets of their parental households. Few jobs pay more than $20,000 per year and many pay less than $8,000. Of the 14 Gambell households which provided information about income from wages, excluding craft sales, the average was $11,220.

More than one-half of the Gambell households and about one-third of the Savoonga households have no wage "earners, excluding carvers and skin garment makers. This scarcity of wage work further underscores the importance of subsistence activities. Further, many of the jobs pay only small wages and several of the jobs are only part-time.

There are periodic bursts of employment when special construction projects are underway. In the summer of 1982, there were about 25 such jobs in Savoonga that lasted several weeks during construction of a community service building and an equipment shelter for the village. Gambell had 8 to 10 jobs of 6 weeks duration for the building of a community center and approximately 20 short-term jobs for the construction of a state-funded emergency evacuation road for protection against flooding from the Bering

Sea. These jobs were eagerly taken because of the need for money to maintain households and conduct subsistence activities.

The only cash income not dependent either directly or indirectly upon state or federal agencies is the income produced from ivory carving, skin-sewing, ancient artifacts, catering to bird watchers and a few tourists. Some cash income is generated by kin working on the mainland who mail some of their wages home, but the extent of such gifting practices is unknown.

There are 318 carvers in the villages, 111 in Gambell and 207 in Savoonga. These artisans make extremely important contributions to the finances of not only their households, but the overall communities as well. It has been estimated that ivory carving brings the island about $250,000 per year, $150,000 to Savoonga and $100,000 to Gambell. In addition to the ivory carvers, there about 90 seal skin sewers in each village who sew family garments or commercial items. Commercial skin sewers, like ivory carvers, contribute badly needed dollars to household and, ultimately, community coffers.

Income from 'native crafts and ancient ivory. The production and sale of crafts and the collection and sale of ivory and artifacts from prehistoric village sites are the only locally generated sources of income on the island. Crafts include items made from fresh and ancient ivory, sewn ' garments, and other items made mainly of seal skin. Information on the sale of skin products is scanty and generalizations difficult, but there are about 90 women in each village who make garments for their families to wear and for sale. Some women sell several beautiful and expensive garments each year, receiving several thousand dollars annually. Other women work at the craft infrequently and sell only rarely. Few garment-makers appear to earn more than $500 each year. Income from skin sewn garments in total is negligible, although in a few households it is an important source of cash.

The greatest source of craft income is ivory carving. Both villages have many carvers and there are very few households that have no carvers. Savoonga seems much more active in the craft than Gambell, with 211 carvers counted in the summer of 1982; Gambell had 111 carvers in the spring season of the same year. One ivory buyer estimated that Savoonga carvers sold about $150,000 worth of carvings, primarily on the mainland. Gambell was estimated to sell about $100,000 worth of carvings, these estimates are imprecise, but they are the only estimates available. The sums, however imprecise, certainly point to the importance of crafts for the household budgets of the people in both villages. The total of $250,000 amounts to about $275 for every Eskimo person on island or about $1,200 annually for every household (see Chapter IV). Of course, there are some households that obtain no income from carving and others that receive in excess of $20,000 each year from carvings.

The sale of ancient carved ivory and other artifacts is also an important source of income. Some families earn much more from it than from carvings or wage labor. Informants stated that they believe this" source of income is almost as important as the sale of carvings produced by living artisans. If this statement is true, the total from all sources of carvings and ivory would amount to nearly $500 annually per person, with Savoonga probably getting a somewhat larger share.

Transfer payments. Transfer payments, e.g. , Energy Assistance, Supplemental Security Income, Aid to Families with Dependent Children and Food Stamps, provide a significant portion of the cash available to islanders. Nearly one-half of the families on the island receive food stamps and energy assistance. Energy for home heating costs families about $2,700 each year. Unfortunately for islanders, the energy

assistance program rarely exceeds $700 per year for any family. The average amount received in 1981 by the 1 1 Gambell families who indicated that they received energy assistance was about $641. Thus, even with federal energy assistance, families which receive such assistance must allocate about $2,000 to $2, 100 from their annual family budget just for home heating. About one-half of the households in Gambell and Savoonga also qualify for and receive food stamps. Of the 16 Gambell families who indicated that they received food stamps, the average household received about $3,372 in stamps last year.

Medical care is provided by the U. S. Public Health Service, so the absence of cash does not threaten island households so seriously as do heating and eating costs. However, families must pay the one-way portion of a round-trip air fare to the health facility in Nome in order to receive more than the rudimentary service provided at island clinics. No information was available about another source of transfer payments, BIA General Assistance.

The amounts received in transfer payments are relatively modest considering the great expense of food, fuel and electricity. The disparity between the cash requirements necessary for survival and the cash available from both earned and unearned sources highlights the extreme importance of subsistence activities.

Purchases. All families must pay monthly bills for food, fuel and a variety of items available only in the cash economy. Cash is always at a premium and almost everyone is pressed for it. Families juggle budgets and financial resources in uncommonly intelligent ways to make ends meet, to purchase all-terrain cycles and snowmachines in cash, to pay for necessary flights to the mainland, and to replace weapons and boats. Much of the needed cash goes to maintain the high level of subsistence activities.

Households in Gambell annually pay an average of $3,800 for goods from local retail stores where prices average about double those of the lower 48 states. Food is the major purchase with cereals, tea, coffee, sugar, baby food, pilot bread, toiletries, soda pop and cigarettes leading the list of purchases. At the maximum store bought goods cost no more than about $250 per month. Some families spend up to $800, but they are conspicuous exceptions. On St. Lawrence Island, $250 purchases about what $100 or $125 would in the lower 48. Needless to say, subsistence goods are the life-blood of the people on the island. islanders purchase relatively little food when their costs are compared with mainlanders, and their appetites are certainly no smaller. Their supply of food merely comes from the natural environment and not the supermarket.

Gasoline for snowmachines, all-terrain cycles (three wheels) and all-terrain vehicles (six or eight wheels) costs each Gambell household about $1,700 per year. Savoonga households spend about $1,100 for gasoline. Nearly every household in Gambell and Savoonga has at least one snowmachine and one all-terrain cycle. Obviously some transportation costs are not relatec to subsistence, but anthropological observations indicate that the majority of vehicle use on the island is tied to subsistence pursuits.

Most households have an aluminum boat and an outboard engine of at ieast 40 horsepower. Like most equipment, boats and engines are purchased with cash since credit is generally not available. in order to make these expensive, but essential, purchases, families must save scrupulously and diligently, with household members even going without a second or third daily meal, in order to acquire them.

The annual cost of transportation (fuel and machines), weapons, ammunition, boats, boat motors and fishing equipment averages roughly

$6,700 per household. Some island households spend much more than this, while other households spend considerably less.

Subsistence and money. In spite of the introduction of cash into their economy, subsistence pursuits provide the vast bulk of the foods consumed by islanders. Informants consistently estimated that about 80 percent of their diets come from subsistence resources. Many asserted that they could only eat "white]' man's food for about three days without having a "sour" stomach.

The estimates provided by informants are supported by the evidence collected during 1982. The average household spends about $250 per month on groceries, soap, paper towels and other sundries. The prices charged by AN ICA and the privately owned retail outlets are about two and one-half times greater than are charged in the State of Washington. This means that islanders spend an equivalent of about $100 per month on groceries and other items considered necessary. At the same time, residents of Washington spend close to $700 per month on similar items. Comparing $100 for islanders to the $700 spent by Washington residents indicates that islanders spend about 15 percent of what main landers spend on groceries and other items. Assuming roughly equivalent consumption rates for islanders and Washington residents, islanders probably obtain the remaining 85 percent of their food from the naturally recurring resources.

Burgess (1974: 195) provides evidence that suggests that 32 percent of the protein consumed by Gambell residents came from store purchases, the remaining 68 percent from the natural resource base, The three estimates, while not identical, suggest that perhaps 70-80 percent of islander diets is provided by the subsistence economy.

Those who receive relatively high incomes, by village standards, from wage labor or carving invariably help others in their pursuit of natural

resources by providing money for equipment and fuel. Even though they contribute to the subsistence economy, those who supply the necessary money confessed that they would prefer to be engaged in full-time subsistence activities rather than the part-time endeavor that their wage employment required. Virtually all islanders perceive subsistence activities as providing the preferred food items, and also as providing a much preferred life-style. For islanders, subsistence hunting and fishing yield intrinsic pleasure as well as fostering communitarian values and community solidarity. Those who engage most intensively in subsistence pursuits are greatly respected for their contribution to the welfare of their fellow crewmen, friends, family and community. No one in either Gambell or Savoonga preferred wage labor to subsistence hunting and fishing.

In addition to the dependence upon federal and state sources for cash income, the importance of the subsistence way of life to island residents can be 'seen from the way in which cash is spent. A large proportion of the cash income is spent to purchase and repair the equipment necessary for subsistence activities. Gasoline, rifles, shells, boats, boat engines, snow machines and explosives for darting guns must be obtained in the cash economy [see Ellanna, 1980:236; Wolfe, 1979:277-293). A survey of a small sample (N=1 6) of Bering Straight and Norton Sound walrus boat captains undertaken by Ahwinona in 1982 indicated that the dollar value of capital equipment necessary to hunt marine mammals ranged between $7,000 and $22,110 per capita depending upon the extensiveness and quality of the equipment (Ahwinona, 1982:13). The same study suggested that the yearly costs of gas and oil for the hunt ranged between $450 and $2,400. The Eskimos of St. Lawrence Island have made a successful adaptation to the use of modern technology. Their innovative uses of technology have

provided them with more efficient means for guaranteeing the continuation of their culture. The technology is a means for capturing and utilizing the recurring natural resources in a new and more efficient manner. The use of modern technology, however, requires that they participate in the cash economy. In effect, wage labor and governmental transfer payments provide the contemporary means for subsidizing a traditional subsistence economy.

Christian Denominations

There are two dominant Christian denominations in Gambell and Savoonga. The first and most prevalent 's the Presbyterian Church which has been present and entrenched (as discussed above) in Eskimo life since just after the turn of the century. The Presbyterians number about 365 in Gambell and about 300 in Savoonga. The second Christian denomination is the Seventh Day Adventist Church. The Seventh Day Adventist Church is a relative new-comer to the island with a growing membership that now numbers 87 in Gambell and about 10 in Savoonga. More than half of the Presbyterians and Seventh Day Adventists attend services regularly. There are also six Baptists in Gambell, and three Mormons and one Baha'i in Savoonga.

The doctrines espoused by Christian denominations have proved appealing to the Eskimo people on St. Lawrence Island and converts have been numerous without evidence of heavy-handed proselytizing. The Christian heritage, stressing Old Testament male dominant lineages and respect for elders and tradition, has found a comfortable place in Eskimo patricians and their attendant values. The New Testament messages of communitarianism, the humane values of brotherly love, treating others as one would like to be treated, patience and forbearance of life's unforeseen difficulties, have found eager recipients in the elder men and women. An

added and no less attractive aspect of Christian beliefs to these Eskimos are redemption and eternal life for all. These beliefs have proved a great value to a people whose lives are filled with peril.

Christian doctrines have fundamentally altered certain aspects of traditional Eskimo beliefs and practices. Animism, the belief that all things animate and inanimate possess spirits and that each is accorded specific rules of respect and deference, has slipped away. What has remained is a continuing respect for nature and living things, but with the important difference that inanimate objects and beings no longer possess spirits which are eternal and which require particular ritual acknowledgment (cf. , Hughes, 1960:322-333). Christian monotheism has also replaced the tradition! hierarchy of spirits. Man and the Christian God alone are invested with eternal life and they alone are moral beings.

However, St. Lawrence Island people have not lost their profound respect for marine life." Marine mammals are viewed with great respect and particular attention is given to the majesty, beauty, intelligence and power of these beings. This respect will "undoubtedly remain embedded in Eskimo life so long as the subsistence economy is the dominant means of obtaining food. islanders take particular pride in their display of respect for all living beings, while abhoring cruelty and slaughter.

Churches take responsibility for aiding those in need and for conducting countless social gatherings quite distinct from the normal functions of teaching the Gospels. 'When islanders speak of their treasured way of life they are also including the Christian aspect of their daily lives. Christian churches play a crucial role in Gambell and Savoonga. People of all ages, males and females, engage in various activities and are given special responsibilities that are assumed with pride and general enthusiasm. Women

teach Gospel lessons, give sermons (in the Presbyterian Church), and some elder Gambell women deliver messages expounding on the Christian teachings. The importance of Christianity for the Eskimos of the region is reflected by the fact that Nome's two radio stations are owned by Christian denominations.

Schools

Formal education--the bulk of instruction directed toward literacy, mathematical and certain social skills, physical fitness and athletics--is provided by the Bureau of Indian Affairs in the lower grades, and by state funded high schools for grades nine through twelve. Before the early 1970s, high school education was provided to St. Lawrence Island students at mainland schools, principally at Mt. Edgecombe (north of Sitka). Attendance at this and other mainland high schools had a special socializing effect, instilling Euro-American values, traditions and skills. During the 1960s, Mt. Edgecombe was particularly noted for a liberalizing ethic which stressed respect for minority peoples, including Native Alaskans. Many island leaders, some of whom are now on the mainland serving important positions in various institutions, were students at the school in the 1960s.

State public schools were placed on St. Lawrence Island as a result of a Supreme Court decision in the 1970s ordering the state, in accordance with its constitution, to provide education locally for school age children through high school. These schools have had the unintended effect of strengthening village traditions on St. Lawrence Island to the extent that most students remain at home and the bulk of them continue to engage in subsistence pursuits and sharing within and among kin groups. School administrators cooperate fully with hunters, fishermen, and collectors by allowing young men and women time away from school during periods of intensive subsistence activities.

There are bilingual programs in Gambell and Savoonga which were established in the 1970s. These programs have fostered enormous pride in Yupik language and culture. Most of the island's students learn to read and write Yupik before they enter high school. The children's language skills delight the elders, most of whom feared that their language would be lost through disuse. The nurturance of the native language and the persistence of subsistence pursuits are seen by many islanders as a single cultural entity.

There are some problems in the schools which concern many islanders. The most serious of these are that the teacher turnover rate is high and that some of the teachers isolate themselves from village life. There are also occasional charges of racism and ethnocentricism on the part of teachers. The ill-will caused by these real or alleged problems is frequently balanced, however, by the exceptional teachers who are intelligent, fair, open to the ways of Eskimo life, and generally respected by the natives.

The new high schools at Gambell and Savoonga have developed some recent rivalries in sports contests. of basketball and wrestling. These new activities take on all the trappings of high school athletics on the mainland with teams of cheerleaders. high school bands, and keen competition for trophies and community accolades. The two schools also compete with some mainland schools in these events. Improved transportation in recent years has allowed these forms of competition to develop. Enrollment at the Gambell and Savoonga high schools is high. Many students, upon graduation, leave their villages for military service or to acquire more education or to look for jobs. However, these migrants often return to the island. Some of these migrants will turn the skills learned elsewhere into valuable contributions to island life.

There are opponents of these schools among the Native Alaskans on the island. They claim that young people should go to the mainland for high school education so that they can better adapt to modern life. These critics assert that mainland experiences give potential village leaders new insights into the larger issues faced by Eskimos. Additionally, mainland experiences often lead to friendships among potential leaders from other regions. The latter function is viewed as crucial for future cooperation among groups from various regions of Alaska.

Community Activities

Walrus Carnival

Each spring, generally in mid-to-late April, Savoonga sponsors the annual Walrus Carnival. The Carnivals main theme is the arrival of the walrus herds and the beginning of the walrus hunt. Eskimo songs and dances are featured at the carnival and the events are conducted at the community building. The Walrus Carnival has earned a reputation for being a major celebration "on the island and attendance has climbed steadily in recent years. Nearly all of "the villagers participate in the festivities and there are community meals featuring Eskimo foods. Many Gambell residents join their Savoonga kin and friends in the celebration. Visitors from the mainland also attend the carnival, including non-natives, some of whom purchase ivory artifacts fashioned by local artisans, giving the event economic as well as social significance. Limited hotel and restaurant facilities have limited the tourism potential of the carnival, however.

Whale Carnival

The Gambell Whale Carnival is held in early summer, generally, but not always, in conjunction with the 4th of July Celebration which is

observed in both Savoonga and Gambell. In 1982 the Whale Carnival was held on July 5th and one resident pointed out that the 4th of July was everyone's holiday, but the Whale Carnival belonged solely to the people of Gambell. The carnival was not held in 1983 and will not be held again this year because of a shortage of muktuk: Gambell captured no bow head whales this year.

Local residents and a non-native school teacher initiated the Whale Carnival in the late 1960s to celebrate the fact that the bowhead gave himself to the people of Gambell. The carnival is now sponsored by the Association of Whaling Captains. Almost all Gambell residents attend before departing for summer camp sites. Some Savoonga people attend the Gambell Whale Carnival, but many Savoonga residents have departed for their summer camps. The events of the carnival include such things as searching for prizes while blindfolded, a harpoon-throwing contest, a high-kick contest, songs and dances, a drawing for prizes, a community feast and a beauty pageant. The latter event involves young women and girls of the village attired in native costumes. The event is judged by some of the whaling captains. The beauty contest offers a rare opportunity to observe the best of skin-sewing and traditional garments.

The Whale Carnival entices nearly all of the Gambell people to the celebration and community solidarity is increased as a result. As with the Walrus Carnival, Eskimo customs and culture are re-affirmed, and for that reason both events, the Whale and Walrus Carnivals, are important social events for islanders.

Singing and Dancing

Dances and sings are staged throughout the year and some of the Gambell and Savoonga singers and dancers, both young and old, have

gained a reputation for being particularly adept in these skills. For example, in the summer of 1982 a delegation of people from Gambell was invited to exhibit their singing, dancing, skin-sewing and ivory carving skills at the Smithsonian Institution.

The winter season is the most intensive period of singing and dancing. Some of the long winter weekend nights are passed in community gatherings featuring singing and dancing. Sometimes during these events songs are sung by the older women, songs sung in jest and marked by clever phrasing.

Holidays and Homecomings

In both villages the Christmas season is celebrated by gift-giving and special meals composed of traditional Eskimo foods. Many of the special meals are for kin and friends who return to the island from the mainland for the holidays. Observing the Christmas holidays combines Eskimo customs of displaying special respect for elders as well as gifting, and the Christian celebration of the birth of Christ. Special church services are held as part of the celebration.

As with Christmas homecomings, those who return to Gambell and Savoonga after an absence on the mainland are frequently treated to special foods set aside for such events. Locally collected land plants, seal meat and blubber, walrus meat and blubber, and muktuk are part of the fare on such occasions, and one's kin and friends gather to bid the returning person a warm welcome.

Birthdays

Birthdays also feature meals of traditional composition and symbolic worth. Village elders are treated to special attention on the date of their

birth. Birthdays are celebrated by one's kin and friends with considerable festivity and affection in both villages. Younger children frequently celebrate their birthdays in an unusual manner. They invite village elders to their party rather than their peers. This is done to show respect and love for them. Elders who, for whatever reason, cannot make it to the party have cake and other party foods delivered to them.

First Fruits

Youngsters, male and female, give the game or plants obtained from their first hunt or collecting foray to the eldest person in their patrician or clan segment. This ritual is conducted in an atmosphere of excitement and generosity. The parents and other kin of these youngsters are particularly proud of the conduct of those who give their first fruits from subsistence pursuits to clan elders (see Murie, 1977).

CHAPTER IV

KINSHIP

In order to understand the people of St. Lawrence Island and their interactions with the physical environment, it is absolutely essential that their kinship organization be comprehended. Kinship organization not only provides them with the basic parameters for acceptable social discourse, but also provides the principles by which extraction, processing, and distribution, including sharing, of scarce resources is accomplished.

Historical Kinship

In all likelihood the kinship system of the St. Lawrence Island Eskimos has been dynamic the last 2,000 years. Whereas even a complete description of the past 300 years is not impossible, Hughes concluded that prior to the modern era, the predominant kinship form was the deme: a group of local people practicing endogamy and identified by their common residence. Membership in a deme was not so much determined by descent from a common ancestor as by residence. Demes were a common form of organization among many mainland Eskimo bands. Hughes (1958:1145-1146) hypothesized that on St. Lawrence Island the deme evolved first into a sib structure and ultimately into a clan structure.

Subsequently, we observe, the structure and functioning of clans has also evolved. For instance, although Hughes was readily able to determine clan names, in 1982 some informants were not able to name the clans. Even so, residents were able to accurately assign villagers to the clan organizations to which they belonged. Moreover, three decades ago

children played kick ball games on teams whose membership was limited to children from the same clan. They no longer do so.

In the recent past, each clan controlled a designated hunting and fishing territory. Use of these areas was limited to clan members. Clan claims to restricted hunting and fishing privileges has been eroded, and was signaled as recently as 30 years ago when a resident petition called for an east to west division of the island. The petition requested that the western-most 600 square miles become' the property of Gambell, while the remaining 1,200 square miles be assigned to Savoonga. The requested demarcation coincided with resident perceptions of community ownership of hunting and fishing rights and common use practices (Burgess, 1974:78). Thus, as early as the 1950s, the rights of the island's two communities were superceding the prerogatives of the clans. insomuch as clans were non-localized, that is some members of the same clan live in Gambell and others in Savoonga, it became more difficult for a clan to exercise control over hunting and fishing grounds belonging to either Gambell or Savoonga, but not more difficult to share the bag or quarry taken by clansmen. The communities controlled their designated portions of the island, and only they could determine access. Clan boundaries were not identical with the boundaries established by petition, and clan decisions were likely to be in conflict with decisions made by communities composed of several clans.

This does not mean, however, that no user rights exist. The families that comprise each clan maintains usufruct over bounded hunting and fishing sites. Members of other clans, as well as families in their own clan, are frequently given permission to use these hunting and fishing areas. The movement away from a practice of highly restricted hunting and fishing grounds to a more liberal policy can "be explained by several

factors. Among these are the consolidation of the island's population from several communities into two communities, improved transportation, the focus on corporate liability of sharing proceeds rather than owning strategic resource areas within the clan, and several state and federal legislative acts. Governmental acts and policies are the most obvious, if not the most important, facts prompting changes in certain aspects of clan organization, including their corpoiate characteristics.

As noted in Chapter 1, St. Lawrence Island received reservation status in 1903, but the creation of the Gambell IRA Council in 1939 and the Savoonga IRA Council in 1940, under the auspices of the Composite Indian Reorganization Act, created a new course of community authority, and has served to erode the power of the clans. Similarly, clan influence was further lessened by the creation of the village councils, Gambell in 1963 and Savoonga in 1969, under Alaska State Law (U.S. Department of Interior, 1977:128-131; n.d.:134-137, 201).

The passage of the Alaska Native Claims Act (ANCSA) in 1971 was another structural change which altered the power and prerogatives of the clans. ANCSA required that all native villages form village corporations (McBeath and Morehouse, 1980:60). The Gambell and Savoonga Native Corporations are the result. Under the provisions of the act the St. Lawrence Island village corporations elected to receive title to the island. The effect of this action is common legal ownership of the island by all of the residents. This communal ownership has undoubtedly provided the impetus for a more democratic use of the island's resources. At the same time, some of the powers vested in clans have been lost, particularly the controls over key strategic resource areas. A formal structure, replete with rules and regulations", has been inserted to govern village affairs and

to deal with state and federal agencies and regional corporations. Clans, nevertheless have retained significant power and influence and most of their original functions.

Patricians

Now, as during Hughes' sojourn on the island, the kinship structure is dominated by a system of patrilineal clans, or to use Murdock's term, patricians (Hughes, 1960:249). In 1982, there were 11 patricians in Savoonga and 10 in Gambell. A patrician can be characterized as a non-local, corporate, compromised unilineal descent group in which post nuptial residence is with the family of the groom and descent reckoning is through the father's male line. Thus, clan membership is determined by the clan affiliation of one's father. Clan members believe in descent from a common ancestor-, real or putative. However, the descent rule is compromised by a, consideration of residence in the case of married women. Women remain members of their father's clan only until they marry. With marriage, they become members of their husband's clan. St. Lawrence island patricians each comprise several segments, "or extended families, and these, in turn, may or may not share the same surname. Indeed, practically every clan has members in both villages and embraces two or more families with different surnames.

Marriage

Today, as in the past, marriages are arranged by the families of the partners. The rules governing acceptable marriages have changed, however. Thirty or forty years ago marriages between cross-cousins and parallel cousins were acceptable, but they are generally not acceptable matches in 1982. Marriages between cross-cousins and parallel cousin

marriages are not unheard of, but sanctions prohibiting cross cousin and parallel cousin marriages are only weakly applied, if applied at all. While there seem to be weak sanctions against first cousin marriages, some families appear not to heed such sanctions.

Even though the evidence is not incontrovertible, the only rules restricting marriages are (1) a prohibition against marriages between first cousins and (2) acceptance of proposed marriages by the prospective bride's and groom's parents. Would-be marriage partners suggest the proposed partner to their parents, but approval of the union and the final arrangements are determined by the parents in consultation with the clan steward and, perhaps, other clan elders. In the past, love was a minor or nonexistent consideration, but today love between partners is a major consideration. After the parents and clan steward(s) give their approval, the prospective groom's parents present" the bride's parents with gifts which are distributed among kin. After the marriage, performed by civil or religious officials, the process is reversed, with the bride's parents taking gifts to the parents of the groom (cf. , Hughes, 1960).' When . islanders marry outsiders, the marriage process changes, resembling marriage in the lower 48. Generally, there is no bride service or gift exchange. (An interesting film of the marriage process, "Marriage Customs of St. Lawrence Island, " has been produced by the staff and students at the high school in Savoonga.)

in principle now, as during Hughes (1958: 1146) visit, with marriage women lose their original social identity, retaining only their personal name which belongs to their father's patrician. The social identity entails specific economic obligations and is therefore very evident, so much so that when we asked a man whether he had visited his daughter and

newly-born grandson, he replied: "No! She belongs to them [his son-in-law's clan] now. "

With marriage a woman necessarily reduces her interactions with her natal patrician. She is thrust into the cooperative ventures of her new clan, sharing the material wealth, enduring the privations, contributing her labor, assuming liabilities and obligations of the clan, and engaging in a myriad of social interactions. She does not look upon herself as an outsider, but regards herself, as do members of her new clan as a full member with a stake in the patrician's successes. In a sense, she becomes a stockholder in a corporation whose goal is to persist forever and whose corporate activities center around subsistence hunting, fishing and gathering. They extract, distribute, and consume collectively, and each member is responsible. for all others.

Into the–bride's new household will come game (whale, walrus, seal, birds, land mammals, and fish), greens, marine plants and invertebrates, and commercially produced goods. She will distribute parts of them to the elders throughout her new patriclan, her mother-in-law, her sisters-in-law, (clanswomen married to her husband's brothers), and her husband's patrilineal parallel cousins' spouses. The sharing does not end with the members of her husband's extended family (or patrilineage). She may distribute goods to members of other extended families within her new clan. Moreover, even though the new bride now belongs to her husband's patrician, and she has lessened her interactions with former clan members as she assumes her new corporate duties, her natal bonds endure. She will likely share with the dependent elders of her father's patrician and dependent villagers such as young widows and divorcees (see Chapter IV),

but such giving will be less frequent than giving to her new extended family (patrilineage) and throughout her new clan.

Bride service. Just as marriage practices have remained relatively unchanged over the past three decades, so has the practice of bride service. In 1982, the groom devoted about one year to the service of his father-in-law, one or more years shorter than the period observed by Hughes (1960:278). Bride service may encompass many activities, including hunting, hauling water or garbage, distribution of subsistence and other goods, providing labor to his father-in-law's clan, and generally obeying the wishes of the father-in-law and the elders of his patrician.

Some grooms and their brides reside in the bride's parental home while the groom fulfills his obligations. In other instances, the couple reside in a house of their own near the bride's parents. Not infrequently, a groom must move from Gambell to Savoonga, or from Savoonga to Gambell in order to live with or near his new in-laws. The period of service officially ends when the groom has proven himself worthy, a child is born to the couple, and/or the couple finds suitable housing for themselves.

The end of the bride service marks a" drastic change in the economic and social orientations of the couple. The groom returns to his father's household and extended family where he is obligated to contribute capital, material resources, labor, and, most importantly, his allegiances. Deferential behavior is now directed to the elder men and women of his extended family and patrician. He will become a member of one or more hunting, fishing and collecting crews. These crews are composed of very closely related men, boys, and some women, whose patrilineal ties reach back to the grand parental or great-g randparental generation. Very likely

the young man will return to membership in the crews he participated with prior to his marriage.

Kinship terms. The importance of male descent to the patrician is reflected in the kinship terms used. Patrilineal kinspeople are clearly distinguished from matrilineal kinspeople. Further, there are more distinctive kinship terms for patrilineal kin than for matrilineal kin. Hughes' noted the asymmetry of the kinship terminology during the 1950s. Patrilineal parallel cousins {father's brother's children) are afforded kinship terms distinct from matrilineal parallel cousins (motheris sister's children), and the former term is often replaced with the term for siblings (see Hughes, 1960: 229-233). Women marrying into a new clan maintain distinction between matrilineal and patrilineal kinspeople for both their father's clan and their new clan [husband's) as well.

Distinctive behaviors are also correlated with matrilineal and patrilineal kinspeople. For example, joking relations are maintained with maternal cross-cousins while sibling-like behavior is expected with paternal parallel cousins, behavior based on respect. This skewing of kin terms was present during Hughes' stay in Gambell, and remained in effect during the summer of 1982 in both Gambell and Savoonga. The kinship terminology would seem to reflect the structure, breadth, depth, and crucial functions of the subsistence organization, where females do not participate in the game harvest, which is more dangerous, but function in the preparation and distribution of essential items.

The whaiing, walrus and bearded seai crews are composed of a man's father, brother(s), uncles, or, with less liklihood, his patrilineal parallel cousins. In rarer instances, these crews may contain his brother-in-law or his sister's son. Crews organized for bird and bird egg collecting

generally have a different composition than those organized for whale, walrus and bearded seal hunting, and they differ from those organized for summer camping. The latter are usually formed around the nuclear family unit, with some patrilineal kinsmen joining periodically to help with the many tasks that summer camping requires: fishing, bird hunting, collecting greens, drying fish and birds and storing the greens.

The composition of the summer camp could lead a casual observer to misread the organization and importance of the patrician. The small summer camp crew is only a part of the patrician. The latter, of course, embraces a large number of people who are available to help with all summer camping activities. The larger kinship network comprising the clan provides money, equipment, labor, subsistence items and other goods. In addition to the mutual aid an islander can expect from clansmen, there is also aid from concerned neighbors and friends who will give when " necessary, or out of generosity even if giving is not necessary.

Stewardship

Throughout the historical period, age and sex have been the major determinants of authority on St. Lawrence Island. Age and sex have been far more important than hunting prowess in determining clan leadership. We found no cases where hunting prowess overrode age and sex as determinants. The extreme importance of sex is readily evident in the clan structure. As we have seen, descent is from males, and women, not men, change their clan affiliation with marriage. The male dominant kinship system pervades most family and patrician activities.

The importance of age is reflected in the fact that the eldest male member of a clan is generally the leader or head. In the case of death of the clan leader, the descendent's wife may serve as leader if she is the

eldest remaining clan member. Thus, the in-marrying spouse, a woman at that, can assume stewardship. But if she is not the eldest living member, stewardship will transfer to an elder male. Experience and the division of labor appear to have convinced St. Lawrence island Eskimos that age, wisdom and maleness go together, even in the face of younger men and/or women who exhibit uncommon talents, skills and judgment.. For generations men have been the food getters, risking their lives on the ice and open waters of the Bering Sea in order to extract resources. Women have processed and distributed food, made the clothes, reared the children, and the like, a division of labor apparently satisfactory to Gambell and Savoonga women. Thus, authority and decision making powers remain largely unchallenged with men. The major exception to this is when the eldest male clan member dies and his wife assumes the authority vested in him.

Clan heads are perceived as sources of wisdom and integrity. They are thought to be the repositories of the most cherished aspects of individual and group values. Patrician leaders teach the value of patience in hunting, kindness to humans and animals, and courage. They also instruct young hunters and fishermen, teaching not merely technical skills, but appropriate attitudes toward the game as well. Patrician leaders do more than maintain the culture and the clan. They are more than symbols of wisdom or instrumental decision makers. They are in fact, stewards of the clan's material wealth and social welfare.

While one of their major functions is to help capitalize and equip crews for the extraction and processing of naturally occurring resources, e.g., walrus, seal, whale, birds and bird eggs, they do much more. Clan stewards advise crew captains as to when to undertake a particular hunt, who should be on a particular crew, and when to replace old, worn or

broken equipment. In addition to their overseeing of subsistence activities, these clan stewards provide counsel as to appropriate marriages and personal behavior, provide names for newborns, and often settle family disputes. However, state and federal courts have removed much of the responsibility for hostility management from the jurisdiction from clan stewards in recent years. In all of these things, their decisions are generally final. Throughout, stewards behave much more like a chairman of the board, presiding over the clan segments (extended fami ies or patrilineages) which constitute the clan (see Hughes, 1960: 270), than the concepts of leadership might connote.

Patrician Functions

Despite inroads by federal and state actions into more traditional forms of self-governance, the patricians have maintained substantial influence and authority. In addition to presiding over marriage practices and customs such as bride service, patricians serve other important functions.

Integration. The major function performed by the clan system of St. Lawrence Island is to integrate the distinct social units. There are over 200 households in the two commun ties. These households range from single-person to extended families, with the patrician holding them together. If households are taken to be the smallest unit of kinship organization, then the patrician is the largest. In between the patrician and the household is a form of social organization we shall call the clan segment, referred to above variously as extended family or patrilineage. Clan segments are like lineages in that descent is determined through males. They differ from lineages in that they are compromised; women

enter and leave clan segments with marriage, while in lineages, genetics determine allegiances.

Clan segments are more or less identical with surnames. For example, two brothers, their wives, sons, sons' wives and unmarried daughters represent a clan segment. In Gambell there are 33 clan segments representing 110 households, and there are 24 clan segments representing 94 households in Savoonga. Each clan segment has a leader and the severs{ segments of the same collectively are presided over by the clan steward (the chairman of his board). This structure provides continuity and cohesion for the disparate households.

Not only do the clans supply cohesion within each of the communities, they help to pattern the social interactions between the communities. Clan members reside in both communities, so inter-community activities frequently follow clan protocols,. _Clan networks, thus encompass residents of both communities, and every aspect of daily life is affected by clan membership and the associated behavior patterns.

Work organization. One of the most obvious functions of patricians is to provide and organize a pool of men and women for all manner of tasks and mutual aid. Tasks performed by clan members extend beyond instrumental subsistence pursuits. They include, but are not limited to, care of children, provision of supplies and equipment, assistance with household labor, construction of buildings, repair of equipment, transfers of cash and commodities, celebrations of special events and countless other functions. Cooperative clan efforts range from the most trivia I to those which represent the most sacred aspect of the peoples' lives, from those which concern incidental events to those which determine the quality of life so treasured by St. Lawrence people.

The patrician system makes life on the island what it is, providing mutual support and the social organization necessary for survival. The survival of the patrician structure is in turn dependent upon the availability of natural resources. Without the native species of the marine and terrestrial environments, the patricians would very likely collapse and with them would disappear the richness they lend to the fabric of life. Perhaps not totally and completely, but almost surely the clans would drastically contract in size and in function. Doubtless, people would continue to share their time, labor, money and affections, but the regularity and certainty now so evident would be drastically reduced. A more atomistic, less integrated, dependent' society would result. The independence afforded by naturally-occurring resources and the management of these resources by clans, would be lost. Deprivations of possessions and power would result. Clan decision-making would lose force and meaning.

The Patrician: An Example

Clan members are bonded together by the many rules of conduct. Some of these rules have been discussed, while others have not. Yet others will be discussed in the next chapter (Sharing). Unfortunately, narrative alone is not sufficient to describe the linkages within a patrician. Figure 2 is a diagram of just one of St. Lawrence Island's patricians. In this example, the clan includes 58 people, with 14 nuclear or remnant families residing in 12 households. Eighteen of the clan members reside in four Gambell households. The remainder, including four generations reside in Savoonga.

Attention to the figure points to the fact that eldest male member of the clan, the clan steward, is linked to the Gambell households through

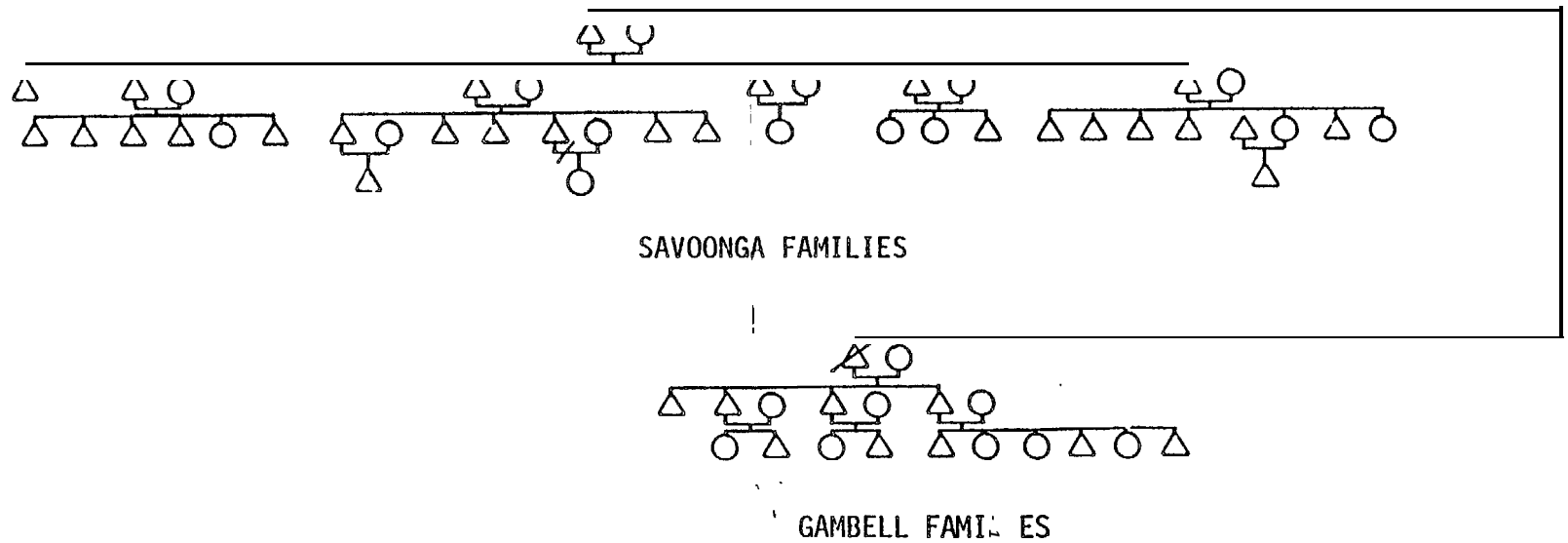


Figure 2. Example of a St. Lawrence Island Patriclan Which Includes Members in Both Gambell and Savoonga, 982.

the wife of his deceased brother. The deceased brother was the clan leader, and if the current steward were to die, his sister-in-law, now residing with her sons, daughters-in-law and grandchildren in Gambell, would become leader of the clan. She would become steward because of both age and her marriage to a former steward. Stewardship would not only change from male to female, but move from Savoonga to Gambell.

It is interesting to note that the present steward bears a surname different from his deceased brother. That brothers possess different surnames is an artifact of the Presbyterian missionaries. Desiring some convenient naming system by which to identify village residents, the early missionaries adopted individual Eskimo names as surnames. This practice led to a sudden proliferation of surnames that disguised the true kin relations of island families. Brothers were given separate surnames, which gave, and continues to give, the casual observer the false impression that, there were many more clan segments than there in fact were. A glance through the Gambell and Savoonga telephone directories gives one the impression that the two villages are distinct and more or less separate kin groupings, The facts are contrary to this however, as clan segments simply possess distinct surnames.

The patrician represented in Figure 2 is not atypical. It is similar to many others that link Savoonga and Gambell. There is continual intermarriage between the two villages fostered in part by recent improvements in communications and transportation. The same technological changes have also accelerated. intermarriages between island and mainland residents.

The patrician represented is a functioning social system. There is constant movement of subsistence goods between the members of the system

in both villages. In the spring of 1982, the strength and commitment with which these two villages pursue their kinship-based obligations was demonstrated when walrus hunts in Savoonga were poor. Gambell members of the patrician rushed to the aid of their Savoonga kinsmen with supplies of meat, tusks, and hides.

In the previous year, when a Gambell whaling crew brought a bowhead whale to Gambell, the steward of the crews journeyed from Savoonga, and speaking in behalf of the entire patrician officially pronounced that half of the whale belonged to the people of Savoonga. His authority and the respect for the successful hunters, members of his kin group, sanctioned the transfer of the whale products from hunters to all the villagers. As we shall see, however, equal sharing of Bowhead whale products between villages is the norm.

The members of the patrician share between villages almost as often as among families within either village. Informants from these families gave repeated examples of trips to Savoonga from Gambell, or the reverse, in which subsistence goods were given and received despite the geographical distance between the villages and the costs of making trips by water, land or air. Within villages the clan members engaged in close contacts, providing baby sitting services. sharing store-bought goods, discussing family matters almost daily, assisting one another with money and labor and, in general, enjoying a greater degree of familiarity and intimacy than with families in the patrician from the other village. However, there is no lack of enthusiasm and warmth when the time comes to assist one's close kinsman in the other village.

We mentioned that some aspects of the corporate patrilineage are undergoing changes and that some practices appear to be weakening.

Technical and social changes are impinging on the people of St. Lawrence Island at an increasing pace. Some of these changes are seen in the patrician. Many have their origins in greater mobility as air travel becomes more and more accessible, in exposure to radio and television. This leads to the adoption of new ideas and practices that have hitherto been unavailable to the island people. These changes are not merely changes in technology, but there have been changes in social organization as well.

Traditional authority rested on knowledge of the hunt, of animals, birds and fish, of the natural environment and of the tools and social organization required to conduct the seasonal subsistence rounds. Prior to the past two decades a hunter, and most especially the head of the patrician, was expected to be familiar with signs of change in the wind and water currents, the perils presented by various types of ice and snow, the organizational skills necessary for the hunt. Now, additional knowledge and skills are equally important. Modern islanders must know how to manage money, to earn cash from wages, work or sales of carvings, to purchase and maintain equipment for both the hunt and household, and to understand the complex rules, regulations and laws which govern modern institutions.

The knowledge needed to cope with the modern world is complex, enormously diverse and demanding. It is difficult to acquire, and sources for acquiring such information are not always available. Technical changes have come in the form of more powerful land, air and water vehicles, telephones (which nearly all households have), television (common in both villages), synthetic fabrics (which remove the need for materials from naturally-occurring species).

In turn, technological changes require changes in the social structure. For example, citizen band (CB) radios have altered the organization of the hunt, as hunters are capable of remaining in contact with one another. Not only can they coordinate their activities better, they are provided with a greater margin of safety. Boats lost in the fog remain in contact with the village. Lost crews know that should they drift south of the island air rescue will be attempted, or fuel and food will be air-dropped. Monitoring CB channels becomes a new task, as does repair of radios,

Such changes require a new education, an education dependent upon diverse, complex, and not always available information. 'Thus, if youngsters are to adequately cope they must have a new type of education, one which combines old and new technology. This new education requires changes in the formal and informal school systems. In a similar fashion, government actions, such as ANCSA, create new institutions and new requirements for successful adaptation. Most of these changes alter, and at times erode the power and authority of the patrician stewards. Yet there is a condition in the lives of the people that sustains, and to some extent enhances, the traditional aspects of authority and social structure. The people continue to depend on naturally-occurring water and land species. Slightly more than 80 percent of the food eaten by the people of Gambell and Savoonga comes from these species. The knowledge and skills required to conduct life as a hunter lends continued integrity and authority to patrician leaders and others who manage subsistence activities. These skills demand detailed knowledge of the marine and iand environments, living creatures, and the indefinable talents of the great hunters despite modern machines and weapons. The

local population, its livelihood, its specialized knowledge and attendant values are still part of the struggle for survival, a struggle unique to the local environment and the many ancient beliefs and traditions. A patrician elder is a man of the island and the sea. Unless the resources of the island and the sea are removed, the elder male, the locus of the folk hunt and folk wisdom, will remain a man of the island and the sea. Patience, intense concentration, knowledge of the immediate environment, ability to lead and think independently, respect for other living things, are the chief values. Even in modern circumstances they remain the dominant values and practice of the people. The subsistence lifestyle is the elaboration of these values.

Households

The last section described the largest kinship units of Gambell and Savoonga, i.e. , patricians. Patricians wed the two villages into a single bonded socia system. Even though each village extracts resources from more or less distinct areas of the island, the fact remains that patricians functionally ink the two communities. This particular kinship system permits each member of each village access to the resources harvested by both villages. The current organizational structure seems to contribute greatly to the physical survival of the islanders and enhances life as well.

Functions

Whereas patricians organize and integrate the activities of Gambell and Savoonga in a rather comprehensive manner, households operate as lower level organizational units. In a general sense, households are organizations of families related by blood, marriage or adoption, and single persons residing alone. The major functions carried out by households

include food acquisition, preparation and consumption; nurturance of children; education of children in hunting, fishing and collecting techniques; teaching the operation and maintenance of hunting, fishing and household equipment; transmission of carving and sewing techniques; and teaching traditional Eskimo and Christian values and concepts about purpose, eschatolog y, values and sex roles. Many of these functions are carried out in the dwelling unit, but some of them are conducted in other settings, such as on the Bering sea or in the field, in other residences, in community meetings, and in public schools.

The household, and its kinship unit the family, does not function in isolation. Evidence has already been provided concerning the transhousehold nature of hunting, collecting and fishing. Very few households in Gambell and Savoonga are able to function and persist without substantial involvement with several other households in the subsistence rounds and cash economy.

Manpower needs for subsistence pursuits, crafts production, and the low cash incomes of most households provide strong motivation for numerous cooperative activities. These activities create mutual aid networks which draw households, families. patricians and villages together. Additionally, many individuals related to the island people, but who reside in Nome, Anchorage and other mainland towns and cities, participate in these networks. Behind all of these extensive and intensive networks is a common value of devotion and love for people in the villages and the unaltered desire to be with and assist kin and friends. This common value is reinforced by subsistence pursuits. Each member of a kin-group and friendship network can call on many kinsmen outside his or her household for economic assistance, labor, education in traditional pursuits and

emotional support. It is crucial to realize that each household is severely limited in its ability to marshal the human and natural resources, that are indispensable for existence, without the cooperation of other households.

Household Organization

In 1982, Gambell had 455 residents living in 110 households (see Table 8),. The figures for Savoonga were very nearly identical with 458 residents dwelling in 94 households. With fewer households and roughly equal population, Savoonga had a slightly larger average household size (4.7 persons) than Gambell (4. 1 persons). A further examination of Table 8 reveals the striking similarity in the household structures of the two communities. For each type of household, the numbers are unusually close. In no instance is there a percentage difference greater than nine percent. Except for nuclear family and single person households, the differences do not exceed one percent. The only consistent difference between the two villages is in the average size of the various household types . Savoonga has slightly larger household sizes, except for extended family, avuncular and conjugal pair households. This is explained, in part, by the availability of federal housing. Overall, however, the household structures of Gambell and Savoonga are very nearly identical.

Nuclear family households. Households in both Gambell and Savoonga consist most frequently of nuclear families. Most often, the nuclear families are comprised of husband, wife, and their children. Fifty-five percent of the Gambell households are classified as nuclear, while 64 percent of the Savoonga households are similarly classified. Obviously, education and material goods and services are provided in the largest part through a nuclear family unit. Thus, the nuclear family is very important to this Eskimo social structure, just as it is in Euro-American' society.

Table 8. Household Types, Frequencies and Mean Size in Gambell and Savoonga, 1982.

Gambell				Savoonga			
Household Type	Freq.	%	Mean Size	Household Type	Freq.	%	Mean Size
Nuclear	61	55	4.9	Nuclear	60	64	6.0
Single Person	23	21	1.0	Single Person	12	13	1.0
Extended	16	15	6.9	Extended	15	16	6.7
Joint (Brothers and sisters with or without children)	5	4	3.0	Joint	3	3	4.7
Grandparent/Grandchild	2	2	4.0	Grandparent/ Grandchild	2	2	4.5
Avuncular (Uncles and nieces or nephews)	2	2	3.0	Avuncular	1	1	2.0
Conjugal Pair (married couple)	1	1	2.0	Conjugal Pair	1	1	2.0
TOTAL	110	100			94	100	
Mean Household size			4.1				4.9

Not all of the island's nuclear families are complete; some are missing one parent. In Gambell, of the 61 nuclear family households, 16 (26 percent) have only one parent; thirteen are headed by women without their husbands and three by men without their wives. In Savoonga, 9 of the 60 nuclear family households (15 percent) are headed by parents without spouses (5 women and 4 men). The loss of a spouse through death or divorce or temporary separation are the three major causes of one-parent households. Another condition that adds to the formation of this household structure is that some single parents have access to older housing which was made available because of recent housing construction. Living in the old houses is apparently preferable than crowding into the homes of their parents or other relatives for some single parents. This applies particularly to young women with children and no spouses. Single parent nuclear family households, particularly those governed by women without men, function under unusual stress. Quite obviously, the women must depend on male kinsmen to provide large portions of their annual food supplies. These male kinsmen, boys included, help without hesitation. Female-headed households are especially vulnerable to the economic vicissitudes of federal and state policies regarding food stamp and general assistance programs. When these forms of transfer payments are reduced, the women turn with increased need to male members of the patricians and to hunters in their neighborhoods for help vital for the survival of their families.

Extended family households. By the definition used here, extended families consist of three or more generations of families or family remnants. The generations are related in a direct line from a male or female of the eldest generation. The second and third generations are comprised of one

or more dependent nuclear families, with one or both parents present and one or more of their offspring. About one-third of the extended family households are headed by elderly people whose mates are deceased. Extended family households missing a male spouse in the eldest generation do not face stresses equivalent to nuclear families missing a male spouse. The extended families have adult male members who contribute to the household maintenance.

Extended family households provide a special type of family interaction and important socialization: children are exposed daily to the traditional practices and beliefs that are embraced by the grandparents. In such a household, the children are given the opportunity to learn, directly and indirectly, the knowledge, insights and values of the grandparents.

Grandparent/grandchild households. The extended family structure, at times, leads to the formation of another type of household. grandparent-grandchild households. It is not uncommon among arctic and sub-arctic cultu res for grandparents to take as their own the first born of their eldest child. However, there are only two grandparent/grandchild households in Gambell and two in Savoonga.

Single person households. The single person household form is a relatively recent social phenomenon in Gambell and Savoonga and is largely the result of housing projects in Gambell (1 976 and 1978) and Savoonga 1978 and 1980). 'These HUD-sponsored projects greatly increased the number of houses in both villages, making available many older houses which were vacated by families which moved into the new houses. The vacated houses were taken over by primarily young singles who desired privacy. Many of the older houses in Gambell and Savoonga are currently

occupied by single men, and in one instance, a single woman. Households which have no children are a novel development in Eskimo social structure. in the recent past, singles faced with limited housing would probably have been living with their parents or parent surrogates, thus maintaining the nuclear or extended family structure.

The importance of single person households to the economy must not be underestimated, particularly in Gambell. The occupants of these households are hunters and many are extraordinarily competent and active, often contributing many more subsistence products to the economy than they receive. Their freedom from the restraints of marriage and other commitments common to larger households gives them extra time and opportunity for creative efforts in subsistence pursuits. Many of the walrus and seal hunters who give subsistence goods to many households and receive from very few are from single person households. In Gambell there are 23 single person households (21 percent), while there are 12 single person households in Savoonga (13 percent).

Other household types. The remaining household types (joint, conjugal pair, avuncular) are almost identical in number and percent in the two communities, which constitutes further evidence of the strong similarities between the villages. Joint family households are made up of single or married siblings and their children, if any. Conjugal pair households consist of married couples without children. Most of the newly married couples live with the parents of one spouse. There are only eight joint family and conjugal pair households in the two villages. Avuncular households, few in number, (three in each village) are comprised of uncles and their married nieces and nephews. Joint family, conjugal pair, and

avuncular households are apparent yet have little special significance in the array of household types, except as departures from the norm.

Family and Household Development Cycles

Young couples, almost without exception, spend the first year or so of their marriages with the parents of the female spouse or in a nearby house. Children come soon and this is one reason there are few conjugal pair households in the young age group. With children, young couples attempt to establish their own households. If they are unable to do so immediately, the couple and their child or children move in with the male spouse's parents. This stage of development features an extended family household, and often the parents in the eldest generation will adopt a grandson. As more years pass and one member of the original couple passes away, the remaining spouse (usually a woman) serves as the head of the household (and perhaps of her husband's patrician), She does this while hosting married offspring and some single offspring who now approach middle age. Too, there might be a niece or nephew or cousins of the head who come to live in the household.

Household membership in the late stages of family and household development is rather variable as kin come and go for employment, education, and military service or otherwise look for an opportunity to sprout their wings away from the village. In summers, teenagers often move from Gambell to Savoonga or from Savoonga to Gambell to live with close patrilineal kin. Others go to summer camps or remain in the villages to be with friends and relatives through the warm months. In each instance they are often removed from their parents and siblings.

In the later stages of development, a family is likely to have the male household head's sister or her daughter living in the household, or his

brother's son or daughter. These relatives might or might not remain long, with a result being that household membership is often fluid in both villages. However, at any given time, the nuclear family household with attached miscellaneous kin is the dominant household type.

At the end of the cycle, when people grow old and are able to work or hunt only occasionally, they are not alone. They have married or adult single sons and daughters looking after them. These elders are the first members of the community to be given subsistence and other goods, and are recipients of countless acts of kindness and generosity. Just as they helped village elders when they were young, now they are helped by this generation's young. The kinship and household system of St. Lawrence Island is truly a security system for the dependent which includes many others in addition to the elderly. It is a system that has endured several hundreds of years.

CHAPTER V

SHARING

Perhaps the most distinctive features of Gambell and Savoonga are the communitarian values that pervade virtually every aspect of social intercourse. These values are so much a part of the daily lives of the residents of the two communities that most residents take them for granted. islanders are slightly abashed when they must involve themselves in the exchange ethic practiced on the mainland. In recent years, with expanded education, travel and communication, the residents of the two communities have become more self-conscious, if not defensive, about their long-established, cherished traditions of reciprocity and giving.

When outsiders, especially non-Eskimos, visit Gambell and Savoonga they are quickly informed of the compassionate and humanitarian values that are so evident in the people of St. Lawrence Island. This is not to say these values exceed in depth and scope those values held by other Eskimo peoples, but St. Lawrence Islanders take a very special pride in the island way of life.

The islanders believe themselves to be unique in many ways. Mainland Eskimos tend to view islanders as representatives of a more traditional culture. Each village takes great pride in its own community and in the kindnesses, generosity and acceptance displayed by fellow villagers toward others. The two communities, in most respects, see themselves as sharing essentially the same way of life, a way of life that is of inestimable value to them, a way of life which provides life with both joy and meaning.

Social Organization

St. Lawrence Island values stem, in large measure, from the extent to which the people depend upon the naturally-occurring species of the marine

and terrestrial environments. The marine environment is the most important of the two environments in the annual round of food-getting and sharing. Island residents are organized on a day-to-day basis so as to efficiently extract, distribute and consume the naturally-occurring resources. The availability of recurring natural resources goes hand-in-hand with island social organization. The seasonal rounds, as well as the giving and reciprocal networks, are all a direct expression of the pulsating seasonality of the natural environment. There is little or no evidence that the social units organized for the purpose of coping with a demanding natural environment are decaying in any way.

This is not to say there have been no changes, however. There have been shifts in utilization patterns. The amount of skin sewing has decreased with a concomitant increase in the use of manufactured fabrics, e.g. , nylon. Too, there is a strong dependence on the market economy for machines, weapons, fuel, clothing and many other articles necessary for subsistence activities. Food items such as soft drinks, coffee, tea, sugar, flour and other items available only from retail outlets are also in demand. In spite of the increased availability of processed foods, most of the household heads interviewed in Gambell and Savoonga estimated that about 80 percent of the food their families consumed came from subsistence pursuits. Several island residents indicated that eating processed foods for more than two or three days gave them a "sour" stomach. Further, these same household heads indicated that their continued dependence on the natural resource base reflects the best part of Eskimo life.

Because of their dependence and emotional attachments to the marine and terrestrial environments, the people are acutely aware that threats to the natural environment are threats to their way of life. Alterations in the

supply of recurring natural resources are seen as forces which would change their social organization and culture. Without subsistence resources there would be no need for crews to harvest the resources. Without crews the present form of social organization would evaporate. With this realization, the people of the island have become increasingly insistent on protecting, in any way possible, the resource base upon which their communities depend.

Since sharing is so essential to the fabric of social and economic life on the island, and since sharing is so immediately and inextricably linked with the naturally-occurring animal and plant species, it is important to describe the ways and items people share. It is one thing to write generally about the importance of giving and reciprocity, and it is quite another to provide sufficient detail to demonstrate the entire process. It is impossible to describe every observed instance of sharing; examples are far too numerous. Besides, the unconnected examples would hide the pattern and structure of sharing. A more productive effort is to describe the sharing network of a single Gambell household. This example will serve as an illustration of the communitarian nature of islanders' lives. This illustration will show how individuals in the two communities manage their daily lives, and at the same time, assist others with food and labor. An examination of everyday activities demonstrates the depth of mutual concern and caring that is so much a part of life on St. Lawrence Island. The example presented, however, must not be viewed as an unusual instance; it is merely one instance. Many other sharing networks could be described which would substantiate the assertion that sharing is widespread and crucial for life on St. Lawrence Island.

Before a discussion of sharing, it must be stated that not all sharing is reciprocal. With many exchanges there is no expectation that an exchange

will result in a gift of equal or greater or even lesser value. For example, some of the patricians do not have a sufficient number of hunters to provide surpluses for themselves and their clan members. Such patricians have a disproportionate number of households headed by the elderly and women with children. They lack mature males. Such clans are unable to provide for themselves. In these instances, other patricians with an abundance of good hunters and hunting crews provide subsistence necessities to those in need with no expectation of reciprocity.

There are few complaints from the able hunters and fishers. The norm is to give. As one prominent hunter in Gambell stated, "Give until it hurts. " Several hunters reported that they derive great pleasure from giving. The giving ethic is further illustrated by the case of a Savoonga hunter who keeps a file of names of all residents in his village. When he and his crew take a minke whale they go through the list to make certain that they give some of it to every household in the community.

Receiving, of course, is the other half of giving and is never a source of embarrassment. There is absolutely" no shame attached to receiving without an implied or expected return at a future time, nor is there resentment for giving without implied receiving at a future time. Anyone who does not ask for what is needed is regarded as peculiar or strange, as peculiar or strange as the person who does not give. Asking for food is a perfectly natural thing to do just as giving is perfectly natural in the Island environment. Even visitors are expected to learn to ask. To ask is to become a member of the community. While gifting is typical, reciprocity, while acceptable, is far less common.

An Example

The Gambell household used here as an illustration of sharing and mutual assistance consists of a man, his wife and their three teenage children. The man holds a wage labor job several months of the year which prevents him from extensive hunting and fishing during this time. He does, however, go seal hunting on weekends with a son, with his brothers, with a son and brothers or alone. His close male kin form whale and walrus hunting crews, and he is able to go whale and walrus hunting on about half of the hunts. The other crew members do not hold wage jobs and they hunt at every opportunity.

The male head of the household also hunts for seals and birds, and he fishes in summer with his brothers and a son. . The son is married, has children and resides in a separate household. The brothers are not married, occupy separate single person households, and are particularly good hunters; many households rely on the three brothers at some time during the year for food from the various mammals, birds and fish they take.

The man's' wife is responsible, as are most women, for the preparation o mammals, birds" and fish the men bring to her household. She dispenses about 50 percent of the subsistence products which come into her possession. The average proportion of subsistence products from a good hunter's home that are redistributed to others appears to be about fifty percent. Some, perhaps one-third of the best hunters, redistribute as much as 70 percent of their take to others. If a good hunter is single, he might redistribute as much as 90 percent of his annual harvest.

Women have great difficulty deciding what to give to those who ask. They are expected to be impartial and to give what is available, regardless o quality or quantity. Many women prefer to treat the elders of their villages

with gifts of special items, and they very often do. But there are times when women wish to save the best for their immediate family rather than giving these choice items away. Some women anguish over whether they are fair with everyone, including elders and the people who rank high in their own and other patrician hierarchies. There is no greed at play in these decisions. Nevertheless, there is the constant torment of commitment to their husband and children in the ethic of sharing and helping others.

The first people considered in the redistribution of home-shared products are elders of the villages, widows, people without hunters in their households, the ill and the infirm. Often these are people who are related to the household through the patricians of the male household head or his spouse, but this affiliation is not necessary. The household used here as a case study generally gives to patrikin before anyone else, but this practice appears to apply to all households that give subsistence products. Items given include edible products of walrus (our data on walrus hunters show that hunters' households give walrus edibles to at least 10 other households in the course of a year), seal, birds, bird eggs, fish, and whales (bowhead, minke, and on rare occasions, grey), collected plants from the sea and land, and occasionally some of the marine invertebrates. Not all things given are subsistence products from the sea or land. The example household also gives tea, bread, sugar, flour, stove oil and other staples from the two local stores. Clothes that are in good condition, but no longer needed in the household, are also distributed. The primary motive for giving under these circumstances is to insure that some people do not go without necessities.

The relationship between giver and receiver is not entirely one-sided. Many of the elderly, the infirm, the widows, and other individuals in households without hunters, at an earlier time taught the wife of our example

household how to store plants, prepare meat, skins and other subsistence items. She, therefore, feels a strong sense of devotion and loyalty to these people. Others who are able to provide food for themselves once cared for the young children of our example household, once gave the head, his wife and growing family subsistence goods when they were in need. Often cash was provided when money was scarce and the hunt inadequate to supply the example household with what it needed, This aspect of giving and receiving is common in traditional societies. The reciprocal relations span lifetimes and giving during one stage of one's life is complemented by receiving during a later stage of life.

The single case from our Gambell sample exemplifies the extent to which people give to others and engage in reciprocal relations in the distribution and consumption of subsistence goods. As has been stated, the case we have selected is not uncommon. Several households studied in both Gambell and Savoonga are very similar to this case study in the nature of interhousehold relationships and in the extent of the sharing network. The kinship associations in this example of a sharing network are graphically portrayed in Figure 3. (It should be noted that not all sharing links are shown in the figure.)

The woman of the example household always insures that six households receive a steady supply of subsistence goods. The six households are headed by elderly women and a widower, people who are related to the women of our example household through her father's patrician. Some of these households have grandchildren and spouseless daughters with children. Two of the households are in Nome while the others are in Gambell (see Table 9), and the woman of the example household sends a wide range of subsistence goods to them--walrus meat, seal meat, muktuk, fish and, occasionally, birds. The

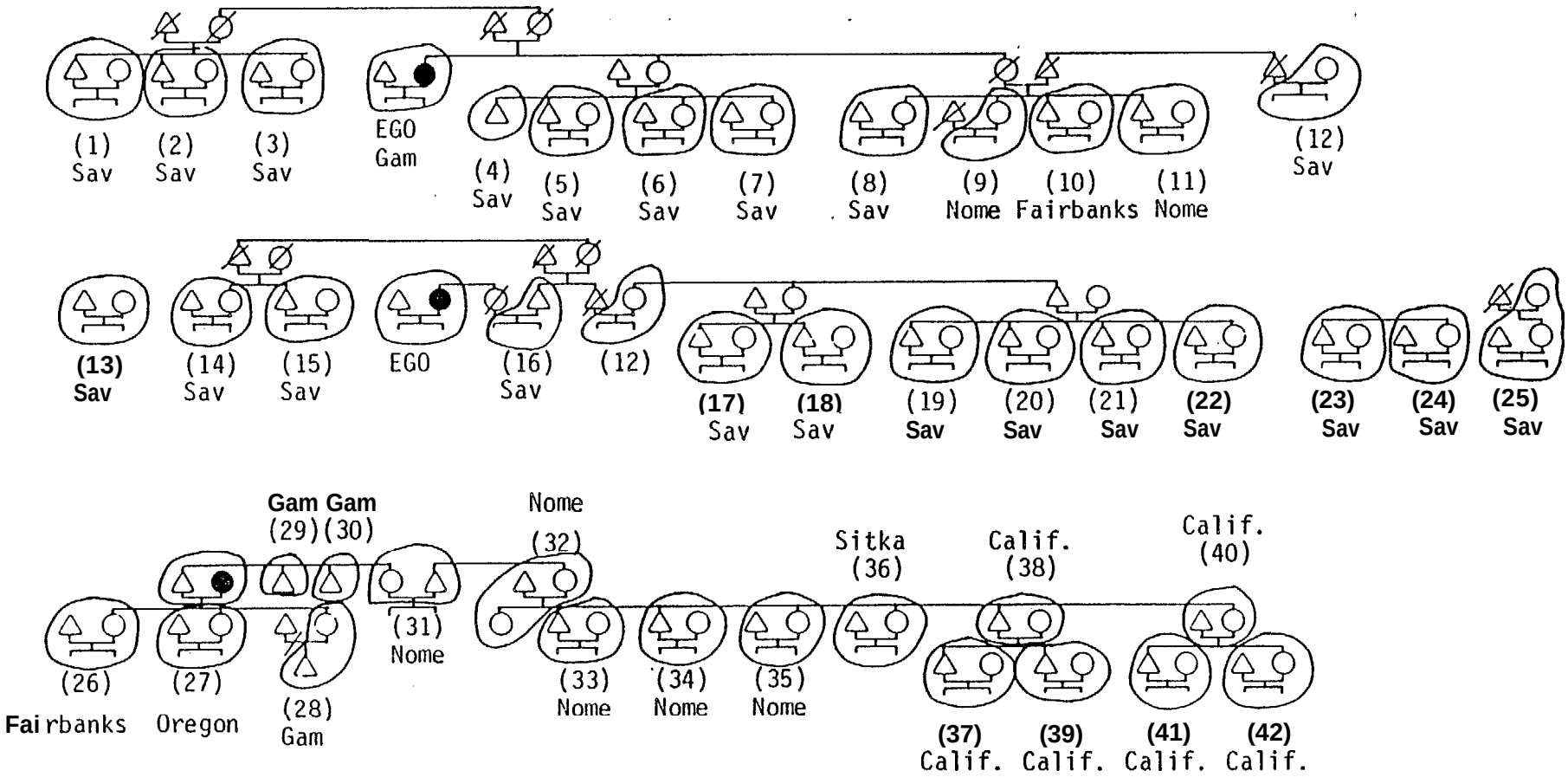


Figure 3 . An **Example of a Kinship Sharing Network,** Gambell,1982.[a]

[a]**To simplify presentation,** Ego's **household has been repeated as has household number 12. Households 13, 23, 24 and 25, while part of the sharing network, have no immediate kin relationships with Ego.**

Table 9. Location of Households That are Part of a Single Gambell Household's Reciprocal and Giving Network of Subsistence Products. 1982.[a]

Location	Number of I-households In Subsistence Products Network
Gambell	29
Savoonga	23
Nome	7
California	6
Fairbanks	2
Oregon	2
Sitka (Alaska)	1
	70

[a] The term giving is equivalent to gifting. That is, subsistence products are given to some households with no expectation of gifts in return. Most of the households listed in this table engage in reciprocal relations with the example household in Gambell. The 70 households represent about 315 people (4. 5 people is the average per household.)

Nome households receive the goods by air freight. These dependent households have few other relatives who can help them. They are indigent and in the Eskimo systems of ethics there are moral commitments to give them food and emotional support. As the wife of the household head stated, "When I am helping people, I am happy. [f there is someone I know who needs something and I have not done something about it, I cannot sleep nights. "

Our example household also has very strong reciprocal ties with two households composed of nuclear families. One is the household of a paternal aunt of the wife of the head of the example household and the second is headed by the wife's brother's son. The ties between the woman in our example household and her male blood kin form a central link in the sharing network. Normally there are strong ties among households through closely related patrilineage descent, although the male heads of households and their spouses do not hesitate to heip the indigen t-, whether related to them or not.

At the present time, women always give to the members of their parental home, as in our example, and the households of their married siblings. Some of our informants, however, told us that giving and sharing have changed in that they have not always included those who were not members of the patrician. [n the past 20 to 25 years there has been a change from almost exclusive sharing and giving within the patricians to wider patterns of sharing. In the recent past, women who married into patricians were expected to give only to their spouses' patrilineage households, with some exceptions to be sure; but clan and patrician affiliation no longer form the nearly exclusive social and economic boundaries they once did, even though the authority hierarchies and most of the functional roles of patricians remain intact.

Our single example from Gambell engages in reciprocal and one-way giving of subsistence products with 70 households and about 315 people. Figure 3 demonstrates the relationship of Ego's household with 42 of the 70 households involved in the network, while Table 9 specifies the number and location of households. Networks as large or larger than this example do not appear uncommon in Gambell and Savoonga. Our case illustrates the breadth, depth and variety of associations: consanguinal relatives, affinal relatives, friends and neighborhoods. The several types of ties form the crucial fabric of traditional St. Lawrence Island Eskimo economic and social bonds. Subsistence goods are the basis of these bonds, the adhesive for community solidarity which are reflected in the sharing of these goods and expressed as deeply ingrained mutual concern.

Our example household is part of a reciprocal and giving network that involves 29 Gambell households, one-fourth of the households in Gambell. Twenty-three Savoonga households are involved in the network (23 percent of the households), seven in Nome, six in California, two in Fairbanks, two in Oregon and one in Sitka, Alaska. These figures demonstrate not only the extent of sharing, but the wide geographical distribution of participating households. This reflects the great strength of the ties which link diverse patrikin groups, friends and neighbors; the same data also support the idea that Savoonga and Gambell form a single island community in many respects.

Walrus meat and blubber, and the skin of the bowhead whale are two subsistence products that are key elements in these intracommunity and intercommunity relations. They are given and received in reciprocal relations or gifted in all of the 70 households which compose this network. Less important products, as expressed by frequency and amount of sharing, are green plants collected on the island. However, there is considerable variation in the volume and frequency of distribution of subsistence goods in

our example. In some instances, whole hair seals are packed in ice and sent to Nome. In other instances, seal products from all seal species are sent to the mainland. Birds, marine invertebrates, fish and bird eggs, to our knowledge, form a lesser segment of the sharing network between the island and the mainland. In Gambell and Savoonga, however, almost all subsistence goods are involved, but the precise proportions are not known.

In times of shortage, Gambell and Savoonga are immediately thrown together. During the spring of 1982 when walrus hunting was poor in the vicinity of Savoonga, many people from Savoonga journeyed to the homes of" their kin and friends in Gambell to order to obtain meat. And, unprompted, many Gambell hunters ran boats or snowmachines ladened with walrus products (meat, internal organs, and skins) to Savoonga. The people of Gambell were radiant with the joy of giving and they carried out their task with determined humanity.

Some Gambell hunters are also quick to give walrus ivory to carvers who are without ivory so that they can continue to earn cash. This very valuable item is also given without hesitation. The carvers in the two communities have formed special bonds of mutual aid that tend to cut across kinship affiliation, neighborhood and friendship networks. Carvers typically share equipment, raw ivory, knowledge of carving and market outlets.

Apart from the example household given here, we must also emphasize that in the large scheme of things that encompasses the lives of Gambell and Savoonga residents, there are not only ties based on the movement of subsistence products, but store-bought goods, labor, time, emotional support, money, equipment, fuels and countless acts of unquestioned loyalties and devotion as well. All of these sharing networks add up to a complete way of life that is conducted, for the most part, in harmony and tacit acceptance.

And the role of subsistence goods, as has already been mentioned, is central to this way of life.

The ties which link Gambell and Savoonga residents together are strong indeed. Social and economic ties within and between the two communities are impossible to distinguish except analytically, Each is an integral part of the other. Islanders do not perceive economic and social ties as being qualitatively different. [t is futile to analyze them separately, even analytically. To do so is regarded by islanders as an insult to the people and their culture, an incomprehensible, wholly artificial and harmful effort to fragment a society that embraces its members holistically.

CHAPTER VI

WHALING

Gambell's whaling tradition is much longer than Savoonga's and for this reason the whalers of Gambell are more numerous. In the spring of 1982, 153 Gambell men and women participated on 22 whaling crews during the 10 day season. There are plans to expand the number of crews in Gambell in the 1983 season from 22 to, perhaps, 24. These crews struck and brought back to the village two bowhead whales, one 26 feet long (approximately 26 tons), the other 29 feet (approximately 29 tons). Both animals were perceived by islanders as disappointingly small. The hunters take what they can get, realizing that the animals are migrating north and that they are in the vicinity of St. Lawrence Island only a short time. Several crews noted that they passed-up shots on other whales because they thought that they were too small. Normally the hunters of Gambell get considerably larger animals than those taken in the 1982 season.

There is no lack of interest in whale hunting in Gambell, nor in Savoonga. The hunt is the most dramatic of any subsistence activity on the island, perhaps in the world. The Savoonga hunters, while having only 10 crews during the 1982 season and a core of 59 very active hunters, are not less ardent than the Gambell hunters in their pursuit of whales (see Table 10 for a numerical comparison of Gambell and Savoonga crews). In the 1982 season Savoonga crews made two strikes off the Southwest Cape where the whalers journey to set up camp and from which they launch their boats for the hunt. One of the strikes resulted in success: a whale of over 50 feet in length (about 50 tons) was retrieved. The other whale capsized a boat and escaped. The whale taken by the

Table 10. Comparison of Gambell and Savoonga Whaling Crews, 1982.

	Gambell	Savoonga
Number of Crews"	22	10
Total Members	153	59
Range of Size	4-11	4-8
Average Size	7.0	5.9
Households Represented	107	46
Average Number of Households per Crew	4.9	4.6
Range of Households per Crew	2-8	2-8
Percent of Village Households Involved	96	47 (in 1983 this figure will be 55%)

Savoonga crews and the two whales from Gambell were shared among both villages. People from Gambell received about 50 percent of the Savoonga whale, and in turn the Gambell hunters gave about half of each of their whales to kinsmen and friends from Savoonga. The Savoonga hunters expect to increase their number of crews from 10 to 12 in 1983. This effort is designed to improve individual and village chances of successfully striking bowheads. Before Savoonga people began whaling, Gambell hunters gave portions of whales only to their kinsmen in Savoonga. Savoonga's participation in bowhead whaling has thus resulted in the wider distribution of subsistence products and increased the level of subsistence activities.

Savoonga did not begin bowhead whaling until 1972. In 1971, a member of the community, a former mail hauler, got lost at Southwest Cape with his dog team. While there he saw the bowhead run, and decided to establish a crew of his own. The initial crew was composed of his younger brothers and other paternal male kinsmen. They got a whale in their first season. Since 1972, the number of Savoonga crews has steadily increased, and it seems likely that in the next few years Savoonga will equal Gambell in the number of whaling crews launched. At present, members of 107 Gambell households engage in whaling while members of only 46 Savoonga households participate in whaling. Despite occasional comments by older hunters to the effect that younger people are not as interested in hunting as were members of their generation, there is no empirical evidence to support this assertion in either Gambell or Savoonga. This is most particularly the case in reference to the whaling and walrus crews.

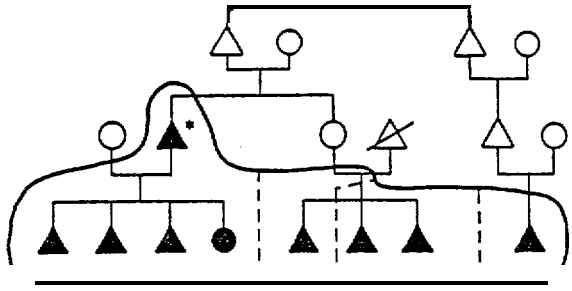
The Savoonga whalers undergo great effort to engage in the hunt. In April of each year they travel west to Kangee camp on snowmachines,

dragging their walrus-covered skin boats and equipment across the frozen snow. From there they turn south and traverse the width of the island to Powooilik Lagoon and then travel to Southwest Cape. Small wooden cabins situated at the Cape are used for shelter during the late April and early May hunt. The journey is about 50 miles long and is extremely arduous, but the hunters regard their efforts as worthwhile: the hunt tests skills, adds honor to their village, and brings them an important source of food. Apart from their nutritional value, products from bowhead whales are both symbolic and a cultural medium for transmitting the society's values.

Community Participation

As already noted, there are 22 crews in Gambell with 153 members. An average crew size in Gambell is 7 people. The smallest Gambell crew is 4 and the largest is 11. The 10 Savoonga crews were comprised of 59 persons, and had an average crew size of 5.9 people. The fewest number of people on a Savoonga crew is 4 and the greatest number is 8. The sizes and compositions of the whaling crews in Gambell and Savoonga can be seen in Figure 4 and Figure 5. As is evident, most of the crews in both villages are between 5 and 7 persons. The number of people for the crews that have been reported here represent more or less fixed crews, but there is some fluidity. There is some shifting of crew members among crews from year to year: membership on a crew is not immutable.

One of the most vital of subsistence activities, a point island people make over and over again but one often missed in the press and in other documents about Eskimos, is that hunting, fishing and collecting are the basis upon which Eskimo social organization rests. This statement is not meant to assert that if all subsistence resources disappeared so would all of the unique elements of Eskimo social organization. But it seems



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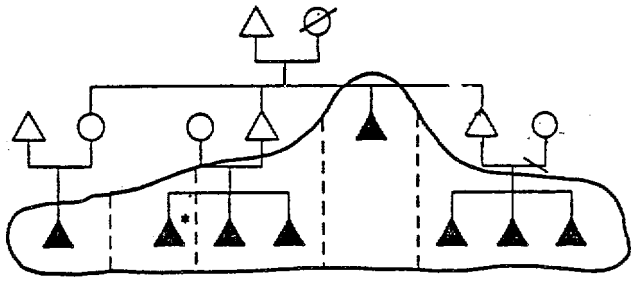

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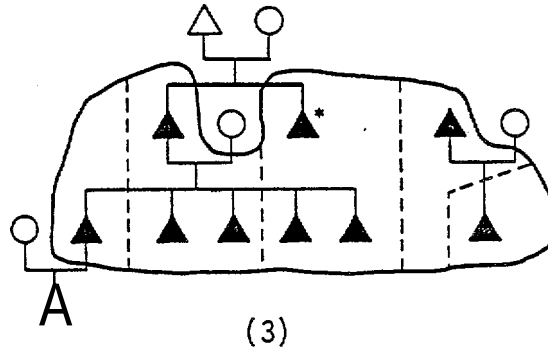

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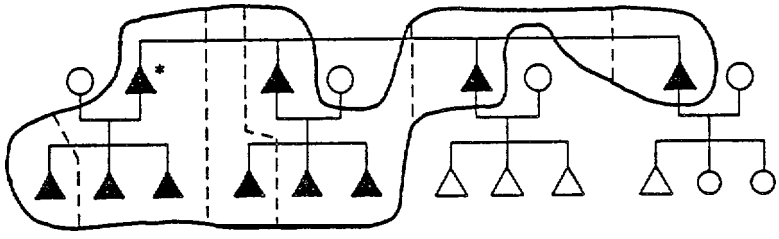

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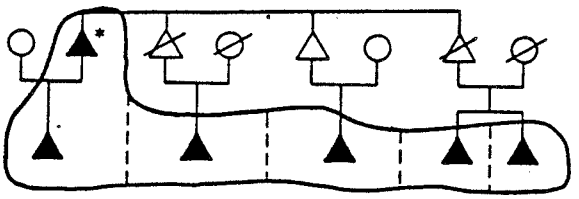
Figure 4. Relationships Among Gambell Whaling Crew Members, 1982.[a]



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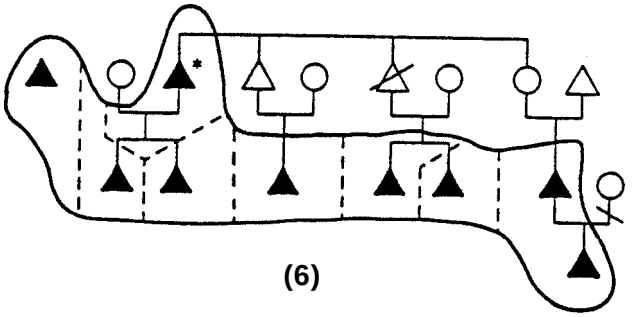

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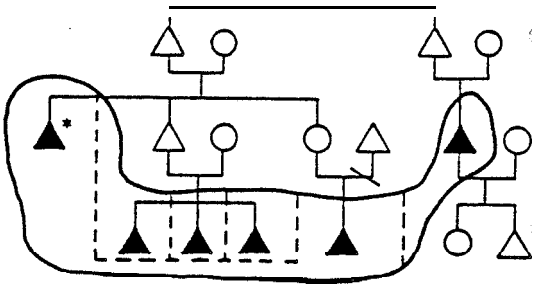

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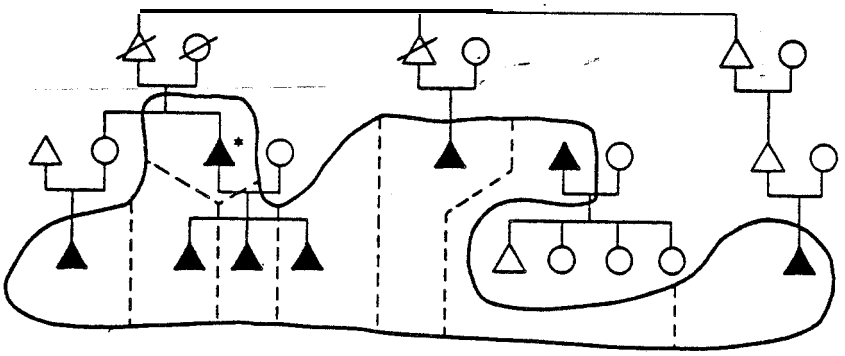

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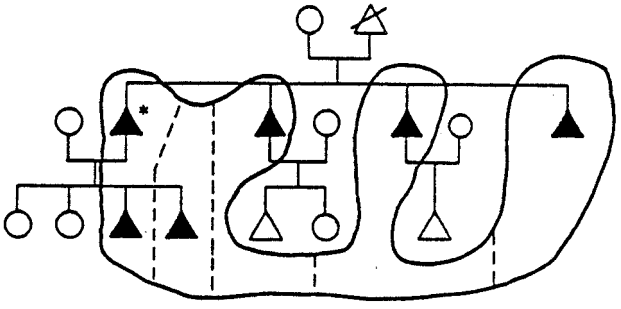

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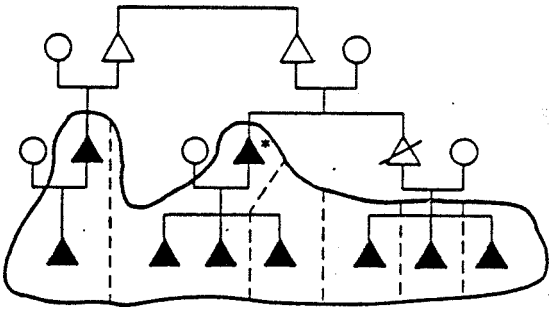

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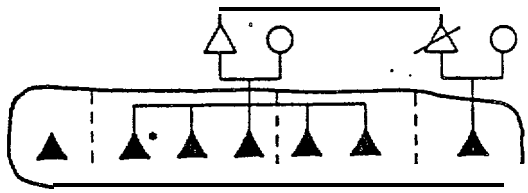
Figure 4 . Relationships Among GambellWhaling **Crew Members, 1982. (continued)**



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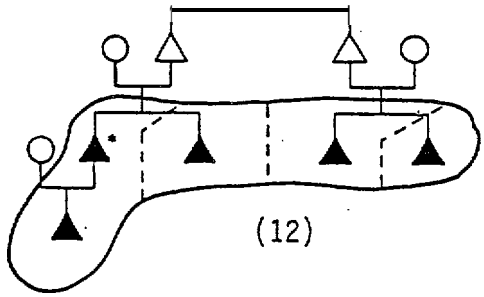

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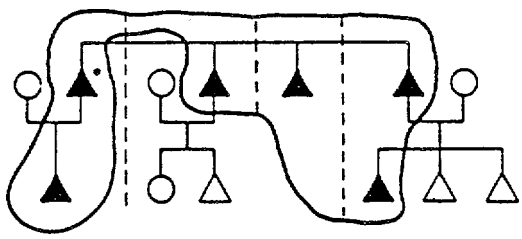

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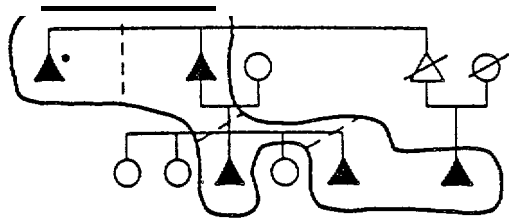

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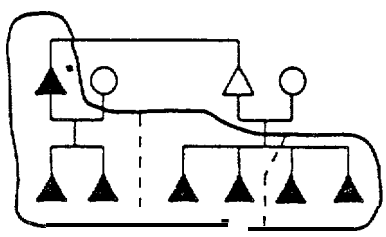

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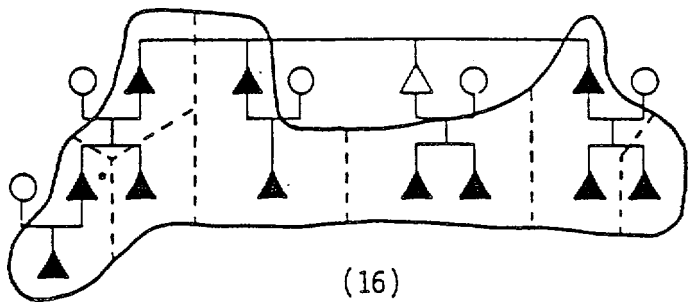

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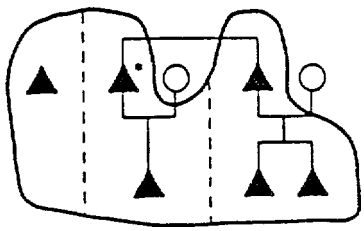

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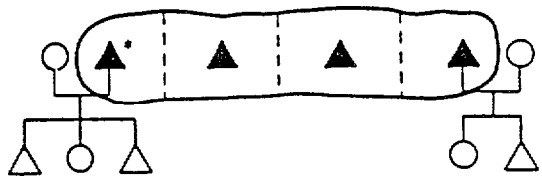

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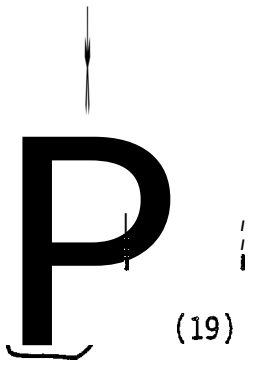
Figure 4 . Relationships Among Gambe' **1** Whaling **Crew Members, 1982. (cent** nued)



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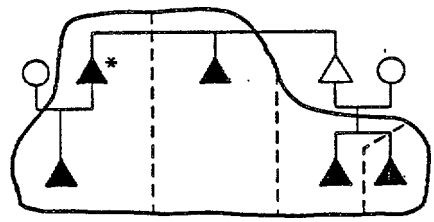

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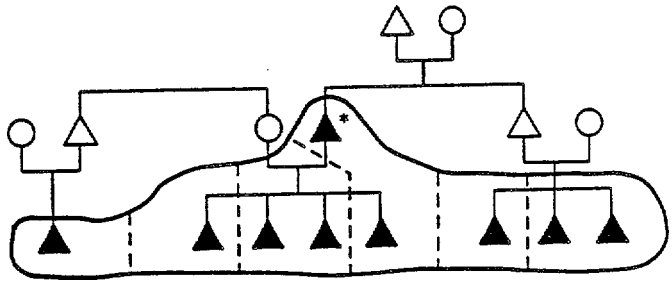

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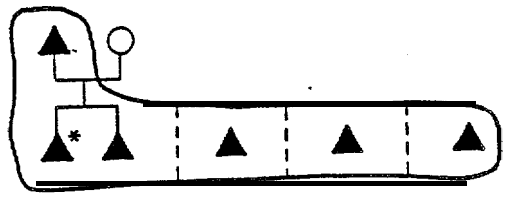


(22)

Figure 4 . Relationships Among Gambell Whaling Crew Members, 1982. (continued

[a]Asterisks designate crew captains. Shaded symbols inside solid lines indicate crew members. Broken "lines distinguish households. Circles represent women, and triangles represent men. Numbers are arbitrary crew numbers.

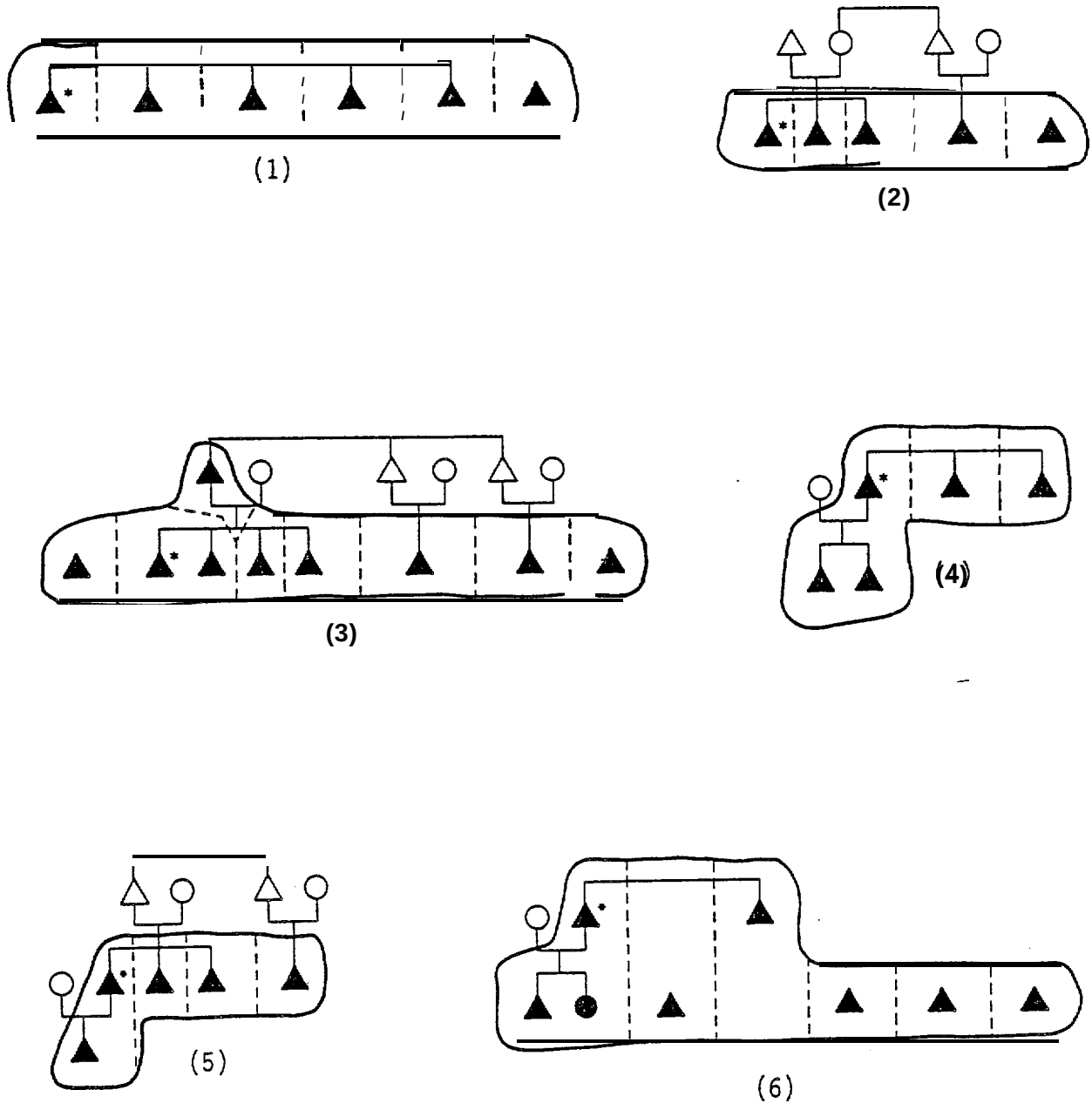
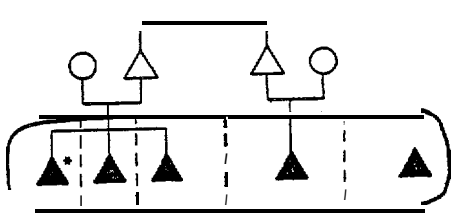


Figure 5. Relationship Among Savoonga Whaling **Crew Members,** 1982.[a]



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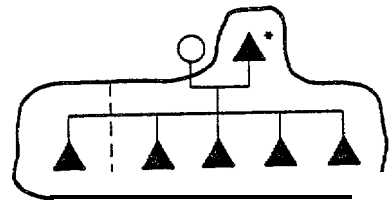

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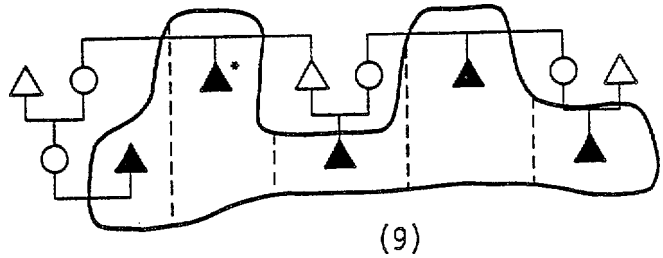

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(10)

Figure 5 . Relationship Among Savoonga Whaling Crew Members, 1982. (continued)

asterisks designate crew captains. Shaded symbols inside solid lines indicate crew members. Broken lines distinguish households. Circles represent females and triangles represent men. Numbers are arbitrary crew numbers.

incontestable that the high level of subsistence activity, and the profound and extensive involvement of the kinship system in subsistence activities, provide the functional basis for the social structure. The ways people organize to extract, distribute and consume these resources create social harmony, kindness, compassion, generosity and deep feelings of familial and community solidarity. Everyone is in the same boat, so to speak, and they know it.

No single activity better emphasizes this than whale hunting. Both villages are emotionally and symbolically tied to their hunters, listening intently to the CB radios for favorable word and with anxiety for bad news. Word travels fast through the communities when something of significance occurs. Within minutes of getting a whale the hunters have notified their villages, and there is jubilation. When the hunt goes badly, or when a crew runs into trouble, the people are notified immediately and are cast in gloom. For islanders, the body of the whale represents the whole community and the community's strongest and most respected values. If no whale is taken, the villages not only have less to eat, they have less to give. Gifting of whale products is important at events such as community feasts and family homecomings. Whale products are viewed as special gifts for elders and distant kinsmen. Whale parts, flesh, muktuk and baleen are the fondest, most treasured gifts one can give.

Whaling Crews

Whale crews are composed of captains, loosely defined co-captains, strikers and engineers. Other members of the crew assist with releasing floats, keeping equipment, such as ropes, in good condition, and watching for whales and for signals from other boats. Whale boats are the largest boats used by the people of St. Lawrence Island, and they are heavy.

They are about 25 feet long, constructed of a wooden frame which is lashed together with rawhide and covered by split, female walrus hides. They require constant care.

Fresh walrus hides must be provided every second or third year, and evenly splitting the skins requires great skill. Splitting the hides not only requires talent, but determination and a "strong stomach." The stench of "cured" hides can be overwhelming. For these reasons, the women who split the hides are paid, one of the only instances where islanders enter into a wage-labor exchange with other islanders. Oil-based white paint must be applied to the walrus skins in order to retard the wear caused by thin "young ice." The paint also helps reduce friction and muffle sounds. Skin boats are equipped with sails that are frequently made from nylon. Engines, and the paddles used in earlier times, are believed to make too much noise and frighten the whales. Engines of about 50 horsepower are mounted in interior engine welts. They "are used when returning home, with or without a whale. In the latter instance, the boats are tied together in a row. pulling together for the long, slow journey home.

Captains of whaling crews are the bosses, the most respected of men. They make all major decisions about when to embark on the hunt, where to go in search of whales, when the crew should turn back and when they should press on. Captains given instructions to the engineers who operate the outboard engines, keeping them fueled and in good condition. The captain of a whaling crew also orders the striking of a whale and orders other crew members as to their duties. Often children as young as six years of age accompany their fathers, uncles, elder paternal cousins or elder brothers on the hunt. Most crew members recalled making their first

whaling voyages when they were between the age of 6 and 10 years. Children are expected to remain absolutely silent on the hunt, to endure the extreme cold, to obey all instructions immediately, and to absolve occasional taunts and kidding with dignity. The youngsters, while occasionally frightened, recall iater in life the immense thrill and sense of achievement and belonging these hunts gave them. The importance of the early adventures is demonstrated by the recall they have of the first and successive hunts in astonishing detail.

Captains are generally leaders of patricians. [f not the head of a patrician, they rank second or third in the authority hierarchy of these groups. For this reason, they assume the responsibility for the boat and the majority of expenses required to run it. Most of the captains said that an average season in recent years cost them between $4,000 and $5,000. Large amounts of cash are necessary to pay for fuel (a huge expense in itself) , outboard engines, gifts, walrus hide splitters, bombs, harpoons, floats, sails, CB radios and other necessary items. Being a captain requires not oniy cash, but extensive planning, organization and respect from others, The elderly captains who were regarded as the best hunters of the past are the most respected people in the village, apart from the patrician heads. The latter, in some instances, also happen to be former great hunters.

Individuals who become captains usually inherit this position in their patricians; age, experience and sex are the primary, but not oniy, determinants. Co-captains frequently stand-in for captains, if necessary. Frequently, co-captains are the next eldest crew members. Strikers, who are responsible for the obvious and difficult task of striking the bowheads with the armed harpoons, are generally third eldest among crew members.

The crews in Gambell and Savoonga are composed most often of male members of the same patrician. Generally, brothers or a combination of brothers, their sons and perhaps a paternal parallel cousin (fatherrs brother's sons) make up the crews. An examination of Tables 11 and 12, which provide descriptions of crew compositions, demonstrates the predominance of the patrikin links on whaling crews. If none of these kin is available, the next choice of crew members comes from the wider patrician. Parallel patrilineal kin such as father's brothers, or father's brothers' sons, are selected.

There is a semi-frequent. occurrence of men joining with their father's sisters' sons and sons' sons, and occasionally unrelated men join together to form crews. Also, unrelated or distantly related men sometimes join closely related men to form crews.

As has been demonstrated, careful attention is given to the enhancement of kin-based crews. Such a crew organization ensures a steady supply of subsistence products for the family and patrician. There is great pride taken in the ability of a patrician and its lesser units, such as extended families, to provide for the welfare of their own members and for the general welfare of the villages.

Hunting Prowess

An adjunct value to kin-based crews is the desire of couples to have sons who can then become potential hunters. Men take very special pride in having sons. Early in a male child's life, fathers, uncles, grandfathers and parallel patrilineal cousins inculcate him with a pride in hunting prowess and an ethic of generosity. The good hunter is at the service of the village, and fathers boast of their sons' first hunting successes. These successes usually come from bird-hunting, for it is less demanding

Table 11. Gambell Whaling Crew Composition, 1982.

Crew Number	Crew Composition
1	9 members (8 males and 1 female); members represent 4 households. Captain, his 3 sons, one daughter, 3 nephews (widow-sister's sons), and one man (captain's father's brother's son's son).
2	8 members (all males); members represent 5 households. Captain, his two elder brothers, paternal uncle, his father's sister's son, and his father's brother's 3 sons. (One of the few instances of a younger sibling being captain of a crew.)
3	9 members (all males); members represent 5 households. Captain, one younger brother, brother's 5 sons, and an unrelated man and his son.
4	10 members (all males); members represent 6 households. Captain, his 3 sons, captain's brother and his 3 sons, and captain's 2 other younger brothers.
5	6 members (all males); members represent 5 households. Captain, his son, deceased brother's son, younger brother's son, and 2 sons of another deceased brother.
6	9 members (all males); members represent 8 households. Captain, his two sons, brother's son, deceased brother's two sons, sister's son and her son's son and an unrelated man.
7	6 members (all males); members represent 5 households. Captain, his divorced sister's son, brother's 3 sons, and distant paternal cousin's son.
8	8 members (all males); members represent 8 households. Captain, his 3 sons, his sister's son, his father's son, his adopted brother, and his second paternal cousin.
9	6 members (all males); members represent 5 households. Captain, his two sons, and his 3 brothers.
10	10 members (all males); members represent 6 households. Captain, his 3 sons, deceased brother's 3 sons, and his father's brother's son and that son's son.
11	7 members (all males); members represent 4 households. Captain, his 4 younger brothers, his father's brother's son, and one unrelated man.

Table 11 (cont.]. Gambell Whaling Crew Composition, 1982.

Crew Number	Crew Composition
12	5 members (all males); members represent 4 households. Captain, his son, his brother, and his father's brother's two sons.
13	6 members (all males); members represent 4 households. Captain, his son, 3 brothers and a brother's son.
14	5 members (all males); members represent 4 households. Captain, his brother and brother's two sons, and a deceased brother's son.
15	7 members (all males); members represent 3 households. Captain, his two sons, and his brother's 4 sons.
16	11 members (largest Gambell crew) (all males); members represent 7 households. Captain, his father (soon to retire from whaling), his son, his brother, paternal uncle and his son, second paternal uncle's 2 sons, and a third paternal uncle and his 2 sons.
17	6 members (all males); members represent 3 households. Captain, his son, his brother and brother's two sons and an unrelated man.
18	4 members (all males); members represent 4 households. 4 unrelated men.
19	4 members (all males); members represent 3 households. Captain, his son and his two brothers.
2 0	5 members (all males); members represent 4 households. Captain, his son, his brother, and 2 sons of a second brother.
21	9 members (all males); members represent 6 households. Captain, his 4 sons, his brother's son, and a second brother's 3 sons.
22	6 members (all males); members represent 5 households. Captain, his 2 sons, and 3 of the captain's father's father's brother's sons's sons.

Table 12. Savoonga Whaling Crew Composition, 1982.

Crew Number	Crew Composition
1	6 members (all males); members represent 6 households. Captain, his 4 brothers and 1 unrelated man.
2	5 members (all males); members represent 5 households. Captain, his 2 brothers, his mother's brother's son and an unrelated "man.
3	9 members (all males); members represent 8 households. Captain, his 3 brothers, 2 of his father's brother's son, 2 unrelated men, and his father (who serves primarily as an adviser rather than a member of the crew).
4	5 members (all males); members represent 3 households. Captain, 2 sons, 2 brothers.
5	5 members (all males); members represent 4 households. Captain, his son, 2 brothers, and father's brother's son.
6	8 members (7 males, 1 female); members represent 6 households. Captain, his son and daughter, brother, and 4 men related through his male line (distant relationship).
7	5 members (all males); members represent 5 households. Captain, his two brothers, father's brother's son and man adopted into his patrilineage.
8	6 members (all males); members represent 2 households. Captain and his 5 sons.
9	5 members (all males); members represent 5 households. Captain, his sister's son in-law, brother's son, brother's brother-in-law, and brother's sister-in-law's son.
10	7 members (ail males); members represent 5 households. Captain, 2 brothers, and 4 unrelated men (2 of whom are Gambell residents).

and far safer for a young boy. When a boy gets a bird he normally gives it to his paternal grandparents, or if they are deceased, to an elder paternal untie and his spouse. If these kin are not available, the bird is presented to any elder of his choice. The same is done with a young man's first seal. Young girls give their first marine or land plants to elders in the same fashion.

Whale hunting requires great skill and group coordination. The bowhead whales pass by St. Lawrence Island on their annual migration to the Arctic Circle. The hunters frequently have no more than 10 to 12 trips to search for the animals. Usually, calves migrate first, followed by cows and bulls. Since each village is allowed only two bowhead strikes (see Chapter II), the hunters must take care in the selection of their quarry if they want large whales. Realizing that the animals will soon be beyond their reach, patience is stretched and judgment is paramount. In 1982, there was an unusually large number of calves and other young bowheads passing the island. The Gambell hunters struck two young animals and got both of them; the Savoonga hunters struck two but retrieved only one. The combined successes of these two vi llages proved greater than the success of arty of the other Eskimo communities. For example, the Barrow Eskimo community struck their quota of five whales, but retrieved none. Point Lay struck their quota of three but retrieved only one. Gambell, on the other hand, has a reputation of retrieving a high proportion of struck whales.

The whale hunt has been eloquently described by Hughes (1 960), and there have been few changes in the techniques and organization since Hughes lived in Gambell. One major change since Hughes' time is the use of citizen band (CB) radios. Now hunters can contact each other with

ease, no longer depending upon the inefficient arid ponderous system of signaling with a flag other boats and shore parties of success in the hunt. Floats have also taken on a modern character. Hunters and their families frequently find large, brightly colored floats on the beaches. Some have escaped from mi litary exercises. Others have apparently come on the prevailing currents from Japanese vessels to the south. They are extremely practical, cheap, virtually indestructible and simple to use. Hunters have generally abandoned the use of seal poke floats which must be laboriously constructed. The new ones are more buoyant, sturdier and larger. Also, rectangular floats and boat bumpers can be used as rollers to move heavy boats on the shore, replacing the use of logs.

Distribution of Whale Products

When a boat strikes and kills a bowhead it surrenders a flipper to the first boat which comes to help retrieve the whale. This is but the first step in the distribution of the products of the whale. The next step occurs when the captain of the successful boat distributes pieces of muktuk (black skin and subcutaneous fat) to the captains of all other boats, who in turn distribute it to their crews. The distribution of the muktuk to boat captains is done while the boats are still on the water, with the harpoons and floats still attached to the whale. Thus begins a period of jubilation and much excitement, although in 1982 spirits were somewhat dampened because of the relatively small size of the two captured bowheads.

After attaching lines to the flukes, hunters tie their boats in tandem and tow the whale to the shore ice. They use their engines for this purpose, but even then their progress is slow regardless of the size of the whale. Gambell hunters take their whales to the north shore near

Gambell; the Savoonga hunters take their animals to the shore at Southwest Cape near Powooilik Bay. Depending upon the size of the whale, butchering is begun while still afloat, or the whale is hauled upon the shore ice. At times, block-and-tackles are used to bring the carcass ashore. At other times, tractors or trucks are used.

At Gambell and at Southwest Cape many people from both villages arrive to greet the hunters. Large squares of muktuk are sliced from the animals by the deft hands of the hunters who use the Kanigak, a slender, curved blade mounted on a wooden shaft six or more feet in length. The hunters work steadily and earnestly, laughing, joking and insuring that all of those who come to meet the hunters are not disappointed in their desire for muktuk. A small whale can be butchered and distributed in four or five hours. The pieces are placed on the beach ice, and people collect their shares with little discussion and no bickering or haggling. Part of the beach is quickly covered with orderly rows of muktuk. Roughly one-half of the bowhead is given to representatives from the other village, and a women's portion is designated for the women of the village which captured the whale. Meanwhile, the captain of the successful boat might set aside some choice pieces of meat or muktuk for the respected elders in his patrician. For example, one whaling captain set aside the back sinew of a bowhead his crew had gotten for his elder aunt who had requested the item for her garment-making.

The last stage of distribution occurs in the homes of those who received some of the whale as members of the crews or who met the boats on the beach. 'This latter group includes nearly everyone in the villages. Home-sharing is directed by the women of the households and they are expected to give freeiy and without complaint. They do.

The most prized part of the bowhead is the muktuk. This is frozen, then sliced and thawed as needed. Some of it is eaten immediately when fresh. The gums of the whale are considered a delicacy and parts of them are given to special friends, relatives and visitors. Other parts, nonetheless, are very important. The flesh which is taken from along the backside and shoulder is highly desirable. The flippers are a treat, eaten raw, frozen or boiled. The tongue is also eaten and, occasionally, the kidneys as well. The heart is not eaten; and the intestines and any other residual parts that are not spoiled are collected and stored for future use as fox bait.

Everyone makes a special effort to keep a supply of muktuk and other whale products on hand for the summer Whale Carnival (held on the 5th of July), birthdays, homecomings and other special events. Many other traditional foods serve a similar purpose in the lives of the people but none is quite as important as bowhead whale parts.

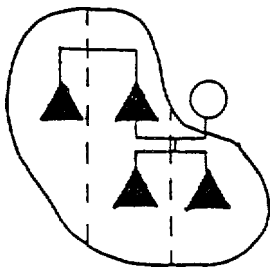
Muktuk is often shipped to kin residing in the continental U.S. Each household receives parts of the bowhead from a successful hunt, and if one village is shorted by poor luck the other ensures that the whale products are available. Every woman has the responsibility of distributing her household's share of the animal. In some instances, the decision about giving can be difficult if muktuk is in short supply and a woman wishes to reserve some of her family's share for special occasions or to give to the eiders for whom muktuk is particularly important.

Other Whales

The fact that St. Lawrence Islanders prefer to hunt bowheads to the other available whale species has been discussed in Chapter I I and only a brief discussion is required. Occasionally, hunters take gray and minke

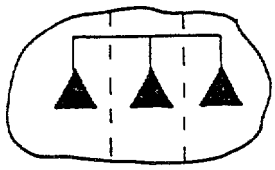
whales. However, when other whales are hunted, the social organization of the crew is different. The crews, while still patrikin based for the most part, are smaller, corresponding to walrus or bearded seal crews (see Figure 6). Like seal and walrus crews, gray and minke whale crews hunt from aluminum boats, using rifles rather than an armed harpoon. Outboard engines are used to chase these other whales, and shooting of the grays is done while maintaining a reasonable distance from the whale. The discussions of crew organization and behavior on walrus and seal hunts (Chapter VII and VIII) are applicable to the hunts for minke and gray whales.

(A)



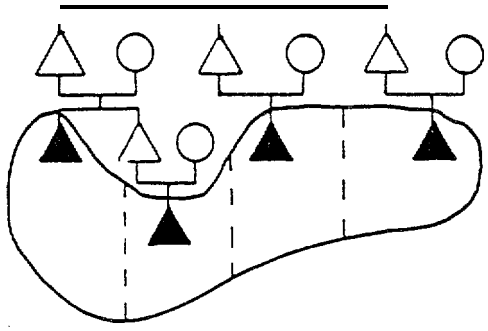
(Minke Whale, August, 1981)

(B)



(Gray Whale, July, 1981)

(c')



(Minke Whale, August 1981)

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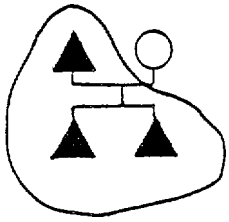
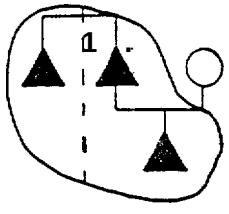


(Minke Whale, June, 1982)

(E)



(Minke Whale, June, 1982)

Figure 6. Composition of Successful Savoonga Minke and Gray Whale Crews[a]

[a] Shaded symbols inside solid lines indicate crew members. Broken lines distinguish households. Circles represent females and triangles represent men. Letters are arbitrary designations. Crews have same composition as bearded seal crews.

CHAPTER VII

WALRUS HUNTING

There were 157 men and boys and 2 women from Gambell who hunted the Pacific walrus during the 1981 season and about the same number of people in 1982. The hunters were organized into 41 crews. About 20 of the crew members are of school age, but they are excused from school to make frequent hunts just as excused absences are arranged when the bowhead whale hunting occurs in the latter part of April.

Most of the crews make at least 20 trips in search of walrus. These journeys take them around the island or, at times, in excess of 60 miles from the island (see Figure 7). Walrus hunts are frequently dangerous undertakings that demand courage, caution, intelligent planning, and knowledge and constant observations of weather: ice can form into a thin, sharp layer, swells can appear quickly and imperil the return trip to the icy beaches, and fog can unexpectedly enshroud the island and its surrounding waters. With impaired visibility, CB radios become life savers, linking boats with each other and the mainland. Even with CBs, crews are sometimes lost in the fog for periods of several days or less. Two Gambell crews were lost. during the 1982 walrus hunt, requiring air charters to locate and drop supplies to them after the fog lifted. One Gambell crew has a radio direction finder which locks-in on the radio beacon at the airstrip. If others can afford to adopt this technology, the dangers posed by fog will be drastically reduced.

A final danger is posed by the walruses. Their great bulk, strength and defensive tactics make them a formidable foe. Occasionally they attack the boats, and one example will serve to illustrate this danger. A crew

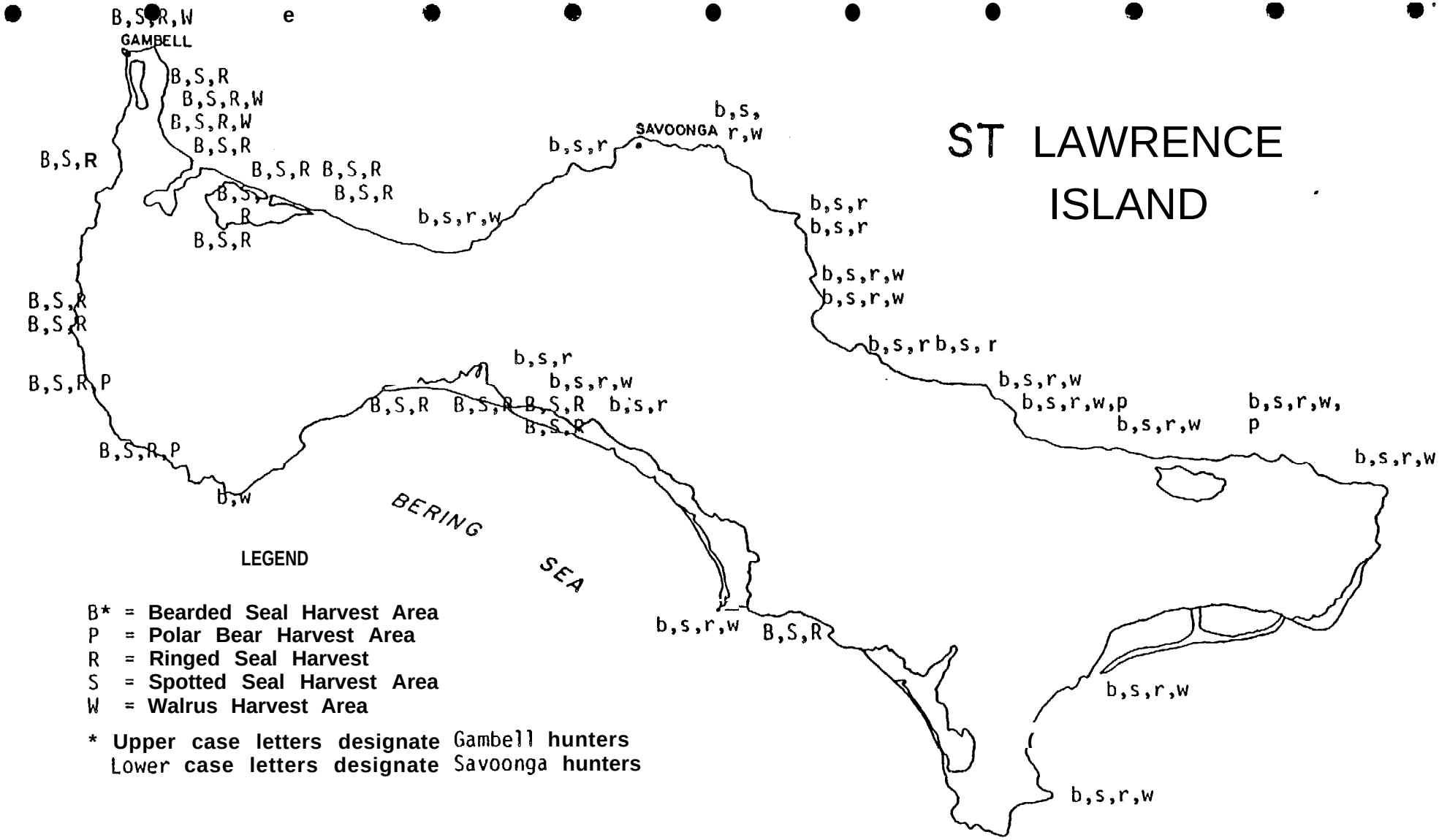


Figure 7. Walrus, Seal and Polar Bear Harvest Areas for Gambell and Savoonga Hunters, 1981.

came upon a herd of walruses. As they approached the animals with the engine running and firing shots, a large, young bull dived into the water, turned over with his underside exposed and tusks poised erect. He suddenly struck the bottom of the boat with great force, puncturing the aluminum hull of the boat with his tusks, leaving two holes, one on each side of the keel. The walrus withdrew and the hunters quickly stuffed the whiskers from a young walrus they had killed earlier in the day into the holes. They then hammered the ragged aluminum flush with the skin of the boat. This action gave the crew enough time to land their boat on an ice flow, where they made further emergency repairs which allowed them to get home safely.

Unlike the whale hunt, walrus hunters generally use aluminum boats, although a few crews use plywood boats. Only two crews, one each in Gambell and Savoonga, use skin boats for the walrus hunt. Aluminum boats were adopted in 1976 in Gambell, and at about the same time in Savoonga. They have become the standard vehicle for walrus, bearded seal, minke and grey whale hunting, and for travel to and from summer camps. The Lund aluminum boat is favored by most hunters. The boats range from 16 to 18 feet in length, and the cost of a new boat delivered to St. Lawrence Island exceeds $3,000. This represents a significant investment for hunters who have only limited access to cash.

Aluminum boats offer the advantages of speed and resistance to the dangers of ice. Skin boats are larger, heavier, less maneuverable and less responsive to larger horsepower engines. Aluminum boats are, however, subject to the ill effects of the vibrations created by the 50 to 55 horsepower engines that are used to propel them. The vibrations are so great that the average useful life of a boat is about 3 years. After three years, the rivets become too loose for safe travel. This short life-span of aluminum boats

places a great hardship on most household budgets, and even strains the ability of patricians to pool financial resources for necessary equipment.

..Social Organization

Almost all able-bodied men and young males are walrus hunters. Some crews and some individual crew members hunt only occasionally and on weekends because they have full-time jobs. Some men do not have enough money to capitalize the equipment (rifles, ammunition, boats, engines, fuel, CB radios, harpoons and floats) and fuel, but such men are relatively few in number.

Crews average about 4 people each (see Table 13). There are usually 2 to 3 fewer people on walrus crews than bowhead whale hunting crews. There are 41 walrus crews in Gambell and 36 walrus crews in Savoonga. A total of 311 St. Lawrence Islanders hunted walruses in 1982, about one-third of the total population. There is a very high degree of participation in the hunt by younger and middle-aged men, considering the fact that the island population is very young and a large proportion is under 14 years of age (approximately 33%). With 41 crews and 157 participating crew members, Gambell's walrus crews had an average size of 3.8 persons. Savoonga's 36 crews and 154 crew members had an average size of 4.3 persons (see Tables 14 and 15). The average Gambell walrus crew is about one-half person smaller than the average Savoonga crew. Gambell has slightly more households involved in walrus hunting than does Savoonga (91 vs. 82). Tables 14 and 15 show there is only a superficial difference between the Gambell and the Savoonga walrus hunting crews in size. In addition to the comparisons already given, the range of the sizes of crews is similar and the average number of households involved in each crew is almost identical for both communities. The proportion of the Gambell population that hunts walrus is 34 percent and

Table 13. Gambell and Savoonga Walrus" Crews Sizes and Numbers of Households (HH) Represented, 1982 .'[a]

Community	No. of Crews	Total Members	Range	Ave. Size	HH Represented	Ave. HH Crew
Gambell	47	157	2-6	3.8	110[a]	2.7
Savoonga	36	154	3-7	4.3	101[a]	2.8

[a]These household figures are slightly misleading because they represent several crew members from Nome, Gambell (in Savoonga Crews) , and Savoonga (in Gambell crews). More than 80 percent of the households in the villages participate in walrus hunting. in Gambell, there are 91 households represented among all crews, or 82 percent of all households; 18 households have 2 people each who belong to more than one crew. In Savoonga, 82 of the 94 households (87 percent) are represented on walrus hunting crews; 14 of these have 2 people each who belong to different crews, and 2 households have 3 people each who belong to different crews.

Table 14. Relationship of Walrus Captains to Other Crew Members, Gambell, 1982.[a]

Crew Number	Crew Composition
1	Captain, 3 sons, 1 daughter, widowed sister's 3 sons (8 members) (Largest crew in Gambell or Savoonga)
2	Captain, father's brother's son (parallel patrilineal cousin) and father's sister's son (patrilineal cross cousin) (3 members)
3	Captain, brother's 2 sons (patrilineal parallel cousins) and unrelated man (4 members)
4	Captain, son and 2 brothers (4 members)
5	Captain, brother, a second brother and his 2 sons and a third brother's son (6 members)
6	Captain, son and brother's son (3 members)
7	Captain and 2 sons (3 members)
8	Captain and 3 sons (4 members)
9	Captain, brother, father and his father's brother's son (parallel patrilineal cousin) (4 members)
10	Captain, son, brother, brother's son and a second brother's son (5 members)
11	Captain, divorced sister's son, and a brother's 3 sons (5 members)
12	Captain, brother, brother's son, and sister's 3 sons (6 members)
13	Captain, and his father's brothers son (parallel patrilineal cousin) (2 members)
14	Captain, father, father's brother's son and sister's son (4 members)
15	Captain and 2 sons (3 members)
16	Captain, brother and father's father's sister's son's son (3 members)
17	Captain, son and brother-in-law (3 members) (Captain has no close patrilineal kin with whom he can hunt.)
18	Captain, his brother and an unrelated man (3 members)
19	Captain and 2 brothers (3 members)
20	Captain, 2 brothers and a sister's son (4 members)
21	Captain, son and brother (3 members)

Table 14. (cont.) Relationship of Walrus Captains to Other Crew Members, Gambell, 1982.[a]

Crew Number	Crew Composition
22	Captain, brother, his sister's son and mother's sister's son (One of the few matrilineal cross cousin relatives to the captain of a Gambell or Savoonga crew.) (4 members)
23	Captain, son and brother (3 members)
24	Captain, son and brother (3 members)
25	Captain and brother's 2 sons (3 members)
26	Captain, 2 sons, and a brother's son (4 members)
27	Captain, son, father's brother and father's brother's son (parallel patrilineal cousin) (4 members)
28	Captain, son, brother, brother's 2 sons, and a second brother's son (6 members)
29	Captain, son, brother's son and an unrelated man (4 members)
30	Captain and 3 sons (4 members)
31	Captain, 2 unrelated men (3 members) (Captain and other crew members have no close patrilineal kin to form a crew.)
32	Captain, son and 2 brothers (3 members)
33	Captain, son and a brother (3 members)
34	Captain, brother and an unrelated man (3 members)
35	Captain and 3 sons (4 members)
36	Captain and 3 brothers (4 members)
37	Captain, brother and an unrelated man (3 members)
3$	Captain, 2 sons and 2 unrelated men (Captain has no other close patrilineal kin to form a crew.) (5 members)
39	Captain and 2 sons (3 members)
40	Captain, brother, father's brother's son (parallel patrilineal cousin) and an unrelated man (4 members)
41	Captain, son and 2 brothers (4 members)

[a] 41 crews
157 members
mean crew size = 3.8
91 households represented
18 households have two members each who do not belong to the same crew

Table 15. Relationship of Walrus Captains to Other Crew Members, Savoonga, 1982. [a]

Crew Number	Crew Composition
1	Captain and 3 brothers (4 members)
2	Captain, 2 brothers and an unrelated man (4 members)
3	Captain, brother and a second brother's 3 sons (5 members)
4	Captain, 2 sons, brother's son, and sister's son (5 members)
5	Captain, son and 2 brothers (4 members)
6	Captain, son and 2 brothers (4 members)
7	Captain, son and 2 brothers captain's father's brother's son (5 members)
8	Captain, 2 sons and sister's son (4 members)
9	Captain, 2 sons and 2 brothers unrelated to captain (5 members)
10	Captain, 2 brothers and an unrelated man (4 members)
11	Captain, 2 sons and a brother (4 members)
12	Captain, son and 2 brothers (4 members)
13	Captain and 3 sons (4 members)
14	Captain, 2 sons, and brother (4 members)
15	Captain, 2 sons, brother, brother's 2 sons, and a second brother (7 members)
16	Captain, brother, brother's son and sister's son (4 members)
17	Captain, brother and brother's 2 sons (4 members)
18	Captain and 2 sons (3 members)
19	Captain, wife, son and an unrelated man (4 members)
20	Captain, 2 sons and sister's son (4 members)
21	Captain and 2 sons (3 members)
22	Captain, son, brother, brother's son-in-law, father's brother's son's son (5 members)
23	Captain, son, daughter, brother and a deceased brother's son (5 members)
24	Captain and 4 sons (5 members)
25	Captain, son and 4 brothers (6 members)
26	Captain, 2 sons and brother (4 members)
27	Captain, son, 2 brothers, and brother's son (5 members)

Table 15. (cont.) Relationship of Walrus Captains to Other Crew Members, Savoonga, 1982.[a]

Crew Number	Crew Composition
28	Captain, 2 sons and brother's son (4 members)
29	Captain, and 4 sons (5 members)
30	Captain, 3 brothers and father's brother's 2 sons (6 members)
31	Captain, 3 sons and brother's son (5 members)
32	Captain, 2 brothers, father's brother's son (4 members)
33	Captain, son, a step-brother, and an unrelated man (4 members)
34	Captain, brother and brother's 3 sons (5 members)
35	Captain and 2 sons (3 members)
36	Captain, 2 sons and 2 brothers (5 members)

a
36 crews
154 crew members
mean crew size = 4.3
82 households represented
14 households have two people each who do not belong to the same crews
2 households have three people each who do not belong to the same crews

Savoonga has just over 30 percent of their population participating in the walrus hunt.

The composition of crews is also remarkably alike in the two communities; 22 of the 36 Savoonga crews are made up mainly of men and their sons, with the captains' brothers included in some instances. Twenty-two of the 41 Gambell crews are similarly composed. The remainder of the crews consist most often of captains and their brothers. There are few crew members who are not related to their crew captains. Generally these are people who have no patrician kin with whom they could unite to form a crew. A few women from each village are crew members, but women crew members are clearly exceptions rather than the rule.

As with whaling, crew membership in Gambell and Savoonga is based on patrilineal descent, usually focused in the nuclear family. In other cases, kinship ties of crew members are based on patrician membership. Only occasionally do crews include members who are not members of the patrician. The structuring of walrus crew membership gives further support and power to the patricians of St. Lawrence Island (see Figures 8 and 9]. The patricians, in turn, provide the organizational structure for everyday activities.

Most of the households in both villages contain walrus hunters. On the average, nearly 3 households are represented in each crew, and some households contribute crew members to several crews. Thus, walrus hunting is an integral part of the yearly subsistence round, binding community members and households together. It represents the single most important subsistence activity on the island.

Walrus are not only the chief source of food for the people of St. Lawrence Island, but indirectly they are one of the major sources of cash. The ivory tusks are the medium for carving, along with ancient ivory that is

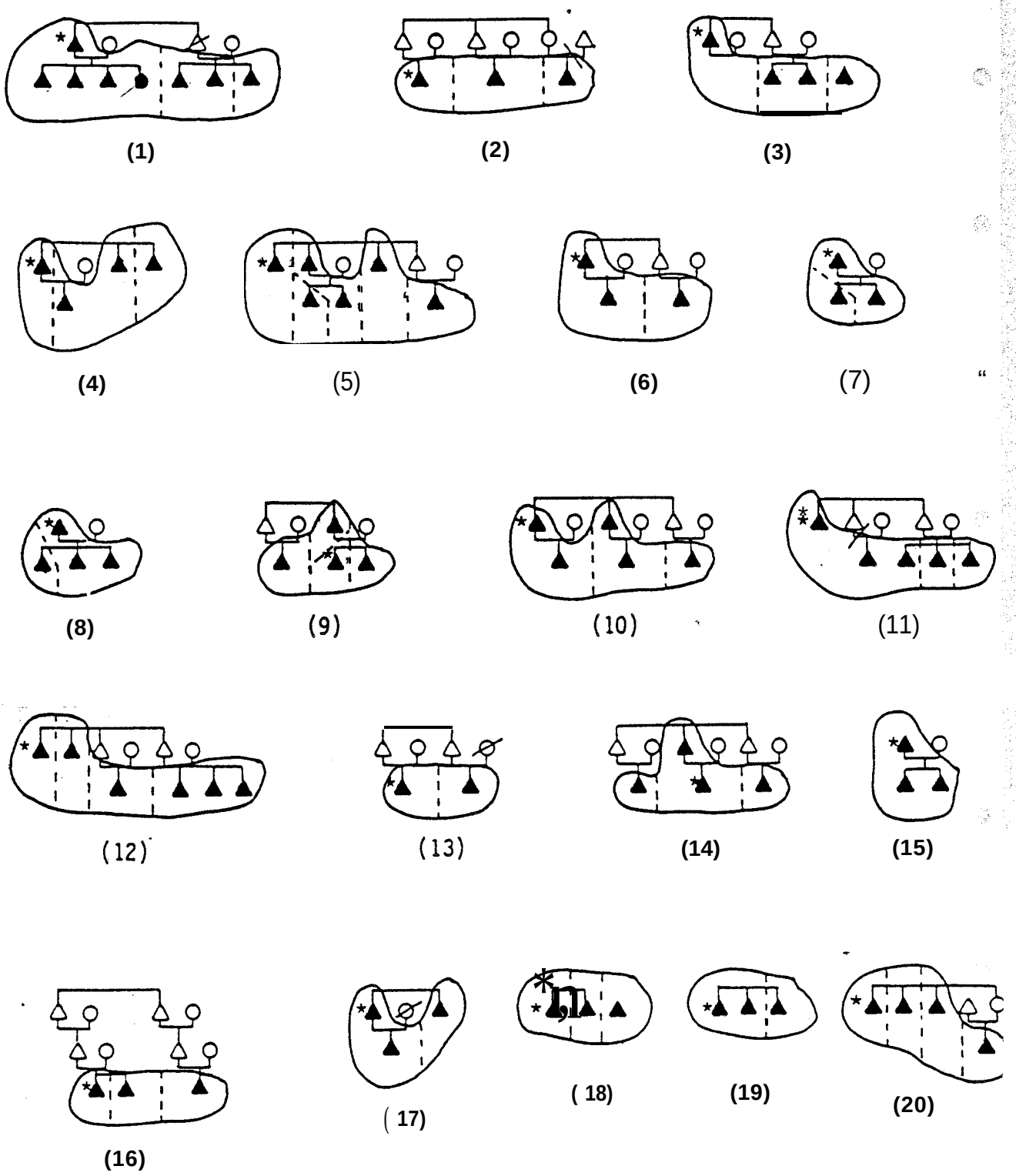


Figure 8. Relationships Among Gambell Walrus Crew Members, 1982. [a]

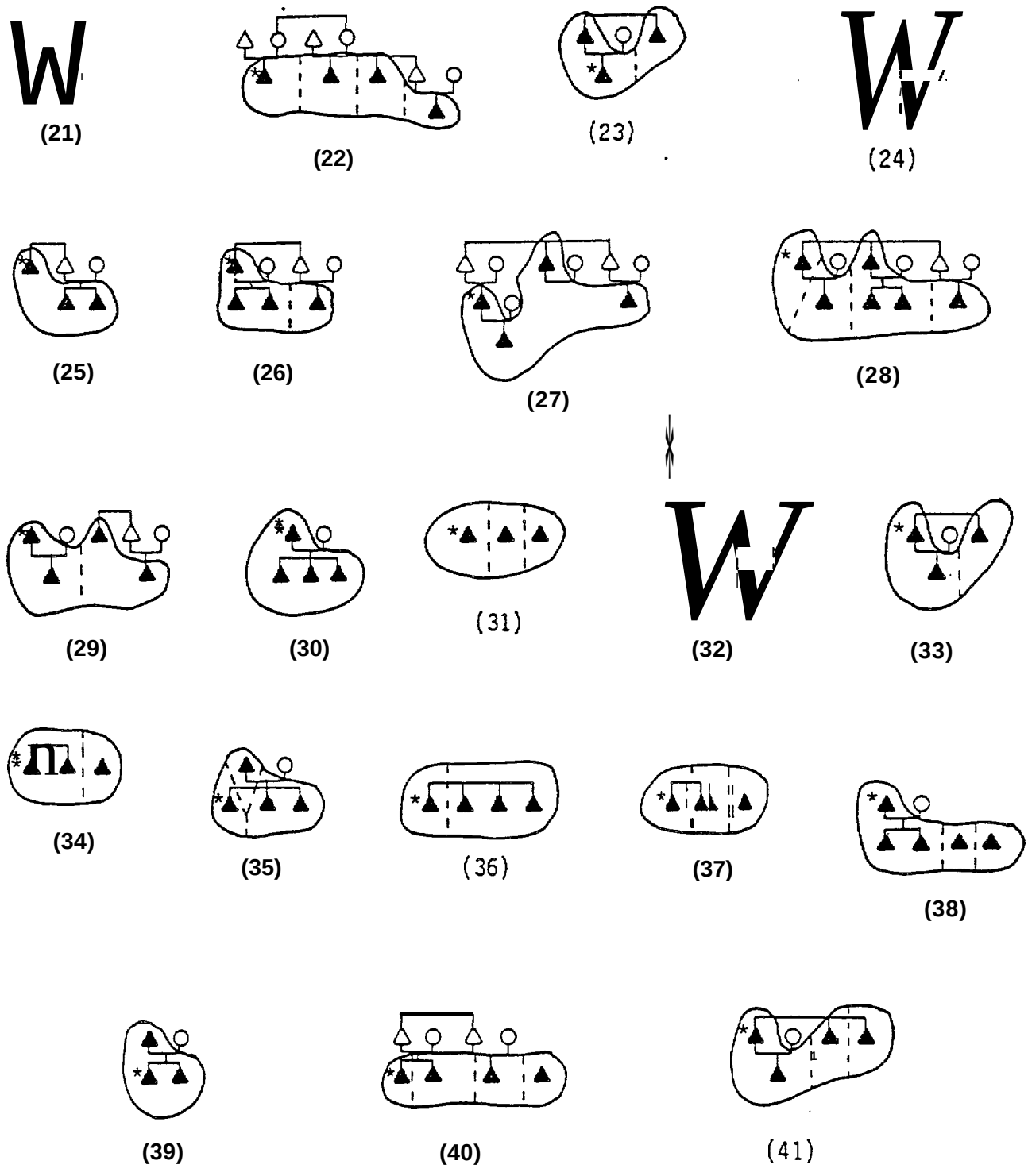


Figure 8 . **Relationships Among** GambellWalrus **Crew Members,** 1982.[a] **continued**

[a]Astericks **designate crew captains. Shaded symbols inside solid lines indicate crew members. Broken lines distinguish households. Circles represent females and triangles** represent **men. Numbers are arbitrary crew numbers.**

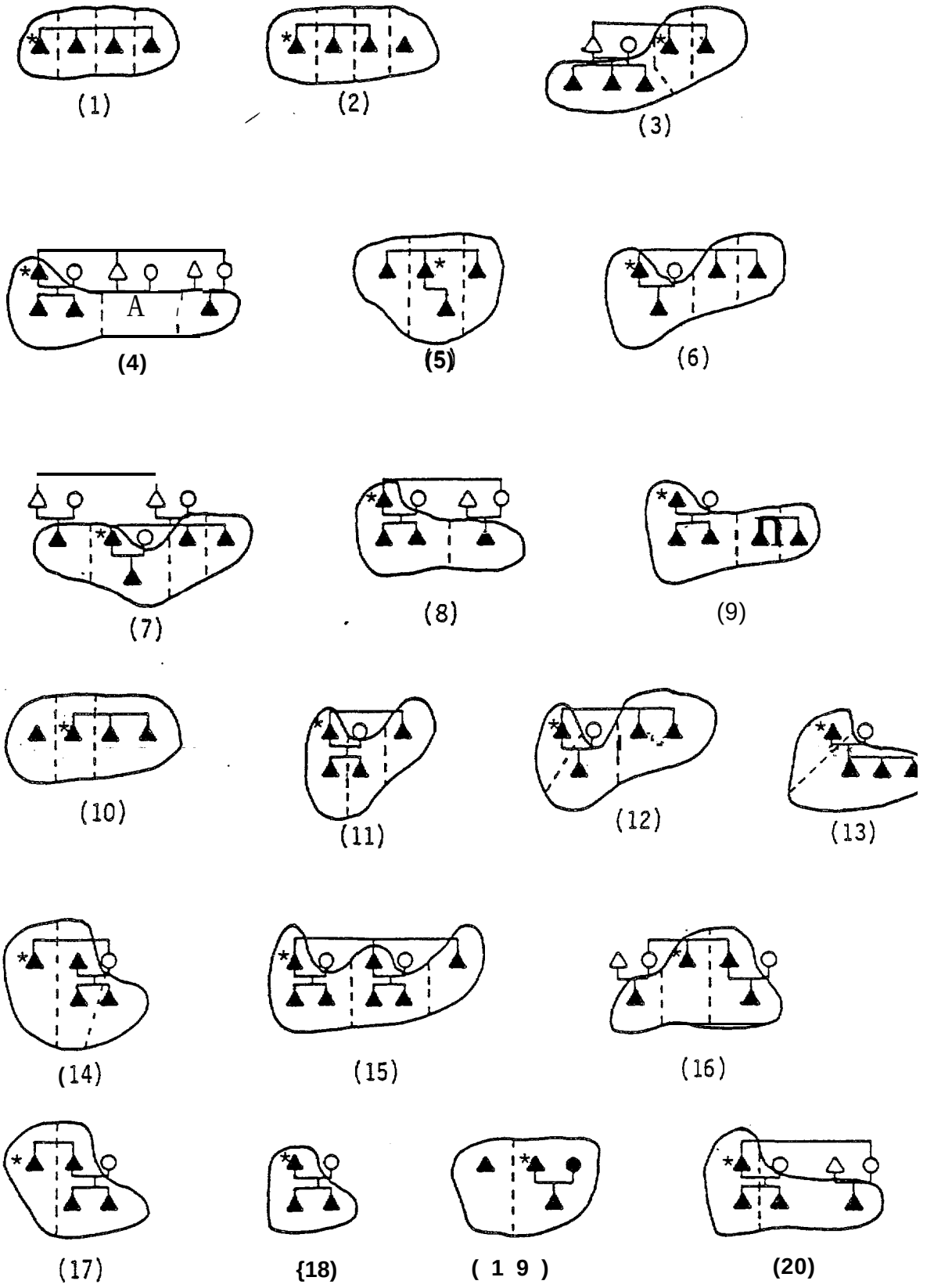


Figure 9. Relationships Among Savoonga Walrus Crew Members, 1982.[a]

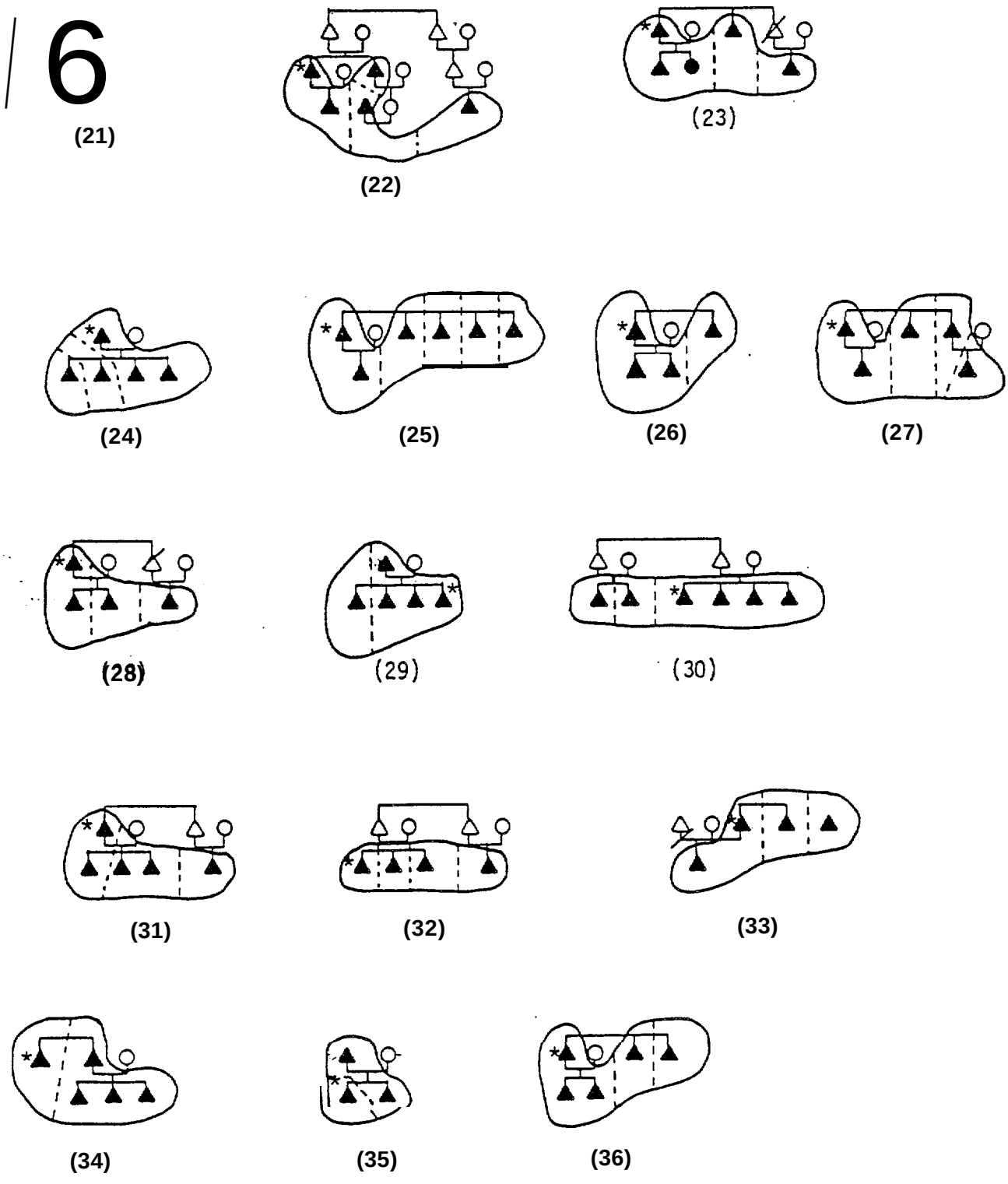


Figure 9. Relationships Among Savoonga Walrus Crew Members, 1982.[a]

[a]Astericks designate crew captains. Shaded symbols inside solid lines indicate crew members. Broken lines distinguish households. Circles represent women, triangles represent men.. Numbers are arbitrary crew numbers.

excavated from prehistoric villages. These are fashioned into animal, bird and other likenesses, and sold to individuals, the ANICA stores, and to ivory buyers. More than 300 men and women carvers in the two villages collectively earned more than $250,000 in 1981. For many households, income from carvings spells the difference between getting-by and experiencing extreme financial hardship. Carving gives people an opportunity to earn while remaining at home with one's family, an aspect of village economics which contributes to the strength of the family and the patrician. Carving also gives the island people a sense of partial economic self-sufficiency, Further, it provides opportunities for artistic expression. They interject their personal interpretations of the beauty, form, majesty, elegance and mystery of the animals and birds that contribute so much to the island's well-being.

Ivory from newly killed walruses ("fresh ivory"), particularly from the cows, is also the basis of credit for the acquisition of fuel and ammunition at the native stores and, on occasion, with native buyers. The yearly round of hunting, carving -and fishing is extremely well-organized, and the use of fresh ivory as collateral for acquiring fuels and ammunition for continued hunting is an integral part of that round. Without fresh ivory, the majority of hunters would not be able to pursue the walrus.

Annual Walrus Hunt

Eighteen Savoonga household heads discussed walrus hunting with the field researcher, and 11 of them volunteered details of their hunts for 1981. Four of the household heads did not hunt and three hunted very little. In Gambell, 43 household heads were contacted. Twenty-four provided information on their total walrus crew take. This is a 39 percent, non-random sample of all Gambell households.

Savoonga. The sample data show that 162 walruses were taken by the 11 Savoonga crews (crew average of 14.7). Sixteen were found by the crews (crew average of 1 .5), while 31 were lost (crew average of 2.8). The 11 crews comprise a 31 percent non-random sample of the crews in Savoonga. It is not known if these crews are representative of all crews in the village, but if they are, the total walrus take for 1981 was approximately 523, with 52 found and 100 lost. The total number of walrus would be 575 taken home (those taken added to those found). This amounts to an average of 16.0 walruses per crew and 3.8 walruses for each crew member. These figures are slightly less than those from comparable data compiled by the U.S. Fish and Wildlife Service. They calculated that Savoonga retrieved 652 walruses (Smith, 1981). While the numbers are not too disparate, it is likely that the U.S. Fish and Wildlife are closer to reality. Our sample was small, and it was undertaken when many of the most active hunters were at summer camps.

Based upon figures provided by the 11 household heads, there were 96 walruses taken and found by Savoonga hunters in 1982. Projecting from the non-random sample to the population, 310 walruses were taken or found in 1982. However, the sample problems just discussed forces the conclusion that the estimate is probably too low. Using an error factor derived from a comparison of 1981 sample data to the data collected by the U.S. Fish and Wildlife Service, a more reasonable estimate would be 386 walruses taken in 1982. This amounts to a meager 10.7 walruses per crew and 2.5 walruses for each crew member. 1982 was a very poor year for Savoonga hunters because of the unusually large quantity of shore ice which remained on the north beach, reducing hunting activity. Some hunters were forced to travel far to the east end or south side of the island.

Gambell. We did not record 1982 walrus harvests in Gambell because the hunt was still in progress during our stay in that village. For 1981, 24 Gambell crews reported a total of 563 walruses taken, 54 found and 130 lost. If sample values are extrapolated to all 41 crews, the total number of walrus taken home would be 1054 (962 taken, 92 found), and 222 lost. The estimate of 962 is virtually identical with the 1981 annual take of 961 recorded by the U.S. Fish and Wildlife Service (Malloy, 1982).

The Gambell crews about which we have detailed information take an average of just over 23 walruses, lose about 2 and find slightly over 5. The ranges of walrus taken was from 2 to 48 per crew. Five crews took more than 30 each. The range of lost walrus was from O to 8, with four crews reporting none lost. Each crew member in Gambell averaged 6.7 walruses. This is a rather large number even considering the extensive use of walrus products.

Sharing

The walrus is the St. Lawrence Island Eskimo's most versatile animal in the Bering Sea as measured by the variety of products that come from it, and the wide range of uses to which those products are put. It is essential to the livelihood of the people and the economy of the villages. The walrus parts that are commonly given as food to others after the crews return from the hunt are: meat (mainly from the shoulder biades), flippers, heart. skin, kidneys, brains, liver, blubber, tongue (infrequently), stomach and stomach contents (clams). Other shared items are used in native crafts. These include: tusks, heads, oosiks (penis), jaw bones, skin (boat covering), and teeth.

Meat is given more often than any other part of the animal, a though livers, skin, stomach and stomach contents are often given as well. Nine

of the 18 Savoonga household heads contacted reported using all of the products listed above, the other nine either did not hunt or the household heads did not report details about uses of the animal parts. The sample of 43 Gambell household heads provides much greater detail on the use of walrus products, and reported that they used nearly all of the parts mentioned above.

The Savoonga households we researched give walrus parts to an average of 20 people during the course of a year (home-sharing). They frequently receive walrus parts in return. We recorded 5 households (the only cases for which details were obtained) that received walrus parts from others households. These households received walrus parts from an average of seven other households. While home-sharing provides for 20 other persons, crew-sharing provides walrus for another four. In addition, about 20 persons meet the returning walrus boats for a share (come-to-meet shares), making a total of 44 persons who directly benefit from a single successful hunt.

Of. 35 Gambell household heads who reported sufficient details, the average walrus crew size is nearly 4. Each crew member's share is divided among an average of about 3 people in his or her household and this is then given to an average of about 4.2 households in home-sharing. The come-to-meet shares average about 5.4 households. Each crew share is therefore divided among roughly 42 people, or about 10 households. The Gambell figures are very close to the figures estimated for Savoonga.

Twenty-nine of the household heads in the Gambell sample averaged receiving walrus parts from 4.1 households, but they gave to 10 households. There are 15 households in Gambell which have no hunters, and there are hunters who thus give to many more than 10 other households. This distribution is vital to the economy of the village, and indeed, it is the major

part of the economy. The precise quantities of walrus products consumed are unknown, perhaps unknowable, but it is logical to assume that the extent of giving implies the use of the greater portion of each animal killed and retrieved.

The Gambell and Savoonga households use several parts of the walrus for birthday dinners, holiday dinners and home-comings for their children, other kinsmen, relatives and friends. The walrus liver, meat, stomach contents (clams mainly), and intestines are often served on these occasions which are often large gatherings. Some households host as many as 75 people at a single birthday dinner.

We have summarized the number of walruses taken by the Gambell and Savoonga hunters and the ways hunters and their female kin distribute the parts of the animals among their fellow villagers and between the two villages. The next section of this chapter is about how the parts of the walruses are used and how they are prepared for human consumption or as crafts for home use and for sale.

Preparation and Use

Meat. The meat used from the walrus is taken from the lower back and breast bones. Most peep le seem to prefer the meat from the breast bone. Meat is hung on racks to dry in late spring and early summer. It may be left hanging for several weeks in the clean air which is largely free of insects. Before the meat is hung to dry and age, it is frequently stored in covered pits which are dug in deep snow. When the snow begins to melt in the spring, the meat is then hung in the air to dry. Some of the dried meat is then frozen and stored for later use. Walrus meatballs, consisting of walrus meat blubber and skin, are occasionally aged in underground meat cellars (see Hughes, 1960: 101-102). The meatballs are not stored and

eaten as often now as in the past, although children like them if given a chance. Very few storage cellars remain in use. In the past, meatballs were most often given to dogs, but since dogs are now seldom needed, the use of balls of walrus meat has fallen by the wayside. Only a few families continue to make and store them as was done in the past (see Burgess, 1974:152).

Liver. The livers of walruses are eaten fresh, usually fried, or frozen and later fried. They are never boiled. Some portions are cut into strips, placed in a jar, covered with blubber from seal, walrus or whale, and aged and eaten raw. The juice from aged liver is used as a dip for walrus meat taken from the breast. Walrus liver is not only nutritious, but thoroughly enjoyed by islanders.

Intestines. The small intestines of walruses are turned inside out and the protective membrane and the contents removed. They are dried, frozen and stored, or eaten shortly after drying. Slices of small intestines are boiled in water or oil with walrus skin or meat, all in one stew. The large intestine is not eaten but it is dried and occasionally used as a container for fish eggs at camp.

In the past, the small intestines of walruses were used as parka covers. They were cleaned of their contents, and the membrane removed and hung out to dry and bleach. If the intestines are to be used as a raincoat, they are dried indoors because no bleaching is necessary. Intestines are used in these ways only by a few households in either village. Modern fabrics have replaced intestines as a source of material for garments.

Stomach. Two parts of the walrus stomach are used as a source of food. The main section from which the outer membrane and contents are removed, and the stomach muscle are boiled and eaten. A small section,

essentially the end tip, is freed of its membrane, boiled and eaten. The main portion of the stomach usually contains clams that are regarded as delicious, and there is often a large quantity of them. These are also boiled and eaten. The stomach is also occasionally used as the main part of a drum after it is rinsed and dried. The outer membrane of the stomach is dried and used by some families to store dried bird breasts, roots and any other food or clothes that are dry.

Kidney. Walrus kidneys are at times dipped in oil and eaten fresh. At other times, they are dried or frozen for storage. If frozen, they are thawed and eaten raw. If dried, they are eaten without further alteration. Kidneys are not as favored as are walrus livers, The mammary glands are considered a delicacy, and they are often boiled and eaten.

Lungs. Walrus lungs are dried and eaten with blubber from seals, walruses or whales, but they are most often fed to dogs. The lungs are prepared for human consumption by first removing the small, hard interior material, then dried and eaten.

Flippers. The flippers of the walrus, both front and rear, are boiled and eaten. The palm and bones are cut in pieces and mixed with blubber in a jar. When the mixture is "just right" it is placed in a plastic bag or waxed paper and frozen for consumption sometime later.

Brains. Walrus brains are boiled and eaten, or aged and stored by freezing. Frozen brains are taken from the freezer, sliced and eaten cold; fresh brains are sometimes mixed with walrus blubber and eaten.

Skin. One of the most important uses of the walrus is as a cover for the frames of whaling boats. Whaling boats need fresh skins about every two or three years, and therefore, the skins are in constant demand for this use each hunting season. Preparing a walrus hide for use as a covering for

whaling boats or as food is a very difficult job and only a few women in each village do it They are rewarded with special gifts--usually subsistence products--or cash by the hunters for whom they perform this service. The walrus hide s stretched on a large rack and carefully, painstakingly split into two sections, each section representing one-half the original thickness of the skin. This task begins at the upper end of the hide, 10 or more feet from ground level, where she balances herself as she skillfully moves her ulu (the woman's knife) horizontally across the width of the skin to split the hide. She crosses back and forth until one-half of the hide is detached from its complement. This practice doubles the area of the hide and allows users to have a more pliant material.

Baby walrus skin is still used as harpoon lines. A continuous line is derived by cutting one and one-half inch strips in a circular motion around the body much like you would remove a strip of skin from an orange. This line must be softened prior to the hunt by working the skin with bare hands.

Walrus hides were once commonly used for floors and roofs of houses but to our knowledge only one house in Gambell and none in Savoonga still uses skins as flooring material and none had roofs of walrus skins.

Tusks. Walrus tusks are the most valuable and important part of a walrus in terms of cash income. Most of the households in Gambell and Savoonga depend upon the acquisition and alteration of the tusks as a form of income.

There are more than 100 carvers in Gambell and more than 200 in Savoonga. Carvers can be found in nearly every household. The better carvers have established regular and consistent clientele. Others are somewhat less talented, but they are able to sell enough of their art to earn an important annual sum (Chapter I I I deals more extensively with this topic).

The head of the walrus, with tusks attached, is often sold for relatively substantial prices. The sale of heads can be an important addition to an artisan's household budget. The jaws are occasionally used as boat runners.

Other uses. Walrus penises are stripped of their flesh to the bone, boiled until bleached, then dried, sanded and buffed to a sheen for sales to the general public (oosiks). Sometimes, an ivory carving is attached as an added attraction. The teeth of walruses are made into beads, and used as additions to bracelets or carved to resemble owls. Like oosiks they are sold as craft items.

CHAPTER VIII

SEAL HUNTING

As noted in Chapter II, there are four species of seals used by the people of St. Lawrence island: the bearded seal (mukluk), the spotted seal (harbor), ringed seal (hair) and ribbon seal. All but the ribbon seal are hunted frequently by hunters from Gambell and Savoonga. The sites where Gambell and Savoonga hunters take seals surround the island and were depicted in Figure 7 (Chapter VII). The map shows that all three main species of seals (bearded, spotted and ringed] are taken at nearly all hunting locations. The locations are numerous and they roughly correspond to summer camping sites. The hunting sites are distributed uniformly around the entire island.

Crews

The bearded seal is the most important of the three seal species. It is vital as a source of food and skin for garments. The bearded seal is the largest of the three species and is the only one that generally requires a crew to retrieve. Crew size and composition are, except for very minor differences, the same as walrus crews. In the past some lone hunters took walrus; this practice is rare today. While there may be only occasional solitary walrus hunters, some solitary hunters manage to take some bearded seals, but they usually depend" on other hunters nearby to help them retrieve, butcher and carry the carcass back to their villages. This situation provides no hardship for those who come to the aid of the solitary bearded seal hunter, for the hunter who helps a solitary hunter automatically receives a share of the animal.

Figure 10 is a graphic portrayal of Savoonga's 37 bearded seal hunting crews for 1981. The 37 crews included 157 crew members, just 3 more crew

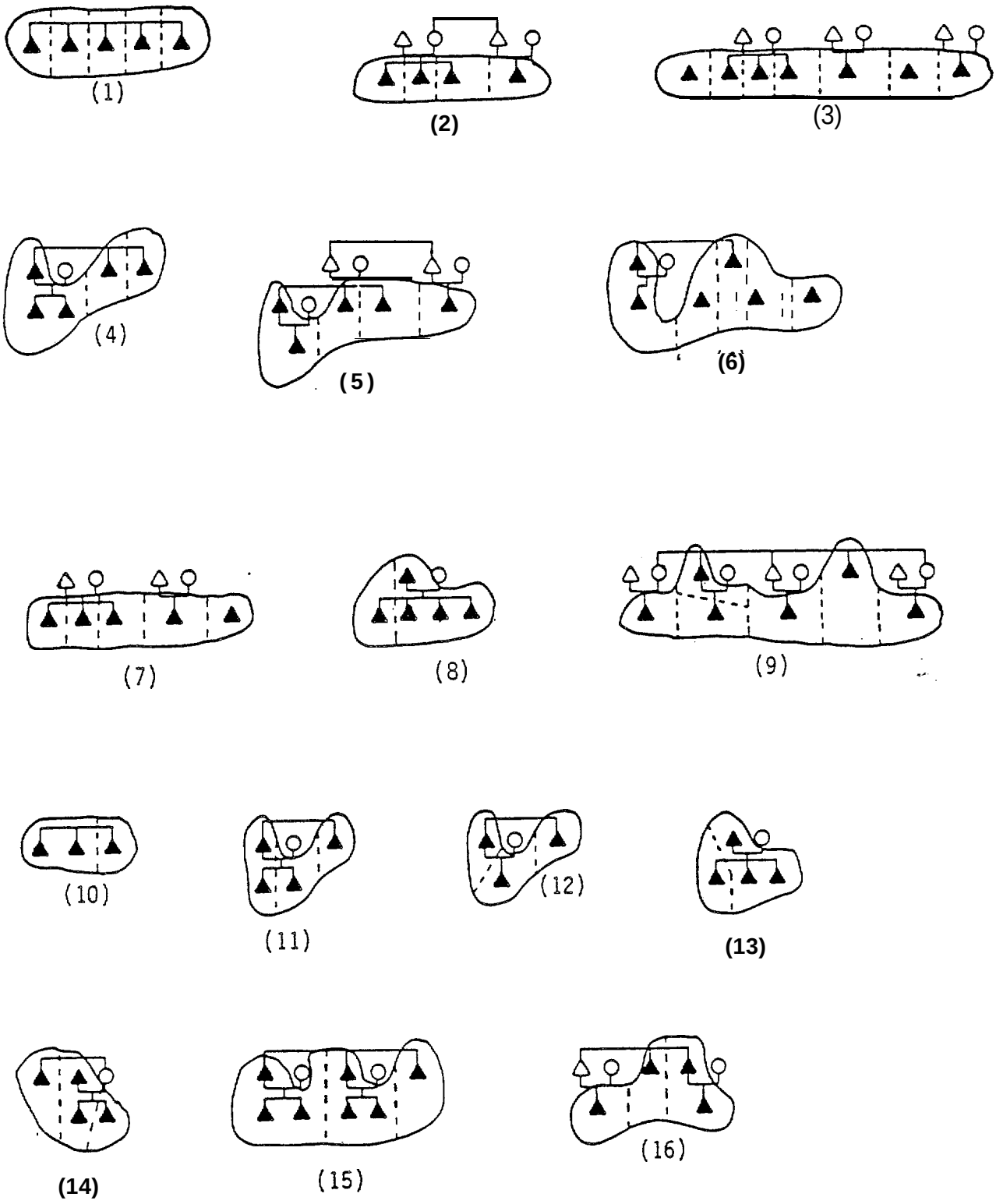


Figure IO. Relationships Among Savoonga **Bearded Seal Crew** Members, 1982[a].

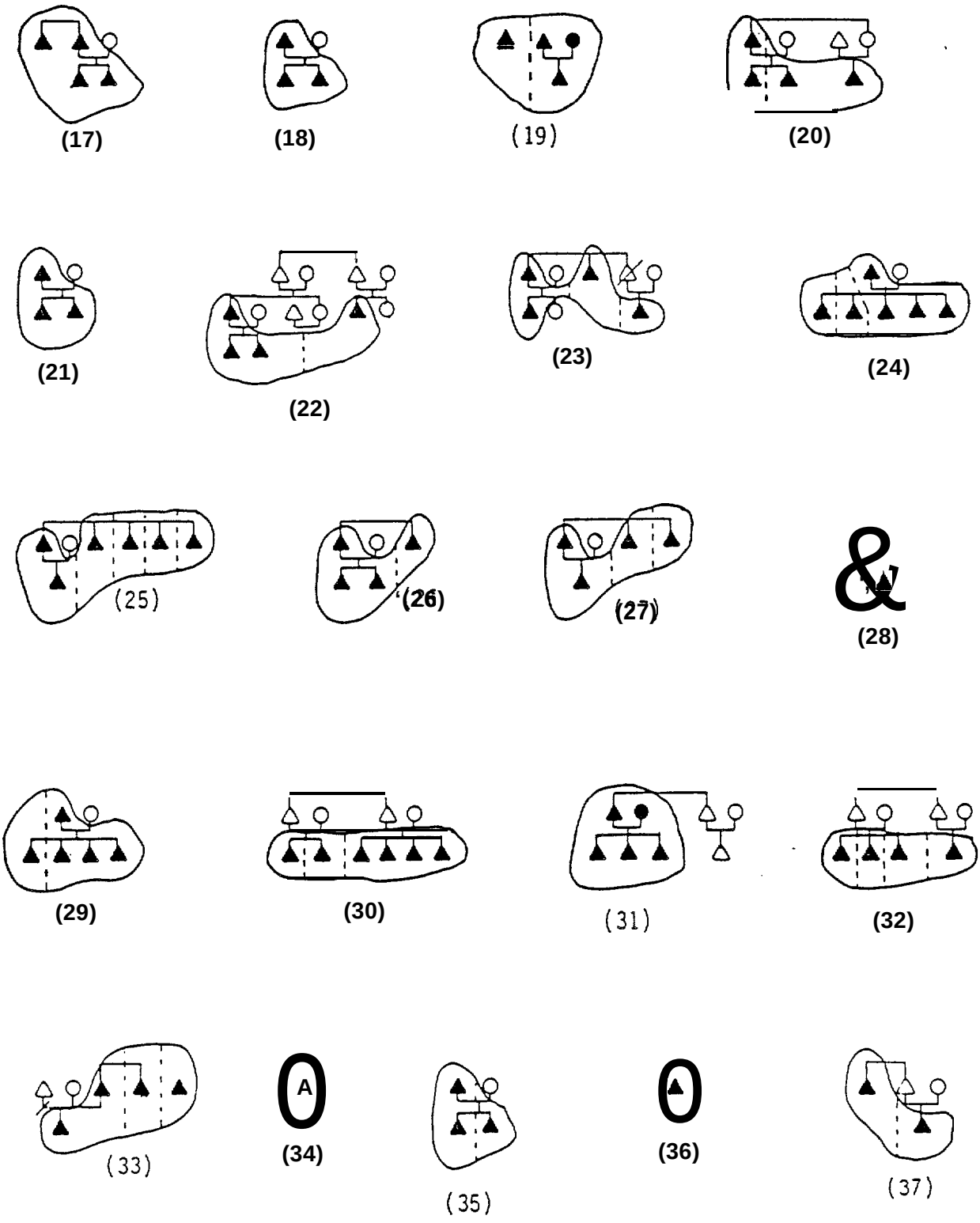


Figure 10. **Relationships Among** Savoonga **Bearded Seal Crew Members, 1982a. (continue{**

[a]**Shaded** symbols **inside solid lines indicate crew members. Broken lines distinguish households. Circles represent females and triangles represent Men.** Numbers **are arbitrary crew numbers.**

members than participated on Savoonga's walrus crews. However, only 76 households were represented on the bearded seal crews, 15 fewer households than were represented on the walrus crews. The average crew size of the bearded seal crews was 4.2, just .4 greater than the average for walrus crews. The Gambell crews were so similar in size and composition to their walrus crews that it is unnecessary to present another figure demonstrating the size and composition of crews. Such a figure would be nearly identical to Figure 8 (Chapter VI 1).

As is the case with whaling and walrus crews, men and their sons or brothers, or men and their parallel patrilineal kinsmen dominate the structures of the bearded seal crews. There are some crews made up almost entirely of men unrelated to each other. Unrelated crew members usually have no patrilineal kin with whom they can join to form crews. The guiding principle in the creation of the bearded seal crews, as in walrus and whale hunting crews, then," is the presence of an elder (but generally not old) man and his sons. The second most frequently observed pattern is an elder man and his son, or his sons, and one or more brothers. The third most frequent pattern is a man and his parallel patrilineal cousins, perhaps with a brother included. Occasionally a captain in the third pattern will recruit his sister's son(s) or, very infrequently, even a son-in-law. This pattern of recruitment and membership is part of the character and function of the patricians, the central structure of social organization in Gambell and Savoonga, undergirding all elements of social organization, including hunting, fishing and collecting (see Chapter IV).

In Gambell, the field researchers accounted for 140 men and boys who hunted ringed and spotted seals in 1981. This number gives an average of one and one-quarter hunters per village household. In Savoonga, participation in the hunting of spotted and ringed seals was similar.

Approximately 150 Savoonga men and boys hunted seals. It must be remembered that unlike bearded seal hunting, hunting for spotted and ringed seals is generally undertaken individually, although pairs of hunters sometimes hunt together.

The Hunt

Bearded seals. The hunt for bearded seals by crews is very similar to the search for walruses, using crews of similar size and composition, and the same equipment: 16-18 foot aluminum boats, 50-55 horsepower outboard engines, snowmachines, all terrain cycles (ATC), high caliber rifles, seal hooks, floats, nylon lines, baby walrus skin lines (tapghak), CB radios, a pouch for equipment, flashlights, extra gloves, rain gear, thermos, snacks, knives, gasoline, and gas cans. Many walrus hunting crews search for bearded seals as part of the walrus hunt, just as the same crews will, on return, hunt murre, cormorants, ducks, geese, seagulls, kittiwakes, and auklets should an opportunity arise. Bearded seals can be regarded primarily as a supplement to the quest for walruses.

Spotted and ringed seals. The search for ringed and spotted seals is done most often by solitary hunters who are at summer camp and who hunt these seals as part of their summer activities, or into late fall and early winter when hunters travel to hunting sites on ATCS or snowmachines for one-day hunts. Ringed and spotted seals are much smaller than bearded seals and can be killed, harpooned, retrieved, butchered and taken home without great difficulty.

Solitary seal hunting is done from blinds dug along the shore with driftwood breastworks, or from blinds constructed from driftwood and stones. In the past lone seal hunters shot seals on the open leads of the ocean ice. Now, as in the past, hunters will sit and wait for seals all day. On

some days there are many seals, on others none. The wait can be very long, trying, cold and, needless to say, uncomfortable. The hunting is done usually when the wind comes from the direction of the water, although if the wind comes from the land and a seal is close to shore, a hunter may take a shot and then try to hook the seal before it is taken away by wind and wave action. If the shot seal is within range, a sealhook attached to a line is thrown in the attempt to hook the seal. A seal is hooked anywhere a hunter can hook it. When the wind comes from the water, the hunter tries to hook the seal on the head in order to avoid damaging the skin below the head.

The sea[is skinned at the beach if it is too large to carry on one snowmachine or ATC. Part of the animal is given immediately to a hunter or hunters who might not have gotten a seal and who are nearby. if there are many seals near the blind, the hunter stays and tries to kill and retrieve as many as possible. Those animals that cannot be carried are left in a safe spot for a return trip. If the hunter's camp is nearby, the seals are taken there, and skinned and hanged to dry. The seal skins, however, are taken to the hunter's village on the next trip home.

Consumption

Nearly all parts of the seal are eaten or used in some way. Only the large intestine is excluded from the islander's diet. Seal meat is eaten raw, boiled with greens and sea plants, fried, roasted, or aged and dried. During the seal hunting season, hunters and their families eat seal meat every day. During the balance of the year, hunters and their families eat seal meat about five out of every seven days.

Most of the bearded seal meat is taken from the rump and waist. This meat is sliced and dried. The dried meat is taken by hunters for snacks

while hunting. The rib meat is difficult to remove but it is used nonetheless. Like walrus meat, the meat of the bearded seal is dried on racks. After drying, most of it is placed in freezers and kept there for later use. Most of the bearded seal meat is boiled prior to eating, however. Some parts, like the liver, are fried, and the small intestine is boiled with the meat. Mukluk (bearded seal) kidneys are often fried. No part of the animal's head is eaten except the brains. The intestines of spotted and ringed seals are dried and then boiled in seal oil or eaten without oil. Young ringed seal meat is boiled until soft and is enjoyed by nearly everyone. The spotted seal is used in about the same ways as the bearded seal and it is also eaten often at summer camp. Some people do not have a strong preference for spotted seal meat, while others would rather eat it than any other seal meat. Most people prefer the meat of the bearded seal to any other seal meat.

The meat of the ribbon seal, the least hunted seal of the four sought by St. Lawrence Island hunters, is used in about the same ways as the other seals. It is different from them because its meat does not harden when it is dried. Ribbon seal meat is dark in color, a rather distinctive appearance among the seal meats. Because of its relative scarcity, the ribbon seal is not a common item in the annual diet of the Eskimo people on St. Lawrence Island.

The hide of the bearded seal is more useful than the hide of any other seal. It is used for boot soles, gun cases and packs. Ropes used in whaling are made from the female's hide. The skin is thick and is therefore very appropriate for these demanding uses. The skin is kept moist during preparation so that it will be strong and pliant. Some families dry the skin of the flippers and use the flippers to collect and store green land plants, but this practice has apparently declined greatly in recent years.

The ringed seal skin is used for all hunting garments because it is strong and supple. The hide of the spotted seal is the most attractive, but it does not work well for garments because the skin shrinks too readily. Few non-Eskimos know about the propensity for spotted seal skin to shrink, however. Thus, spotted seal skins are the most popular skins used for garments sold to tourists who buy for appearance, and only intermittent use. It is therefore the principal material used by the 90 Gambell and 86 Savoonga women (and a few men} who prepare and sew skin garments for sale to people on the mainland. The earnings from this craft bring thousands of dollars into the villages, and while only a relatively small amount when compared with the income obtained from ivory carving, it is essential to the budgets of many families (see Chapter III).

The Harvest

The sample of 43 Gambell households questioned about seal hunting contained 25 household heads who hunt bearded seals individually, as captains of crews or as crew members. Twenty-four individuals in the non-random sample hunted ringed seals, 30 hunted spotted seals and 5 hunted ribbon seals. Those in the sample who hunted bearded, spotted and ringed seals represented about 27 percent of all the men and women in Gambell who hunt seals.

Table 16 lists the number of seals taken by species in 1981. As can be seen, ringed seals are taken in the greatest numbers, with a per hunter average of 23. Spotted seals were the next most frequently taken species, with an average of 15 per hunter. The bearded seal was next with about 12.5 taken per hunter. The ribbon seal is taken in relatively insignificant number according to our figures. Because of its bulk, the bearded seal likely provides the greatest contribution to the diets of the people of Gambell

Table 16. Seals Taken, Found and Lost by Sample of Gambell Hunters, 1981.

Species	Taken	Found	Lost	Number of Households Reporting
Ringed	554	28	119	24
Spotted	459	41	135	30
Bearded	314	6	73	25
Ribbon	19	0	6	5
TOTAL	1346	75	333	

even though the numbers harvested are significantly "fewer than for the other seal species.

The numbers given in Table 16 represent about 39 percent of all the Gambell household. Extrapolating from that percentage an estimate of 3,451 harvested seals is projected. An additional 192 found seals can be projected in the same manner (see Table 17).

The estimates in Table 17, while only rough approximations, indicate that each person on the island had access to about eight seals. The extrapolations also suggest that each household in Gambell had access to about 33 seals for its use during the year. This compares with the 9 walruses estimated to be available to each household. It must be remembered that the estimates are based on a non-random sample and thus must be treated as rough estimates and no more.

Gambell hunters also provided information about whether they hunted animals in crews or as solitary hunters, where seals were taken and the seasons they were taken. The spotted seal is taken more often on the solitary hunt than any other seal (see Table 18). The 30 hunters contacted about taking spotted seals reported a winter take of 9, a spring take of 26, a summer take of 116, and a fall take of 782. The summer and fall are obviously the most important seasons for hunting this seal, and it is hunted most often in conjunction with summer subsistence activities. Spotted seals are present on and near the island in other seasons, as the figures show, but not in great numbers.

The second most frequently sought seal by lone hunters is the ringed seal [see Table 18). Approximately 48 were taken in the winter, 63 in the spring, 62 in the summer, and 159 in fall. Ringed seals are taken in greater numbers than any other species of seal and the seasonal figures are rather uniform except for fall when Gambell hunters harvest more than twice as many

Table 17. Estimate of Total Number of Seals Taken, Found and Lost, Gambell, 1981.[a]

Species	Taken	Found	Lost	Taken and Found	Per Capita Access
Ringed	1420	72	305	1492	2.3
Spotted	1177	105	346	1282	2.8
Bearded	805	15	187	820	1.8
Ribbon	49	0	15	49	.11
TOTAL	3451	192	853	3643	8.0

[a] Estimates are based on the fact that the non-random sample of 43 households represents 39 percent of al households in Gambell.

Table 18. Gambell Crew and Individual Hunter Harvests of Major Seal Species, 1981.[a]

Species	Crew Take	Average	Individual Take	Average	Percent Crew	Percent Individual
Bearded	280	11.2	34	1.4	90	10
Ringed	226	9.4	332	14.0	41	59
Spotted	126	4.2	333	11.0	28	72
Ribbon	4	.8	15	3.0	21	79
TOTALS	636		724			

[a] Represents 43 households (39 percent).

as during any other season. The ringed seal is hunted by lone hunters with greatest success in the fall (1 59), and by crews with greatest success in the spring (63). However, the seasonal takes are relatively uniform whether by individuals or crews.

The bearded seal is not sought often by individual hunters because of its size. Only 34 were taken by solitary hunters (see Table 18). This seal is hunted by crews in spring when the crews are mainly after walrus. During the spring walrus hunts, the crews' preferences range from walrus as first choice, bearded seals second, with ringed seals their third choice. Four bearded seals were harvested in the winter of 1981 by the 25 hunters who provided information, 25 were taken in spring, 5 in the summer, and none in fall. This -cycle of harvest is somewhat dependent on the life cycle and migratory habits of the animal. Table 18 reveals the importance of crew hunting the bearded seal.

The total annual crew harvest of bearded seals for the 25 crews for which information was available amounts to 280, nearly 90 percent of all the seals taken. This percentage of the harvest attributable to crews is much greater for bearded seals than any other species. The seasonal harvests of animals by crews in 1981 are 77 in winter, 133 in spring, 7 in summer, and 63 in fall. Spring hunting is obviously the most productive and is done in conjunction with walrus hunting. Spring is a time when hunters are already organized for crew hunting and when the adult bearded seals are available in relatively large numbers.

The ribbon seal is hunted with such infrequency that it serves no purpose to analyze the differences between individual and crew takes.

When figures for all seals are combined and no distinction is made between crew and individual hunts, a better understanding of the seasonal fluctuations in the numbers and the relative strengths of each species is

achieved. The bearded seal clearly shows the greatest fluctuations with spring being the season when the greatest number are taken (1 58) and summer when the least number are taken (12). The ringed seal is clearly most available in the fall season when combined crew and individual takes exceeded 220 in 1981. The spotted seal is taken in modest numbers in winter and spring but during the summer camping season (1 57) and the early fall hunts (263) the numbers increase to approximate the take of ringed seals.

The Savoonga sample of 18 households (just over 18 percent of all households) is probably not representative of seal hunting activities in the village. Nevertheless, the Savoonga data are presented in Table 19. This allows the reader to draw independent conclusions. If the Savoonga numbers are treated as merely indicative of proportions, some comparisons between Gambell and Savoonga are meaningful.

The most valuable comparison lies in the fluctuations of harvests through the seasons. In a general way, seal harvests are, as one would expect, similar between Gambell and Savoonga. A comparison of Tables 18 and 19 reveals the similarities. Bearded seals are taken in their greatest numbers in spring by the crews from both communities. In other seasons, bearded seals are rarely taken. The 18 Savoonga households reported 49 bearded seals taken, 95 percent by crews and only 5 percent by lone hunters. The proportions are similar to Gambell's 90 percent and 10 percent, respectively.

Sixty-two ringed seals were taken by the hunters in the Savoonga sample and their take is rather uniform through the seasons, a pattern also found in Gambell, although the Gambell hunters showed a proportionately larger harvest in summer. The crew-to-individual hunter ratio for Savoonga is close to Gambell's for ringed seals: in Savoonga, crew take was 31 percent, and individual take was 69 percent. While in Gambell, it was 41 percent and 59 percent, respectively. For spotted sea [, 48 were recorded as

Table 19. Savoonga Crew[a] and Individual Hunter Harvests of Major Seal Species, 1981.

Species	Crew Take	Crew Average	Individual Take	Individual Average	Percent Crew	Percent Individual
Bearded	47	6.7	2	1.0	95	5
Spotted	12	3.5	36	5.1	25	75
Ringed	19	9.5	43	5.4	31	69
Ribbon	0	0	4	2	0	100
TOTAL	78			81		

[a] Represents 18 households (19 percent).

having been taken in 1981. There was a precipitious decline in the summer spotted seal take, but otherwise the pattern is similar to Gambell's. The proportion of Savoonga's spotted seal harvest by crews (25 percent] is similar to Gambell's (28 percent).

Sharing of Seal Products

Several observations have already been made regarding the sharing of some seal products as well as descriptions of the types of products used, and the ways they are prepared by householders. These observations will not be repeated.

It is important to compare use patterns in the two communities. There is very little difference between the patterns of sharing walrus and bearded seal parts in Gambell and Savoonga. The animals are taken by nearly identical crews during the same season. and the products move through almost identical kin and friendship networks. An average of approximately 10 households receive seal parts, mainly meat and skins, from the households of successful hunters. Seal hunter's households received similar items from about 4 households. This pattern of giving and receiving applies to all species of seals and there are no major differences among types of seals and the patterns of giving and receiving,

The hunting of seals requires considerable planning throughout the year with each species taken in a fashion demanding coordination with other subsistence activities such as walrus and whale hunting, bird hunting, egg collecting and fishing. Much of the seal hunting is done in conjunction with other hunting and with summer camping pursuits. Seals are hunted incidentally to the walrus hunt, never during the whale hunt to our knowledge, and as an integral part of summer camping activities, Seals are obviously very important in the Eskimo diet, running a close second to

walrus, and, perhaps, equal to it during some years. They are also important to the economy because of their skins and the attraction skin clothing and toys hold for outsiders. The economies of Gambell and Savoonga, subsistence and cash, would likely fail with a serious interruption of the seal harvests.

CHAPTER IX

SUMMER RESOURCE UTILIZATION

Slightly more than three-fourths of all Eskimo people on St. Lawrence Island set up summer camps intermittently or continuously from late June or early July until early or middle September, People travel to camps in 14 to 20 foot boats, with few exceptions, powered by 40 to 84 hp. (mainly 50 to 55 h. p.) outboard engines, 3-wheeled ATC's and 4 or 6-wheeled all-terrain vehicles (ATV). The total number of people who camped in 1981 was 727: 397 from Savoonga and 330 from Gambell. Residents from 80 percent of all island households spent time in summer camps. The difference between the proportion of islanders who camp and the proportion of households represented in summer camps reflects the fact that not all members of participating households go to camps. Some of the elderly, some women without husbands, a few people" with full-time jobs, and some teenagers comprise the majority of the 186 people on the island who do not camp. However, very few people appear to not want to go to camps at some time during the camping season. These figures reveal the tremendous importance of camping. However, the more important proportion is the 93 percent of the households which have one or more campers, for this figure reflects the availability of summer subsistence resources to almost every island household, even in the absence of sharing.

About 85 percent of Savoonga's residents camped in 1981, Some campers stayed for long periods, returning to the village only to pick up supplies. Other campers stayed for only a short time. Still, others camped intermittently, traveling relatively short distances from Savoonga to nearby

camp sites from which they could conveniently travel to the village to pick up supplies and see to domestic and other concerns without serious interruption.

Eighty-eight of the 94 occupied households in Savoonga (94 percent) had one or more members who went to camps in 1981. The rate of participation in camping, as measured by households and individuals, is very high in Gambell as it is in Savoonga. Ninety Gambell households (82 percent) were represented at summer camps, with 72 percent of the villagers camping at some time during the summer. Indeed, the villages are similar in their patterns of camping, with rates of participation by Savoonga residents just slightly greater than those of Gambell residents.

Like Savoonga campers, many Gambell residents make forays to summer subsistence collection sites which are within a convenient one-day journey, returning home in the evening. This, however, does not constitute camping as the term is intended here. The Savoonga camping groups are composed of an average of 5.8 campers and 1.3 households, compared with Gambell's average of about 5.8 campers per group and 1.6 households represented at a camp. The camping groups, hereafter referred to as crews, range from one to five participating households, and most of these are closely related, usually through the male line. Summer camp crew sizes in both villages range from one person to fifteen.

Social Organization

The nuclear family is the foundation of most camping crews. Figure 11 and Figure 12 depict summer camping crews of Gambell and Savoonga. There are many nuclear or nuclear family remnants which combine with nuclear families for summer camping. Nuclear family remnants include, widows, divorcees, widowers, single men, and women who leave their husbands and children at home while they help out at the camps of their brothers' or

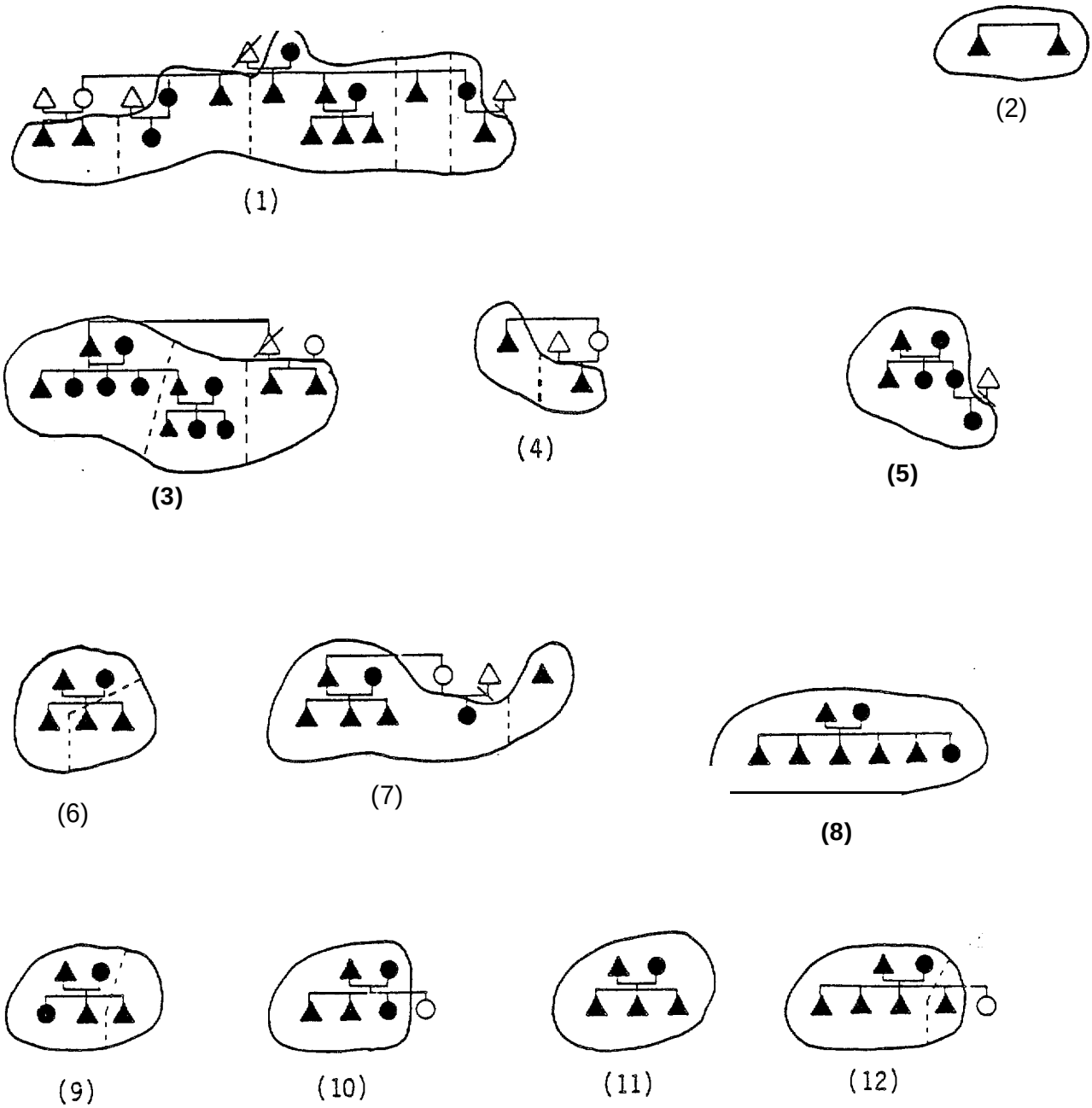


Figure 11. Relationships Among Gambell Summer Camp Crew Members, 1982.[a]

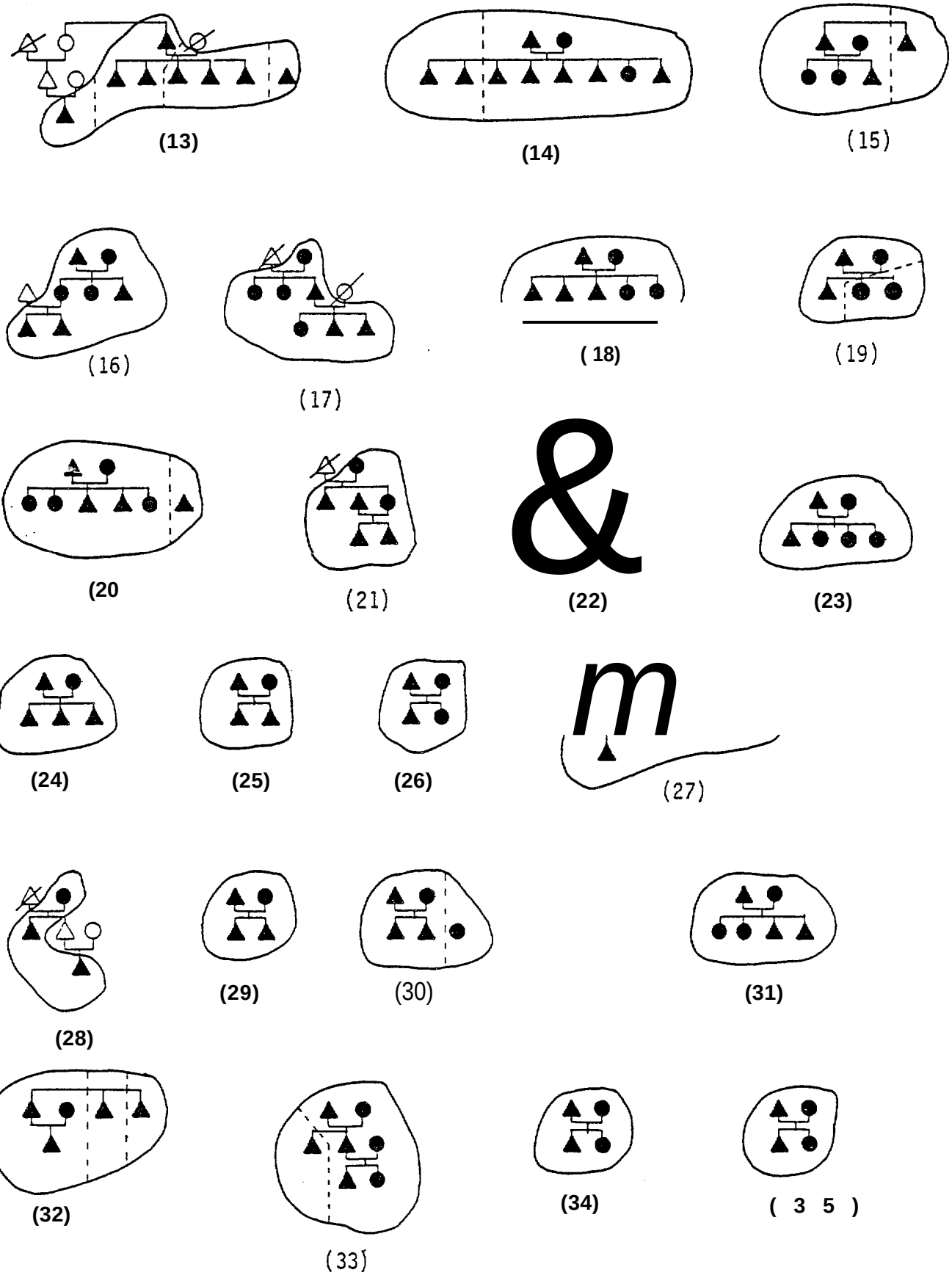


Figure 11. Relationships Among Gambell Summer Camp Crew Members, 1982.[a] (continued)

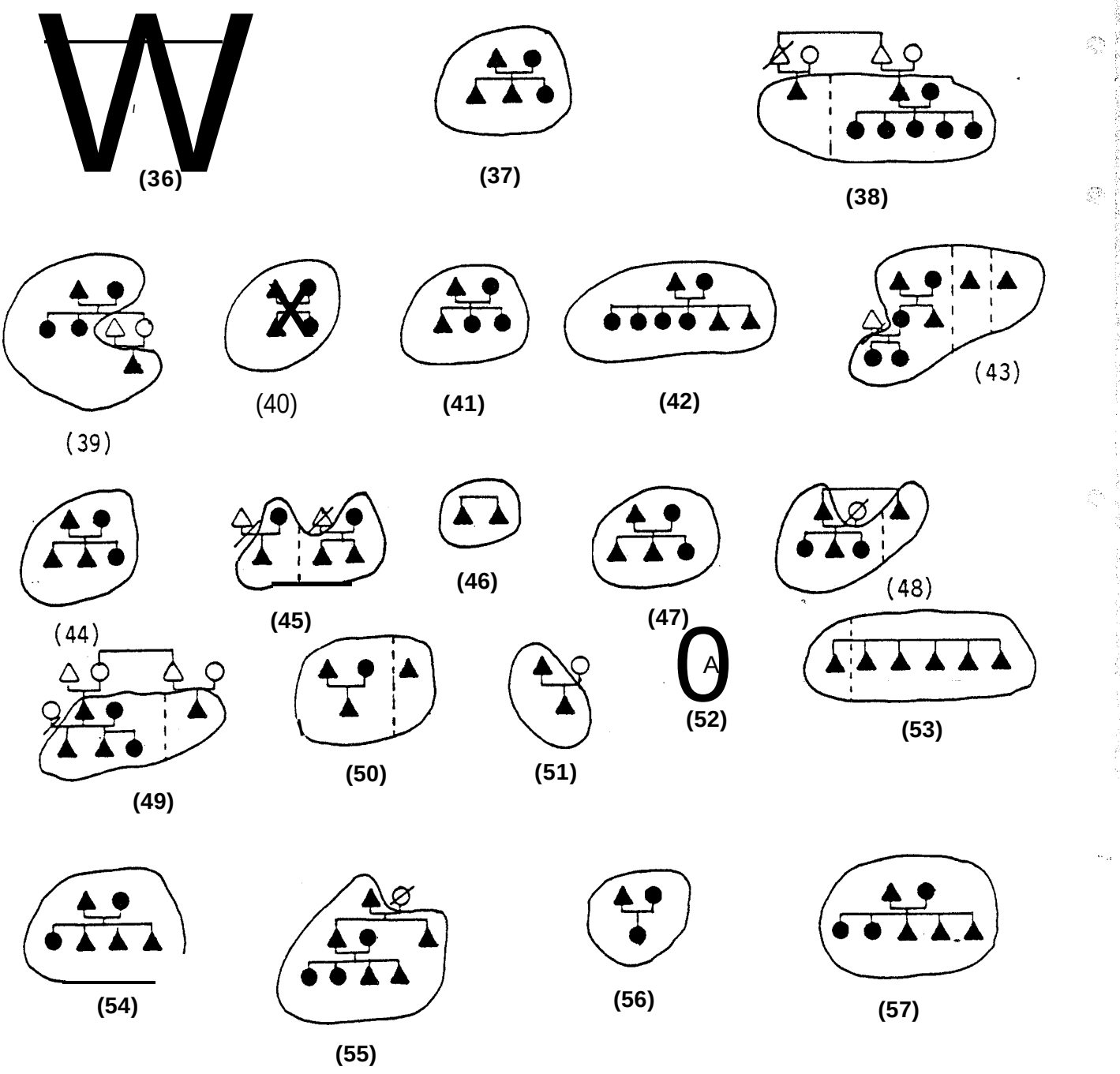


Figure 11. Relationships Among Gambell Summer Camp Crew Members, 1982.[a] (continued)

[a]**Shaded symbols inside solid lines designate crew members. Broken lines indicate households. Circles represent women and triangles represent men. Numbrers are arbitrary crew numbers.**

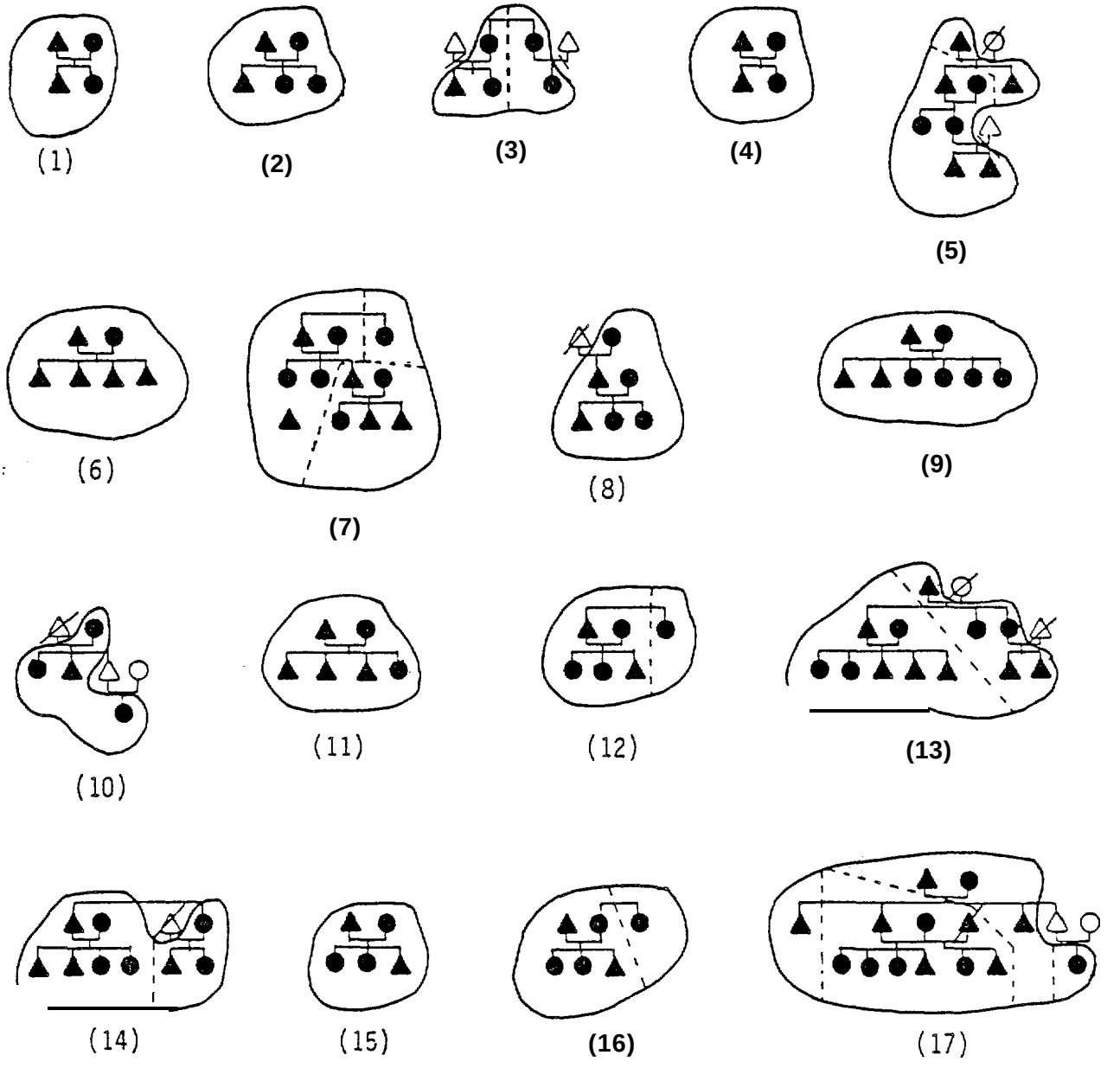


Figure 12. **Relationships Among** Savoonga **Summer Camp Crew** Members, 1982.[a]

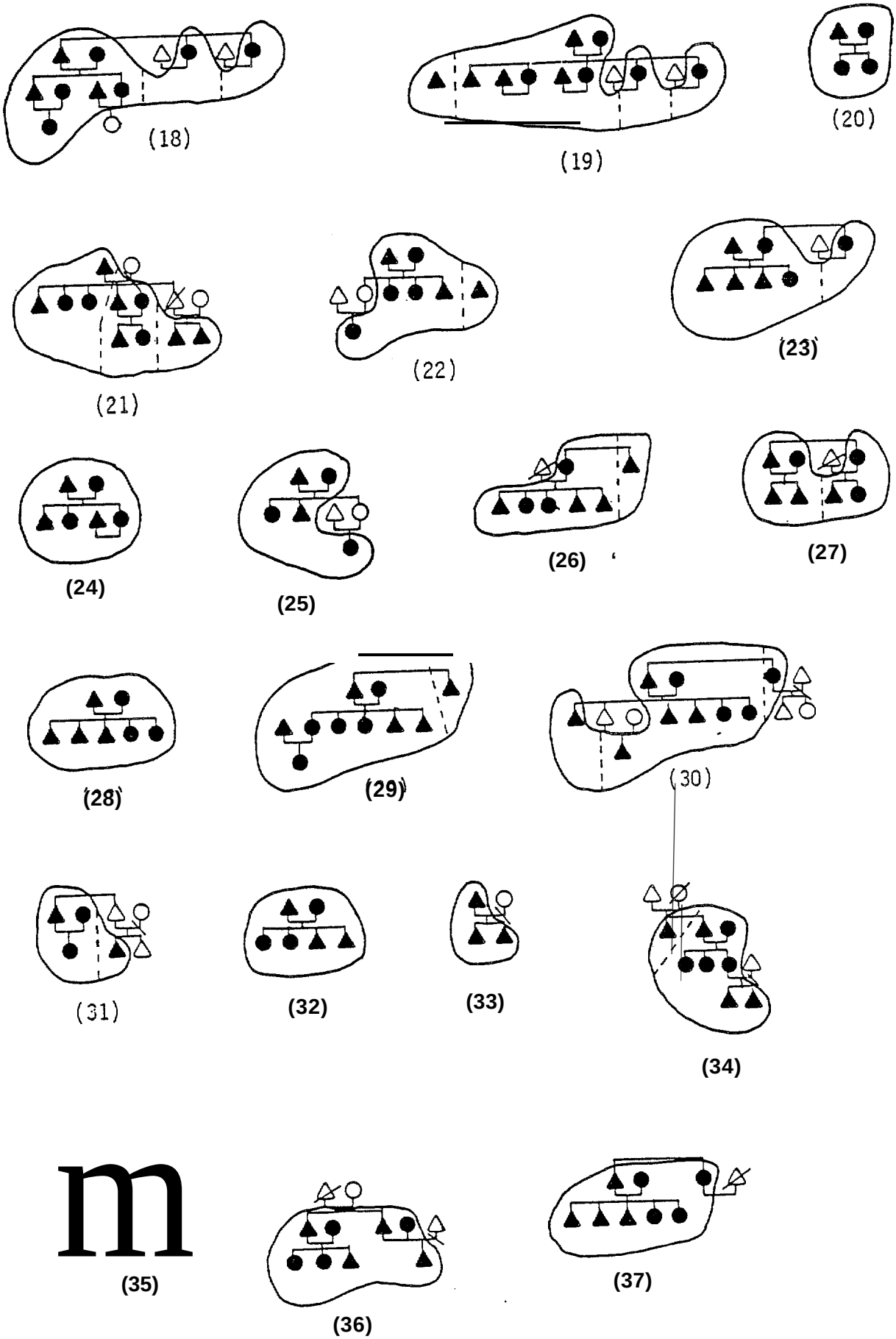


Figure 12. Relationships Among Savoonga Summer Camp Crew Members, 1982.[a] (continued)

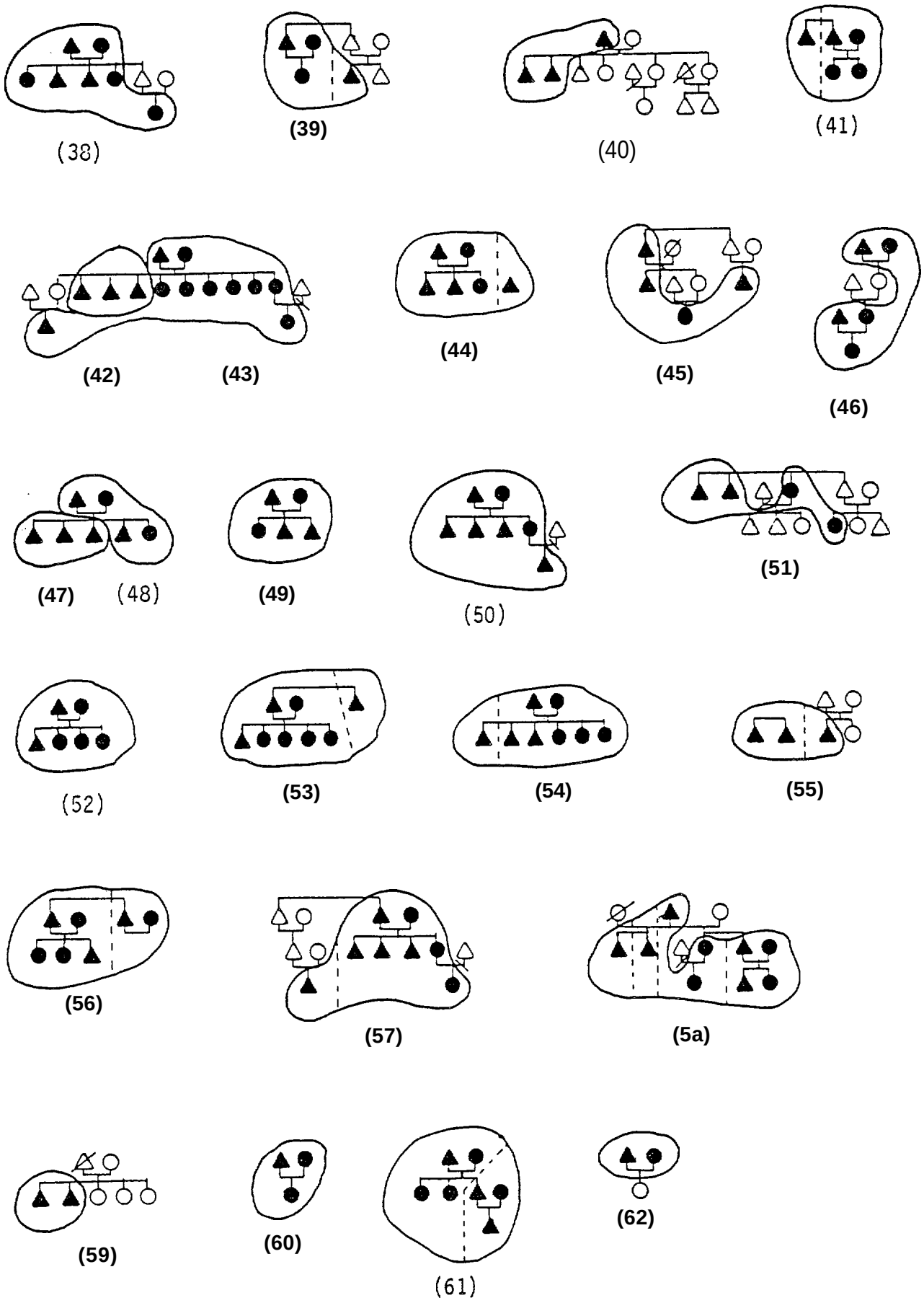


Figure 12. Relationships Among Savoonga Summer Camp Crew Members, 1982.[1] (continued)

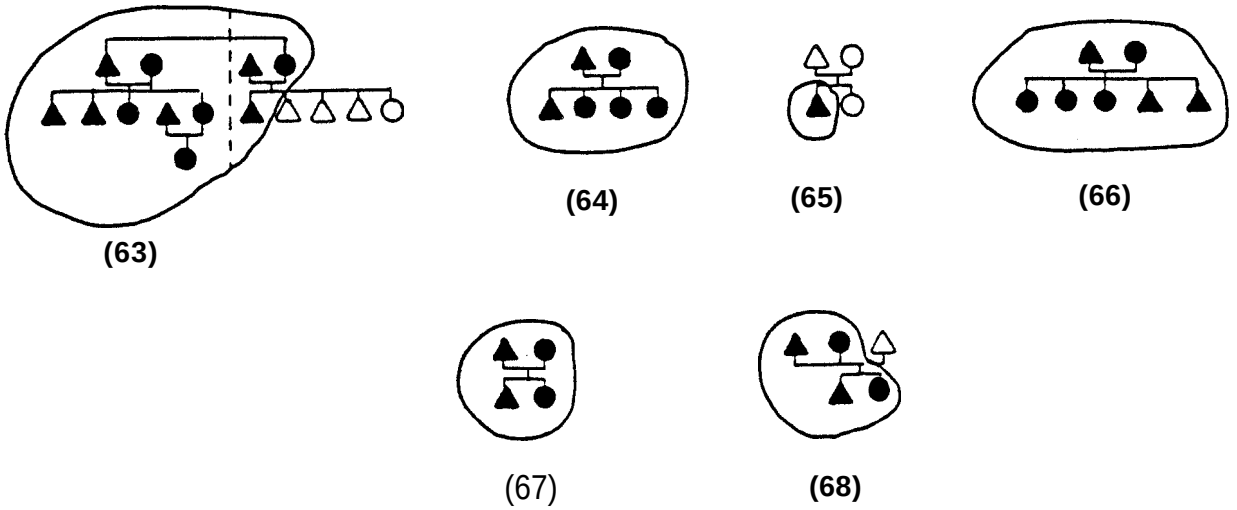


Figure 12. Relationships Among Savoonga Summer Camp Crew Members, 1982.[a] (continued)

[a]**Shaded symbols inside solid lines designate crew members. Broken lines indicate households. Circles represent women and triangles represent men. Numbers are arbitrary crew numbers.**

sisters' families. Many camps from both Gambell and Savoonga exhibit an extended family composition, and there seems to be no preference for married sons over married daughters (e.g. , see households 3, 48 and 55 of Figure 11).

Camping is more than a subsistence pursuit for many families. For example, several families camp so that they may engage in the quest for old ivory, with little interest in subsistence per se. Savoonga residents do this much more extensively than do Gambell people. Perhaps this is a result of the nearness of Punuk [stand, a well-known old ivory site, which may account, in part, for the higher proportion of campers found among Savoonga households. Many families supplement their household budgets with old ivory finds. The sites which contain fossilized ivory, either raw or carved, are prime locations for summer subsistence pursuits, just as they were when the first islanders camped there. Thus, ivory digging and summer subsistence activities frequently coexist. The desire to camp and collect subsistence resources, as well as the economic need for old ivory, motivates many women and men to join with their kinsmen at camp. Old ivory, when found, helps defray the costs of maintaining a domicile in a village. When fossilized raw ivory is found, it is carved just as is new ivory. However, carvings of fossilized ivory generally bring higher prices than equivalent carvings of new ivory. Occasionally, fossilized ivory tools and carvings, that is, artifacts from a much earlier period are discovered. Such items can bring a windfall to the finder, perhaps as much as $25,000 for carved human figures. This income is considered the sole property of the finder, although the money is usually put to general use in the lucky person's patrician.

The short-term economic gains from selling fossilized artifacts are obvious, but some non-natives have questioned the long-term cultural and individual

psychological consequences of these sales. Those who have questioned the wisdom of the sales point out that the natives are losing irreplaceable items of their cultural heritage, and in fact are destroying their culture. However, none of the available evidence (observational or archival) suggests that St. Lawrence Islanders feel that they are destroying their culture by selling the sacred and profane objects of their ancestors. Rather they seem to feel that the efforts of their ancestors have provided them another means for adapting and adjusting to the economic demands of a world that has slowly but certainly enveloped their traditional culture. Currently they are even using placer mining techniques to recover fossilized ivory.

From the perspective of the islanders it is unfortunate that these resources are limited in quantity and variety and are not naturally" recurring. It is likely that there will be a serious decline in cash income from fossilized ivory in the next decade or two, especially in Savoonga, as the supplies of both raw and carved fossilized ivory are extracted.

Most of the time spent at summer camp is devoted to hunting seals, ducks (Pacific eider), geese, and a variety of seabirds; fishing; collecting duck, geese and murre eggs, several species of land plants, and from the Bering Sea kelp, and several simple sea animals that resemble plants (see Chapters 11, XII and XIII for a complete listing), These resources are plentiful, but they are not harvested without Cost$_d$ Considerable equipment is necessary. Table 20 provides a description of the typical equipment used at summer camp. Whi[e the price of each item is not included, it is evident that the costs of summer camping, exclusive of fuel for transportation, are not insignificant. The costs are substantial, even if some of the equipment is used for other activities.

Gambell Campers

Hunters and collectors have told us that many circumstances condition decisions about where to locate their summer camps, besides the availability of

Table 20. Summer Hunting and Camping Equipment, St. Lawrence Island, 1981.

Boat (aluminum, 14 feet to 20 feet, in one instance a hand-made wooden frame walrus covered boat and one wooden hand-made boat)
Inflatable raft (4 feet)
Boat and raft engines - 4½ to 85 horsepower; spark plugs
All terrain cycles[a] (Hondas, models 70, 110, 185 or 200), (many families have more than one of these); spark plugs
All terrain vehicles (4 to 6 wheels; these are being phased out in favor of the all-terrain cycles)
Rifles for seal-hunting (.222, .2206, .220 caliber); high velocity, flat trajectory, 50 to 80-grain bullets
Shotguns for bird-hunting (.410, 20, 16 and 12-gauge)
Ammunition for shotguns (occasionally hand-loaded by hunters)
Fish nets (50 feet to 150 feet, home-made or store-bought)
Bird nets with handles for catching young birds
Wooden cabins
Tents (nylon or canvas)
Seal blinds of wood or rock
Gas tanks
Harpoons (for seals)
Floats (for fish nets)
Ropes (made of young bearded seal skin, baby walrus, or nylon)
Fishing rods, reels, hooks and lines
Seal hooks (for use by men)
Knife (steel-bladed)
Ulu (women's knife)
Gasoline
CB radio
12-volt battery for CB radio
Kerosene
Blazo (cooking fuel)
Wood stove (metal, homemade)
Lantern (blazo fuel)

[a] Two families in Savoonga use dog-teams for summer and winter camping.

resources. Ease of access by boat and ATCS, favorable weather, traditional established use, family's preference, and access to ancient village sites containing old ivory and prehistoric artifacts are all considered in making a' choice.

The Gambell campers use Powooiliak Lagoon more than any other site on the island. Twenty-one households use sites along the 10 to 12 mile length of the lagoon (see Figure- 13). Powooiliak Lagoon is used extensively and intensively as can be seen in Table 21, which lists the camping sites and activities. The next most preferred location is from the western end of Powooiliak Lagoon to Silook Camp. Nineteen households use sites along Koozata Lagoon, and they harvest a wide variety of marine mammals, fish, birds and bird's eggs. These two lagoons are open and easy to traverse, with campers traveling along the narrow strip on ATCS or in the lagoons by aluminum boats and inflatable rafts.

The remaining' Gambell camping sites are, as measured by the number of households that use them, somewhat less important. In order to better understand the distribution of camping sites and the importance of these sites to the people, we must look at the three parts of the island that are used by the Gambell people: north, west and south portions.

The north and northwest regions of the island receive the greatest number of campers "from Gambell. A total of 56 households use one or more sites in this section of the island from Gambell to Taphook Point. Forty-two households use the stretch of beach from Boxer Bay to the junction of Powooiliak and Koozata Lagoons, and 33 households camp along the east side of the island from Gambell to Boxer Bay (see Table 22). This distribution of camping sites and the number of households that use them reveals the widespread use of the island and its resources. It is important to note that

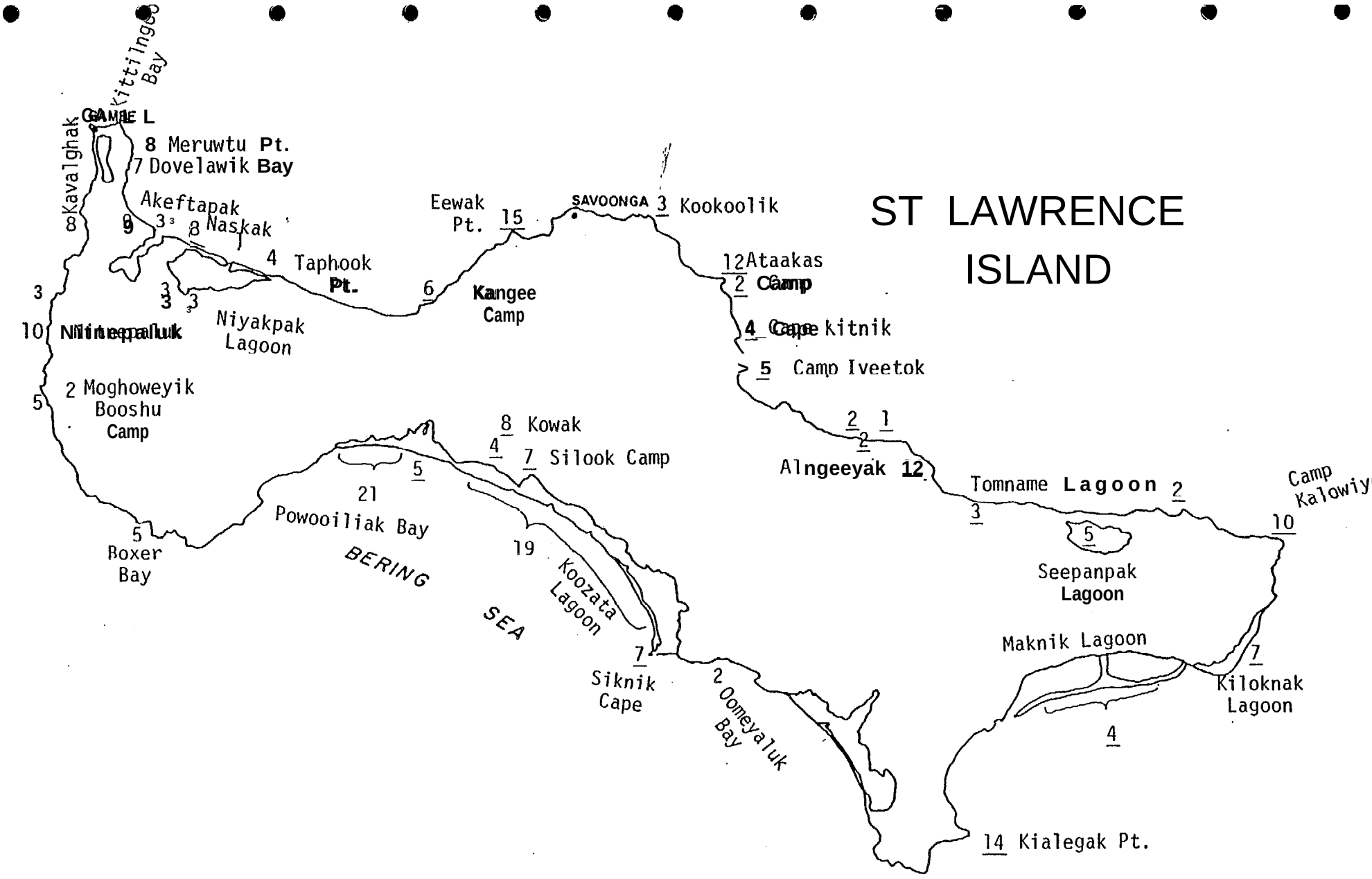


Figure 13. Summer Camping Sites for Gambell and Savoonga **Households**, 1981. **(Underlines indicate** Savoonga **households. Households may use** more than **one** site).

Table 21. Gambell Summer Camping Sites and Major Subsistence Activities, 1981.

Location	Seal Hunting	Fishing	Collecting Land Plants	Bird Hunting	Collecting Sea Plants & Invertebrates	Bird Egg Collecting
Powooiliak	21	19	19	19	19	17
Koozata Lagoon	19	19	19	19	19	14
Akefta pa k	9	9	8	3	2	0
Kavalghak	8	8	6	6	6	4
Naskak	8	6	7	7	7	0
Meruwtu Point	8	7	8	8	8	3
Dovelawik Bay	7	6	7	5	5	6
Booshu Camp	5	5	1	5	1	0
Taphook	5	4	5	5	5	0
Kitnepaluk	5	10	7	7	7	0
Agtapuk	3	4	5	5	4	0
I koygak Creek	3	4	3	2	0	2
Savukahuk .	3	3	3	3	3	3
Avrughak	3	3	3	3	3	0
Aghsugh	3	3	3	3	3	0
Kunaghak	2	2	2	0	2	0
Moghoweyik	2	2	2	0	2	2
Oomeyaluk	2	0	0	0	0	0
Pungkoosit	1	1	1	1	1	1
Boxer Bay	1	2	2	1	1	1
Ningeehak	1	0	0	1	0	0
TOTALS	119	117	111	103	98	53

Table 22. Gambell Summer Camping Sites and Frequency of Use by Area, 1981.

North Side: Gambell to Taphook Point

Camp Site	Number of Camping Households
1. Akeftapak	9
2. Naskak Camp	8
3. Meruwtu Point	8
4. Develawik Bay	7
5. Agtapuk Point	5
6. Taphook Point	4
7. Ikalooksik River	3
8. Ikoygak Creek	3
9. Aghnaghak	3
10. Avrughak	3
11. Pungokosit Spit	1
TOTAL	56

South Side: Southwest Cape to Oomeyaluk Bay

Camp Site	Number of Camping Households
1. Powooiliak	21
2. Koozata La"goon	19
3. Oomevaluk Bay	2
TOTAL	42

West Side: Gambell to Boxer Bay

Camp Site	Number of Camping Households
1. Kitnepaluk	10
2. Kavalghak Bay	8
3. Booshu Camp	5
4. Boxer Bay	5
5. Savukahuk	3
6. Moghoweyik	2
TOTAL	33

the stretch of the island from Meruwtu Point north to Taphook Point, about the same length as the area from the extreme west end of Powooiliak Lagoon to Silook Camp near Koozata Lagoon, attracts the greatest number of camping households (56).

There are several places near Gambell that are frequently used for summer resource collection: Kittilngook Bay, Chibukak Point, Tategnak point, Iworrigan Camp, and Tiflighak Bay. These locations begin at the extreme northwest tip of the island and end just short of Meruwtu Point. On the west side of the island, several sites from Gambell to Kaghoopalik Point are used. All of these camping sites can be reached within a day's round-trip walk or vehicle journey. The sites are used for collecting all of the resources listed.

Seal hunting, by a very narrow margin, is the most common subsistence pursuit for Gambell summer campers; fishing is a close second. Land plant collecting is engaged in next most frequently followed by bird hunting. As Table 21 shows, sea plant and invertebrate collecting are next. Of the 111 households, 103 collect sea plants and marine invertebrates. The collection of murre, duck and geese eggs constitute the final summer subsistence activities, but the number of households participating in this activity lags far behind the number engaging in the other five activities.

The western third of the island, long used by residents of Gambell, is utilized in such a way that primary camping areas stop at about the point where use by Savoonga people begins. In the north, Gambell use stops a few miles beyond Taphook Point, and in the south, it stops about Knife, mid-way in Koozata Lagoon. There is some overlap in use between the two villages, however. Two Gambell households camp with close paternal Savoonga kinsmen at sites that are mainly used by people from Savoonga. There are no cases of the reverse. That is, instances in which Savoonga households camp with people

from Gambell were not discovered. Two Savoonga households camp with the married daughters of the household heads. One daughter is from Ft. Yukon, and one daughter is from Nome. These are the only known cases of mainland people routinely camping with any St. Lawrence Island household. The two women in these cases leave their spouses and children at home and camp with their paternal families.

In summary, there is a considerable amount of camping on the island by kin and friends. Additionally, there are four men from the island who go to the mainland to camp and hunt caribou, and several women from Savoonga collect berries near Nome. Otherwise, summer resources are taken at island camps which are dominated by particular households or groups of households.

All things considered, the data here demonstrate the critical nature of all sides of the island (north, west, south) to the people of Gambell. The Gambell people use one contiguous section of the island for summer resource collection. The people from Savoonga use the balance of the island, the regions east of where the Gambell camping ends. It is obvious that any major environmental change in any of" these areas would spell disaster for the villagers. The resources are rather uniformly distributed from one side of the island to another. There is no overwhelming concentration of one subsistence resource, except birds' eggs which are taken at Powooiliak, and Koozata on the south side, and, to a much lesser degree, Dovelawik Bay on the north side. To some extent, figures on use areas are misleading since they do not convey quantities. It is known that Kavalghak Bay yields thousands of murre eggs during June, although only four households used it for this purpose in 1981.

Savoonga Campers

Savoonga summer campers pursue major summer subsistence activities in about the same order of frequency as Gambell campers. Table 23 shows

Table 23. Savoonga Summer Camping Sites and Major Subsistence Activities, 1981.

Location	Seal Hunting	Bird Hunting	Fishing	Collecting Land Plants	Collecting 'Invert. & Sea Plants	Marine Bird-Egg Collecting
Kialegak Point	14	13	14	13	13	13
Eeuwak	12	13	12	10	15	12
Alngeeyak Point	11	12	8	7	7	8
Kulowiye	9	9	9	6	0	10
Siknik	7	6	6	5	7	0
Ataakas	12	6	0	2	7	3
Kowak	8	7	7	6	5	0
Seepanpak	5	5	5	5	5	5
Si look Camp (Koozata Lagoon)	0	7	7	7	4	4
I veetok	5	5	5	5	2	1
Tomname Lagoon	3	3	3	3	3	3
Kangee	3	3	6	3	3	3
Kookoolik	3	0	0	0	0	0
Ongoveyuk	2	2	2	2	2	2
Cape Kitnik	4	4	4	4	4	4
Powooiliak Lagoon	5	5	0	0	0	0
Kitnagak	2	2	2	2	2	2
Maknek River	4	0	0	0	0	0
Kintaga Bay	2	2	2	2	2	2
Tapisaghak River	0	0	7	0	0	0
South of Ataakas	2	2	2	2	2	2
Ongove	1	1	1	1	1	1
Kakonarek	0	0	4	0	0	0
TOTALS	114	112	111	90	84	77

the various subsistence activities engaged in by Savoonga households and the locations where they pursue them. The number of Savoonga households which fish is almost identical to the number of Gambell households which fish (see Table 21). Similar frequencies are also found for the other three most frequent summer subsistence activities--seal hunting, bird hunting and collecting land plants. Bird egg collecting is more often engaged in by Savoonga campers than by Gambell campers, however (see Chapter XI for a more complete discussion). The similarities of the summer activities of both communities underscore the similarity of the two communities in virtually all activities (compare Tables 21 and 23).

About sixty percent of the Savoonga camping sites are on the north side of the island, as measured by household use, and, as with Gambell camping sites, they are evenly distributed there. For Savoonga campers, the north side sites run from Kangee Camp to Camp Kulowiye, as Table 24 shows. A few locations are of particular importance to Savoonga residents. because they offer access, variety and a general abundance of resources. Information indicates that Kialegak Point at Southwest Cape, and Eevwak Point, five miles west of Savoonga, are the two most important sites offering the full range of summer resources. All of the seals, most of the summer fish species, birds and birds' eggs (particularly ducks and geese] , land and marine plants and marine invertebrates (see Table 23) are all found at these two Points. Alngeeyak Point is the third most important summer resource collection site. About 25 percent fewer households use it than use the sites mentioned above (Kangee and Kulowiye) , although the variety and apparent abundance of resources are very high, as is household use.

There are other sites that possess the full range of resources, but not many Savoonga households use them. These include Kitnik (7 households) , Kowak (8 households) , Seepanpak Lagoon (5 households) and iveetok

Table 24. Savoonga Summer Camping Sites and Frequency of Use by Area, 1981.[a]

North Side: Kangee Camp to Camp Kulowiye.

Camp Site	Number of Camping Households
1. Eevwak Point	15
2. Ataakas Camp	12
3. Alngeeyak Point	12
4. Camp Kulowiye (Northeast cape)	10
5. Tapisaghak River	7
6. Kangee	6
7. Camp I veetok	5
8. Seepanpak Lagoon	5
9. Cape Kitnik	4
10. Kookoolik	3
11. Tomname Lagoon	3
12. Kintanga Bay	2
13. Ongaveyuk Lagoon	2
14. Kitnagak Bay	2
15. 2 miles South of Ataaksa Camp	2
16. Ongave	1
TOTAL	91

South Side: Kilknat Lagoon to Powooilik Lagoon.

Camp Site	Number of Camping Households
1. Kialegak Point	14
2. Kowak (North of Silook Camp)	8
3. Kiloknak Lagoon	7
4. Siknik Camp	7
5. Silook Camp	7
6. Powooili k Lagoon	5
7. Kakonarek (North of Koozata Lagoon)	4
8. Maknek River	4
9. Knife	3
TOTAL	59

[a] Fifty-one percent of the Savoonga camping households used more than one location.

(5 households), among others. These sites might be used more often in the future if the island population continues to increase.

Like Gambell households, Savoonga households extensively utilize the available natural resources. They harvest these resources at a wide variety of camping sites which totally encompass the island. Most camping locations yield all of the major subsistence resources in significant numbers. Damage to any of the camping areas would create substantial hardships for the village of Savoonga, as well as all the inhabitants of St. Lawrence Island.

CHAPTER X

FISHING

The last chapter described the equipment used for summer fishing, and the organization of the camping crews, so those topics need not be discussed. However, most families on the island do some winter fishing, primarily for sculpin, tomcod and blue cod. Many families catch these species by the hundreds and these fish play an important part in the winter food supply. However, except for lines and implements to chop holes in the ice, little additional equipment is necessary.

This chapter focuses upon the data we have on the quantities of the various fish species taken in 1981, with occasional reference to the data collected in 1982, and summarizes the ways that islanders consume and distribute fish and fish products, with special attention to gifting and reciprocal sharing. The numerous locations where fish species are taken are shown in Figure 14. As can be seen from Figure 14, virtually the entire periphery of the island is used for fishing.

The major techniques for catching the many fish species available (but mainly salmon and char) in the summer employ gill nets, and, to a lesser extent, rods and reels (see Chapter I I for an enumeration of the available species). The large lagoons and their accompanying rivers are the chief sources of these vital resources, and fish are caught in conjunction with hunting for birds and seals. in many families, fish comprise the overwhelming majority of the summer food supply, when abundant, and they are frequently given to passers-by,

In the winter, fishing for tom cod and blue cod is often conducted by solitary fishermen, but most often it is conducted by a summer crew consisting of 5 or 6 people, representing one or two families. Whereas

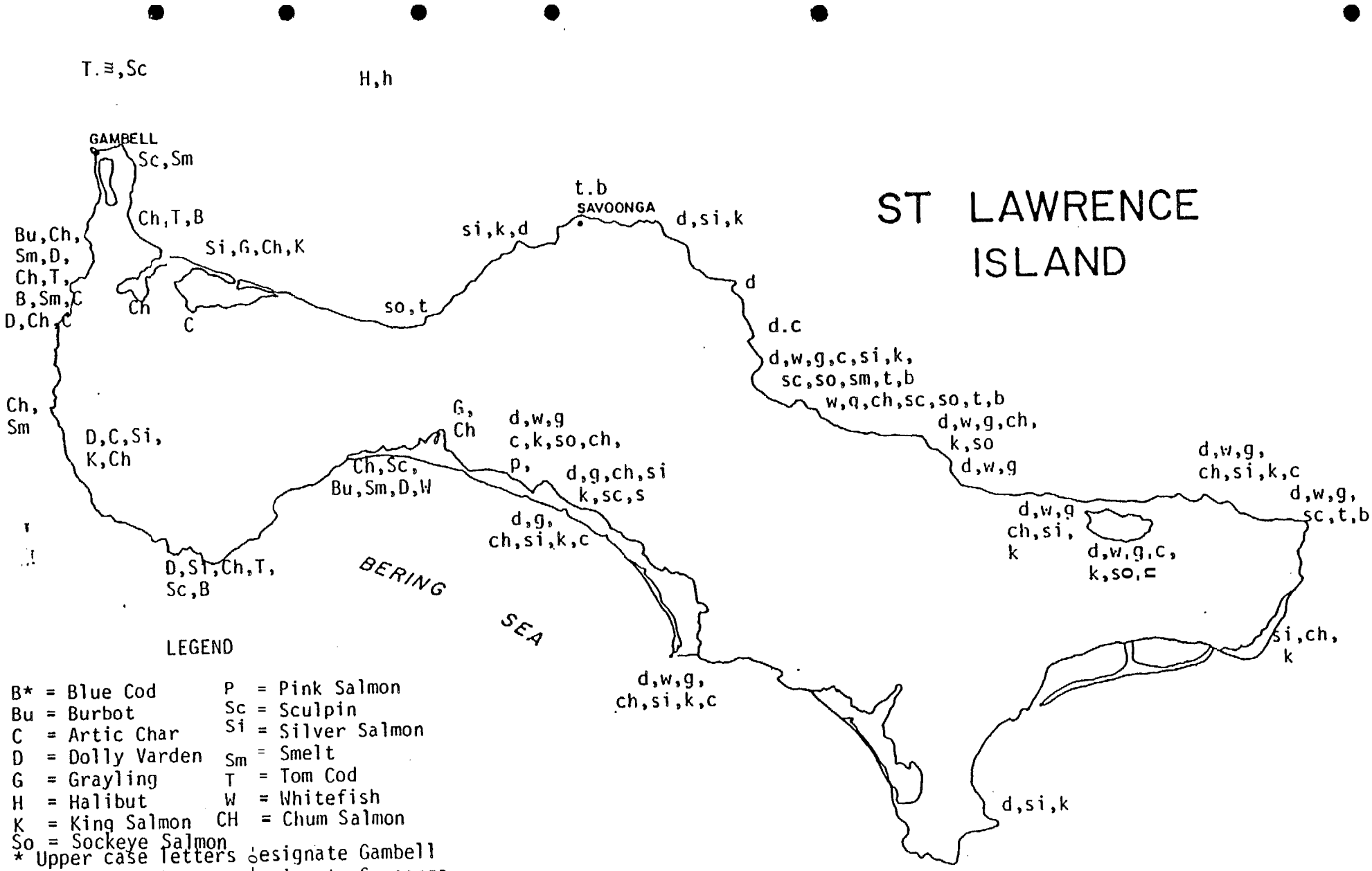


Figure 14. Major Fish Species Harvest Areas for Gambell and Savoonga Fishermen, 1982.

summer camps are located far from the villages, and most of the fish are caught in the large lagoons which are at least 20 miles from Gambell and Savoonga, winter fishing is done within a few miles of each village. Gambell fishermen usually go just off shore on the ice from Ooynik Point to Chibukak Point. Savoonga fishermen go off shore north of their village, out onto the Bering Sea ice. They range along the shore 5 miles to the west and about an equal distance to the east. Fishermen cut holes into the ice and lower lines with unbaited hooks. They then draw the line up, hand over hand, retrieving the line and hooks to the surface of the ice. Cods are frequently snagged as the hooks pass by. As many as several hundred fish can be brought to the surface in the course of two or three hours. It is not unusual for fishermen to retrieve 100 fish in one session on the ice. The fish are placed in gunny sacks or other containers, loaded onto a snowmachine and taken home. Some people assert that they could bring home many more fish than they usually do, but they feel no compulsion to take home any more fish than they need. If the fisherman is accompanied by friends or" relatives, these people collectively divide the catch in equal shares (crew sharing). When the crew returns to the village, they are often met by relatives and/or friends, and the crew members give some of their shares to these people (come-to-meet sharing).

After crew members have taken their remaining fish home, there is subsequent distribution of the fish to neighbors, the elderly, the indigent, others who are in need, and those whose supplies of food are low (home sharing). Home sharing of fish occurs throughout the year, and continues as long as a crew member's household has some fish on hand. The women or woman of the household, as we have described in the chapter on sharing, is mainly responsible for the distribution of the fish after they

are brought home, although her husband, brothers, sons or other resident male fishermen invite people to stop by for gifts of fish.

Surplus winter fish, and the summer catches that are not consumed at camp, are put in individual household freezers. In Gambell, they use the community freezer. Savoonga has a commun ty freezer building under construction, and it will soon be in service. The freezers contain, in some cases, hundreds of fish and these can last a household for many months, even though the household might distribute more than half of its individual and/or crew shares of summer and winter catches. Some households reported up to 5,000 pounds of fish taken in a single summer season. One fishing household distributed fish on a regular basis to more than 20 percent of the households in Gambell.

Forty of the 43 households that comprised the Gambell sample did some fishing during the year. Some households do very little, seeking only one species, and they pursue this species in what must be described as a rather casual manner. Three households in the sample did not fish at all, six fished only occasionally and the remainder, about 34 households, fished intensively. These latter households catch many species of salmon and char, which are locally referred to as "trouts" They also harvest some sculpin and whitefish in summer along with tom cod, blue cod and sculpin in winter. Thus, nearly 80 percent of the Gambell sample of households fish regularly and intensively. If the sample is representative, then nearly 90 of Gambe l's 110 households rely upon fish for food.

The Savoonga sample of 18 households revealed! that 3 households did not fish, 4 households fished occasionally and 11 households fished intensively. Thus, 6? percent of Savoonga households had members who fished, about 19 percent less than the proportion of the Gambell sample

that fished. It must be remembered that there are reasons for believing that the Savoonga sample underrepresents subsistence harvests, if for no other reason than the majority of the community was camping during the research period, and that those remaining were not generally harvest participants. Without being actively engaged in the harvest pursuits, it is likely that they would lack detailed information on subsistence harvests. Furthermore, the master charts of all Savoonga households prepared at the outset of the research show that 76 percent of the villagers and 92 percent of the households set up summer camps. In Gambell, the master charts revealed that 74 percent of the people and 81 percent of the house holds set up summer camps. The similarities of the figures for the two communities give strong evidence that Savoonga and Gambell are more similar than the subsistence harvest figures would indicate.[3]

All 61 household heads contacted in the Gambell and Savoonga samples were asked about harvest locations, which species 'were caught. what equipment and techniques were used, the number of people in the fishing

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[3] It is a commonly held article of faith among many non-native Alaskans that Savoonga is a more progressive community than Gambell. These individuals believe that the residents of Savoonga are better educated and more receptive to change than their friends and kin in Gambell. The data collected for this report do not support this oft-held belief. The cultural, organizational and structural similarities between the villages are extremely striking, and the data and discussions on hunting and camping crews, patricians, clan segments, membership in religious sects, educational institutions, sharing patterns, customs, social structures and intercommunity friendship ties confirm the assertion that the two communities are indeed very similar. Perhaps the contention that Savoonga is the more progressive of the two communities is based upon the fact that a large number of leaders in Kawerak are from Savoonga, but this fact provides little, if any, justification for the assumption that Gambell is less advanced than Savoonga in adopting modern practices. It is most unfortunate for the people of Gambell that terms such as "progressive" and "advanced" carry positive connotations while the converse carry negative connotations.

crews, and the distribution of fish among crew members, among those who come-to-meet and in home sharing.

The responses to general questions about fishing depended on how well respondents remembered their annual catches. The quantities reported ranged from very specific numbers for each species to less precise quantities, such as 200 pounds or one-half of a plastic bag. The goal was to record the number of each species taken in 1981 and in 1982, up to the time the questions were asked.

It became immediately evident that fish are extremely important in the annual subsistence round of the people of St. Lawrence Island. Several of the informants told us that a single summer fish and its eggs, when combined with some seal oil, can provide a plentiful meal for a family of five or six. When one considers that some households take as many as 1,000 fish in a season, the importance of fish in the diet of islanders becomes evident. These same households might redistribute all but 200 fish, contributing an indispensable food source to the poorer families of the two communities.

Table 25 provides a summary of fish caught by respondents during the summer of 1981 as well as the number caught by the entire village. However, the figures given are based on rather small samples. In no instance was specific data collected about the annual catch for more than 14 percent of the households in either community. Nevertheless, the figures convey a general impression of the size of the catch and provide an estimate of the relative importance of the various species as shown by the number (but not bulk or weight) caught. In terms of numbers caught, the several sculpin species, the cod species, grayling and Dolly Varden are all important. They are taken in large numbers by both

Table 25. Ten Major Fish Species of Gambell and Savoonga: Quantities, Months Caught, Crew Size and Location, 1981.

Species	Community / Quantities by Individual or Crew	Total by Community Average Annual Catch by individual or Crew	Average Crew Size (Includes those who who fish alone)	Months Caught.	Location
Chum Salmon	Gambell: 200, 100, 200, 250, 15, 75, 76	916 / 131	7 crews recorded. (some individual and crew fishing) Average size: 2.7	July-September	Koozata Lagoon
Chum Salmon	Savoonga: 20, 30	50 / 25	2 crew recorded. (Size unknown)	July-September	Koozata Lagoon
Dolly Varden	Gambell: 100, 100, 150, 100, 300	750 / 150	5 crews recorded. Most are caught by individual fisher-men at summer camps	June-September	Niyrapak Lagoon, and Koozata Lagoon (mainly)
Dolly Varden	Savoonga: 300, 100, 150, 10, 700, 600, 200, 500, 200	2760 / 307	9 crew recorded. Most are caught by individual fisher-men at summer camps	June-September	Koozata Lagoon, Camp Iveetok
Grayling	Gambell: 170, 200	370 / 185	2 crews recorded. (Size unknown)	July-September	Koozata Lagoon
Grayling	Savoonga: 40, 300, 100, 200, 30, 30	700 / 117	6 crews. (Size unknown)	July-October	Koozata Lagoon, Camp Iveetok

Table 25 (cont.). Ten Major Fish Species of Gambell and Savoonga: Quantities, Months Caught, Crew Size and Location, 1981.

Species	Community/ Quantities by Individual or Crew	Total by Community / Average Annual Catch by Individual or Crew	Average Crew Size (Includes those who who fish alone)	Months Caught	Location
King Salmon	Gambell: 12, 10, 10, 2, 10, 4, 30, 2, 1, 5, 3, 2, 100, 150, 8, 2	351 / 22	16 crews recorded. Average crew size: 2.6. This average" includes individual fishermen and some summer camping crews of up to 5 people each	June-September	Koozata Lagoon, Niyrapak Lagoon, Kitnepaluk
King Salmon	Savoonga: 150, 3, 3, 3, 40	199 / 40	5 crews recorded. Crew size unknown	June-September	Koozata Lagoon, Iveetuk
Pink Salmon	Gambell: 75, 70, 100, 150, 20, 50, 39, 56, 40	600 / 60	10 crews recorded. Average crew size: 2.7. See comments for King Salmon	July-September,	Koozata Lagoon
Pink Salmon	Savoonga: 10, 60, 20, 30, 40	160 / 32	5 crews recorded. Average crew size unknown	July-September	Koozata Lagoon
Sculpins	Gambell: 25, 400, 200, 350, 400, 375, 100, 4, 45, 20, 30, 120, 10, 50, 100, 250, 450, 400, 250	3579 / 188	19 crews recorded. Average crew size: 3.2	June-August	From Gambell West to Niyrapak Lagoon (mainly)

Table 25 (cont.). Ten Major Fish Species of Gambell and Savoonga: Quantities, Months Caught, Crew Size and Location, 1981.

Species	Community/ Quantities by Individual or Crew	Total by Community / Average Annual Catch by individual or Crew	Average Crew Size (Includes those who who fish alone)	Months Caught	Location
Sculpins	Savoonga: 200, 100, 200, 57, 120, 100, 25, 100, 20, 100	1022 / "102'	10 crews recorded. Average crew size: 3.2	June-August (Some winter fishing)	Approximately 10 miles east or 10 west of Savoonga. Some ice fishing north of the village
Silver Salmon	Gambell: 175, 250, 150, 75, 200, 20, 16, 10, 150, 49, 39	1134 / 103	11crews recorded. Average crew size: 3.18	June-September	Koozata Lagoon
Silver Salmon	Savoonga: 6, 20, 70, 200	296 / 74	4 crews recorded. Average crew size unknown	June-September	Koozata Lagoon, Eevwak Point
Tom and Blue Cods	Gambell: 50, 50, 200, 200, 100, 150, 150, 100, 100, 350, 350, 100, 100, 150, 100, 500	2750 / 172	16 crews recorded. Average crew size close to 1. [Individual fishing primarily)	January-March	North of Gambell (ice-fishing)
Tom and Blue Cods	Savoonga: 50, 100, 1, 100, 250, 50, 100, 15, 100, 100, 100	1965 / 197	10 crews recorded. Crew size same as Gambell	January-March	North of Savoonga (ice-fishing]

Table 25 cont.). Ten Major Fish Species of Gambell and Savoonga: Quantities, Months Caught, Crew Size and Location, 1981.

Species	Community/ Quantities by Individual or Crew	Total by Community Average Annual Catch by Individual or Crew	Average Crew Size (Includes those who who fish alone)	Months Caught	Location
Whitefish	Gambell: (Insufficent data)			July	Koozata Lagoon
Whitefish	Savoonga: 125, 100, 10, 50	285 / 71	4 crews recorded. (Size unknown)	July-September	Koozata Lagoon

communities. The silver salmon is also very important to both villages as the catch data indicate. The chum salmon seems more important to Gambell than Savoonga, and the whitefish more important to Savoonga than Gambell, but the differences could be a reflection of sampling error.

The quantities of fish caught provide a rough estimate of the relative importance of the ten major species to islanders (see Table 26). Obviously sculpin, Dolly Varden, tomcod, and blue cod are very important. However, it is difficult to assert with any great confidence that they are the most important. There are considerable differences between the sizes of the species. All of the salmon, but especially kings, are considerably larger than sculpin. Further, generalization is restricted due to the small sample size. Nonetheless, the information on catch is detailed and represents the best data on fish harvests for St. Lawrence Island to date. Many households take arctic char. This fish was mentioned by many household heads who did not recall the total quantities taken. Many islanders tend to categorize arctic char with Dolly Varden, calling them both "trouts." 'T"he catch data for Dolly Varden undoubtedly include arctic char. Therefore, the reader is cautioned not to overlook this species, although the precise quantities taken are unavailable.

There were many household heads, some of the most active in subsistence activities, who did not recall specific quantities for each species caught. In these instances, the informants stated that they took all of the major species, and their lists frequently included arctic char as well as the 10 major species listed in our table. Unfortunately, they could not recall the precise, or indeed, gross quantities of any of the species they caught.

Table 26. Number of Fish by Major Species Reported by Gambell and Savoonga Fishermen, 1981.

GAMBELL

Species	Number Taken	Number of Crews Recorded	Individual or Average Crew Catch
Sculpin[a]	3,579	1 6	188
Tomcod and Blue cod	2,750	16	172
Silver Salmon	1,134	11	103
Chum Salmon	916	7	131
Dolly Varden[b]	750	5	150
Pink Salmon	600	10	60
Grayling	370	2 "	185
King Salmon	351	16	22
Whitefish	(unknown)		

SAVOONGA

Species	Number Taken	Number of Crews Recorded	Individual or Average Crew Catch
Dolly Varden[b]	2,760	9	307
Tomcod and Biue cod	1,965	10	197
Sculpins	1,022	10	102
Grayling	700,	6 ,	117
Silver Salmon	296	4	74
Whitefish	285	4	71
King Salmon	199	5	40
Pink Salmon	160	5	32
Chum Salmon	50	2	25

[a] Includes severs{ species
[b] Probably includes arctic char

Several household heads said that they took more than two species of cod, but the species other than tomcod and blue cod seemed to play a relatively minor role in the subsistence rounds. Sockeye salmon were listed by five Gambell households (but no Savoonga households) as a major catch. Sockeye salmon probably play a much greater role in the complex of fishing than the scant information indicates.

Another species which is caught with some regularity but does not appear in Table 25 is the Pacific halibut. This fish frequently grows to a length of 6 feet. [t is caught with rod and reel during the winter and spring, off the north coast of the island in the vicinity of both villages. Pacific halibut are sought by several crews who work together. Because of their size, fishing for halibut requires crews of several people. Someone has to do the fishing with rod and reel, another has to steer the boat and operate the motor, and yet another person must assist with the final capture of the fish. Many fishermen use a handgun to dispatch the fish which possesses great strength. Handguns are viewed by villagers as the most efficient means of dispatching the Pacific halibut. Several crews from the two villages catch these fish, but data regarding annual catches were not available. It is known, however, that Gambell and Savoonga crews customarily share their halibut catches each year.

Apparently, there are two kinds of flounders caught by fishermen from both Gambell and Savoonga. These flounders are reportedly taken only occasionally and not regarded as tasting good. They measure about one foot in length, and are taken when other fish are difficult to get during the winter months. The Gambell people get them from Tiflighak Bay to Akeftapak Bay, and at Kavalghak Bay, Moghoweyik, and Koozata Lagoon, A flounder species of an unusually large size is caught near Savoonga by Savoonga

fishermen. When caught they are shared with people in Gambell. This species (perhaps the starry flounder) is occasionally caught at Tategnak Point, directly east of Gambell across Sevuokuk Mountain. They too are shared. The successful Gambell fishermen give some to friends and relatives in Savoonga.

Informants report that there are also three species of smelts taken each year by fishermen from the two villages. Villagers have identified them as rainbow, transparent and long-finned smelts. These three species are caught in summer and fall when they lay their eggs. All three species are found on the beaches sometime during summer, usually toward the end of the season. In 1978, thousands of rainbow smelt were washed onto the beaches of Niyrakpak Lagoon southeast of Gambell, even though these fish are never caught in this lagoon. The fish were collected and frozen for later use. Many were given to friends and relatives. The rainbow smelt is found by people from Gambell from Ooynik Point to Kittilngook Bay and on to Niyrapak Lagoon. The long-finned smelt is found from Ooynik Point to Kittilngook Bay as well, and it is found along the west side of the island all the way to Powooiliak Lagoon at Southwest Cape. It is caught with small throw-nets and collected from beaches. Information is lacking as to where this species was caught by Savoonga people, but several people in Gambell reported that this fish is often given to them by relatives and friends from Savoonga. It is difficult to assess the importance of the three smelt species to island subsistence. Smelt were mentioned by household heads only occasionally, and the reported amounts caught were imprecise. Therefore, it can tentatively be concluded that the three smelt species are relatively unimportant to the subsistence economy.

The other fish species, however, are clearly critical elements in the subsistence livelihoods of the islanders. The amounts caught each year appear to provide necessary dietary elements, as well as alternatives to marine mammal flesh. Part of the winter, and much of the summer activities are organized around the harvest of fish. Like the marine mammals, then, fish play a critical role in the social organization of the island.

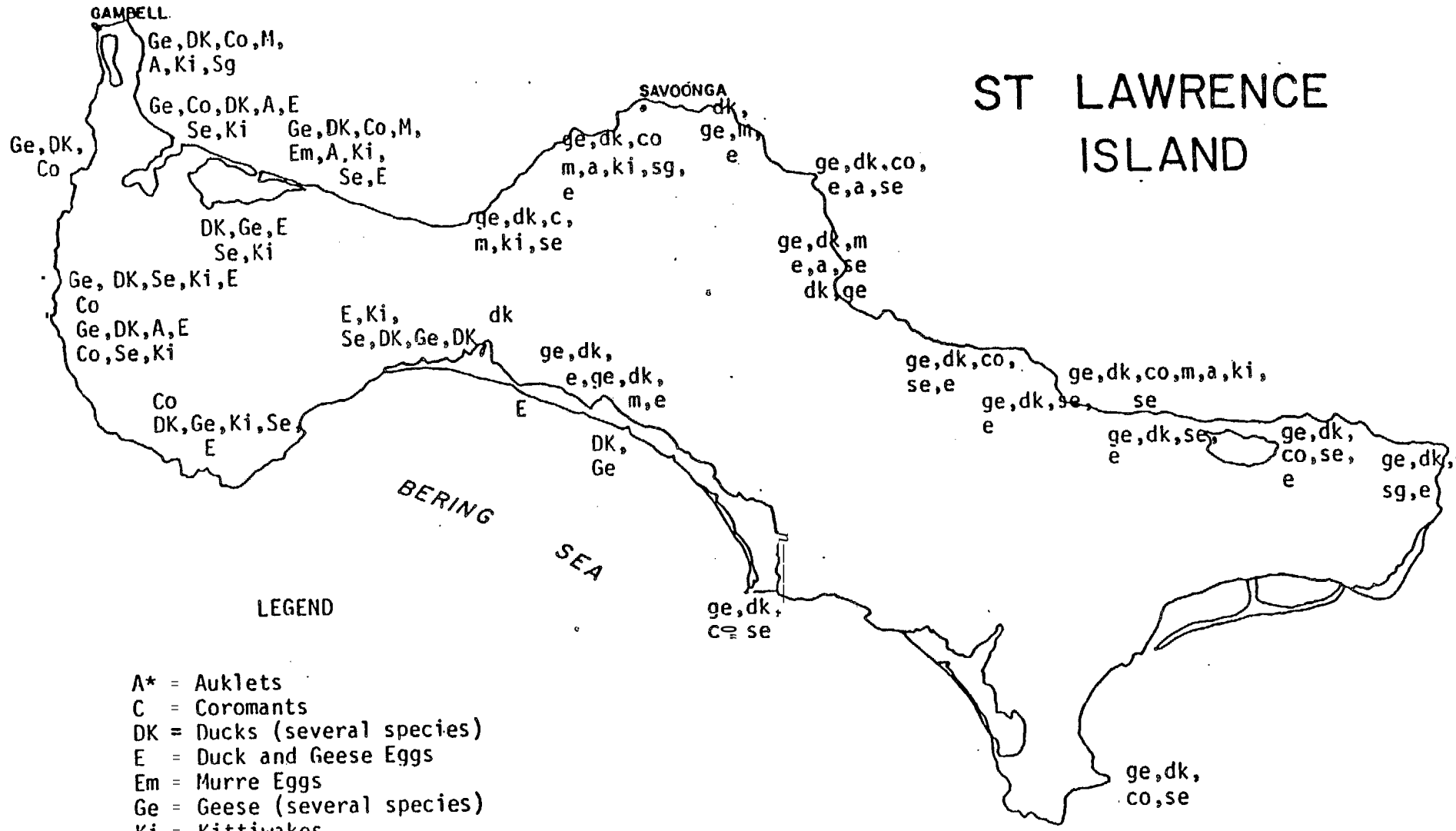
CHAPTER XI

BIRD AND BIRD EGG HUNTING

Bird resources, including the eggs of murres, ducks and geese, are an essential part of the diet of the islanders. During some periods of the year, late spring and summer, birds are a major source of food, and many activities are promoted to capture water fowl, seabirds, and their eggs. They are dried or frozen (or both) for use in winter. When eaten fresh, birds are fried, baked, or boiled and are regarded as great delicacies. They add important variety to the summer camp diet of fish and occasional seal meat. In winter, they are a refreshing break from diets of stored walrus, seal and fish, and some people develop very strong preferences for specific types of birds.

St. Lawrence Island provides a wide variety of avian species (see Chapter 11). The several species are hunted at a large number of locations around the island (see Figure 15), and many are accessible during several months of "the year. Some locations, such as Tomname, produce numerous species; while other locations, such as Powooiliak, produce only one species (see Tables 27 and 28). Several species of ducks and geese are available from May to December and are hunted with shotguns. Murres are hunted from May to about November, auklets from May to June, cormorants from August to November, and loons, cranes and several less important species are hunted sporadically throughout the summer.

Birds, like many other subsistence resources on the island, are frequently hunted as part of the quest for other species It is, for example, not uncommon for walrus hunters to take some ducks when



A* = Auklets
C = Coromants
DK = Ducks (several species)
E = Duck and Geese Eggs
Em = Murre Eggs
Ge = Geese (several species)
Ki = Kittiwakes
Sg = Seagulls

* Upper case letters designate Gambell
Lower case letters designate Savoonga

Figure 15. Major Bird Species Harvest Areas for Gambell and Savoonga Hunters, 198z.

Table 27. Bird and Bird Egg Harvest Areas for Savoonga Hunters and Collectors, 1981.[a]

	Ducks and Geese	Duck and Geese Eggs	Adult Cormorants	Young Cormorants	Murres	Murre Eggs	Auklets	Adult Kittiwakes	Young Kittiwakes	Adult Seagulls	Young Seagulls	Seagul Eggs	Total
Tomname	×		×		×		×	×		×			6
Alingeeyak Point	×	×		×						×	×		5
Ataakas	×		×			×	×			×			5
Kitnaqh	×	×	×								×		4
Camp Kulowiye	×	×	×							×			4
Kangee Camp	×		×		×				×	×			5
Ongoveyuk	×	×	×							×			4
Ongove	×	×	×							×			4
K'alegak	×		×								×	×	5
Eewak	×			×	×	×	×	×					6
Cape Kitnik	×		×		×	×		×		×			7
Siknik	×		×							×			4
Kitanga Bay	×	×			×								3
Knife	×	×			×								3
Seepanpak	×	×									×		3
Koskool'k	×				×	×							3
Kowak	×	×											2
Iveetok	×												1
Powooi iak	×												

[a] References are to a map of St. Lawrence Island, U.S.G.S., 1974.

Table 28. Bird and Bird Egg Harvest Areas for Gambell Hunters and Collectors, 1981.[a]

	Geese	Ducks	Duck and Geese Eggs	Cormorants	Murres	Murre Eggs	Auklets	Kittiwakes	Seagulls	Total
Tiflighak Bay	x	x	x	x	x		x	x	x	8
Apatiki Camp	x	x		x	x	x	x	x	x	8
Taphook Point	x	x		x	x	x	x	x	x	8
Kittilngook Bay	x	x		x	x		x	x	x	7
Chibukak Point	x	x		x	x		x	x	x	7
Tategnak Point	x	x		x	x		x	x	x	7
Akeftapak Bay	X	x	x	x				x	x	6
Niyrakpak Lagoon	x	x	x	x				x	x	6
Kavalghak Bay	X	x	x	x				x	x	6
Ooynik Point	X	x	x	x				x	x	6
Powooiliak Bay	x	x	x	x				x	x	6
Koozata Lagoon	x	x	x	x				x	x	6
Ikalooksik River	x	x	x	x				x	x	6
Naskak Camp	x	x	x	x				x	x	6
Booshu Camp	x	x			x	x	x			5
Kitnepaluk	x	x	x						x	4
Boxer Bay	x	x	x							3
Moghoweyik	x	x								2

[a] References are to a map of St. Lawrence Island, U.S.G.S., 1974.

returning home their hunts. Fishermen are apt to shoot ducks while waiting to check their gill nets, or on their way to summer camps.

Hunting

Inquiries about hunting yield specific and detailed information from 24 Gambell households and 16 Savoonga households. The Gambell sample represents about 22 percent of all the households in the community. Of the 43 Gambell households contacted about bird hunting, very few reported that no one in the household did hunting of this type. Unfortunately, nearly one-half of the people contacted could not recall the approximate number of birds they had killed or captured in 1981 and 1982.

Murres. Murres are hunted near Gambell and Savoonga, and hunters from either village need not travel more than about 15 miles to find them in abundance. The best habitats for them are within 10 miles east and 10 miles west of Savoonga, and 10 to 15 miles south from Gambell along the western shoreline and 4 to 5 miles east of Gambell. Murre hunts can be conducted relatively quickly, and often hunters will bag as many as 100 in a single journey to the cliff habitats of the birds. The average daily take is between 40 and 60 murres. Sample results indicate that Gambell bird hunters bring home more murres than any other species. The 24 households which provided detailed information reported that they had harvested nearly 6,200 birds in 1981. This represents an average take of 258 murres per household. The 16 Savoonga households reported harvesting 1,950 birds, for an average of 130 murres per household.

The Savoonga figures must be looked upon with a cautious eye because the research there was conducted from the middle of July to the middle of August. This period was the peak of the summer camping season and many of the most active hunters, collectors and fishermen were not available for

discussions. As already stated, the sample results probably underrepresent the population. Nevertheless, the available facts reveal that Savoonga, too, had a large harvest of murres.

No reasons have been encountered which would lead one to believe that Savoonga people depend less on murres than Gambell people. The Gambell resident averages about 50 murres per person per year for the reporting households. It must be remembered that not a II households harvest an average of 258, and that those who harvest large numbers distribute at least 50 percent of their take. Some households receive about as many birds from friends, neighbors and kin as they give, while other households receive none.

Most of the hunters get murres as members of crews and these crews average about 4 people (see Figures 16 and 17). The crews divide the harvest of murres (crew share], "and many of the hunters give to about 4 other people when they return from the hunt (come-to-meet share) , and all of them distribute birds to people who come to their homes (home sharing)..

Nearly all of the hunters and their wives or mothers give to more than 4 people. The hunting households generally receive murres from far fewer. people and households than they give to. This distribution pattern confirms earlier observations about the central role of skilled hunters. They usually give more than they receive. Successful hunters are the producers for the community, and when they retire from most of their subsistence pursuits they are, in turn, supported by successful younger hunters from their patrician. If the clan has too few skilled hunters, however, hunters from other patricians will provide the necessary support.

Auklets. Auklets are the second most frequently harvested bird species taken in the second greatest numbers. Three species are hunted:

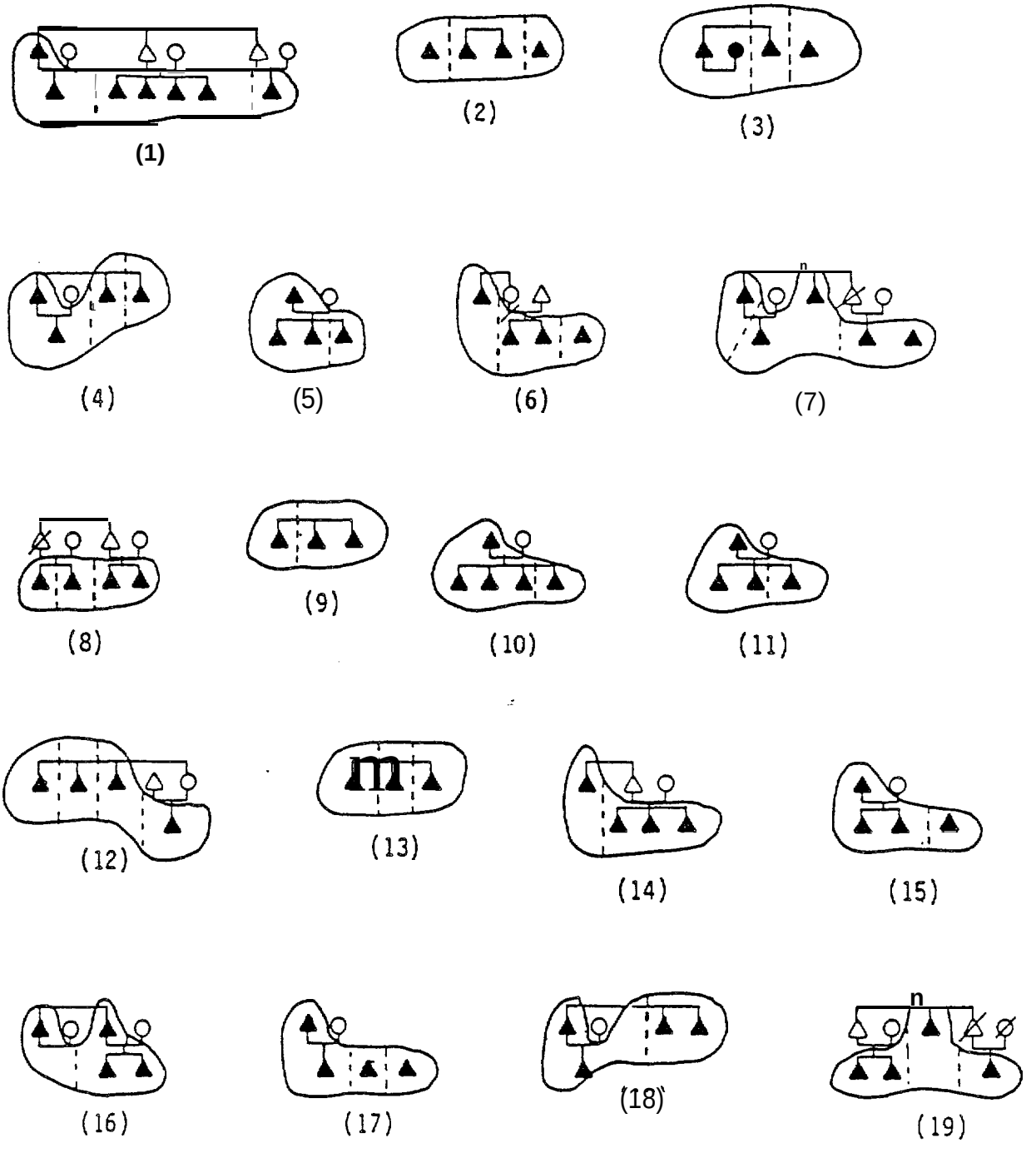


Figure 16. Relationships Among Gambell Young Bird Collecting Crew Members, 1982. [a]

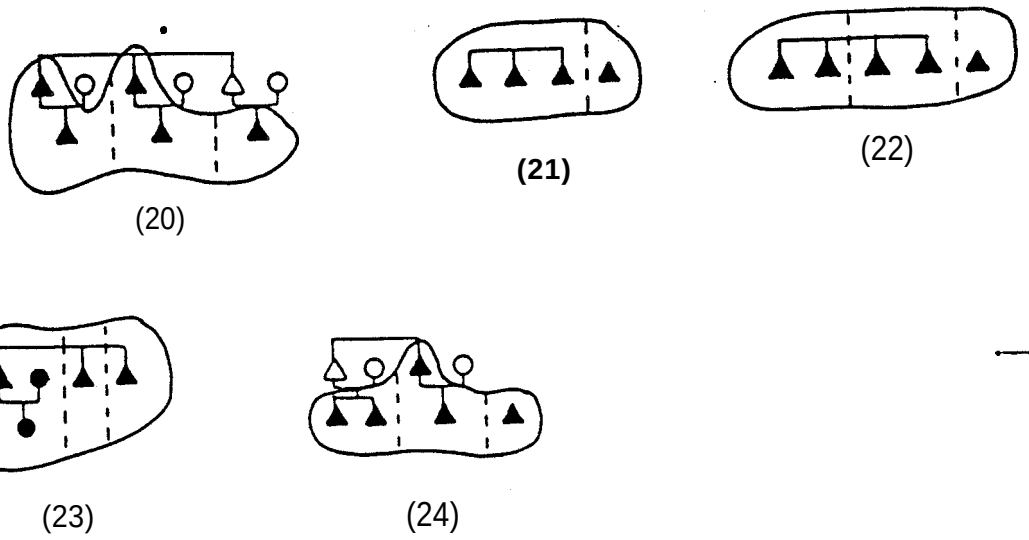


Figure 16. Relationships Among Gambell Young Bird Collecting Crew Members, 1982. (continued)

[a]Shaded symbols inside solid lines indicate crew members. Broken lines distinguis households. Circles represent females and triangles represent men. Numbers are arbitrary crew numbers.

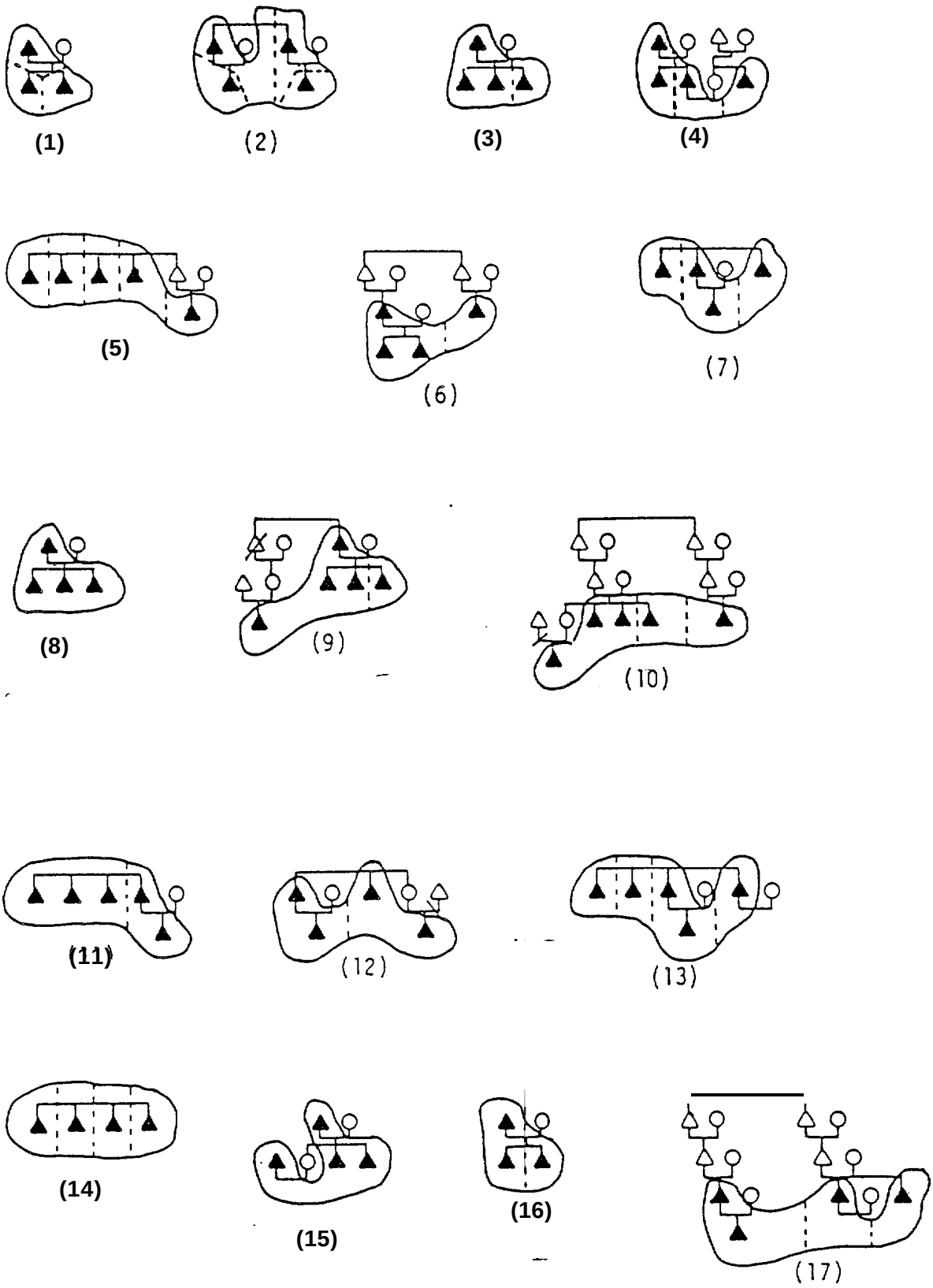


Figure 17. **Relationships** Among Savoonga Young **Bird Collecting Crew Members,** 1982.[a]

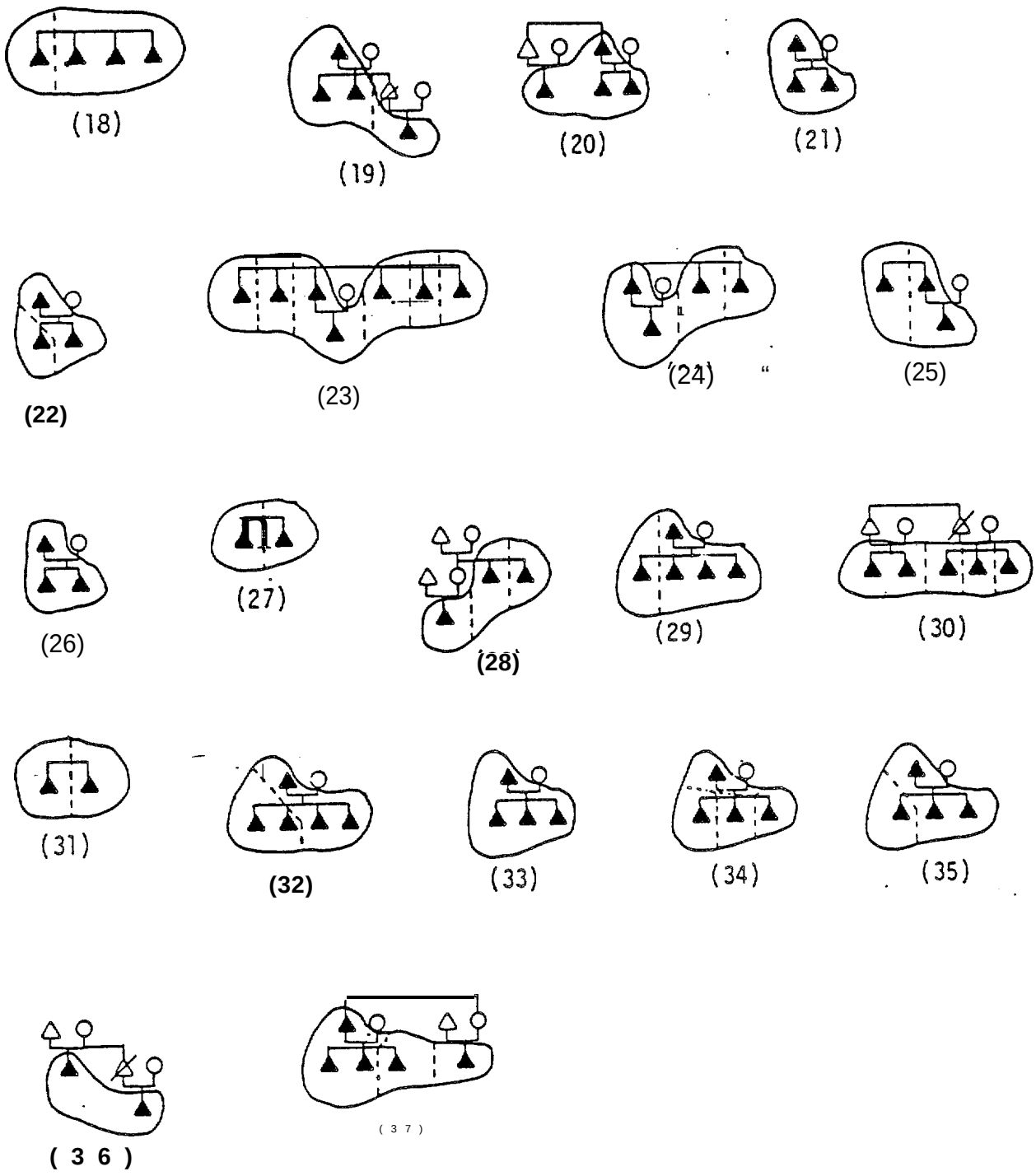


Figure 17 (continued). Relationships Among Savoonga Young Bird Collecting Crew Members, 1982.[a]

[a] Shaded symbols inside solid lines represent crew members. Broken lines indicate households. Circles represent women and triangles represent men. Numbers are arbitrary crew members.

least, parakeet and crested. Like the murre, the auklet is a small bird and it is found in cliffs, in roughly the same locations as murres. Auklets are very numerous, and they are an important source of food. During the peak of the auklet hunting season, most hunters' homes are repositories of large numbers of these birds. They are hunted by individuals or by crews of about 4 people. Many hunters greatly enjoy an evening journey to the cliffs of Gambell or near Savoonga for a solitary hunt. About as many auklets are taken as murres per trip, and the average take per hunter is very similar. The 20 Gambell hunters who reported specific numbers for 1981, averaged about 274 birds per year. The 12 Savoonga hunters who reported specific numbers claimed an average of 54. Again, the reader is cautioned- about the size of the Savoonga sample.

Unlike murres which are generally hunted with shotguns, auklets are also taken with nets. Even though auklets are easier to take with shotguns, some Savoonga hunters are switching to the use of nets because of the rising cost of ammunition. The cost of shotgun shells normally must be added to fuel costs. Murres and auklets hunts require from two to five gallons of gas per hunt, and gas was selling on the island for about $2.50 per gallon. Even so, murres and auklets are relatively inexpensive to hunt because of the bounteous harvests.

Ducks. Ducks are hunted at different times of the year, but most often they are hunted in conjunction with other subsistence pursuits such as fishing and seal hunting. They are frequently hunted near both villages after people have returned from summer camps. In 1981, Gambell hunters averaged about 90 birds each for the 21 hunters who gave detailed information. The 12 Savoonga hunters who provided details on their duck hunting averaged 42 ducks in 1981. Many other hunters reported taking ducks during the course of 1981, but they were unable to give specific

figures. ' These figures, while incomplete, indicate that a number of ducks are harvested annually.

Geese. Seventeen Gambell hunters reported an average annual harvest of 48 geese (from the three species on the island), and the 8 reporting Savoonga hunters provided figures which indicated an average of 27. Geese are taken in about the same way and under the same circumstances as ducks: summer camping hunts and some solitary hunts from the villages.

Cormorants. Few households had specific and detailed information on cormorants. Ten Gambell hunters reported taking 700 cormorants in 1981. This is an average of 7,0 birds per hunter. Even though not taken in large numbers, this bird is the favorite of some hunters because of the dark, "delicious meat it provides. ,

Birds are obviously very important in the diets of the people of St. Lawrence Island. They a_re eaten fresh as well as stored in large numbers in the village freezer or in home freezer units. The costs of hunting birds cannot be calculated in isolation of other forms of hunting and fishing because these pursuits are often combined. However, ammunition costs make bird hunting relatively expensive, at least when compared with walrus hunting. With walrus hunting, one or a few shots produce large amounts of meat and other products. With bird hunting, however, even the very best marksman produces only a few ounces of flesh per shot. However, bird hunting appears to be a source of pleasure for those who engage in it, and it is difficult to put a price on the value of such feelings. It is impossible to accurately estimate the number of birds used per household in the two villages but the averages given here. inconclusive as they are, demonstrate that many thousands of birds are taken each year for the sustenance of slightly more than 900 people.

Insofar as bird hunting is common throughout North America, most readers have some ideas about how bird hunters proceed. Therefore, no elaborate description will be presented. However, Table 29 lists the equipment used, locations hunted and the harvests of several species.

Bird Eggs

Most households collect murre, duck and geese eggs. Murre eggs, as Table 29 indicates, are the most important bird egg. They are collected in the greatest numbers, and are also the preferred egg. Many Gambell and Savoonga families take more than 33 gallons of murre eggs each year.

Collecting murre eggs is a difficult task, requiring the cooperation of at least two people. This subsistence activity takes place only in the month of June. By July, nearly all 'murre eggs have hatched. Because they are so enjoyed by islanders, and since long-term storage requires freezing, the murre egg supply is usually exhausted by late July. Duck, geese and seagull eggs are also collected near summer campsites, but these resources are much less important than murre eggs. This does not mean duck and geese eggs are inconsequential; some Gambell families reported using as many as 30 gallons of these eggs in one season. They are, however, significantly less important as a subsistence resource.

Murre eggs are gathered by young men and boys climbing the cliff faces where the birds nest. The work is strenuous and dangerous. Occasionally, a crew member loses his perch on the rocks, plunging into the sea below, to be rescued by his crew. The collected eggs are placed in small plastic buckets and lowered on ropes to the workers who remain below. The eggs are then transferred into larger containers, typically 33 gallon plastic garbage cans, and the smaller containers returned.

Table 29. Summary of information on St. Lawrence Island Birds, 1982.

Gambell

Murres (Thick-billed and Common)

Time: May to November
Several go only in May-June, some in June-July, Some only in April-May

Location: Near Gambell for the most part; Also cliffs at point of mountain, Kittilngook Bay, Chibukak Point, Tategnak Point, and Tiflighak Bay.

Equipment: shotguns, boats, all terrain cycles (ATCs)

organization: Usually in crews, but occasional solitary hunts. Frequently hunted in conjunction with marine mammals.

Annual household murre takes, 1981: 70, 50, 350, 200, 450, 300,400, 200, 60, 100, 45, 200, 50, 100, 150, 200, 320. 21, 100, 70, 1,200, 500, 450, 600

24 households; total of 6,186 murres; average of 258 murres

Annual household murre take until June, 1982: 10 households, total of 2,155 murres, average of 215 murres

Auklets

Time: May to June; a few people hunt into July, and one person is recorded as having hunted auklets as late as September.

Location: Similar to murres; most of the locations are reported as "near Gambell", on the east side of Sevuokuk Mountain.

Organization: Family and other crews, a good deal of solitary hunting, but more crew hunting. Crews are similar to young bird collecting crews.

Equipment: Shotguns and nets; some parties use one or the other, some use both.

Annual household auklet takes, 1981: 600, 460, 150, 350, 300, 150, 150, 100, 35, 30, 50, 300, 300, 250, 90, 250, 70, 750, 650, 450

20 households; total of 5,485 auklets; average is 274

Annual household auklet takes until June, 1982: 350, 375, 300, 550, 600, 450, 600, 50, 300, 350, 150, 150, 100, 24, 8, 250, 300, 250

18 households; total of 5,157 auklets; average is 287

Table 29 (cont.). Summary of nformation on St. Lawrence Island Birds, 1982.

Ducks (all species)	(See Chapter IX to supplement this section.
	Time: May to December; most of the ducks are taken in June to early September. They are hunted near Gambell after early September when people leave summer camps and return to the village. Some people begin duck hunting as early as March.
	Location: Summer camps and locations east of Gambell, but near village. Frequently in same locations as murres and auklets.
	Organization: crews (camping) , or solitary hunts; the former necessitates the use of a boat, the latter a Honda or on foot. Shotguns are always used.
	Equipment: Shotguns, boats and outboard engines, or ATCs.
	Annual household duck takes, 1981: 50, 125, 75, 100, 140, 200, 150, 40, 50, 100, 100, 25, 20, 15, 100, 50, 100, 150, 75," 175, 100
	21 households; total of 1,940 ducks taken; average of 92 ducks
	Annual household duck takes until June, 1982: 40, 18, 75, 45, 75, 100, 4, 48, 100
	9 households; total of 505 ducks; average of 56 ducks
Geese (all species)	(See Chapter IX for supplementary materials. Ducks and geese are found in the same locations and seasons. The techniques, equipment and crew organization are similar for both species.)
	Annual household geese takes, 1981: 125, 45, 70, 100, 100, 50, 50, 25, 20, 8, 15, 36, 80, 90, 75, 20, 75 (average of 65 geese per trip)
	17 households; total of 984 geese; average of 58 geese
	Annual household geese takes until June, 1982: 75, 15, 46 (average of 15 geese per trip)
	3 households; total of [36 geese; average of 45 geese,
Gulls and Kittiwakes	Time: September - November
	Location: Most taken in the vicinity of Gambell; same sites as murre hunts. Many also taken at summer camps.
	Organization: Both summer camp crews and individual hunts.

Table 29 (cont.). Summary of information on St. Lawrence Island Birds, 1982.

	Equipment: boats, shotguns
	Annual household takes, 1981: 125, 300, 175, 300, 225, 200, 200. 125, 200, 125, 100, 30, 240, 75, 300, 50
	16 households; total of 2,770 gulls and kittiwakes; average of 173
	Annual household takes until August, 1982: 150
Cormorants	**Time**: August to November
	Location: near Gambell on east side of Sevoukok Mountain
	Organization: Some young bird collecting crews and some individual hunting. Some cormorants (adults) taken in summer.
	Equipment: shotgun and boat
	Annual household cormorant takes, 1981: 40, 75, 75, 180, 100, 75, 40, 40, 15, 60
	10 households; total of 700 cormorants; average of 70
Murre Eggs[a]	**Time**: June and first part of July
	Location: Booshu camp (Moghoweyik); cliffs east of Gambell near village;
	Organization: See bird eggs collectors above;
	Equipment: Boats, large containers {33-gallon size is common, plastic; also wooden pails)
	Annual household murre egg take, 1981: 33 gallons; 1 washtub; 1 30-gallon container and 1 wooden box; 2 30-gallon containers (trash cans) and a washtub; 2 30-gallon garbage cans and 1 washtub; 2 30-gallon cans and 2 wooden boxes; 1 30-gallon trash can and 1 double washtub; 1 30-gallon container of eggs; 1 30-gallon container of eggs; 1 33-gallon container and 1 washtub; 1 33-gallon container; 2 #10 washtubs; one washtub; 24 to 50 eggs; 110 eggs; 1 33-gallon container; 133-gallon container one washtub and one pail; 300 plus eggs (one washtub; 1 10-gallon container); 3 washtubs; 3 33-gallon containers and 2 washtubs; 1 33-gallon container; 1 30-gallon container and a wooden box; 1 washtub and 2 wooden boxes.

Table 29 (cont.). Summary of Information on St. Lawrence Island Birds, 1982.

Savoonga

Murres (all species)

Time: Same as Gambell

Location: Most are taken from the cliffs within 5 miles east of the village; some to the west a few miles, and others taken (in rare instances) to the west as many as 10 miles away. (See Chapter IX)

Organization: Taken by crews, occasional solitary hunters.

Annual household murre egg takes, 1981: 65, 45, 75, 75, 60, 180, 250, 40, 30, 100, 80, 150, 200, 300, 300

15 households; total of 1,950 murre eggs; average of 130 eggs

Auklets

Time: May to June (same as Gambell); a few people hunt into July.

Location: Primarily within 18 miles east of the village, and most often within five to six miles. Occasionally within three miles to the west; one case of some hunting on the south side (Koozata area). Auklets and murre hunting are frequently done within a short distance of the village; this is true of Gambell as well. Both villages are located within easy access of cliffs where the birds are plentiful. Hunting is done as the need for meat arises. Many people go as often as they possibly can, hunting for both food and pleasure.

Organization: Family and other crews; some solitary hunting, but mainly crew hunts.

Equipment: Shotguns and nets; some parties use one or the other or both.

Annual household auklet takes, 1981: 25, 20, 300, 20, 0, 0, 50, 50, 20, 10, 100, 50; "

12 households; total of 645 auklets average of 54 auklets; (This number is only about 20% of the Gambell average. A larger sample would be required to make a valid comparison with Gambell.)

Ducks

Time: May to December. Most of the ducks are taken from June to early September. (See Chapter IX to supplement this section.) Some ducks are taken from the same locations where many people camp.

Table 29 (cont.). Summary of Information on St. Lawrence Island Birds, 1982.

	Location: Summer camps and locations east of the village from 5 to 50 miles; occasionally shot north of village in the winter months.
	Equipment: Shotguns, boats and outboard engines, or ATCs
	Annual household duck takes, 1981: 15, 40, 10, 30, 15, 8, 50, 20, 15, 60, 200
	12 households; total of 463 ducks; average of 39 ducks (This is only about one-half of the Gambell average.)
Geese (all species)	(See Chapter XI and section on Gambell duck and geese above) Annual household geese takes, 1981: 6, 7, 1, 70, 10, 20, 80, 25
	8 housholds; total of 219 geese; average of 27 geese; (Slightly less than one-half the reported Gambell average.)
Gulls (includes young seagulls)	Time: September - November
	Location: A few miles east of the village for the most part.
	Annual household seagull takes, 1981: 90, 200, 5, 10, 10, 100, 50, 8.
	8 households; total of 473 seagulls; average of 59 seagulls (about one-third the Gambell average]
Murre eggs[a]	The information on Savoonga murres egg collection appears to be consistent with the quantities reported by Gambell collectors. The average per household is about 33 gallons per year plus an additional container full(such as a washtub). This resource has become more and more important in winter because of the availability of electric freezers. The contents of murre eggs are put into plastic storage bags and placed in home" or community freezer units, where they are stored for later use. This innovation in egg storage began only one or two years ago. The capacity to freeze eggs will doubtless add further impetus to egg collection . in coming years. Many families boil murre eggs, freezing them afterwards. Murre eggs are prepared in much the same ways as chicken eggs are: fried or boiled. They impart a delectable shrimp-like taste and the period of egg collecting is eagerly anticipated because of this delicious food being added to the diet. Eggs are given freely to relatives, friends and visitors.

Table 29 (cont.). Summary of Information on St. Lawrence Island Birds, 1982.

Other eggs[a]	Only sparse information is available on the quantities of duck and geese eggs that are gathered. The few households with specific details reported quantities as high as 20 gallons each yea r. A similar absence of information is faced regarding other types of eggs. It is known that some families collect seagull eggs, but quantities are generally meager.

[a] While it would have been possible to convert the measurement of eggs from garbage cans (30 and 33 gallon) , 10 gallon cans, washtubs and boxes into estimates of the number of eggs in the various containers, such a procedure, while precise, would be inaccurate. Furthermore, it would invite inappropriate and meaningless quantitative machinations and comparisons. Estimates of the containers' sizes by respondents were not always accurate, containers of the same size would not always hold the same number of eggs because of the different shapes and/or stacking procedures, and not all of the containers were filled to the same level. Too, estimates of breakage in transit were not available. For these reasons the measurements were reported in terms provided by informants. By so doing less precise numbers are provided, but the reported values have more reliability and therefore more confidence can be placed in them than if they were converted to an enumeration of eggs (see Mueller, Schuessler and Costner (1977:31).

Generally, egg-collecting crews travel to the collection sites in aluminum boats, but during rough weather they sometimes travel to the cliffs on ATCs. i f the foui weather arrives after the crews have begun, they may be forced to leave the eggs at the base of the cliffs and seek a safer harbor. To carry the fragile eggs on heavy seas would endanger both eggs and crew. They must, of course, be picked up later. in 1982, a U. S. Coast Guard flight managed to rescue and return to the villagers some eggs that had been left because of bad weather.

Most of the crews that collect bird eggs are comprised of people representing more than one household. in Savoonga an average of 2.2 households are represented on each crew, while 2.9 households are represented on each Gambell crew. Crew sizes range from three to six members. Egg-collecting crews are formed around nuclear and extended families and patricians. Male siblings and male parallel cousins (father's brothers' sons) provide the nucleus of most crews. Manpower requirements for egg collecting demands at least 3 peopie - someone to collect the eggs, someone to collect the pail that is lowered and raised by the collector, and someone to man the boat at the base of the cliffs. At the collecting sites, the cliffs rise abruptly from the water, and therefore boats must stay in the water where eggs are placed as they are gathered. The labor requirements of egg-collecting contribute importantly to the muiti-househo"id nature of work groups as well as to feelings of mutual assistance in the villages. Like the other subsistence activities, such as whale, walrus, and, bearded seal hunting and summer camping, bird egg collecting requires multiple-household cooperation.

Savoonga has 41 egg-collecting crews (see Figure 18). These 41 crews have members who reside in 93 households. The mean crew size is 3.8.

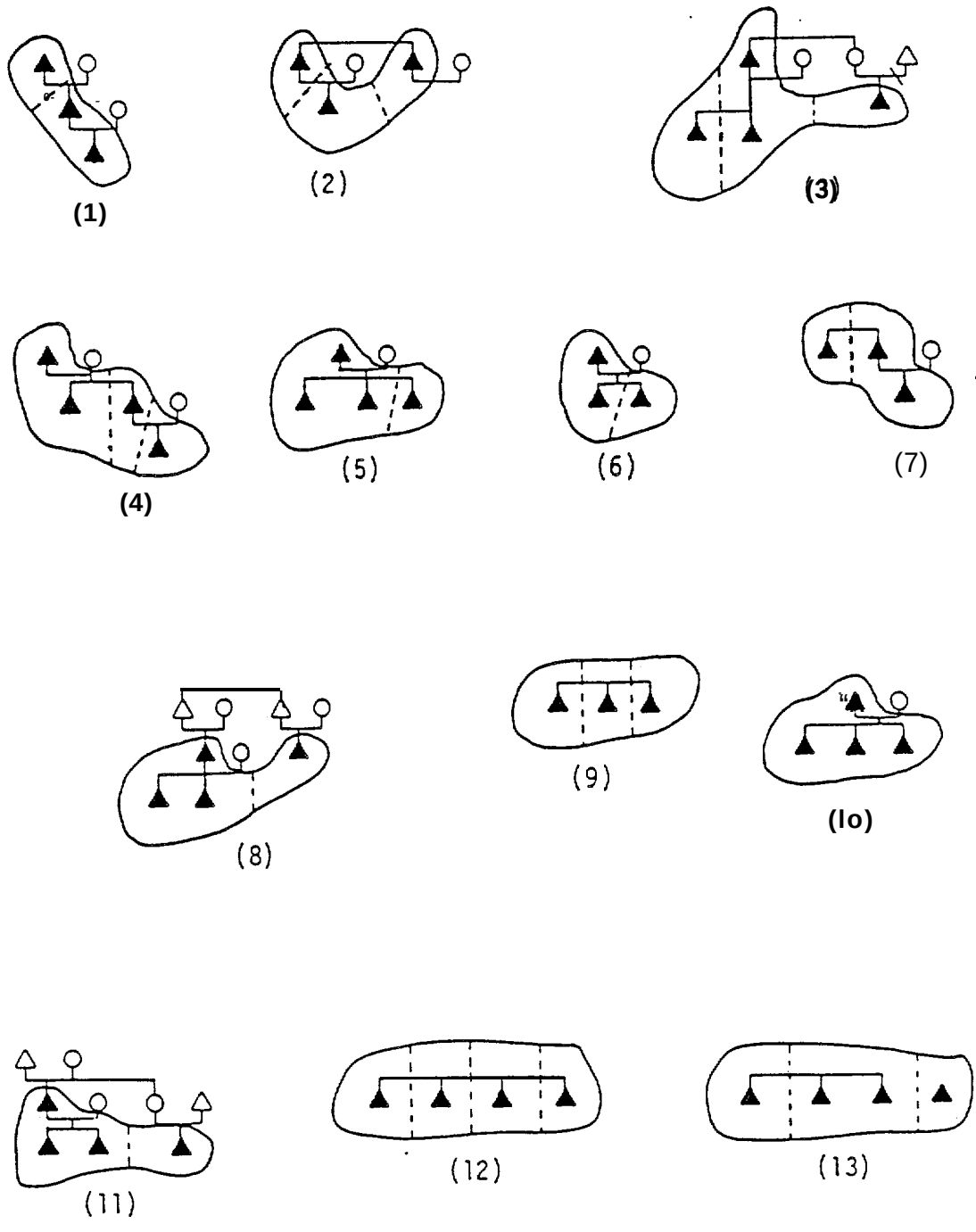


Figure 18. **Relationships** Among Savoonga **Bird** Egg **Collecting Crew Members,** 1982.[a]

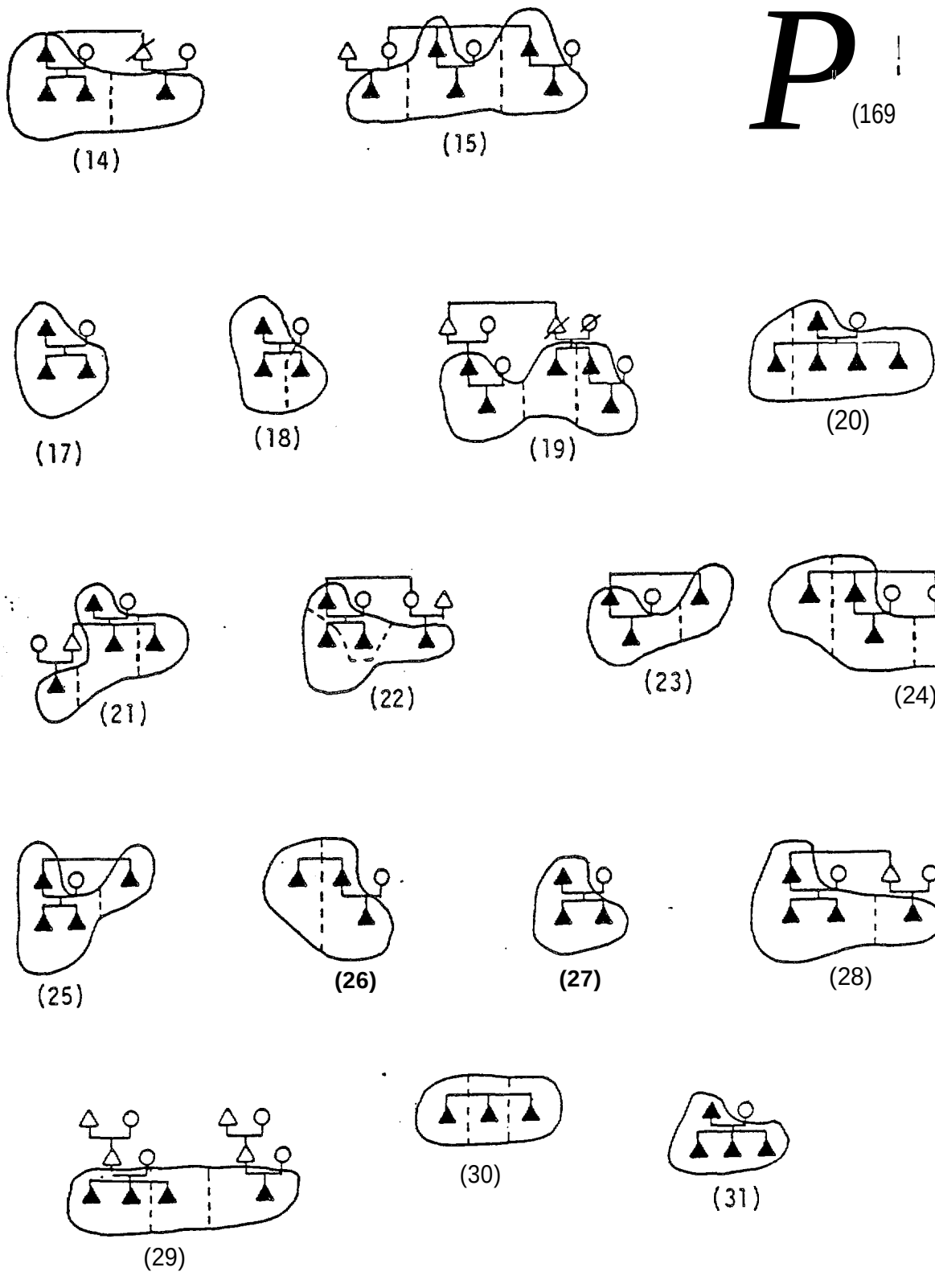


Figure 18 (continued). Relationships Among Savoonga Bird Egg Collecting Crew' Members, 1982.

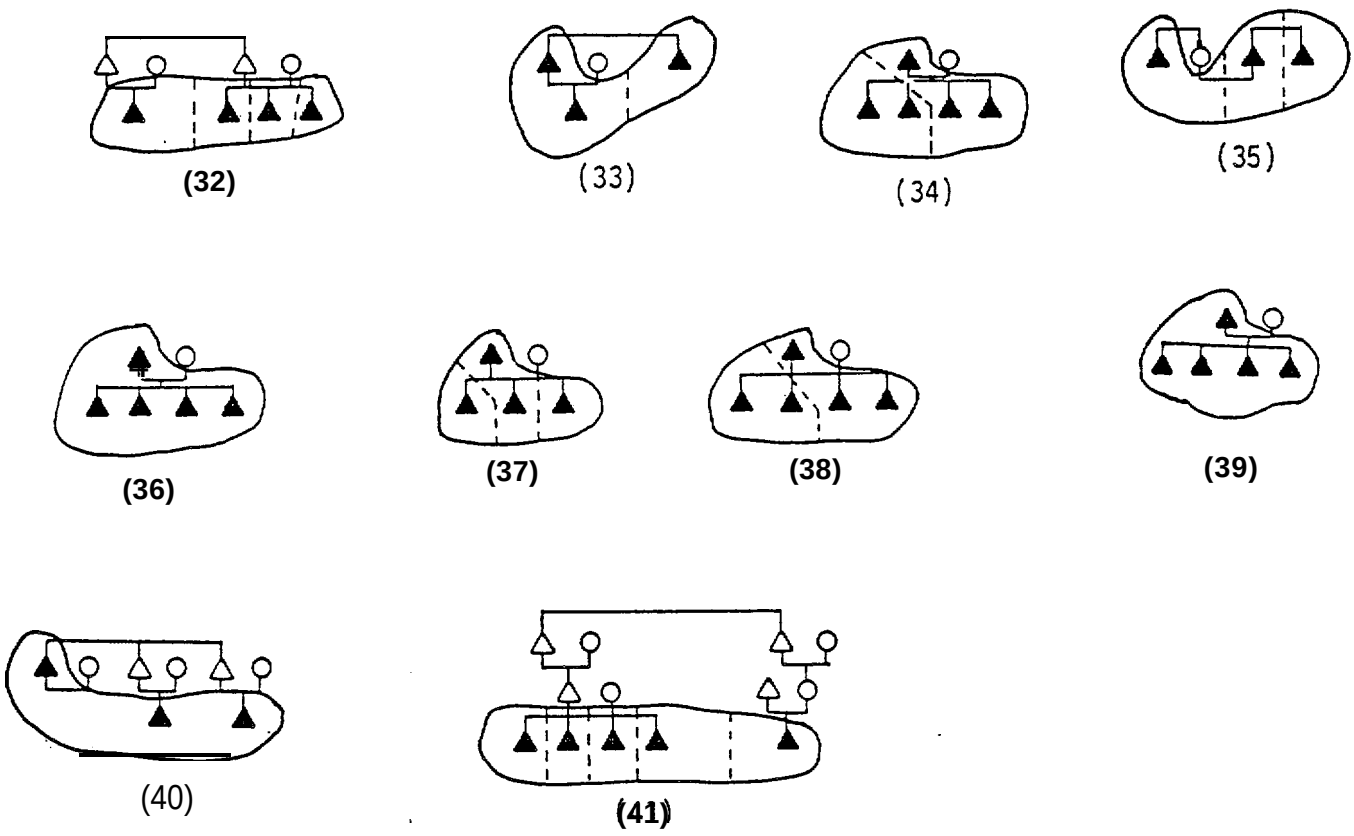


Figure 18(continued). **Relationships Among** Savoonga **Bird** Egg Collecting **Crew Members, 1982.**

[a]Shaded **symbols inside solid lines designate crew members. Broken lines indicate households. Circles represent women and triangles represent men.** Numbers **are arbitrary crew numbers.**

Nearly 94 percent of the Savoonga households have one or more people who are members of a crew. Realizing that collecting eggs requires agility and youth, and that most males stop collecting eggs in their 20s or 30s, these figures suggest that nearly all able-bodied men participate in the collection of bird eggs. It is a dangerous and difficult undertaking, and youngsters take many risks without either boast or complaint. Most young men regard it as a necessity for their immediate and extended families, and it is viewed as part of being a man.

Gambell egg-collecting crews are larger, on the average by more than one crew member, than those in Savoonga, with an average size of 4.9 (see Figure 19). According to the native research assistants, 18 crews with 89 crew members, representing 52 households resided in Gambell. Other specifications of the Savoonga and Gambell crews are presented in Table 30. There are considerably fewer crews in Gambell (less than half the Savoonga number), many fewer people involved, and just over one-half the number of households involved in this subsistence pursuit. The character of the natural environment offers a partial explanation for these differences. Murre eggs are more readily available near Savoonga within rather easy reach by sea or land travel. Savoonga's sites are just a few miles to the east or west, white Gambell people have to travel 15 miles or more to the south to collect murre eggs.

Although the Gambell community does not have as many egg collectors as Savoonga, there is nonetheless a good deal of household participation in this activity. Nearly one-half of all households in the village have one or more people who collect eggs, and the quantities taken per crew are very substantial. Sample data indicate a minimum of 33 gallons of murre eggs are collected by each crew per annum. In most of the cases studied in detail, - at

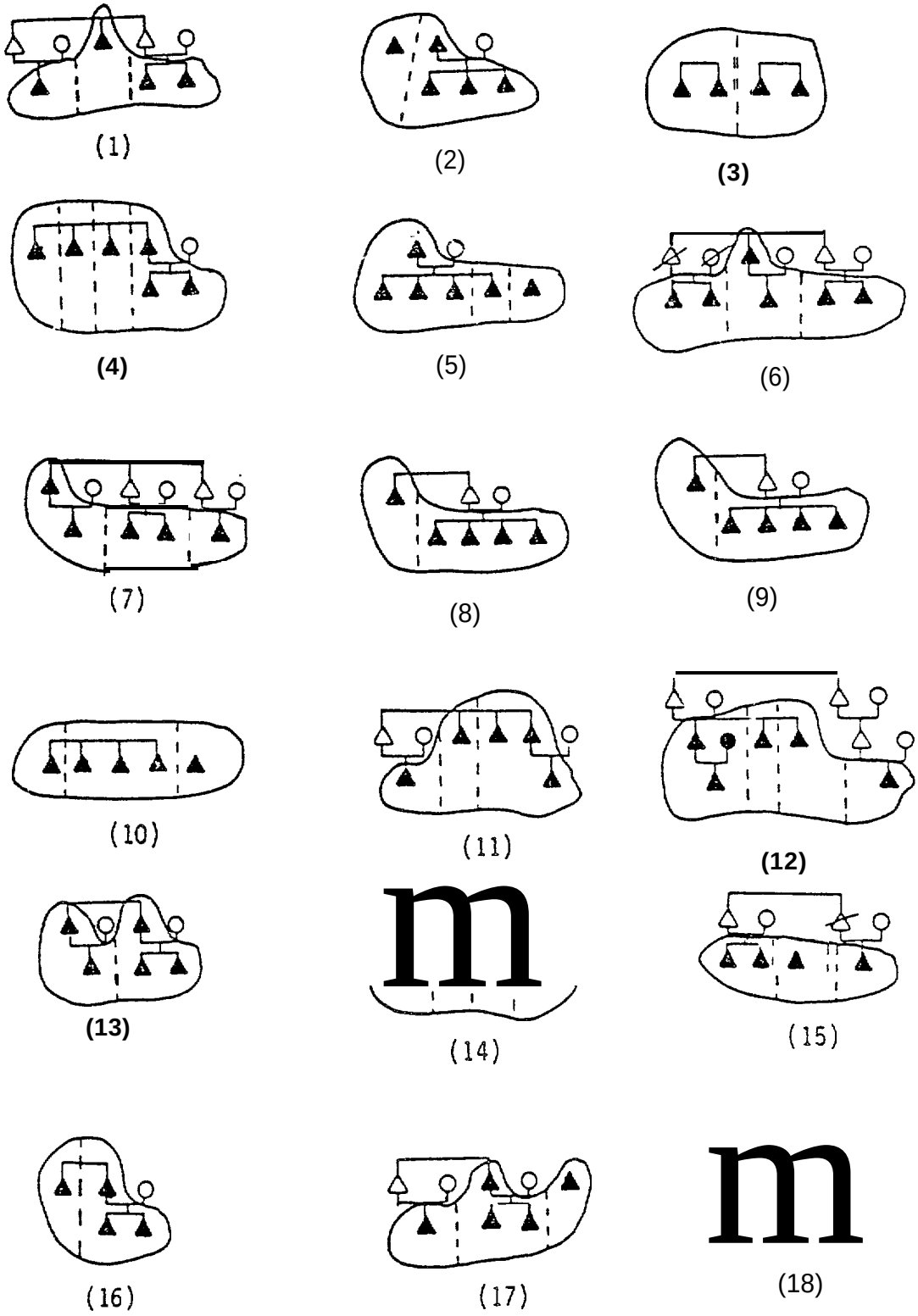


Figure 19. Relationships Among Gambell Bird Egg Collecting Crew Members, 1981.[a]

[a]**Shaded symbols inside solid lines designate crew members. Broken lines indicate households. Circles represent women and triangles represent men. Numbers are arbitrary crew members.**

Table 30. Bird Egg Collecting Crews, Gambell and Savoonga.

	Crews	Number of Crewmen	Average Crew Size	Number of Households Represented
Gambell	18	89	4.9	52
Savoonga	41	156	3.8	93

least another five gallons are probably collected. If all crews collect an average of 38 gallons per year, and there are 18 crews, the total quantity is about 680 gallons for the village, or nearly one and one-half gallons per person.

In Gambell, eggs move from house to house with great speed, propelled by the sharing ethic and mutual concern. Each crew member gives to at least four other people in home-sharing alone. This pattern of sharing and giving is usually reciprocal. One gives and one receives except in those instances where individuals are unable to do any collecting. The same patterns of sharing observed in Gambell were also observed in Savoonga.

Unfortunately, information regarding the quantities of eggs collected by Savoonga crews is lacking, and no estimates are possible. If Savoonga crews retrieve as many eggs as Gambell crews, as the sparse data suggest, each Savoonga resident has. as many as 3 gallons of murre eggs available to him or her each year. Murre eggs provide a very substantial source of food, a source that is eagerly welcomed during a month when hunters are concluding the walrus hunt, hanging and drying walrus, and "preparing for summer camping season.

During the murre egg season, everyone in Gambell and Savoonga is offered eggs, and there is an air of excitement, pleasure and heightened generosity. Most families eat murre eggs everyday. The eggs and the large quantities of murres taken during June and part of July are a very important part of the yearly subsistence round in the two communities. A large majority of the residents of both communities (as hunters, collectors or re-distributors of the products) are part of these vital activities.

Young Bird Collecting

Another important subsistence activity is the collection of young birds. Thousands of young birds are taken from their nests before they are able to fly. The primary species collected are seagulls, cormorants, kittiwakes, least auklets, crested auklets and parakeet auklets. The primary young bird harvest sites are located within 5 to 20 miles of Gambell and Savoonga. Crews typically travel to the sites in boats and return home on the same day.

Young bird collecting requires larger crews than bird egg collecting. As with egg collecting, the crews are organized on the basis of nuclear families and patricians. At least 4 people are needed to do the work: (1) someone to man a boat at the base of the cliff, (2) someone to collect the birds by hand, usually the strongest and most agile person in the crew, (3) someone at the top of the cliff to direct the collector, guide the rope and watch for falling rocks, and (4) someone who anchors the rope at the base of the cliff and belays the collector. The birds are killed with a rapid twist of the neck and thrown to the base of the cliff where they are gathered up at the end of the collecting period and placed in gunny sacks for transporting them back to the village. Both villages pursue this resource with eagerness and considerable skill. Like bird egg collecting, young bird collecting rewards the collector with an important source of food and an alternative to marine mammal flesh.

There are a greater number of young bird collecting crews than egg collecting crews (see Tables 30 and 31). In Gambell there are six more crews and 14 more people who take young birds than collect eggs. Although there is a greater emphasis on youth and agility in the egg collecting crews in Savoonga, a comparison of Tables 30 and 31 shows fewer young bird

Table 31. Young Bird Collecting Crews, Gambell and Savoonga, 1981.

	Crews	Number of Crewmen	Average Crew Size	Number of Households Represented
Gambell	24	103	4.3	64
Savoonga	35	141	4.0	91

collecting crews (35 compared to 42 egg collecting crews) and fewer people involved (141 compared to 156). One explanation for this difference is that bird eggs are very accessible to the population of Savoonga: most of the collection sites are within 5 miles east and about 5 miles west of the village. The young bird collecting and hunting sites are somewhat farther than this, reducing the number willing and able to travel this greater distance.

Bird egg collecting and young bird collecting crews are made up of the same people for the most part. These crews are obviously versatile and stable as witnessed by the fact that in June they quickly and efficiently organize for one purpose and in early September they come together for a different purpose. The natural resource base and subsistence task groups expand and contract, in unison. As the avian resources aggregate (eggs and young birds) so do the collecting crews, with a hiatus in the summer. During the summer, attention turns to other subsistence 'species. Summer collecting crews are different in composition than bird egg or young bird crews. Summer camps do not require as diverse a group of young men and boys, but the seasonality of egg production and young birds meshes with the seasonal character of summer camps. Murre eggs are available and collected just before summer camps are disbanded.

It is evident by the activities of egg and young bird collecting that St. Lawrence Islanders adapted to the natural resources of their land. They employ the types of technology and social organization of work that sustain family, patricians, village and intervillage unity. They did this in the very distant past and continue doing it today.

Preparation and Consumption

Customarily, women skin or pluck the birds and place them on outside racks to dry. Auklets are often boiled or placed (in some households) in

large jars filled with sea oil. Auklets will keep about one year in jars, and preserving them in this way is certainly worth the effort. Ducks are often boiled and submerged in oil. They are also dried, cut into strips and made into stew with spices and vegetables. The hearts, stomach and meat are eaten but not the intestines.

Geese are treated in much the same ways as ducks. Some goose meat is set aside for special occasions, like Christmas, whale and walrus carnivals, and for children returning from school on the Alaskan mainland. One informant stated that when goose flesh is not available for these occasions, the woman of the house feels very bad.

Some freshly killed cormorants are boiled and eaten with oil. Some are dried and stored. Young cormorants, taken in late August or early September, are plucked, skinned, their internal organs removed and discarded. They are then placed in a barrel of seal oil or whale fat. Stored in this fashion they are eaten in winter.

Kittiwakes and seagulls are taken in relatively small numbers, but when they are eaten they are boiled or fried.

CHAPTER XII

MARINE PLANT, TERRESTRIAL PLANT AND INVERTEBRATE UTILIZATION

The marine and terrestrial plants collected by the people of Gambell are crucial items in the Eskimo diet, providing variety in taste, texture and nutrition. They are eaten by themselves or in conjunction with blubber, meat and oils of marine mammals. Some plants are mixed with other plants when consumed, while others are eaten singly. Together, the land and sea plants are a critical complex in the seasonal rounds of the natural resource harvest, and each plant is frequently collected in conjunction with forays to gather other plants. The people of Gambell use at least 12 varieties of marine plants and 24 varieties of land plants.

In addition to being part of the everyday diet, both marine and land plants are used for special occasions. Because of their extensive use they are collected in surprisingly large quantities. Gambell households collected an average of about 170 pounds of marine plants per year and 123 pounds of terrestrial plants per year. These quantities provide a steady supply of non-meat edibles in the diet. In view of the cost and relative scarcity of fresh produce from the mainland, natural ly-occurring plant species are indeed of great importance.

The available literature which deals with the utilization of marine and terrestrial plants suggests that wild plants do not comprise more than about five to eight percent of the total diet (Hall and Hall, 1969: 41-53; Hughes, 1960:160,163). These authors further suggest that the degree to which Eskimos depend upon wild plants has declined in recent years. Data collected during 1982 indicates that current dependence upon wild plants remains similar to the dependence observed 15 to 20 years ago. It must

be stressed, however, that the quantities collected and consumed by the people of Gambel are significant, and surely make a crucial contribution to islanders' diets.

Marine Plants

Eighteen Gambell households were able to specify the quantities of marine plants they had collected in 1981. Amounts taken ranged from a few pounds to 500 pounds. The average household collected about 170 pounds, or more than 40 pounds pet- person per year. Most of the 18 household heads who recalled the quantities collected stated that at least one person in their households gathered sea plants, but general y two or more household members were engaged in the pursuit.

The most important marine plant in the island Eskimo diet s lota ly referred to as upa, a reddish plant with a white poisonous center. Upa is taken in large quantities, possessing both dietary and cultural significance. It is prized as a delicacy and is an integral part of Eskimo diet.

Upa is taken in winter and summer. In winter, men and boys use a special implement--a rake-like instrument with winged parts that snag the plant--to bring the upa to the surface of the ice. In -summer and fall, the plant washes ashore and is collected there by young and old, male and female. There are three locations where upa is particularly abundant: Taphook Point (used mainly by Gambell people), Kangee Camp and Ataakas (used mainly by Savoonga residents). However, Gambell people frequently collect upa in an area running from Ooynik Point on the west side of the island to Niyrakpak Lagoon, even though upa is less abundant there.

Upa is eaten on many special occasions such as birthdays, homecomings and holidays. Men and boys go to great pains to collect u pa

in the winter, for it is consumed with great pleasure. However, even though prized, if the amount of upa collected is meager it is nevertheless shared as widely as possible.

A second major marine plant is aghnawook. Long-stemmed and attached to the sea bottom, aghnawook is taken in summer, winter and fall. It is collected through the ice in winter and spring, and collected from the beach in summer. Aghnawook is very popular with islanders, and, like ups, is eaten fresh, or frozen and stored. Typically, aghnawook is eaten mixed with the oils of sea mammals. Children have a special liking for this plant. Aghnawook is collected at Southwest Cape, and on the northern borders of the island from Chibukak Point to Nyrakpak Lagoon. It can be obtained from the shoreline out to about three miles from the shore.

Kemaghluk, a -segmented plant, its- meat dirty white in color and perhaps six inches in diameter but coming in many shapes and sizes, attaches itself to sea rocks. It is often taken along with ups, and is eaten raw or cooked. Generally kemaghluk is eaten in conjunction with meat. Kemaghluk is collected in summer and fall along shores at Moghoweyik on the west side of the island and at Powooilik Bay on the south side. Some Savoonga people also collect Kemaghluk at these same locations.

Another popular segmented plant is tukughnak. There are two kinds, one which is white and one which is red, the latter being the smaller of the two. Tukughnak is not found in the areas customarily used by residents of Savoonga (see Chapter IX). Thus, Savoonga residents ask Gambell kin and friends for supplies of tukughnak each year. This plant is often frozen for winter use and eaten along with meat. A red

type of tukughnak is collected in summer and fall along the beaches from Ooynik Point to Niyrakpak Lagoon. The white variety is found from Booshu Camp to Kaghoopaluk Point on the west side of the island and from Southwest Cape to Powooilik Bay. This larger type is collected in spring and fall. When taken in summer, it is engorged and very salty, a condition which necessitates boiling it to remove the excess amount of saline water.

There are several other marine plants (mamaghrak, gemkoghnak, melukutak, and ughyu), in addition to kelp, that are collected along the beaches in summer and fall when islanders are collecting upa. The major collection sites are the beaches from Ooynik Point to Niyrakpak Lagoon and at Southwest Cape. Occasionally, these less important sea plants are collected at Moghoweyik. These plants are usually eaten fresh with seal meat, and special efforts are made to give them to visiting friends and relatives. Gemkoghnak is considered a special treat for children.

Rockweed bladderwort (Fucus distichus) is another regular source of food for Gambell residents. It is gathered by hand only in the summer. This type of bladderwort gathers around rocks when the tide is out, and is found along the island's shore on the east side of Sevoukak Mountain, at Kittilngook Point. It is also found on the west side of the island at Kavalghak Point. Some of the women in Gambell are learning techniques for drying this plant from mainland Eskimo women. This plant is often eaten while people are at summer camps. Since it is collected only in the summer, it is not easily frozen for storage. Any successful technique for drying it expands the winter food supply for Island households.

There are five varieties of kelp that have distinct Yupik names, and a sixth for which neither Yupik nor English names have been identified.

The most readily collected and available throughout the year is esthquak. It is found all along the west side of the island and north to Akeftapak Bay. It is collected through the ice with hooks and lines. When there is no ice it is collected from beaches. Often it is eaten with walrus blubber (ookum), walrus breasts and tips of walrus flippers. Collectively, these ingredients are an exquisite Eskimo meal. Esthquak is found in the same locations as mah'sik, a smaller plant, which is used and treated in the same ways as esthquak.

Efteghrut, a third member of the kelp family, is collected at Koozata Lagoon, Powooilik Bay, and Siknik Cape. The latter is one of Savoonga's collection areas. Gambell people rarely eat this plant, although it is very popular with Savoonga residents. It is invariably eaten with seal or walrus blubber.

A fourth variety of kelp, esteqtaq (ribbon kelp, Alaria margin) . is collected in spring, summer and fall, as are most of the kelp-family. It is found along all of the beaches used by Gambell people (see Chapter IX). It is often dried for winter use, has a pleasant taste, and is eaten with walrus blubber, bird meat, walrus or seal flesh. Agatu, the last of the kelp group, is found in many of the same places as esteqtaq, and is used in ways similar to esteqtaq.

Terrestrial Plants

Terrestrial plants, like marine plants, are an essential part of the Eskimo food complex.. Islanders prefer the few species available on the island to the canned or frozen or fresh vegetables that are available at island stores. Women and young girls, singly or in groups, do the collecting of land plants. The work of collecting land plants is a mixture of the hardships of squatting and bending, and the pleasures of fresh air,

beautiful scenery, solitude, escape from the social requirements of village life and the companionship of friends and kin. Three-wheeled cycles, all-terrain vehicles and boats are all used to travel to the collecting sites (see Chapter IX). Some collectors walk to locations near their village but foot travel is not the norm. Motorized vehicles allow islanders to collect large quantities and several varieties of land plants with relative ease. Several informants stated that they are able to collect greater varieties and larger quantities than they were able to collect before motorized transport. Land plants are invariably shared with elders who love these foods and who are no longer able to do their own collecting.

All land plants are collectively referred to as "greens." This term is never applied to marine plants. Gambell people collect an average of 123 pounds per household per year according to the data recorded from 15 protocol interviews. Most of the households in our 43 household sample stated that they collected large amounts of land plants, but most household heads did not volunteer the quantities taken.

Land plants, like all other subsistence resources, are extensively shared. Several of the households contacted reported giving up to 75 percent of the land and marine plants they collected in 1981 to friends and kinspeople. The average amount of sharing was about 50 percent. Three to twenty-five other households received land plants from each of the households contacted. The average number of households which received land plants from each household in the sample was 10.

The large proportions reported shared is important since the amounts collected are relatively small. Furthermore, land plants are generally regarded as delicious, adding variety and new textures to the diet, and are particularly valued in winter. Thus, islanders are sharing desired

and relatively scarce resources. Finally, most land plants can be easily stored for relatively long periods with comparative ease, making the sharing an even more generous act.

The most sought-after plant is nunivak (Roseroot or King's Crown). It is tastiest in July and August, and collectors make haste to find the young, sweet plants with which they fill plastic bags, flour sacks, and occasionally garments, for the return trip to the village. Nunivak is found most often south of Troutman Lake near Gambell. It is found at many other sites near the village with the exception of the Northwest Cape where the beach is gravel and land plants do not grow. Nunivak is also found in the cliffs immediately east of the village. Savoonga women and girls also have no difficulty finding this abundant plant. It grows in large quantities immediately east, west and south of Savoonga.

Collectors can fill a 25-pound flour sack or large plastic bag in a single afternoon. Nunivak is stored in barrels for winter and spring use. It is pressed with a stone and allowed to sour much like sauerkraut was treated by European immigrants. Finally, it is frozen in squares for future meals. In most households, it is eaten several times each week. It is used as a confection or a vegetable and is consumed with boiled meat. Nunivak is the islanders' favorite land plant as well as the most abundant. It is consumed at ordinary meals and special occasions as well.

The remainder of the plants used by St. Lawrence Islanders at-e listed in Table 32. They are grouped according to the part of the plant that is used most often, e.g. , leaves and stems, berries and roots. A few of the land plants are grouped according to medicinal and miscellaneous uses, e.g. , seasoning and teas. Nearly all of the plants are readily available in numerous locations around the island and many of them are

Table 32. Land. Plants Collected and Used by Gambell Residents, 1981.

Common Name	Scientific Name	Yupik Name	Comments/ Locations
LEAVES AND STEMS			
Roseroot or King's Crown (3 varieties)	Sedum rosea	Nunivak (leaves and stems), Saqlak (roots]	Leaves, stems and roots. Most commonly collected land plant. Stored for winter and spring use. Plant is found all over island.
Willow (2 varieties)	Salix pulchra	Ququnqaq	Roots eaten fresh with blubber and meat. Used to cure diarrhea and stomach discomfort. Buds eaten fresh. Found in many locations.
Brook Saxifrage or Heart-leaved Saxifrage	a	Amlluqiiraq	Leaves and stems eaten fresh or stored, eaten with nunivak. Found in many locations on island.
Sour Dock	Rumex articus trautu	Alqeqkaq	Flowers eaten when picked. Remainder of plant boiled and mixed with blubber and meat. Common on island.
b	a	Quqelngiq	Leaves and stems mixed with seal oil, meat, fish and eaten fresh. Children love fresh leaves. Common on island.
Mountain Sorrel or Sourgrass	Oxyria digyna	Akughaq	Roots stored and eaten in winter. Many recipes for this plant. Common throughout island.
Coltsfoot	Petasites frigida	Kaamgwaaq	Leaves and stems. Eaten often, but use is declining. Has a strong taste. Older people prefer it. Common on island.

Table 32 (cont.). Land Plants Collected and Used by Gambell Residents, 1981.

Common Name	Scientific Name	Yupik Name	Comments/Locations
River Beauty or Dwarf Fireweed	Primrose family	Angukar	Leaves and stems eaten fresh or stored and eaten with oils and meat. Common on island.
BERRIES			
Crowberry, Blackberry or Curlewberry	Empetrem nigrum	Paghnghak	Eaten fresh or stored. Hammered and mixed with salmon berries. Used 2 or 3 times each week in many households. Used as a dessert. Common on island.
Alpine Bearberry	Arctostaphylos alpina	Kaavlak	Eaten fresh. Refrigerated and eaten soon after picking. Collected at Sevoukak Mt. (flanks) and at Kavalghak Bay.
Cloudberry Salmonberry Baked appleberry	Rubus chanaemorus	Aqavzik	Eaten fresh. Refrigerated and eaten soon after picking. Common on island.
Lowbush Cranberry	Vaccinium vitis-idaea	Kiitnik	Eaten fresh or refrigerated and eaten soon after picking. Sometimes made into a jam. Found at Kavalghak Bay, Sevoukak Mt. (flanks), and Southwest Cape
ROOTS			
b	Resembles Rose avens	Melliq	Eaten Fresh or mixed with blubber and meat. Found near Gambell, Southwest Cape, Boxer Bay and Taphook Pt.
b	Resembles Rose avens	Tegetuwaaq	Root has aspirin-like effect. Also eaten fresh or mixed with blubber and meat. Collected at Northwest cape and Kittilngook. Common on Island.

Table 32 (cont.). Land Plants Collected and Used by Gambell Residents, 1981.

Common Name	Scientific Name	Yupik Name	Comments/ Locations
b	a	Ayngusiq	Roots mashed and boiled with oil. Has a sweet taste. Found at Kavalghak Bay, Southwest Cape and perhaps other island locations.
b	Resembles Rose avens	Suqlamengestaq	Roots mashed and boiled with oil. Has a bitter taste. Found at Taphook Pt. , Sevoukak Mt. (flanks), Southwest Cape and Moghoweyik.
Bering Sea Spring Beauty	Claytonia acutifolia	Qullikaq	Roots eaten fresh or mashed and mixed with blubber and oil. Some men collect this plant. Found at Boxer Bay and Poovookpuk Mtn.
b	a	Pughpuuqa	A yellow root that is rarely eaten. Hunters at Southwest Cape occasionally use it to stave off hunger. Also found at Moghoweyik and perhaps other locations.
	a	Uulqiq	Once commonly used as "mashed potatoes" at camps, now rarely used. Found at Taphook Pt. and northern flank of Mugum Peak.
		Pekneq	A grass root used by some families once or twice a week throughout the year. Mashed and boiled with commercial flour to make a soup. Also eaten raw or meat and blubber. Collected at Ooynik Pt. and Kavalghak Bay. Common on island.

Table 32 (cont.). Land Plants Collected and Used by Gambell Residents, 1981.

Common Name	Scientific Name	Yupik Name	Comments / Locations
Parry's Wallflower	Parrya nudicaulis	Qakeqhaq	Eaten raw throughout the year in large quantities. It tastes like pepperoni and children often eat it while watching TV or studying. Collected at Southwest Cape, Powooiliak Bay, Moghoweyik and Kitnepaluk. Common on island.
b	a	Iglagaaq (General term for roots collected after snow melt)	Eaten with blubber and meat, but not stored. Collected near Troutman Lake. Common on island.
Wild potato	Claytonia tuberosa	Olthqaqek	Mashed and mixed with marine mammal oil.
b	a	Ugfigaq	Eaten raw or mashed and eaten with oil and blubber.
Medicinal and Miscellaneous			
Wild celery	Angelica lucida	Tepluk	Dried and used for colds and other ailments that retard breathing. Eaten or burned and the smoke inhaled. Most frequently used of the medicinal plants. Norton Sound Hospital keeps a supply. Collected at Koozata Lagoon, Moghoweyik, Kavalghak Bay and Powooilik Bay. Common on island.
b	Rose avens	Aghavrak	Like tepluk, used for respiratory problems. Collected on Sevoukak Mtn. (flanks), around Troutman Lake and Taphook Pt.

Table 32 (cont.). Land Plants Collected and Used by Gambell Residents, 1981.

Common Name	Scientific Name	Yupik Name	Comments/ Locations
b	a	Sevnaawraq	Leaves used for tea. Found at Moghoweyik, Silook Camp and perhpas other locations.
b	Resembles Glaucous gentian	Asleqegsaasiq,	Dried and added to soups as seasoning. Not used except by elders. Common on island.
b	Resembles Rose avens	Tegetuwaaq	Root has aspirin-like affect (discussed above].

[a] Scientific and common names taken from Hall and Hall, 1969.

[b] Field workers were unable to identify these plants even though they referred to several volumes of land plants in the the life zones of which the island is a part, including photos and slides from University of Alaska Cooperative Extension Service (1981).

found on the flanks of Sevoukak Mountain, near Troutman Lake, at campsites along the west side of the island and at Southwest Cape.

The most frequently use plants by quantities, aside of nunivak, are one or two varieties of root plants and salmon berries. These plants will very probably be great favorites for a long time to come and their greater accessibility is due to the common use of all-terrain cycles. They will doubtless continue to contribute to the food supplies of nearly all Gambell households. The scant information we have from the 18 households contacted in Savoonga points to a similar intensive and extensive use of land plants.

In verteb rates

The people of St. Lawrence Island catch eight varieties of clams, three varieties of crabs, two varieties of sea worms, and one variety each of mussels, sea urchins, scallops, shrimp. and star fish. The term variety, rather than species is used because the scientific and common English names were generally unknown to villagers, native research assistants and researchers. The distinct Yupik names used may or may not accurately distinguish among species or subspecies. The differences marked by the Yupik terms may well reflect the age of the invertebrate or the available food supplies. These resources are most often collected along the beaches and much of the time they are gathered in connection with summer camping activities.

Clams. Most of the clams taken from the beaches are collected in spring, summer and fall. Those collected from beaches are found in greatest numbers from Akeftepak Bay on the northern shores near Gambell, east to Taphook Point where there are rich clam beds. There are also many clams taken from Powooiliak Bay, and Siknik Point in Koozata Lagoon is an especially productive clamming area.

Clams are the most important of the marine invertebrates. The single greatest source of clams is walruses; clams are retrieved from their stomachs. Clams are one of the chief sources of food for walruses which plunge to the floor of the Bering Sea, pull apart clam shells, extract the contents, and return to the surface. Walrus hunters find many of the clams undigested, but partially digested clams are never rejected for human consumption. The Yupik word for the species or sub-species of clams eaten most by walruses is uklumrek (by our best phonetic and orthographic rendering).

Of the 43 Gambell household heads in the sample, only 10 people provided specific numbers of clams that they obtained during the year. The information obtained in Savoonga was too scant for meaningful analysis, and will not be discussed. Most Gambell informants could not recall the precise quantities, but nearly all of them stated that they eat clams every year, mainly' those taken from walruses' stomachs. The quantities reported ranged from 10 to 50 pounds per year per household, with the annual average for those who provided estimates being close to 30 pounds. According to informants, about 50 percent of all clams taken are given to relatives and friends. Those who give clams to others tend to receive about the same quantities as they give. Giving and receiving clams follow about the same reciprocal and giving patterns as has already been discussed for other walrus products (see Chapter VI I).

The remaining varieties of clams, besides the one major and one minor variety taken from walruses' stomachs, are found along the beaches. The Yupik names for the less frequently available varieties are: tamunek, wuvukughnak, tapghaghak, quprughaghak, evelengestak, taptak, and kamikruk. All three native field assistants in Gambell stated that eight

varieties of clams are important sources of food for the villages. They are eaten fresh with seal or walrus oil, or frozen and eaten later with the blubber of marine mammals (seals. whales, walruses).

Crabs. There are three distinct Yupik terms for crabs: neghnak (this name probably applies to king crab and a smaller variety) and neghnavreghak. The latter is a small crab the same color as the king, and is sometimes called kempalunek. In all likelihood, neghnavreghak or kempalunek is the tanner crab. The last variety is the hermit crab for which there is apparently no Yupik name currently in use by Gambell residents.

King crab is caught with fishing "rods in the summer. In winter and spring; baited lines with sinkers are used, and some are collected from the beaches. They are found from Kittilngook Point near Gambell, north arid east to Iworrigan Camp on the north side of the island, from Southwest Cape east to Powooiliak Lagoon on the south side and at both Kitnepaluk and Moghaweyik on the west side. All crabs are either eaten fresh or frozen and later boiled or fried and eaten with oil (blubber).

There is another variety of crab on the island that is very similar in appearance to the king crab. It is smaller than the king crab and some people refer to them as blue crabs. They are collected only from beaches, apparently living farther out in the water than the king and other varieties of crabs used by the people of Gambell. It is found from Ooynik Point to Niyrakpak Lagoon. It is eaten and stored in the same manner as king crabs. Of interest is the fact that crabs are the only subsistence species which can be legitimately sold to another villager. Perhaps this is because of the relative scarcity of crabs. In any event,

while legitimate to sell, they are seldom sold. As with other subsistence foods they are generally shared freely.

The neghnavreghak, for which we have neither a common English or scientific name, has thinner legs than the king crab and blue crab. They are collected in summer and fall along the beaches from the seaside of Troutman Lake to Kittilngook Bay. These are used as food for humans and as bait for fox traps.

The tanner crab (also called neghnavreghak) is larger than the variety mentioned in the preceding paragraph and yields large quantities of leg meat. It is taken with the same devices used to catch king crabs in spring and winter. [t is taken most often at Akeftepak Bay on the north side of the island and at Kavalghak Bay on. the west side. The least important crab is the hermit crab. It is taken in summer and fall from beaches mainly from Ooynik Point to Niyrokpak Bay.

The several varieties 'of crabs are taken by some households in large numbers. Of the few household heads who reported quantities, one mentioned an annual average take of about 70; other informants reported rather consistent annual numbers of about 50. About one-half of the household heads who reported numbers stated that they take crabs only occasionally and incidentally and that they rarely collect more than 20 per year.

Even though the data collected on crab harvests is limited, studies by Magdanz (1982) and Thomas (1 981) provide some estimates of the importance of crabs for the island communities. Thomas' 1980 study on King Crab catches suggests that harvests by Savoonga residents at their northside crabbing sites decreased drastically from 1979 to 1980 and generally declined from 1970 until 1980. The pre-1980 estimates were

based on respondents' recall. The northside sites produced an average of just 1.6 crabs per household in 1980, while the 1970 average was 21.1 (1981:93). Southwest Cape crabbers faired somewhat better averaging 30.2 crabs per household in 1980. The 1980 average was, however, the lowest average since 1975 (1981:97).

The harvest amounts for Gambell residents were relatively stable between 1970 and 1980. In fact, the 1980 household average (38.2) was slightly larger from the 1970 household average (34.4) (1981:111). It should be noted that a higher proportion of the Gambell sample reported crabbing activities than did the Savoonga sample reporting on either the northside or at Southwest Cape. However, if the "households which reported crabbing on the northside were not the same households as those which reported crabbing on the Southwest Cape, a question which cannot be determined by the information supplied (see 1981:96,97,111), -the proportion of sample households in the two communities which crab is approximately equal. In either event, Gambell households sampled averaged more crabs caught in 1980 than did their friends and kin in Savoonga.

Magdanz's ?981 study, unfortunately, does not include data for " Gambell (1982:7). Nevertheless, data for Savoonga crabbing activities in 1981 are reported. Northside and Southwest Cape crabbing spots each show a decline from 1980 to 1981, but the household average for the Southwest Cape was still relatively high (see 1982:24), while the average household catch for the northside was negligible (see 1982:21). The northside harvest was smaller than the harvests of any of the other three study communities (Nome, Golovin and Elim). Additionally, fewer of the sampled households indicated that they crabbed and the number of days

spent crabbing declined as well, decreasing roughly 50 percent between 1980 and 1981 for northside crabbers (1982,:20). The decline in days spent crabbing might be a result of the common belief that crabbing was not as good as in years past, and this was often attributed to commercial crabbers plying their trade in St. Lawrence Island's coastal waters.

Mussels. The single variety of mussel, umyak in Yupik, is washed onto beaches in summer and fall, and collected and prepared immediately by boiling and mixing with marine mammal oils. Many families collect this variety of mussel, but it is not known to what extent they are used. Mussels are found on many island beaches.

Scallops. The single variety (or species) of scallop, called evelu in Yupik, is found all around the island. They are collected throughout the year, but they do not constitute an important source of human food. Little information about scallops was forthcoming from informants.

Sea worms. There are two varieties of sea worms', gingupuk and ginguk. The former is obtained from walrus stomaches and on many beaches around the island in both summer and fall. Gingupak tastes like clams, is eaten fresh or frozen and later eaten. The ginguk is smaller than the qinukuk and is found on island beaches in summer and fall.

Sea urchins. The one variety of sea urchin, kulmeen, is not an important source of food, although it is used by some households to bleach seal skins. it is found in summer and fall when it is washed onto beaches where it is collected from Ooynik Point to Niyrakpak Bay and along the beaches of the south side of the island. When it is found, it is eaten fresh or boiled.

Starfish. The Yupik word "eyksak" applies to several varieties of starfish, some of which have six legs, while other varieties have five legs.

They are not abundant and when they are found on beaches in summer and fall they are eaten fresh.

Shrimp. The people of Gambell recognize only one variety of shrimp which is called Kemeghtungek, found in summer and fall on beaches from Ooynik Point to Northwest Cape. It is taken in sufficient quantities to be frozen and stored, eaten later in a variety of recipes.

CHAPTER XIII.

SUMMARY

The ancestors of St. Lawrence Island's native population probably migrated from Siberia, near the Okhotsk Sea, sometime before the birth of Christ (see Chapter II, Hughes, 1960, and Burgess, 1979). Until the mid-1800's, and the beginnings of commercial whaling in the Bering Sea, social intercourse between islanders and outsiders was probably limited to the related peoples of the Siberian coast and an occasional ship exploring the uncharted seas. With the introduction of commercial whaling activities, islanders were introduced to new peoples, cultures, languages and technology. Before the end of the century trading for European and U.S. produced goods had become routine, if not everyday, and some islanders were shipping out as hands on whaling vessels.

By the beginning of the twentieth century, a mission "an-d school had been established by the Presbyterian Church at Gambell. English was the idiom of the school and acculturation of the Eskimo population began. During World War 11, some military men were stationed on the island, but their numbers were few and the impacts upon the native culture minimal. Exposure to Western European culture, and hence acculturation, was speeded up by the invasion of the island by the Weather Bureau and Civil Aeronautics Administration (CAA) in 1943. Personnel, observation equipment and a housing compound were located on the edge of Gambell. Villagers were now exposed tc. new people, ideas, behavior and technology on a regular basis. Some villagers worked as domestics for the new families stationed there, and limited socialization between islanders and the newccmers occurred (Hughes, 1960). For the most part, the interactions were genial and a certain amount of good-will was forthcoming.

The CAA remained on St. Lawrence Island until 1953. Before they left, however, the U.S. Army established a base there. The intimate and generally pleasant relationships between CAA employees and islanders were replaced with more impersonal and often less good-willed interactions. The new role models provided by the military were more diverse, and in at least some instances, far from the ideal. Difficulties between villagers and military personnel were not uncommon during this period, and military and village authorities were frequently required to resolve disputes and problems between islanders and military personnel (Hughes, 1960).

About the same time that the Army base was established, missionaries from the Seventh-Day Adventist Church came to the island proselytizing for converts. Their arrival had been preceded by school teachers of the same faith, and the joint efforts produced some new converts. Thus, new ideas, beliefs and behavior were being observed by natives on every front. While the Army base only remained until 1952, an Air Force base was established during the same year, and the challenges to traditional ways continued intensely for several more years (Hughes, 1960).

Almost 30 years later, the evidence of the social changes initiated by churches and the military are to be seen everywhere. They can be seen in the use of technology (snowmobiles, all-terrain cycles, all-terrain vehicles, firearms, aluminum boats, binoculars, television sets, citizen band radios), in behavior (smoking, drinking, spoken English, attendance at Christian churches) and in the island's formal institutions (City Councils, I RA Councils,. Native Corporations, Alaska Native Industries Cooperative Associations, Alaskan Village Electrical Cooperative, Christian churches, schools, health services).

In spite of these obvious changes, much of the traditional culture remains (subsistence hunting, fishing and gathering, respect for elders, patricians, traditional technologies, love of the natural environment, respect for marine mammals, especially bowhead and killer whales). These elements of the traditional culture are not mere vestigial appendages attached to the new social structure. They are central in the life of the islanders, and are part of a dynamic adaptation by the traditional culture to the demands of a harsh natural environment and a demanding, often insensitive, social environment imposed upon islanders by the country to which they now belong.

Institutions

Political Structures

The most obvious effects of American society upon island traditions can be seen in the nature of their formal organizations, especially governments. These bureaucracies were modeled upon government structures created in the continental U.S. , and are alien to the traditional leadership structure which had evolved slowly over the centuries. The older leadership structure appears to have evolved from demes, then sibs, and most recently, clans. These traditional forms of social organization structured virtually all social interactions and resolved disputes. Prior to the introduction of formal organizations, i.e. , groups with written rules governing membership and behavior, several patricians governed the island. The number of functioning patricians in historical times can never be known, but in 1955 Hughes was able to identify 9 patricians (Hughes, 1960:298) , and in 1982 there were 10 patricians in Gambell and 11 in Savoonga.

These patricians are non-local. corporate, compromised kin groups in which post-nuptial residence is with the family of the groom and descent is reckoned through the male line. They are compromised insofar as in-marrying females cease membership in their father's clan and become members of their husband's father's clan. A variety of regulatory and legislative actions have stripped the patricians of much of their traditional authority, replacing them with forma l/legal organizations. In spite of this, patricians have retained many of their traditional functions. They continue to determine not only marriage patterns and rituals, the distribution of subsistence resources, the timing of the several marine mammal hunts, and the purchase of new hunting equipment, but since patrician members are elected officials of the legal governments, patricians continue to exercise their collective wills in the deliberations of formal government. Now, however, patrician representation in government is leg itimated by democratic processes.

City Councils. Gambell and Savoonga residents, roughly 450 in each village, are legally governed by three local political organizations: City Councils, 1 RA Councils, and Native Corporations. Each community has a City Council consisting of seven elected officials: a mayor, vice mayor, treasurer and four councilmen. The terms of officeholders are staggered, as are the terms of office in all three governmental institutions, so that experienced officials are always on hand to advise newly-elected officers. Each city council appoints administrative officers who are responsible for many of the day-to-day activities.

The Gambell and Savoonga City Councils have taxing powers over local businesses, although to date only a small sales tax has been imposed. The City Councils provide police and fire protection, issue business permits,

control road development within village boundaries and maintain the airstrips. To finance these services, outside funding is necessary because the local sales tax is inadequate. Fortunately, the two city governments are eligible for state matching funds and special grants designated for community improvements. Typically, state grants generate more money for the villages than the revenues from local sales taxes. The State of Alaska, again through special grants to both villages, has also funded the beginning phase in the establishment of ivory co-ops in Gambell and Savoonga. The total sum to be received wi ll be about one-half million dollars, $250,000 for Gambell and the same amount for Savoonga. Before the money is distributed, however, the details of the co-ops must be finalized and approved by state review teams.

The state's recent influx of oil revenues from energy developments on the North Slope has greatly benefitted both of the villages. The state monies received by Gambell and Savoonga will reach their peak in 1983 when grants will provide for new fire-fighting equipment, new community buildings for city offices, recreation facilities, learning centers and libraries. State monies to the people of Savoonga amounted to about $100 per capita in 1981, and in 1982 they rose to about $190. Gambell has experienced a similar increase.

IRA Councils. Because of its status as a Reindeer Reserve, St. Lawrence island fell within the provisions of the 1939 Composite Indian Reorganization Act. Both communities voted to accept the government form provided by the act. Gambell's IRA Council was chartered by the federal government in 1939, and Savoonga's IRA Council was chartered in 1940. The IRA Councils have broad powers and responsibilities, many of which overlap with the powers and responsibilities later granted to the two Native

Corporations. Their basic charters pertain to the protection and management of island resources, native customs and traditional crafts.

Each IRA Council has a president, vice president and five councillors. The councils receive their funds from several sources, including profits from the Alaska Native Industries Co-operative Association (ANICA) and from federal grants. However, both IRA Councils are chronically low on funds.

Native Corporations. Prior to December 19, 1973, the two villages were faced with the option of (1) accepting fee simple title to their reindeer reserve (virtually the entire island) including both surface and subsurface estates while rejecting participation with other native villages in the major provision of the Alaska Native Claims Settlement Act (ANCSA), or (2) participating as any other native village in the Act, accepting their share of the $962,500,000 cash settlement provided by ANCSA, receiving surface rights to 376,480 acres of St. Lawrence Islan-d 'and rejecting arty other land claims they might have to St. Lawrence Island.

Gambell and Savoonga filed the necessary papers for incorporation as Native Corporations and the initial articles of incorporation were approved by the Bering Straits Regional Corporation. Under the article of incorporation, shareholders in the two new corporations were those enrolled Gambell and Savoonga native people born before December 18, 1971. As shareholders, they have the right to elect the members of the board of directors, and receive declared dividends. Their designated or apparent heirs will inherit their shares. However, stockholders in one corporation cannot own stock in the other corporation.

After the filing and approval of the articles of incorporation, the Eskimo people of Gambell and Savoonga (the corporate stockholders) voted

to take fee simple title to approximately 1,136,000 acres of St. Lawrence island. The decision by the two villages was to accept title to the island in joint ownership, rather than each village receiving surface rights to 138,240 acres of land and participating with other Alaska natives in ANCSA's cash distribution. Thus the villages chose to manage their own corporate affairs and to reject participation in the Bering Straits Regional Corporation and a share of the settlement funds that would have come to them. The shareholders now have surface and subsurface rights to about three and one-half times as much land as they would have had had they chosen to participate in AN CSA.

Each Native Corporation has a minimum of seven elected officers, a president, vice-president, secretary-treasurer and four members. These officials comprise the governing boards. The corporations have all the powers which any corporation possesses under charter with the Alaska Department of Commerce. Like the IRA Councils, the Native Corporations are charged with the management of resources and all activities related to resource use and protection. When the Native Corporations were established, no firm guidelines were prepared to distinguish the powers and functions of I RA Counci s from Native Corporation powers and functions. Nevertheless, the peeple of the island have worked out amicable relations among their various governments, and they have been careful to avoid serious jurisdictional conflicts. In general, the corporations have been seen as responsible for resource use and protection, and both corporations exercise their powers conscientiously.

Essentially, the two Native Corporations own and control the resources of the island. Thus, they control the future development of island resources. Because the island is jointly owned by the two Native

Corporations, the two organizations work together and coordinate their efforts. There is constant talk among shareholders and directors of what should be done to best serve the most cherished traditions of island life. There is some anxiety that in 1991, when the corporate shareholders become eligible to sell their shares, some stockholders will sell their shares to non-Eskimos. islanders are especially fearful that monetary concerns will force some stockholders to sell shares to energy companies, and that control of the island by Eskimos will be lost. The problem is keenly felt, and the Native Corporations and IRA Councils openly discuss the issues facing them and the options open to Gambell and Savoonga residents in the near future.

The people of Gambell believe that ANCSA forces them to act much too quickly regarding the disposition of corporate shares. Prior to 1991, islanders feel that they must compile a vast amount of information, much of which will require research, in order to adequately protect the current and future generations from folly. Most of the leaders in the Gambell Native Corporation and the IRA Council believe that the people of the island must prepare for the future one step at a time, proceeding at their own pace.

Savoonga leadership appears to concur. There have been several joint Gambell-Savoonga meetings with representatives from the two Native Corporations and the two IRA Councils to discuss these matters in depth. The leadership from both communities are intent upon resolving the problems without rancor, jealousy, haste, or a quest for exclusive powers by any organization.

The same leaders assert that the eiders of both communities do not want to sell any subsurface rights to the island, nor do they want to jump into any large development schemes now, or after 1991. Leaders are considering legally prohibiting any inholdings on the island, thus preventing a hasty

decision by. some shareholder to sell his/her shares to outsiders and thereby creating havoc for any unified, all-Eskimo management plan.

The strong desire to protect the current ownership of the island and preclude unwise decisions about any future development is reflected in other views held by many village leaders. There is a decided preference for the ownership of the island to be transferred from the Native Corporations to the IRA Councils. There is a belief that the IRA Councils' relationship with the federal government, specifically the Bureau of Indian Affairs, affords the best means for protecting island lands from alienation.

Leadership

The several political institutions appear to serve the people of St. Lawrence Island very well. There are, nonetheless, strains in these institutions and problems for the people who administer them. It would be naive to ignore these strains. The most pressing matters concern the demands placed on the elected servants themselves. In Gambell there are 21 elected officers; Savoonga has 23. These positions are generally held by men. Many elected officials have held previous elected positions, frequently in institutions other than those in which they are now serving. These elected officials face a dilemma, one they understand quite well: how does an elected official, serving with minimal financial remunerations, serve the community, while at the same time providing subsistence products for their families? Leaders experience serious conflicts between the need to serve and the requirements of hunting, fishing, trapping and carving. Many elected officials are also boat captains and these latter positions of responsibility make additional demands on time, money and organizational skills, demands which may be jeopardized by the burden of public service.

There must be no mistake; the first obligation of community leaders is to subsistence pursuits! Life itself is dependent upon successful subsistence activities. Other matters are clearly secondary and leaders make no pretense to the contrary. Most of these men would likely prefer to be at home with their families or pursuing game rather than attempting to resolve community problems.

However, it is generally believed that those most qualified to serve should serve. Thus, many individuals are called upon to serve on the City Council, IRA Council and/or Native Corporation. These same leaders frequently hold positions on the Alaska Walrus Commission, the Eskimo Whaling Commission and the Bering Straits School District, maintain close ties with Kawerak, as well as hold memberships in other specialized organizations. Membership in these non-local organizations is extremely important, providing close contacts with mainland Eskimos as they attend conferences where new information pertinent to Eskimo well-being is disseminated. While obviously crucial to Eskimo political organization, such activities further detract from subsistence activities. With all of these demands, some men vow they will never again submit to a call to serve. Usually, however, they relent and run for office for yet another term. Public servants, although occasionally exasperated, and often exhausted and over-worked, are generally willing to continue to serve or serve again. They feel a deep sense of commitment and obligation to their kin, neighbors and community.

Many leaders take pride in their terms in office, realizing that they form a core of leaders who rotate from one institution and position to another. In this way they gain valuable experience and a broadened perspective on the interrelationships among and between the institutions.

They come to better understand the functions that are unique to each. Such leaders are frequently leaders and spokespersons for their patricians and clan segments, possessing many hunting skills and knowledge of matters that are of importance to the villages. Additionally, community leaders are often closely related to leaders in the other village, a situation that accounts for some of the inter-community good-will.

Island leaders believe that the social and political health of the two communities is directly dependent upon local decisionmakers. Decisions grow out of an intimate knowledge of and direct concern for the well-being of the villages. Only local decisionmakers are able to take into account the protection and preservation of local values: sharing, mutual concern, dependence upon naturally recurring resources, and the social system which is structured around the patricians.

Nevertheless, professionalism has come to Gambell and Savoonga. The city councils have recruited local professional managers. These positions are specialized, full-time positions directed to the tasks of city government. The IRA Councils and Native Corporations also have clerks, a further step toward professionalism and specialization. These recent innovations in government perhaps portend accelerated specialization which will ultimately eliminate some stresses on elected leadership. The problem, of course, is providing continuing funding for these specialized functionaries.

Religious Structure

There are two dominant Christian churches in Gambell and Savoonga. The Presbyterian Church entered Gambell just before the turn of the century. Presbyterians currently number about 365 in Gambell and about 300 in Savoonga. The second denomination is the Seventh-Day Adventist

Church. The Seventh-Day Adventists are relative new-comers to the island arriving in the early 1940s. They have a growing membership that is now 87 in Gambell and about 10 in Savoonga. More than half of the Presbyterians and Seventh Day Adventists attend services regularly. Three other religious faiths are represented on the island, but maintain no facilities. There are six Baptists in Gambell, and three Latter-day Saints and one Baha'i in Savoonga.

The doctrines espoused by Christian churches appear to have proved appealing to Eskimo people on St. Lawrence island. Converts have been numerous without evidence of heavy-handed proselytizing. The Christian heritage, stressing Old Testament male dominance, and respect for elders and traditions has found a comfortable place in Eskimo patricians and their attendant values. The New Testament messages of communitarianism, the humane values of brotherly love, treating others as one would like to be treated, and forbearance of life's unforeseen difficulties, have found eager recipients, especially in the elder men and women. An added and no less attractive aspect of Christian beliefs, redemption and eternal life for all, has proved of great value to a people whose lives are made peri lous by a severe environment.

Christian doctrines have fundamentally altered certain aspects of Eskimo beliefs and practices. Animism, the belief that all things animate and inanimate possess spirits and are to be accorded specific rules of respect and deference, has slipped away. What has remained is a continuing and persistent respect for nature and living things, but with one important difference. Objects and creatures that are not human no longer possess eternal spirits which require particular ritual acknowledgment (Hughes: 1960, 332-333).

Christian monotheism has replaced the traditional hierarchy of spirits. Only man and the Christian God are invested with eternal life, and they are moral beings. Nevertheless, islanders have not lost their profound respect for marine life. Marine mammals, are viewed with great respect and particular attention is given to the majesty, beauty, intelligence and power of these beings. Bowhead and killer whales are still viewed as "brothers. " These Eskimo people take particular pride in their displays of respect for all living beings, and they abhor needless cruelty and slaughter. This respect will likely remain embedded in Eskimo life so long as the subsistence economy is the dominant means of obtaining food.

The Christian churches play an important role in Gambell and Savoonga. People of all ages and both sexes engage in numerous church-related activities. They are given special responsil ilities which are assumed with pride and enthusiasm. Women teach Gospe lessons and deliver sermons in the Presbyterian Church. Some elder Gambell women deliver messages expounding on the Christian teachings. Churches take responsibility for aiding those in need, and for organizing and conducting countless social gatherings. These gatherings are generally for special community purposes, quite apart from the normal function of teaching gospels. When Eskimo people speak of their treasured way of life they are also including the Christian aspect of their daily lives.

The importance of Christianity in the lives of islanders is reflected in the fact that the two Nome radio stations are owned by Christian denominations. Both stations are listened to regularly. They are the only signals which reach the island with consistency. In addition to broadcasting Christian messages, these stations also serve more secular needs. Besides music and news, these stations provide educational programs specifically aimed

at the Eskimo population, contributing to the continuation of local culture and languages. They also broadcast flight information for bush flights, commercial and private, as well as messages from one party to another. The latter service is especially important for announcing early or delayed arrivals on the island.

Education

Formal education is provided by the Bureau of Indian Affairs for the lower grades, and by the state-funded high schools for grades nine through twelve. The bulk of instruction is given to literacy, mathematical skills, selected social skills and physical fitness, with several classes devoted to the maintenance of island culture.

Before the early 1970s, high school education was provided to St. Lawrence Island students on the Alaska mainland. The principal school was Mt. Edgecombe, located north of Sitka, Alaska, nearly 1,000 miles from the island. Attendance at this and other mainland high schools had a special socializing effect, instilling many values dominant in Euro-American cultures. During the 1960s Mt. Edgecombe was particularly noted for a liberalizing ethic which stressed respect for minority peoples, including Native Alaskans. Many St. .Lawrence Island leaders, some of whom are now on the mainland serving in important positions, were students at the school in the 1960s.

The public high schools now established in the villages absorb the bulk of high school age students. Enrollment at the Gambell and Savoonga high schools remains high. Many students, upon graduation, leave their villages for stints in military service, or to acquire more education, or to look for jobs, but a large proportion of them return to the island.

The avowed purpose of establishing high schools on the island, and in many other Native communities in Alaska, was to protect village traditions. Local schools were thought to "insure that young people would not be forced to leave families and friends, or denied opportunities to carry out subsistence pursuits. This plan has had mixed results with its proponents claiming the desired beneficial effects. Opponents argue that students need the mainland educational experience to adapt to modern life. Furthermore, opponents of the island schools believe the interpersonal ties which develop between Eskimos from different regions while attending mainland schools are critical to Eskimo political unity.

The Gambell and Savoonga high schools have developed some recent rivalries in sports contests, e.g. , basketball and wrestling. These new activities take on all. the trappings of high school athletics on the mainland. The events are undertaken with teams of cheerleaders, high school bands, and keen competition for trophies and community accolades. Improved transportation has allowed the two island schools to compete with some mainland schools in these events, as well as against one another.

Kinship

Patricians--non-local, corporate compromised kin groups with descent reckoned through the male line--form the nucleus for virtually all social organization of St. Lawrence Island. The importance of men and the clan structure can be seen by the enduring pattern of referring to father's brother's son (patrilineal parallel cousin) as brother and father's brother (patrilineal uncle) as father. These terms reveal the continued strength and integrity of the island's patrician system which has been an essential part of the kinship structure since well before the turn of the century.

The structure of the hunting crews also demonstrates the key role played by the patricians in the subsistence quest. Understanding life on the island is impossible" without understanding the kin structure and the importance of kinship must not be underestimated.

Embedded within the patricians of Gambell and Savoonga is a well-defined hierarchy of authority defined chiefly by age. While patricians are generally headed by males in keeping with the patridominant nature of the system, age can and does override sex. The eldest person in a clan, provided his or her health is reasonably good, is the leader of the clan. As the leader, he/she is asked permission for undertaking a large number of actions, The leader is asked for approval for marriages, the major equipment purchases necessary for successful hunts and the scheduling of hunts. The patrician leaders also give advice about hunting techniques and a wide array of personal matters. Perhaps most importantly, patriclan heads monitor the redistribution of many subsistence goods. These elders are treated with great respect and are expected to be particularly wise, carefully weighing all the relevant information prior to rendering a judgment. In order to carry out these tasks they are expected to be available whenever needed. Often those seeking advice must travel from Gambell to Savoonga or from Savoonga to Gambell to speak with their patrician head. In spite of the difficulty, the time and effort will be sustained for such a trip if the issue cannot be resolved over the telephone as is sometimes the case.

Marriage

Women marry into their husband's clan, abandoning the clan affiliation of their father, but the husband must first spend about one year performing bride service for his father-in-law or a surrogate. The groom

assists with a wide variety of male tasks and all of his father-in-law's subsistence activities, e.g. , serving as a member of his father-in-law's crew, all the while giving his individual catches to his wife's household.

After a year has passed the bride moves from her village to the village of her husband. [f husband and wife are from the same village residence might change from the bride's parent's house, or one nearby, to a residence nearer the groom's parents. Most marriages are between residents of the same village. In recent years only eight or nine women have married out of Gambell into Savoonga and an equal number married into Gambell from Savoonga. Some women have, however, married into mainland Eskimo communities, leaving the island.

The bride then becomes a member of her husband's patrilineal clan. She becomes her in-laws' "daughter, " "niece, " "aunt, " depending on her place in the lineage. She is given away by her father's patrician. Her new social orientation (visiting, sharing subsistence and other goods, gift-giving, dining and recreation) now falls mainly within the orbit of her husband's clan. Most women see their prestige and pride as flowing from their function within their husband's clan and they take on the tasks cheerfully and unquestioningly (for the most part).

Role Expectations

Women in St. Lawrence Island Eskimo culture prepare meals, care for children, keep house, maintain clothing and collect land and sea plants and marine invertebrates, but their most important task, one that is expected of all of them at some time in their lives, is to prepare and dispense subsistence and other goods from their households. Some women sew skin garments for use by their families or to sell to people on the mainland. Many women search for old ivory and ancient artifacts at ancient village

sites, especially when at summer camps. Even if a married woman is a successful commercial skin sewer, or even if she produces income from artifacts she finds, the redistribution of subsistence products remains her central task.

Secondary role functions for women include keeping the family budget records, carving ivory, and in rare instances (one or two in each village), hunting alongside men for whales, walrus and bearded seals. Some of them aspire to positions of leadership and one woman holds two elected offices in Gambell.

Men are the hunters, fishermen and trappers, and comprise most of the carvers. Men are the captains of all hunting and collecting crews. Frequently they must risk their lives on the rough and frigid seas while pursuing their major responsibility of capturing subsistence resources with which to feed and clothe their families. They are expected to behave cautiously, however, avoiding risks whenever possible.

Additionally, men teach their younger male patrikin (sons, grandsons, nephews, younger cousins, brothers or adopted kin) to hunt, trap, fish, search for old ivory, carve and repair and maintain equipment, They occasionally prepare meals, keep family budget records, construct new skin boats or repair old skin boats for whale hunting and reload shotshells and rifle ammunition.

In a general sense men are expected to provide the leadership in the patricians and the six island governments. Some of them hold office not only in local government, but also in various regional and national organizations that are concerned with marine mammals, leadership development and other issues.

Girls and younger women help raise siblings, nephews and nieces, and children adopted by their parents or grandparents. They clean house, prepare meals, wash clothes, occasionally collect land and sea plants, marine invertebrates and bird eggs, and assist younger household members with formal education. They are expected to stand in for adult females whenever necessary. Younger women and girls also assist with skin sewing, thereby learning the skills. The most important lessons they learn during their younger years are those which teach the importance of sharing with kin, friends, and others.

Boys assist men with hunting and fishing, and they frequently collect birds' eggs, a dangerous undertaking for which they are better suited than adult males. At an early age they begin to participate in the various hunts where they not only learn hunting skills, but they are also taught and encouraged to be strong, patient, enduring and above all, generous. Boys and young men run errands for their families, help elders with chores, watch after younger members of their households, and occasionally prepare meals and do general housework.

Elders are the object of respect and deference. Married couples honor recently deceased elders by naming a new-born child after the departed. This practice stems from the belief that the spirit of the deceased inhabits the body of the next child born into the lineage. Today the practice is almost exclusively a demonstration of respect for elders.

Frequently the elderly watch over their grandchildren. Sometimes they even take their first-born grandchild and raise him or her with the intention of providing the care and training expected of parents. For all practical purposes they adopt that grandchild. The care that grandparents bestow upon their grandchildren is generally returned when

they grow older. As the child matures, he/she increasingly cares for the grandparent.

Nearly all elders live with younger kinsmen." Typically, they live with their married offspring. This is especially important if the elder's spouse is deceased. Living with their children guarantees that someone will be constantly available to provide aid, but perhaps more importantly, such a living arrangement insures companionship. Regardless of their living arrangements, they are always given the entire range of subsistence goods and are cared for by kin or neighbors on a regular basis.

Overall, role expectations in St. Lawrence Island society are relatively clearly defined. There are some instances where there is an overlap of expectations for categories of persons, and in some instances expectations are violated, but violations occur mainly when someone is attempting to aid a person of the opposite sex. The sex roles are generally accepted with minimal alteration or serious questioning.

Households

Most of the households in Gambell and Savoonga are occupied by nuclear families (parents or surrogate parents and offspring or surrogate offspring). Fifty-five percent of the Gambell households and sixty-four percent of the Savoonga households are nuclear. There are some extended families [parents and married offspring with children), some grandparent-grandchild households, some sibling households (brothers or sisters or a combination of the two) and single person households. Only about two percent of the households in both communities consist of only a married pair. Many households have adopted children, often grandchildren taken by their grandparents, and there are some households that have several people related in different ways to the household head such as

brothers, nephews, cousins or the like. Households never stand alone economically, however. Each household is wedded to many others through the complex networks of subsistence crews and crafts production. These networks span not only households but the two villages, just as patricians span households and villages.

The availability of new housing in the late 1970s and 1980 made it possible for many newly-married couples and single men and women to establish households separate from their parents or surrogate parents. In some instances, children remained in the older housing after the rest of the family moved into the new housing. The net result of the new housing was to decrease the average family size and increase the number of occupied households. In Gambell, the average household size is 4.1 people and Savoonga, with fewer single-person households, has an average household size of 5.0 persons. Family sizes on the island are fairly large, with parents over 35 years of age having an average of nearly 4 children. In the past 12 years the populations of Gambell and Savoonga have increased an average of about 2.35 percent per annum. Such a growth rate indicates a doubling of the population every 29 years.

Employment and the Cash Economy

Employment

Gambell and Savoonga had a total of 134 full-time and part-time jobs in the spring and summer of 1982. These jobs were shared among a total population of 913 people (455 in Gambell and 458 in Savoonga). Most of the jobs are in the service sector of the economy. More than one-half of the Gambell households and about one-third of the Savoonga households have no wage earners, excluding carvers and skin garment makers. This

absence of wage work further underscores the importance of subsistence, " activities. Further, many of the jobs pay only small wages and several of the jobs are only part-time. Of the 14 Gambell households which provided information about income from wages, excluding craft sales, the average was $11,220.

There are 318 carvers in the villages, 111 in Gambell and 207 in Savoonga. These artisans make extremely important contributions to the finances of not only their households, but the overall communities as well. It has been estimated that ivory carving brings the island about $250,000 per year, $150,000 to Savoonga and $100,000 to Gambell. In addition to the ivory carvers. there are about 90 seal skin sewers in each village who sew family garments or commercial items. Commercial skin sewers, like ivory carvers, contributed badly needed dollars to household and. ultimately, community coffers.

Cash Economy

Purchases. Families in Gambell annually pay an average of $3,800 for goods from local retail stores where prices average about double those of the lower 48 states. Food is the major purchase with cereals, tea, coffee, sugar, baby food, pilot bread, toiletries, soda pop and cigarettes leading the list of purchases. At the maximum, store bought goods cost no more than about $250 per month. Some families spend up to $300, but they are conspicuous exceptions. On St. Lawrence Island, $250 purchases about what $100 or $125 would in the lower 48. Needless to say, subsistence goods are the life-blood of the people on the island. Islanders purchase relatively little food when their costs are compared with mainlanders, and their appetites are certainly no smaller. Their supply of food merely comes from the natural environment and not the supermarket.

Gasoline for snowmachines, ail-terrain cycles (three wheels) and all-terrain vehicles (six or eight wheels) costs each Gambell household about $1,700 per year. Savoonga households spend about $1,100 for gasoline. Nearly every household in Gambell and Savoonga has at least one snowmachine and one all-terrain cycle. Obviously some transportation costs are not related to subsistence, but anthropological observations indicate that the majority of vehicle use on the island is tied to subsistence pursuits.

Most households have an aluminum boat and an outboard engine of at least 40 horsepower. Like most equipment, boats and engines are purchased with cash since credit is generally not available. In order to make these expensive, but essential, purchases, families must save scrupulously and diligently, with household members even going without a second or third daily meal, in order to acquire them.

The annual cost of transportation (fuel and machines) , weapons, ammunition, boats, boat motors and fishing equipment averages roughly about $6,700 per household. Some island households spent much more than this, while other households spend less.

Transfer payments. Nearly one-half of the families on the island receive food stamps and energy assistance. Energy for home heating costs families about $2,700 each year. Unfortunately for islanders, the energy assistance program rarely exceeds $700 per year for any family. The average amount received in 1981 by the 11 Gambell families who indicated that they received energy assistance was about $641. Thus, even with federal energy assistance, familes which receive such assistance must allocate about $2,000 to $2,100 from their annual family budget just for home heating. About one-half of the households in Gambell and Savoonga

also qualify for and receive food stamps. Of the 16 Gambell families who indicated that they received food stamps, the average household received about $3,372 in stamps last year.

Medical care is provided by the U.S. Public Health Service, so the absence of cash does not threaten island households so seriously as do heating and eating costs. However, families must pay the one-way portion of a round-trip air fare to the health facility in Nome in order to receive more than the rudimentary service provided at island clinics. No information was available about another source of transfer payments, BIA General Assistance.

The amounts received in transfer payments are relatively modest considering the great expense of food, fuel and electricity. The disparity between the cash requirements necessary for survival and the cash available from both earned and unearned sources highlights the extreme importance of subsistence activities.

Subsistence

The two most salient features of life on St. Lawrence Island are the great dependence on naturally occurring resources and the sharing ethic which is intimately tied to the subsistence economy. Approximately 80 percent of all food consumed annually by islanders comes from the sea and land. Only about 20 percent of islanders' food is purchased. Subsistence resources are acquired through the efforts of the residents using their own adaptations of modern and ancient technology, a social organization geared to these cooperative activities and values which support and sustain their subsistence livelihood with a focus upon sharing.

The sharing ethic is seen in the fierce, insistent pride in giving. "Give," as many informants emphasized, "until it hurts." "Give until there is no more. " Many village elders say, "Give all you can and you will never go hungry.]' What this implies, of course, is that if one gives when he/she is able, the giving will be returned when he/she is not able. One household in Gambell was recorded as giving subsistence products to 315 islanders and mainlanders during a single year. This eager ethic of sharing extends to all subsistence goods, marine mammals, fish, birds, birds'. eggs, invertebrates, land and sea plants, as well as some store bought goods and cash.

Walrus

Walrus provide more food' than any other single plant or animal, and over 300 people on St. Lawrence Island hunted walrus in 1982. Gambell fielded 41 walrus crews, while Savoonga had 36 crews, for a total of 77 crews. Unfortunately, complete data for the 1982 walrus harvest are not available. Field research ended in Gambell before the completion of the walrus hunt, and only partial data are available.

Data collected for 1981, however, are relatively complete, and if the sample of respondents who provided information on walrus hunting is correct, it is projected that over 1,600 walrus were taken or found in 1981. Gambell hunters had a successful year in 1981 with a projected harvest of well over 1,000 walrus, whereas Savoonga hunters fell considerably short of Gambell's harvest with a projected harvest of only 575 walrus taken and found. The actual walrus harvest by those included in the sample was 178 animals taken or found by Savoonga hunters, with Gambell hunters taking home 617 animals. It must be remembered that the Savoonga sample was small and undertaken during the summer camping

season, so the difference in takes between the two villages is probably not as large as it appears. The sample probably underrepresents the true take. The historical record of walrus takes by Savoonga hunters indicates that they are roughly equivalent to the takes by Gambell hunters.

While only fragmentary data on Gambell's 1982 walrus hunt are available, data are available for Savoonga. The latter community had a relatively poor hunt in 1982 because of a persistent build-up of pressure ice, mainly along the north shore. Walrus hunting was, therefore, severely restricted and Savoonga's harvest amounted to only about 96 walrus. Using a correction factor derived from U.S. Fish and Wildlife data, the projected 1982 walrus harvest for Savoonga was in the neighborhood of 386 walrus.

Most parts of the walrus are used for food, though not all of every walrus killed is consumed. Flesh, liver, intestines, stomach skin, blubber, and some of the stomach contents (clams primarily) are eaten. All parts of the walrus are shared among the crew members who took the walrus, and the parts are distributed in turn to kin (particularly patrilineal kin), friends and neighbors, village elders, widows and women who have children but no hunters in their households. The sharing networks know no village boundaries and subsistence products move between the two communities. This was an extremely important factor this past year because of Savoonga's limited success with the walrus hunt. The small Savoonga harvest was augmented by walrus products provided by Gambell hunters.

The needy are invariably given walrus meat and other edible parts of the animal. It does not matter to those who give whether or not those who are in need are kinsmen or not, and no one who calls at the homes of

successful hunters is denied portions of the animals. Hunters take great pride in being able to give these items without expectation of return. The network of the distribution of walrus products extends beyond the confines of the island to include kinspeople and friends residing in Nome, Anchorage and other Alaska communities, as weli as a few friends and kin residing in the continental U. S. Successful hunters of both Gambell and Savoonga give walrus products to an average of 10 other households each year, receiving similar subsistence goods from oniy f! households.

In addition to providing valuable nutrients, walrus supply other essential subsistence items. The skins are used to cover the skin boats employed in the whaie hunt, while intestines are used as raingear and for drum heads. Perhaps most important are the ivory tusks. Whiie sales of raw ivory to the outside world is prohibited by the Marine Mammals Protection Act, there is a large demand for carved ivory. The carved ivory takes on a myriad of shapes from animal figurines to etched bookma rkers. The sale of processed ivory produces a substantial income for the island, one of the few sources of earned income that is not linked to state or federal largess.

Social relations coalesce around walrus hunting in such a way that all major patricians are heid together by the seasonal rounds of hunting, butchering, distributing and consuming walrus products. Thus, walrus hunting ties patricians and the two communities together just as it links neighbors and kin together. More will be said about this group cohesion engendered by hunting in the section on the bowhead whale hunt.

Sea is

The four varieties of seals hunted by islanders (spotted, ringed, ribbon and bearded) are a vitai part of the island's subsistence economy.

For the most part bearded seals are hunted by crews from aluminum boats, using outboard engines, CB radios and high-powered rifles. Crew hunts for the other three seal species are not as frequent as they are for the larger bearded seal, and solitary hunts from shore-blinds are common. The samples of hunters in Gambell and Savoonga reported taking over 1,400 seals in 1981, with ringed seals being taken in greatest numbers, followed by spotted seals. Ribbon seals were taken only infrequently. If the sample results are representative of the communities, approximately 4,500 seals were harvested by Gambell and Savoonga hunters in 1981. While ringed seals are taken with the greatest frequency, bearded seals are probably the most important to islander diets because of their vast size. Bearsled seals can weigh up to two and one-half times as much as spotted seals,

Like walrus, seals significantly contribute to the well-being of islanders. The flesh and oil from the seals provide nutrients in much the same way that walrus flesh and oil do. Furthermore, island residents are fond of seai oil and flesh, so seals must not be viewed as a food source which is utilized only in the absence of other foods. Food products frcm seals are an essential ingredient in the life of islanders, just as walrus products are. Again, like walrus, seals are shared through much the same networks that have already been discussed, and they are shared as extensively. No one who desires seal products goes without if they are available.

In addition to their value as food, sea ls provide other scarce resources. Of special importance are the skins. Seal skins are tanned, either locally or commercially, and they are made into a wide variety of products. Many of the products are used by natives. In addition to

several types of garments, children's toys are also constructed from seal skins as are some ropes used for hunting. If, however, garments are to be used locally, home processing of the hides is preferred. Commercially tanned hides tend to absorb moisture far more readily than home-tanned hides. The waterproof nature of home-tanned skins is crucial when hunting boots, pants, gloves or parkas are to be made. For a hunter to become wet while on the ice presents not only discomfort but a potential life threatening situation. Commercial tanning appears more acceptable for products intended for commercial ends where waterproof garments are not necessary. Many women prepare garments to be sold to non-natives, and their sewing brings badly needed income into many island homes.

Whales

The spring whale hunt, brief, dramatic, and exhilarating, brings joy and community solidarity unlike any other activity on the island. Hunters state that the search for whales, with the quiet, intense expectation and the community and individual pride associated with the hunt, is the most important thing a man can do. There were 218 hunters of bowhead whales on St. Lawrence Island in 1982, working in 32 crews, 22 in Gambell and 10 in Savoonga. Both Savoonga and Gambell expect to form two additional whaling crews in the spring of 1983, bringing the total to 36 crews. Virtually all of the eligible adult males on the island are engaged in bowhead hunting.

In the spring of 1982, three bowhead whales were captured, two by Gambell and one by Savoonga. Each community receives about one-half of each bowhead whale taken by either community. The equal sharing of bowhead whales links the two communities together and there is tremendous interest in the hunt. The progress of the hunt is transmitted by CB

radios, and islanders in both villages keep abreast of both hunts. When a strike is made, all island residents are immediately aware of the strike via telephones as well as CB radios. A large proportion of those not hunting gather on the beach to greet the crews and help with the butchering. By the time the whale is beached, representatives of the community not striking the whale will likely be on the beach to greet the successful hunters and claim their community's share.

Like walrus and seal products, whale parts are rapidly distributed through both villages and across the Bering Sea to islanders residing in mainland communities. Muktuk (subcutaneous skin and blubber) is virtually an obligatory edible at birthday celebrations, holidays, homecomings. and other special occasions. its use in these circumstances supplements the Eskimo diet, but more importantly its distribution and use reinforces the special character of Eskimo culture. Even though bowhead whales do not provide the volume of protein provided by walrus, bowhead whales are an exceedingly important resource for they" are the symbolic representation of St. Lawrence Island's culture. To distribute portions of the bowhead whaie is to distribute the distinct characteristics of island life, and very special efforts are made to distribute it to all island residents.

Whale hunting crews, like walrus hunting crews, with few exceptions, consist of patrilineally related males (father-sons, unties-nephews, and brothers). These crews are the central instruments of capture as well as distribution of both walrus and bowhead whales. Occasionally, unrelated people join together, but they do so oniy when there are no close male kinsmen available to form a crew. Thus, most crew members are recruited from the ranks of the patricians. Patricians, made up of severai families

related through the male line, organize and conduct the major subsistence activities, including hunting, Butchering animals, storage and distribution of subsistence goods. These same patricians also form the basis for bearded seal hunting crews and summer camping crews where fishing, plant collecting and hunting of the smaller seals take place. Patricians provide the foundation of bird egg collecting and young bird hunting crews as well. Thus, patricians provide the organizational nucleus of almost all of the island's subsistence activities. The two communities organize via clan linkages to pursue subsistence products, thereby uniting the two villages in the pursuit of a common goal.

Summer Camping

While whale, walrus, and the four species of seals provide the mainstay of islander diets, other subsistence items are nonetheless important. These other resources supplement the marine mammal diet and provide variety to the diet. Waterfowl and seabirds are hunted successfully and the numbers taken are not insignificant. Bird eggs are another resource which is relied upon, especially during the early part of the summer when the birds are nesting.

Nearly three-fourths (330 persons from Gambell and 397 persons from Savoonga) of all islanders leave their villages in the summer and early fall, moving to summer camps to fish, hunt seals and birds, collect land and sea plants and other invertebrates and/or hunt for ivory artifacts from ancient village sites. Those who do not camp consistently and for extended periods each season are generally those who are unable to go: the elderly, the handicapped, some men and women who hold full-time jobs. Teenagers frequently prefer the company of their age-mates in their villages and they too often remain behind.

The forays to camp sites far from Gambell and Savoonga are essential elements of the yearly round of subsistence activities. In addition to providing necessities, they afford islanders an opportunity to visit friends, neighbors and relatives outside the confines of village life. If it were not that summer camping activities were so crucial to the subsistence economy of the island, summer camping would appear no different from the summer exodus of mainland non-natives to favored camping spots.

Residents of Gambell and Savoonga look forward to camping and to the laughter and joy which accompany the daily subsistence toil. Men and women alike enjoy fishing with rod and reel, a pleasant, if relatively non-productive pasttime, while waiting to clear the gill nets which are set across the rivers. Others await passing ducks and geese. Children play "happily in the snow-fed rivers and streams, requiring numerous changes of clothes.

Most families' spend many weeks at these camps. Some families spend the entire summer in camp. Gambell people predominately use the section of St. Lawrence Island from Taphook Point in the north to Koozata Lagoon in the south, while people from Savoonga utilize the remainder of the island.

Quite apart from the fact that camping yields critical food resources which are indispensable to family survival, camping strengthens feelings of concern for the protection of their island and its vast natural resources. Pride in the possession of their island which is exclusively their domain, is also reinforced while camping.

The large assortment of summer resources are distributed rather evenly around the entire periphery of the island. Seals are taken from the waters surrounding the island and fish are caught in quantity on

nearly all of the major lagoons and rivers, with silver salmon, arctic char. and Golly Vardens contributing to the household larders. The latter three species dominate the summer catch just as sculpins, tomcods and blue cods dominate the winter ice-fishing catch. For exampie, residents of Gambell caught almost 1,200 silver salmon and their combined catch of sculpin and the two species of cod was over 6,000 in 1981. in the same year, residents of Savoonga caught roughly 2,800 Doily Varden and arctic char, while at the same time catching nearly 3,000 sculpin and cod.

Auklets, murres, ducks, geese and cormorants are captured in large quantities during the summer camping season. in 1981, Gambell households took an average combined bag of 752 birds, while Savoonga households had an average take of about 250 birds. Because bird egg collections are quantified by islanders in terms of buckets or refuse cans of varying dimensions, it is difficult to preciseiy estimate the number of eggs collected either during camping season or before. Nonetheless, the number of eggs collected is clearly substantial.

Likewise, it is difficult to estimate the quantities of land plants, sea piants and invertebrates collected during the summer camping season, but it is not insignificant. Gambell residents collected about 177 pounds of sea piants per household in the summer of 1981 and an average of 123 pounds of iand plants per household.

Natural Resource Shortages

A decline in major subsistence resources would obviously have a serious adverse effect on the the physical well-being of St. Lawrence Islanders. Because of the islanders' dependence upon naturally occurring resources for approximateiy 80 percent of their diet, any reduction in the natural resource base would caii for immediate action. Depending upon the

nature and extent of the shortage, islanders would require either a shift in hunting priorities and intensities or some form of state or federal aid if hunger and/or starvation were to be averted.

If only one or a few species were affected, it might be possible for islanders to intensify hunting efforts for the unaffected species in an attempt to replace reduced or lost resources. The success of such alternative hunting strategies would be determined by the magnitude of the disruption, the number of species affected, the availability of alternative species, the season of the year, the volume of stored subsistence products, the length of the disruption and a host of other factors. Clearly, a reduction in the bird population would not pose the physical threat that the reduction in the walrus herd would. A 10 percent reduction in the seal population is less serious than a 90 percent reduction. Finally, a less than catastrophic reduction in the winter walrus herd is more significant than an equal reduction in the spring walrus herd.

Besides the threat to the population's physical well-being, harvest disruptions of subsistence resources presents a threat to the island's social structure, even if threats to the communities' physical well-being are ameliorated. A reduced availability of naturally recurring resources would alter the depth, breadth, and strength of the clans, the organizational core of island society. Without the necessity of communal subsistence activities and sharing, the motivations for maintaining solidarity would be lessened. Without resources to share, the sharing networks would diminish, their function reduced or eliminated. Insofar as many of the sharing networks are based upon patrilineages, the patrician ties would again suffer and community cohesion would be redu-ced.

Such changes would erode that specia feeling of mutual concern now felt between both individuals and communities. Subsistence/activities, including technology and labor demands, are the basis for social life on St. Lawrence Island. Each household is tied to many others in the network of hunting and collecting crews and in the reciprocal and one-way networks of sharing subsistence and other goods. Without the need to cooperate in the hunt and without subsistence products to share, island culture would be unavoidably altered and government subsidies would not provide an equivalent replacement for the lost resources, except in the short-run. Life could be maintained, but not the extant social structure. The extent of the changes are dependent upon several factors which must be addressed. A detailed analysis of the likely consequences of varying levels of harvest disruptions for the community of Gambell is the topic to which we now turn.

CHAPTER XIV

HARVEST DISRUPTIONS:
ASSUMPTIONS, IMPACT CATEGORIES AND SYSTEM PARAMETERS

Introduction

Even though data were collected and analyzed for both Gambell and Savoonga in Chapters i through XI II (Technical Memoranda SLI-3 and SLI-4), an analysis of the consequences of harvest disruptions will not be undertaken for Savoonga. Only the consequences of potential disruptions in the availability of naturally-occurring resources for the community of Gambell will be discussed.

As already discussed in Chapter I (Technical Memorandum SLI-4), the inclusion of Savoonga in the study occurred after research was already well under way in Gambell. Insufficient funds were provided by OCS (Contract AA85I-CTI-59) for field workers to remain in Savoonga for a length of time equivalent to the time spent in Gambell. Thus, the data collected in Savoonga were somewhat less extensive and complete than the data collected in Gambell.

Furthermore, the OCS contract specified that field work in Savoonga was to be undertaken during the summer, the height of the summer camping season. During this period a large majority of Savoonga's population was dwelling away from the village at summer camping sites. Those Savoonga residents who remained in the village tended to be individuals who were not as actively engaged in subsistence pursuits as those who were living at summer camps, e.g. , youngsters, elderly persons, widows and wage workers. The fact that the better and more active hunters and gatherers were, for the most part, unavailable for discussions and observations during the field work

period partially explains the differences observed in the data from Gambell and Savoonga. Even though the research team believes the Savoonga data to be reliable and valid, to the extent they somewhat underrepresent some subsistence harvest amounts, caution dictates that a conservative approach be taken and the disruption analysis will therefore not include discussions of Savoonga (see discussion in Chapter I).

The data collected indicate that Gambell residents generally harvest greater quantities of naturally-occurring resources than do Savoonga residents, but this is most likely a result of the composition of the samples obtained in the two communities. Discussions with active hunters and gatherers were more readily available in Gambell than they were in Savoonga. Anthropological observations support the conclusion that the data collected in Savoonga probably underestimate the extent of natural resource utilization in that community, but the extent of the underestimation cannot be precisely determined given the non-random nature of the samples.

In spite of the difficulty of estimating the extent of the underestimation, other evidence also supports the conclusion that the Savoonga data are underestimates of the population parameters. Protocol observations and archival data collected on St. Lawrence Island indicate that the two communities are remarkably similar. Evidence obtained on the demographic characteristics, income, employment, kinship structures and sharing patterns graphically demonstrate how much alike the two communities are, further strengthening the conclusion that the data on subsistence harvests collected in Savoonga underestimate the true size of the harvests.

Had random sampling procedures been utilized, any observed differences could have been explained in terms of the likelihood of sampling errors. Unfortunately, from a scientific perspective, the OCS

contract specifically forbade obtaining the OMB clearance necessary for the use of interview schedules or structured questionnaires with more than nine people. With this restriction, random sampling techniques were rendered trivial, and non-random sampling became the only practical procedure. A sample of nine is too small to be representative of either community, and using multiple samples of nine persons each with a different set of questions would not provide the comprehensiveness required of the research. Non-random network sampling, using protocols rather than structured interview schedules, provided a reasonable and efficient means of gathering scientifically sound data.

Unfortunately, with this type of sampling, generalizing from sample to population cannot be undertaken without risk. Caution must be exercised when such generalizations are made, because in the absence of random sampling, the potential error cannot be determined. Probability theory cannot be utilized without the statistical guarantees provided by random sampling. Nevertheless, the nature and size of the sample obtained in Cambell provides considerable confidence that the sample is probably representative of the population, and that the size of the various natural resource harvests can be reasonably estimated. .

Methods and Standards

It must be remembered that the research design, methods and techniques employed in the study determine the quality of data obtained. These data, of course, provide the basis for determining the nature and extent of the potential harvest disruptions and the analysis of impacts upon categories. Nevertheless, other than the preceding discussion of sampling procedures and caveats, and the following discussion of the problems inherent in

generating external validity and making projections about future conditions, little needs to be said about the research procedures employed.

Chapter I (Technical Memorandum SLI-4) fully discussed the methods utilized on the project, and that discussion need not be repeated here. It appears useful, however, to reiterate that three types of data collection procedures were used: (1) anthropological observations, (2) protocol observations and (3) archival observations. Further, data obtained from one observation technique were, whenever possible, compared with the data collected using the other techniques (triangulation) so as to determine the validity of the data. In the absence of more rigorous scientific techniques, e.g. , survey sampling and over-time measurements triangulation of the three observation methods provided the only means of estimating the validity of the data (see Webb, et al. , 1966).

Even though triangulation provided a means of establishing the validity of some of the data, it could not determine the validity" of all of the data. This is especially the case when relationships between variables are at issue. Comparable data were not always available given the financial and temporal limitations imposed by the research contract. Nor could triangulation resolve the difficulty of making projections about future conditions, a point to which we now turn.

Assumptions

Assumptions About External Validity

Before continuing with the discussion of the logic supporting the analysis of the harvest disruptions, it must be noted that a further methodological hazard remains. Even though the evidence suggests that generalizing from the Gambell sample to the Gambell population is possible

with some degree of confidence, it is impossible to confidently discuss change over-time with data which have been collected only at a single point in time. At best, synchronous data, i.e. , timebound, provide a description of what is currently the case. It provides no assurances whatsoever about what must be.

While an analysis of change over-time can demonstrate the causal linkages among variables if over-time measurements are available, even this type of analysis provides a shaky basis for projecting change into the future. in essence, this is a problem of extrapolating beyond the data, and all assurances of the external validity of the conclusions are removed. Because most of the study's data are synchronous, hence timebound, and because the archival data are too meager to lend validity checks to many of. the generalizations obtained from those synchronous data, the ethnographic baseline (Chapters I to XIII) from which impact categories are drawn is an" empirical statement of "what is", rather than a causal explanation of "what must be".

It is a non sequitur to claim that time-bound data yield generalizations about temporal relations. Comparable data from at ieast three points in time are required to evaluate causal sequences, and these data are not available in the present study. Put simply, empiricai statements about Gambell will require external validity checks before they will be genera! izable beyond the present. For instance, whether Gambell society will be the same ten years from now, even if no sources of influence intervene to change it, cannot be generalized from the current conditions. The present research guarantees nothing here, even though we have confidence in that research. The oniy sure method for strengthening the validity of our findings is for temporai replication at two" additional points in time. indeed, even if the probable

consequences that are posited in the harvest disruption analysis occur in accordance with those postulates, there is no way of knowing whether they occurred because of the factors specified or because of other unmeasured factors unless followup studies are conducted.

Assumptions About Government Regulations

The federal government and Alaska state government affect Alaskan native communities in a variety of ways, but especially through the regulation of fish and wildlife, including harvest quotas. Unfortunately, there is no way to predict future numbers of bowhead whales, Pacific walrus, the four species of seals, or the several bird species upon which islanders so desperately depend. Thus, there is no reliable means for predicting any changes "in the governmental regulations which control the killing of marine mammals or birds. It is therefore necessary to assume that marine mammal herds, seabird colonies and waterfowl numbers will remain large for an indefinite period, and that new and more restrictive take quotas will not be applied. A corollary assumption is that bowhead whale quotas suggested by the International Whaling Commission and imposed on Alaskan native whaling communities by the National Marine Fisheries Service, will continue in force.

The Marine Mammal Protection Act of 1972 gave the Department of the Interior responsibility for managing the nation's manatees, polar bears, walrus, sea otters, and dugongs. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service are responsible for managing and enforcing the moratorium on taking and importing marine mammals and marine mammal parts. Walrus are not on the endangered species list and walrus hunting is not currently limited by quota. The U.S Fish and Wildlife Service estimated the Pacific walrus population at 300,000 n 1982

(c f., Fay, 1981), 120,000 of them in U.S. territorial waters, and the population appears to be increasing. It is assumed, because of the size of the walrus population, that quotas on their take will remain indefinitely lifted and that non-native hunters will continue to be restricted from hunting walrus.

Current federal law does not allow international sales of marine mammal parts, although exemptions allow natives to sell worked (carved) ivory. We assume that this exemption will remain in force indefinitely. Further, it is assumed that if the responsibility for the management of marine mammals is transferred from the U.S. Fish and Wildlife Service to the State of Alaska, there will be no changes in the provisions that allow natives to sel I by-products, nor any new restrictions on take by Eskimo hunters, nor any new provision which allows sport hunting by non-natives.

The imposition by the United States of a 200-mile territorial limit to waters off its shores in 1977 has had a marked effect on western Alaskan fisheries, and St. Lawrence Islanders perceived an increase in fish population. I-far-vests are felt to be up since 1977. We assume that the federal territorial limits will remain indefinitely and that harvests will remain at current levels or increase. These assumptions are made even though it is acknowledged that rapid changes can occur in the size of wildlife populations through famine, weather, overhunting and/or accessibility to the populations, or because of unpredictable migrations away from formerly occupied areas. It is further acknowledged that political climates (international, federal, and state) can change rapidly also. However, the assumptions made provide a means of analyzing potential disruptions and thereby provide a base from which to evaluate changes in the natural and social environments which may occur later.

Assumptions About ANCSA

ANCSA provisions, in conjunction with the Indian Reorganization Act of 1934, the Indian Self-Determination Act of 1975, the Indian Financing Act of 1974, the Indian Health Care improvement Act of 1976, and the Indian Child Welfare Act of 1978, confer upon villages sovereign immunity, the authority to acquire jurisdiction over child welfare cases, the authority to contract with the Bureau of Indian Affairs and Indian Health Service for programs, and the authority to manage those programs. It is assumed that these acts will remain in force and that tribal ordinances and customs, as consonant with P.L. 280, will be honored in State of Alaska civil courts.

We recognize, however, that many of the provisions of ANCSA are undergoing investigation and review by the Alaska Federation of Natives (AFN) and Alaskan Native Foundation (ANF). It is likely that legal challenges will be mounted by these combined organizations to state fish and game regulations, ownership of some state land, stock ownership provisions in native corporations, control of ocean waters between the 3 and 200 mile territorial limit, and several provisions of ANCSA that have proved bothersome or unacceptable to natives. Nevertheless, in order to undertake the harvest disruption analysis under the most stable and known conditions, we assume that ANCSA will remain in force in its present form.

Assumptions About Off-Shore/On-Shore Activities

Disruptions to harvests can occur from o f-shore as well as on-shore activities, including staging areas, recreation uses, and so forth. In the harvest disruptions analysis the focus will be upon the magnitude of the disruption, not the source. In some instances, disruptions will be examined by species. In other instances, impacts will be assumed to affect several species simultaneously and they will be dealt with jointly.

Assumptions About Relations Among Categories of Culture

The real and measurable relations among "categories" of culture, or of society, have been recognized by social scientists for over one century (see Tyler 1871, Morgan 1877, Marx 1964, Durkheim 1933, Weber 1947, for examples). Measuring those relations and explaining the meanings of them have spawned controversies as well as the development of new methodologies during the long course of that history. We take as given that regular relations obtain among ideologies, technologies, economies, and social phenomena. Such relations have been demonstrated within cultures over time, and among cultures measured at one or more points in time (see Naroll,1970; Driver, 1973; Jorgensen, 1979; and Lewis, 1956;). Several modes of social science inquiry have focused on the causes and mechanisms of social change. Perhaps none of those modes of inquiry has been more successful or more enduring than those that have sought to determine the relations among environment, technology, economic organization, and ideology. On the general level of culture change, scholars as diverse as Marx (1964), Kroeber (1939), White (1959) and Harris (1980) have sought to account for the effects imposed by environments on forms of production arid organization, and the manner in which technology mediates and limits the effects of environments. On the specific question of change in Native American communities, case studies by social scientists such as Graburn (1969) and Aberle (1966), comparative case studies by Jorgensen (1972, ?979, 1980), and a spate of social impact assessments and critiques of those assessments have been produced (see Jorgensen et al. , 1978; Geisler, et al. , 1982; Jorgensen, .McCleary and McNabb, 1982).

It is evident that as technologies have been developed to increase hunting efficiency and territorial mobility, or to harness river systems, or

to produce agricultural surpluses and the like, that populations have grown. Further, organizations for production (including ownership, inheritance, extraction, division of labor by sex, age, and task groups) , consumption, distribution, and exchange have changed, as have family household organizations, polities, and ideologies.

We do not challenge the basic tenets of this rich social science literature inasmuch as changes in some aspects of Eskimo culture have been quick and dramatic since the introduction and wide-spread adoption of snowmobiles, outboard motor boats, high-powered rifles, all terrain cycles and all-terrain vehicles. At the same time, populations have become more concentrated in villages. Rapid and wide-ranging movements in subsistence pursuits have come to involve groups of men rather than entire families. Wider networks of kinspeople and friends are involved in these activities and they can complete in a few days what once required a few weeks.

The increased use of modern technology has changed the base of the Iota l economy. It has become increasingly dependent on sources of unearned income through federal and state grants, transfer payments, legislative prog rams, agencies, and awards, to provide the cash necessary to acquire the technology and fuel required to maintain subsistence pursuits, shelter, health, and clothing.

The penetration of state and federal government ever more deeply into village affairs has aitered the political economy of village life, creating regional corporations, village corporations, city governments, and the iRA councils. State and federai actions have aiso prompted residents to seek services and income from those institutions. The relations among local institutions and state and federai governments introduce legal and

professional relations where few had existed before. Relations between representatives of local institutions and the residents of the villages are moving from traditional relations among leaders and followers toward professional-client relations.

We do not presume that the harvests of naturally-occurring, renewable species can be neatly separated from the cultural milieu in which the subsistence economy is embedded, but we can analytically examine several broad cultural categories that influence or are influenced by the harvest of naturally-occurring species. We assume that we can demonstrate the interplay of (1) the organization of subsistence extraction, (2) dependence on certain technologies which require cash for their purchase and use, (3) the relations of local institutions to families and to their environmentally-based subsistence economies, (4) the ideas and sentiments that people hold and express about their natural environments, (5) proper relations to those resources, and more.

Assumptions About Relations Among Impact Categories

For the reasons already discussed, a synchronic study cannot infer causality, so temporal data will be adduced, whenever possible, to lend credence to the concluding hypotheses about the consequences of harvest disruptions to Gambell culture. Before listing the specific categories that we assume may be "impacted" by disruptions to the harvests of naturally-occurring species we provide a brief narrative on assumptions about relations among categories of Gambell culture.

The harvests of naturally-occurring renewable resources by Gambell residents and the uses to which those resources are put are embedded in a nexus of cultural relations, the origins of which extend back over 2,000 years. The subsistence economy, with its organization of production,

distribution, and consumption, subsuming ownership, inheritance, stewardship and authority, are some of those relations, but there are many more.

Should we choose to analyze the subsistence economy separately from other aspects of Gambell culture, we assume that we should do so for analytical purposes only. For instance, family, household, and wider networks of kinspeople are organized not merely as kinship qua kinship units to rear children, or even for limited additional purposes such as to provide shelter or emotional support. These organizations are integrated as core units for the extraction, preparation, storage and consumption (including use) of those natural resources or the products derived therefrom. Family household units and often kinspeople living in other households, pool technology required for subsistence, such as boats or snowmobiles, skills, and the like, as weii as cash from earned and unearned sources of income for the purchase and upkeep of equipment and more mundane daily needs. Members of these units thus provide gifts of resources. That is, they share labor, technology, locally abundant resources, and even scarce resources, with affines, kinspeople, or friends in Gambell and distant villages.

Attached to the organization of kinship, which itself is deeply embedded in the organization of the subsistence economy, is a very wide array of ideas and sentiments. Many of these ideas and sentiments are associated with obligations to contribute to the household economy. Other sentiments are associated with the consumption of naturally-occurring resources because of their ii fe-sustaining, spiritual or medicinai value. Yet other sentiments revoive about the sharing of resources with the aged, kinspeop-ie, affines, and friends, as weii as a willingness to work to obtain

resources for the sole purpose of sharing them. There are also sentiments about the beauty of the island and surrounding waters from which islanders extract their livelihoods.

This ideology of sharing andhelping is paramount among basic values of Gambell society. Furthermore, the ideology of sharing and helping takes expression in acts of sharing and helping that run counter to the ideology of economic choice which allegedly motivates market behavior. Many examples of common behavior in Gambell demonstrate that sharing and helping, not economic choice, motivates native actions.

We assume that the sense of community in modern Gambell is institutional. That is, it is long tried, repetitive, habitual, and expected. This sense of community comes from the sharing of resources and skills, extending through wide networks of kinspeople and friends, through the helpfulness that is extended to persons in need, through a common history stretching back to the time of Christ that has drawn together diverse Yupik speaking peoples. The sense of community coalesces around sentiments about the beauty of the land and waters of St. Lawrence Island and from commonly shared sentiments about the threats posed to Gambell by natural forces as well as by industries arid governments.

We assume that Gambell natives remain wedded to their environment and to their subsistence economy in largest part because they prefer to do so. Wage labor and salaries are perceived as short-term solutions to material problems, just as are transfer payments and the legislation on which they are based. Cash income is sought and much of that income is used to purchase technology that will enhance subsistence harvest activities which, in t-urn, make family and community iife more predictable. Even' ivory carving, the island's major cash producing activity, is frequently pursued

mainly to purchase and maintain the equipment necessary for subsistence activities, or to purchase other crucial items. We assume, therefore, that the continuance of Gambell village life is predicated on this continued presence, extraction, and use of naturally-occurring, renewable resources. We further assume that the formally organized institutions in Gambell that have been legislated into being during the past thirteen years will be used in attempts to assure the continuance of access to, and protection of those resources, and to guarantee transfer payments and federal and state relief should those resources be severely altered or reduced. institutions, then, we assume will be used in culturally explicit ways, ways which will support continued extraction, distribution, and consumption of naturally-occurring resources.

A special note on sharing. Central to the subsistence economy in its manifold connections to other aspects of contemporary St. Lawrence Island culture is the concept and the practice of sharing. Sharing is institutionalized in such a way that raw resources are given, labor is contributed, and equipment is borrowed and loaned among networks of kinspeople and friends. The concept of helping is so deeply held as to not require second thoughts about economic choices when an able person contacts a person in distress nor to say thanks nor to expect explicit reciprocation after providing help. The able person acts to help the disabled person, to repair his equipment or the like.

We assume that this practice and its accompanying ideology. has accommodated Eskimos to their arctic and sub-arctic habitats in the past, and will continue to cause natives not to behave as "economic men" in the western market tradition (see Knight, 1933; and Polanyi, et al. , 1957; for lucid analyses of the assumption of economic man and choice in economics).

The practices of sharing, giving, and helping are so widely spread and so persistent in the arctic and sub-arctic (see, for recent examples, Jorgensen, McCleary and McNabb, 1982; Wolfe, 1981; and the review article by Moran, 1981) that their collective significance is often overlooked, and apparently accepted as a given by many arctic researchers (see, for example, Nelson, 1969: 378-380; and especially Ellana, 1980:108-116). Sharing, giving, and helping among arctic and sub-arctic Eskimos are not only conceptually different from the concept of market exchange for standard values and the higgle-haggle of bartering, they are also conceptually different from the concept of reciprocity. With reciprocity, there is explicit recognition that the donor of a service or an object will receive an equivalent service or object from the original recipient at some future date. Some Eskimos give much more than they receive, but the recipient is conceived of as the community, not a personal recipient, and the donor does not expect specific reciprocity. He accepts the cultural institution of giving. He helps and is helped. Nevertheless, esteem accrues to the big giver, i.e., to the successful extractor who shares his catch.

We assume that sharing, helping, and giving among arctic and sub-arctic Eskimos are, then, conceptually different from market exchange practices and also from concepts of reciprocity and redistribution as applied to non-market exchange systems (see Polanyi et al., 1957, Sahlins, 1965).

Categories of Culture Assumed to be Impacted by Harvest Disruptions

1. Subsistence

   A. Naturally-occurring species sought

B. Distances travel led to acquire naturally-occurring species

C. Strategies employed to acquire species

D. Native foods consumed

E. Processed foods consumed

1. purchased

2. purchased with transfer payment assistance

3. received as transfer payments

F. Skills and knowledge about harvest locations

II. Technology

A. Motorized transportation equipment (needs and amount invested)

B. Fuel

C. Hunting equipment

D. Fishing equipment

E. Shelter

F. Clothing

G. Discretionary technology, e.g., electronic equipment for home and motorized equipment (CB's, TV'S, digital barometers, telephones, etc.)

H. Storage technology, including energy-dependent home freezers and refrigerators and community freezer

III. Economic Organization

A. Resource ownership and control

1. Relations between village and region

2. Relations between or among villages

3. Relations between or among family members in relation to inheritance

4. Recognition of stewardship for family-household resource areas

5. Significance of stewardship

6. Requests to stewards and from stewards

B. organization of labor

1. Subsistence tasks

a. By sex

b. By age

c. By task group composition, including networks of kinspeople or friends

d. Authority of stewards to organize

2. Productive commercial tasks [e.g., ivory carving]

a. By sex

b. By age

c. By task group composition

3. Wage labor for non-productive (public sector) employment

a. Amount

b. Demands

4. Dependency of transfer payments for earned income (employment) and unearned income (including welfare).

C. Production

1. Amount of species harvested

a. Birds

b. Land mammals

c. Sea mammals

d. Fish

e. Shellfish

f. Land plants

g" Marine plants

h. I nverteb rates

2. Amount of species stored

a. Birds

b. Land mammals

c. Sea mammals

d. Fish

e. Shellfish

f. Land plants

g. Marine plants

h. Invertebrates

3. Amount and kinds of by-products from naturally-occurring species

D. Organization of distribution

1. Sharing, giving (and receiving): items

a. Naturally-occurring resources

b. Technology

c. Cash

2. Sharing, giving (and receiving): donors and recipients

a. Within households

b. Within networks of kinspeople

c. Between affines

d. Between friends

e. Between residents of different villages (intervillage)

f. Authority to give

3. Pooling and redistributing, ceremonial or institutional

a. Within villages

b. Within villages but also to foreign guests

c. Authority to organize and to request gifts for redistribution

4. By-products as commodities (carvings and skin sewing)

a. Sales volume

b. Price

c. Cultural definitions of commodity value (to be shared or to be sold, and if to be sold, for personal gain or for other uses)

E. Organization of exchange

1. Definitions of commodities

2. Authority to sell

3. Pressures to sell (and to buy)

4. Prices

5. Purchases of commodities for standard values

F. (organization of consumption

A. Relation between units of production and unit of consumption

B. Family-household consumption

IV. Ideas and Sentiments about the 1 mportance of Naturally-Occurring Species

A. Ideology and sentiments about village place and space

1. Beauty

2. Perpetuity

3. Relations to land (including water, ice, sky)

4. Abundance

5. Proper use of natural resources

6. Community (shared meanings, also space)

B. Ideology about consumption of foods from naturally-occurring resources

1. Medicinal (threats to health if not eaten, restoration of health if eaten)
2. Spiritual (relation to completed, or whole, or good person)
3. Native reality (tradition foods as "real" food rather than unnatural or processed foods)

C. Ideology about acquisition of naturally-occurring renewable resources

1. Effort to procure is beneficial to the extractor and all who receive parts of the products
2. Sharing is helpful, expected, beneficial to the person (extractor-distributor) and to the species
3. Cash income, in large part, is to be invested in technology for extraction, extractive ventures, and/or supplies and fuel to assist extractors in their pursuits

D. Ideology about proper understanding of abiological and biological phenomena

1. Necessity to learn by precept, rather than oral instruction
2. Bad form to criticize person for ineptness in subsistence tasks
3. Potential loss of skills within community without explicit oral or written transmission of skills
   a. Seamanship
   b. Knowledge of ice
   c. Techniques for harpooning
   d. Knowledge of attributes and behavior of game

E. Ideology about threats to abundance of naturally-occurring and renewable resources from non-native activities

1. Beliefs that non-natives expropriate and deplete environments without regard to native needs for and uses of those environments

2. Beliefs that government regulators of the environment possess inadequate knowledge and are poorly informed about the environment and the consequences of their regulations

V. Social Organization

A. Kinship (also see Economic Organization categories)

1. Family household composition

a. Size of household "

b. Pooling and sharing within household

c. Authority within household

d. Stability of household

e. Male-female relations within household

f. Husband/father and wife/mother roles

2. Kinship networks

a. Pooling and sharing

b. Requests for help

c. Adoptions

3. Affinal networks and activities

a. Within village

b. Between villages

B. Friendship networks and activities

1. Within village

2. Between villages

C. Village community

1. Camping together during bird, seal and fish seasons
2. Village festivals
3. Genesis of social movements (political/religions: alternative, redemptive, reformative, transformative]
   a. Issues
   b. Leadership
   c. Goals
   d. Means
   e. Philosophy of history

VI. Religion

A. Traditional religion

B. Organized religions

1. Counseling services
2. Social services

VII. Political-Economic Institutions

A. Village corporation

1. Requests from village residents
2. Requests to, and relations with regional corporation
3. Staff Stress (including burn-out)
4. Management stress (including burn-out or dismissal)
5. Requests to and relations with externally-based financial institutions

B. IRA government

1. Requests from village residents
2. Requests to regional Kawerak for assistance

3. Activities and programs to provide helping services
4. Request to state and federal government
5. Relations with state and federal government
6. Employment provided by IRA and programs for which it contracts
7. Stress to employees
8. Stress to management, including demands on leadership to enter new areas, such as securing and distributing unearned income as transfer payments or for services rendered (job)
9. Growth of role in proving and distributing unearned income

C. city government

1. Requests for helping services from residents
2. Requests for employment from residents
3. Requests for city for grants, contracts, and aid from state and federa l sources
4. Relations of city with state and federal government
5. Stress to staff, burn-out and resignation rates
6. Resignation of elected leaders
7. Relations with village corporations and IRA council
8. Requests to change state and federal regulations
9. Growth of role in providing public sector jobs

D. Regional non-profit corporation

1. Requests for help in relations with state and federal government
2. Requests to exert influence to change state and federal wi ldlife regulations

3. Request to take ead in relations with externally-based corporations
   a. Provide jobs
   b. Curtail deleterious affects on environment presumed to be caused by corporations
4. Requests from village for regional government to seek grants and contracts to provide options and employment to villagers
5. Stresses on leaders and staff
6. Growth of role in acquiring and distributing unearned income to village

VIII. Helping Services

A. Social services
   1. Requests for counseling aid
   2. Stress

B. Health services
   1. Requests for counseling aid
   2. Stress

c'. Law and order
   1. Requests for services
   2. Stress

CHAPTER xv

HARVEST DISRUPTION IMPACTS

The major assumptions and research methods underlying the analysis of the cultural impacts resulting from harvest disruptions of recurring natural resources were discussed in the last chapter. Even though the impact categories specified at the end of Chapter XIV were theoretically and logically consistent. the available evidence does not permit a detailed discussion of each and every one of them. Thus, only those impact categories for which there is substantial information will be included in the discussion of impacts. Before a discussion of the impacts can begin, however, the implications of some of the methods and assumptions discussed in the last. chapter are so important for the analysis in this chapter, it is necessary to reiterate some of the cautions here.

Caveats

Generalizations. While much of that which is stated in this chapter will undoubtedly apply to Savoonga as well as to Gambell, it must be remembered that Gambell alone is the focus of this chapter. The OCS contract requirements did not provide for equal research efforts in both communities. The research effort in Savoonga was less extensive than the research effort in Gambell. With a less adequate data base for Savoonga, the inclusion of Savoonga in the analyses of impacts resulting from harvest reductions was deemed by OCS and the research team to be inappropriate.

Because the two communities were not randomly selected from a known universe of which both communities were members, it is technically "inappropriate to generalize the findings obtained in Gambell to Savoonga

without hazard. Since random sampling was employed in neither the selection of study communities nor the selection of the respondents, probability theory cannot be used, and the extent of the hazard of generalizing within or between communities cannot be reasonably estimated. The reader is therefore cautioned about generalizing the interpretation of the Gambell data to Savoonga.

Data collection and methods. The ability to make valid and precise predictions rests, of course, on the data which provide the base for the predictions. OCS contract provisions prohibited the use of scientific random samples as well as the use of structured interview schedules or questionnaires administered to large numbers of respondents. Without scientific sampling, probability theory cannot be "employed to determine the error in estimating population parameters from sample statistics. Thus, the extent to which sample values reflect population parameters must remain in doubt. The result of this is that a valid quantification of present harvests of naturally-occurring resources for all of Gambell is impossible.

Prediction. The most important caveat to keep in mind, however, is the problem of predicting the future. Even if the ever-present philosophic problem of demonstrating any good reasons for predicting the future on the basis of past occurrences is ignored, reasonable predictions cannot be made on the basis of synchronic data. At minimum, measurements at two and preferably three points in time are necessary to establish a sequence of events. Insofar as the OCS contract provided for data collection at only one point in time, and since the archival data available for St. Lawrence Island is limited in both time span covered and subsistence products discussed, neither internal nor external validity can be claimed

for the conclusions reached in this chapter. With synchronous data it is not possible to demonstrate that the relationship between the level of disruption and the cultural or social consequence is real and determinate. In brief, "real" in a statistical sense means that whenever the level of disruption varies, the type of consequences varies systematically and in the same direction. "Determinate," in a statistical sense, means that no other sources of influence are intervening to affect the relation. What all of this means is that there can be no certitude as to the projected social and cultural consequences of natural resource harvest disruptions.

Disruptions

Family and Village Disruptions

It is necessary at the outset to distinguish between disruptions to the harvest of subsistence resources harvested by particular families, and disruptions to harvests of species or combinations of species important to the entire village. In this study we focus on the latter rather than the former, but need to distinguish between the two types. During any season of the year it would not be uncommon for an individual or hunting crew to experience unprofitable hunting time. However, this "bad luck" does not keep the individual, crew, or their families from sharing in the bounty of the hunt. More successful hunters will willingly share their game. Unsuccessful hunters will receive subsistence products from kinspeople and friends, both within Gambell and from other villages, and especially from Savoonga if Savoonga hunters are not similarly affected. With the common and strong ethic of sharing, no one knowingly withholds resources from those in need, and those in need will ask for resources should their plight go unnoticed by the more successful hunters.

Thus, individual disruptions, while inconvenient, are shared by many and the effects are thus minimized for any given individual, family, or crew.

Sources of Disruptions

Disruptions of the harvests of naturally-occurring resources for the entire village of Gambell is a more important issue, and is the focus of this chapter. Disruptions can come from many sources, including reasons associated with the hunters themselves, however unlikely that might be, but such sources of disruptions are not the concern here. We are concerned with disruptions the source of which is the result of outside influences. One of the major sources of village-wide disruptions comes from the weather. For example, northeasterly winds may keep shore-ice and hunters fast to the Northwest Cape. Under such conditions pursuit of bowhead whales and Pacific walrus is halted. Too, fog may keep walrus and whale crews from venturing out to sea. If crews do venture out during relatively fog-free times, the fog may return, forcing them onto an ice flow until the weather clears and they can find their way home to Gambell. In such instances not only are hunting activities curtailed, but vast reserves of human energy and subsistence capital are consumed in efforts to locate ice-bound hunters and guarantee their well-being. Often, planes must be brought from Nome or even Kodiak (U.S. Coast Guard) to drop supplies to the stranded hunters or to air lift them back to the village.

A second source of subsistence harvest disruptions could potentially come from off-shore oil exploration. Air and water pollution which frequently accompany off-shore oil development could kill significant numbers of marine mammals, avian and fish species, and land and sea plants. If air and water pollution do not cause the demise of substantial

numbers of one or more species. it could drive them from their traditional habitats or alter their annual migration routes. In a like fashion, noise and visual pollution, a natural and inevitable consequence of most human activities, including off-shore oil developments, would likely force one or more species from their natural habitats or normal migration routes. Whether from reduced population sizes, changed feeding or resting locations, or altered migration routes, the consequences for Gambell residents are the same, at least for the short-run. At minimum, there would be less to eat. At maximum, there would be death, either of the culture or the people.

Chapters 1-12 have unequivocally demonstrated the great extent to which St. Lawrence Islanders rely on naturally-occurring resources and a sharing ethic for survival. It must be remembered that islanders estimate that about 80% of their food is acquired from the natural resources available on the island or in the nearby waters. In addition to food, the natural {y-occurring resources also supply clothing, a variety of everyday utensils as well as cash income from skin sewing and ivory carving. Subsistence problems for Gambell residents are felt immediately upon a reduction in the harvest, and become critical when the flow of the predominant staples are interrupted for extended periods of time.

Unlike some mainland Eskimos, e.g. , Unalakleet residents, the people of Gambell are dependent upon relatively few species of plants and animals for their well-being during any particular season. As Table 33 demonstrates, marine mammals provide the bulk of the food consumed during every season, except perhaps summer. The relative harvest amounts listed in Table 33 should not be interpreted to mean that those species contributing relatively lesser volumes of subsistence materials are

Table 33. Monthly Subsistence Harvests by Species, Gambell, 1981[a].

Species	Month J	F	M	A	M	J	J	A	S	O	N	D
Walrus	L	L	L	M	S	S					L	L
Bearded	M	M	M	M	S	S	L	L	L	M	M	M
Spotted	L	L	L	L	L	L	S	S	S	S	S	S
Ringed	M	M	M	M	S	S	S	S	S	S	S	S
Ribbon	L	L	L	L	L	L	L	L	L	L	L	L
Bowhead				M	M							
Gray						L	L					
Minke						L	L					
Salmon												
King						L	L	L	L			
Pink						L	L	L	L			
Coho						L	L	L	L			
Chum						L	L	L	L			
Grayling						L	L	L	L			
Sculpin					L	L	L					
Cod (2 varieties)	M	M	M									
Dolly Varden and Arctic Char						L	L	L	L			
Whitefish (several varieties)							L	L	L			
Murre					L	L	L	L	L	L	L	L
Auklets					L	L						
Ducks					L	L	L	L	L	L	L	L
Geese									L	L	L	
Gulls & Kittiwakes									L	L	L	
Cormorants								L	L	L	L	
Bird Eggs[b]						M	M					
Clams (8 varieties)[b]				L	L	L	L	L	L			
Crabs (4 varieties)[b]	L	L	L			L	L	L	L	L	L	L
Mussels[b]									L	L	L	
Greens, Roots, Berries and Sea Plants[b]						L	L	L	L	L		

[a]The monthly harvest of each species has been assigned a value which meets the assumptions of an ordinal scale. L refers to a limited harvest, M to a modest harvest and S to a significant harvest.

[b]For purposes of analysis, the groupings of species will be treated as a single species.

not important. Clearly all of the naturally-occurring species are important both nutritionally and psychologically. They are all important, if for no other reason, because of the variety of tastes they provide.

During summer, fresh land and sea plants, birds, birds' eggs and several fish species replace marine mammal flesh as the major food sources. However, the use of frozen or dried marine mammals can greatly alter the actual consumption patterns during the summer. Overall, walrus flesh and blubber are dominant in terms of amount consumed, volume harvested and taste preference. Walrus are followed by bearded seals and bowhead whales in volume harvested, even though bowhead whale flesh and muktuk are gene rally preferred to bearded seal products.

The point of this is to illustrate that Gambell natives do not have the resource flexibility that some other groups enjoy. They are dependent upon relatively few species during any given season, not possessing the ability to pursue several alternate species should the numbers of normally avai lable species become drastically reduced. Furthermore, the species available to islanders are apt to be similarly affected by the same disruptions. For example, oil spills would likely have the same or very similar effects on the area's three whale species, four seal species, and Pacific walrus. Noise and odors from shipping and other exploration and production activities would likely have similar effects upon whales and walruses and perhaps seals as well. Disruptions to any of the marine mammal species during winter or early spring would be extremely costly for the native population. There are few substitute resources during this period other than two species of cod (blue cod and tomcod), and four species of crab. Both cod species might, however, be affected by the same factors which affect marine mammal harvests, and the harvests for both fish and marine mammal species might be similarly reduced.

Conceptual problems

Even though the variety in the diets of Gambell residents is somewhat more restricted than some other native groups, say Unalakleet, they still harvest significant amounts from well over 30 species of fish, birds, invertebrates, land and sea plants and marine mammals. However, as can be seen in Table 33, many species provide only a limited proportion of the total harvest. That species such as king salmon provide only a small part of the native diet in no way signifies that king salmon or any other species is expendable. Each species plays its role in the seasonal harvests, and none can be thought of as unimportant.

Even though limited, the number of available species makes an impact' analysis based upon possible harvest disruptions of each individual species a formidable task. If the disruptions of pairs of species and higher order combinations of species are included, the number of possible disruptions to be analyzed becomes very large indeed. Any analysis based upon an enumeration of individual species and all possible combinations of species from 1 to n is rendered totally impossible when a consideration of seasonal disruptions is added to the equation. Clearly, an impact analysis based upon disruptions to individual and combined species for each season is an inappropriate research strategy.

An additional conceptual problem arises with the attempt to define low, medium and high impacts. There exist no adequate measures of the quantities of the several species pursued by Gambell hunters and gatherers. The concentration or dispersion of the species is unknown as is their location during any given season. The absence of this information precludes the possibility of creating cent.inuo.us interval or ratio level scales of the proportion of existing resources harvested by Gambell

natives. Even if the precise numbers of a species available to Gambell residents were known, however, and even if precise harvest figures were known, that still would not resolve the problem of defining the three levels of disruptions. In the final analysis, defining an impact as low, medium or high is dependent upon the point of view of the person defining the three levels.

To a non-native a reduction in the annual harvest of a single walrus may seem like no loss whatsoever, but to an Eskimo a single walrus represents a significant contribution to his livelihood. Not only is there the loss of meat and blubber, there is also the loss of the hide, intestines and their contents, and ivory. In this hypothetical instance the non-native would likely define the loss -as an instance of low harvest disruption, while the native would define the loss as a medium or even high level of harvest disruption depending upon past or expected hunting success, as well as the season of the year.

Unfortunately, there are no universally acceptable criteria for defining the three disruption levels. A satisfactory resolution to this difficulty is to define the levels of impact in terms of the effect that the harvest disruption has upon the culture and social structure of the group so affected, rather than upon some totally abstract notions of high, medium or low disruptions. A judgment as to the level of disruption is still called for, but criteria are available for making the judgment, criteria based upon the extent of cultural disruptions. While such a scale lacks the precision of an interval scale with equal-appearing intervals, the resulting scale possesses the traits of an ordinal scale including mutually exclusive and exhaustive categories.

Definition of Disruption Levels

In today's world of numbers and computer processing, it is tempting to attempt to define the three impact levels in terms of percentages. To do so appeals to contemporary biases regarding quantification. For example, intuitively one might say that a 10 percent harvest disruption represents a low level disruption, a 25 percent reduction a medium level disruption, and a 40 percent reduction a high level disruption. After all, if 80 percent of one's diet comes from naturally-occurring resources, a 40 percent reduction means a dietary loss of 32 percent. A diet reduced by one-third is certainly a major disruption, especially if you are the dieter. It must be pointed out that a harvest disruption designated as high would actually include percentages between 40 to 100 percent, and the effects upon diet thus range from a 32 percent to an 80 percent reduction of edibles. Such a calculation, of course, ignores important non-dietary considerations.

While definition in terms of percentages is tempting, to define disruptions in this manner creates a false impression of precision, while at the same time giving an illusion of simplicity which is simply not there. To define harvest disruptions in terms of percentages implies that it is possible to empirically observe a disruption of a particular magnitude. However, without time series data extending through time from which a normal or average harvest can be calculated, it is meaningless to speak of a percentage reduction in harvest. A valid diachronic data base for all subsistence species which is necessary for demonstrating the proportion of a harvest disruption simply does not currently exist.

Some diachronic data are available for bowhead whale harvests and Pacific walrus harvests. The data sets for bowhead whales harvest are,

however, fragmentary and of doubtful validity prior to the past few years. The data sets for Pacific walrus harvest, white greatly improved in the recent past are nonetheless inadequate, being primarily based solely upon spring hunt successes (see Malloy, 1982). Further, U.S. Fish and Wildlife Service data cover only the relatively recent past. It is unlikely, but desirable, that scientifically adequate measures of the harvests for each of the most important species will be obtained in the near future. The costs of obtaining annual measurements for even a single species would be quite high. Furthermore, to establish current harvest amounts, while desirable, begs the issue of typical harvests prior to potential disruptions caused by off-shore oil and gas activities. Nevertheless, a time-series data base of harvests for the island's subsistence base would be highly advantageous given the high likelihood that off-shore oi ! activities will proceed, consequently altering species availability to one extent or another.

Low level disruptions. The Northwest Cape of St. Lawrence Island is bound by ice and snow for six months a year. Sometimes the ice conditions aid the hunters in their quest for game. Adequate leads open so that hunters can pursue the bowhead whaie. At other times ice conditions keep the game away or prohibit the movement of the hunters in their chase. The variabie but persistent winds of the island also influence the hunters ability to seek game and frequently determine the availability of game. if northeasterly winds persist in April and June, shore ice may remain fast so that hunters are unable to go after whale or walrus. Even if shore-ice has" departed in the spring, high winds and/or extremely cold temperatures frequently keep hunters off the water for days at a time. in summer and fall the winds often limit boat access to the numerous fishing camps located on the periphery of the island. Campers may be forced to

remain in Gambell or ride ATC's or ATV's overland to the summer camps. The overland trips require much more time and consume more fuel than the boat trips and thus may become viewed as unreasonable alternatives for going to fish camps. [f campers arrive in camp by boat, winds may force them to remain in camp longer than they intended or they must make arrangements over their CB radios to have others drive ATC's and ATV's to their camps and pick them up for the ride back to Gambell. For this reason many campers take ATC's to fish camp on their boats, providing alternative modes of transportation should the need arise.

Even when wind, ice condition or temperature present no unusual conditions which restrict a hunter's ability to capture game or collect plants, there are times when the harvest is disrupted by unforeseen and frequently not understood forces. ' Perhaps disruptions on the Siberian coast or in the Aleutian chain cause these disruptions. For whatever the reason, walrus may appear during a given year in drastically reduced numbers or the seals may make belated appearances. Prime hunting locations may suddenly become devoid of game for no apparent reason. Obstacles to a plentiful harvest and the subsequent cache of subsistence products are not infrequent. Additionally, walrus and seal herds are known to fluctuate in numbers due to natural forces. Herds go through cycles characterized by gradual increases in population, followed by sudden declines as food resources for the animals are overexploited. In 1982 the herds appeared to be approaching maximum size for the carrying capacity of Bering Sea resources. Natural fluctuations could have serious or trivial economic and social consequences for the Eskimo residents of the island depending upon the length and magnitude of a downward fluctuation. Clearly, both villages would suffer roughly equivalent impacts

as a result of natural fluctuations, and life on the island is possible only through adjustments to momentary and minor disruptions in the harvests of the various species upon which the islanders are dependent.

Fortunately, many disruptions, natural or imposed, are minor, not affecting more than one or a few species and then only for relatively short periods of time. Because of their short duration and the limited number of species involved, disruptions of this type create no unendurable hardships for the residents of Gambell. The storage of game from more successful periods and sharing between Gambell's residents provides for the natives during these hard times. Because the disruptions are minor and short lived, no significant cultural alterations occur.

These recurring but minor harvest disruptions are herein defined as low level disruptions. In effect, they define the parameters of subsistence for the natives. Weather, ice and unknown conditions, on an unpredictable but anticipated basis reduce resource availability below their expected levels. They alter the geographic distribution and arrival and departure dates of the species. They restrict access to resources by interfering with travel and cause spoilage of resources already harvested, During the last whaling season, for example. hunters were unable to remove the single struck whale from the water in time to avoid spoilage of the flesh, and all or most was lost. All of the muktuk, however, was apparently saved as was the baleen.

These minor disruptions in harvests can alter the material culture and/or social structure on the island, but generally these alterations are insignificant. Perhaps crews will take a few more risks in their hunting or fishing. Too, crew alignments may be momentarily altered as some hunters elect to hunt with different partners or crews in order to

overcome adverse short-term conditions. Minor harvest disruptions have led to a change in the material culture of Gambell. In order to combat the danger of fog, especially during the spring walrus hunt, the captain of one walrus crew has recently obtained a radio direction finder which homes in on the radio beacon at the Gambell airstrip. This allows any boat so equipped to navigate safely back to Gambell during the worst of fog conditions. This simple but expensive piece of technology increases the ability of hunters to pursue walrus and whale, and do it more safely, while reducing the time, energy, and money frequently directed to rescuing fog-bound hunters. This innovation has so far not altered the social structure of Gambell.

Medium level disruptions. Whereas low level disruptions create no long-term or enduring hardships for the denizens of Gambell, medium level disruptions invoke more lasting changes in the culture. While minor adjustments to the material culture may be the result of attempts to find more efficient and more productive hunting techniques in response to low level disruptions, medium level disruptions create more permanent and significant changes. Medium level disruptions are likely to encourage some crew realignments, more extensive sharing networks, more time spent hunting, or other structural changes.

As already noted, during any season there are relatively few naturally-occurring species available to the residents of Gambell. For this reason medium level disruptions must be defined more narrowly than would be the case for some other areas, e.g., Unalakleet. For example, in winter and early spring medium level disruptions to the marine mammal harvest would create significant problems insofar as cod and crab are the only other species available. These latter two species contribute relatively

little to the overall caloric intake of Gambell residents when their contributions are compared to the harvests of marine mammals. Nevertheless, the contributions of cod and crab to native diets are important both nutritionally and psychologically. However, during the winter they are not viable alternatives to marine mammal harvests.

For the village of Gambell, a medium harvest disruption occurs when (1) two marine mammal species, or (2) one marine mammal species and three other species, or (3) six other species listed in Table 33 are rendered inaccessible for two seasons. This specification, however', requires some qualification. Because of their importance to the diet, if in the fall and winter the harvest disruption includes both bearded and ringed "or spotted seals the disruption must be classified as a high rather than a medium harvest disruption. Similarly if the two marine mammal species whose harvest is disrupted in the winter and spring are Pacific walrus and any of the whale species, the disruption must be classified as a high harvest disruption rather than a medium level harvest disruption.

High level disruptions. In contrast to low and medium level disruptions, high level harvest disruptions have serious and long-term consequences for Gambell residents. High level disruptions are very likely to result from large-scale spills from tankers and wells. Equally as likely to create high level disruptions are the small and persistent releases of oil from tankers, wells, and storage containers. Heavy ship traffic as well as the odors given off by such traffic and construction activities associated with preparing for and drilling for oii and gas can also conceivably create high level disruptions. The changes might include such drastic alterations as population migration to mainland Alaska or even the continental U. S. High level disruptions might also involve changes in the patrician system,

household structures, sharing networks, and the relationship of Gambell Eskimos to the U.S. Government and the State of Alaska as well.

The changes necessary to be classified as high level disruptions are logical continuations of medium level disruptions. As previously noted, if Pacific walrus as well as any whale species are rendered unavailable for the winter and spring seasons, a high level disruption is in effect. The combined absence of bearded and ringed or spotted seals during the fall and winter also constitutes a high level disruption. Additionally. if any of the disruptions discussed under medium level disruptions continue for three seasons, the result is herein defined as a high level disruption.

Predicting the Consequences

Just because determinate causal sequences based upon interval level data cannot be firmly established, using the data available does not mean that useful predictions cannot be made. Forecasts as to the possible social consequences created by medium and high level disruptions are not without considerable merit, even if measurement precision and time lag specifications between cause and effect are lacking.

Several factors contribute to the validity and credibility of the forecasts. First, data on subsistence harvests from this research covered respondents' recollections for all of 1981 and portions of 1982. Estimates by respondents as to the extent of their dependency upon subsistence resources are so consistent that to disbelieve their estimates would be to reject the best avai [able evidence. Further, field observations by project personnel, both native and non-native, corroborates these estimates. Finally, evidence provided by Burgess (1974) and Hughes (1960) not only provide support for the estimates of the high level of dependency of

islanders upon naturally-occurring resources, but also provide evidence of the relatively long duration of the observed dependency. There is every reason to believe that the current dependency level has extended back at least three decades, before which the dependency level was probably very nearly 100 percent.

Next, theoretical and empirical evidence from many sociological and anthropological sources, e.g. , Duncan (1961) and Hawley (1950), have discussed the relationship between man and his physical environment. Changes in the physical environment can have severe implications for the social structure, just as changes in the social structure can affect the physical environment. For example. the volcanic disruptions of Mount St. Helens caused long-term alterations in the local social structure. Some residents migrated to other areas, while others died as a result of the volcanic activity. Short-term structural changes were brought about in areas far from the immediate vicinity, as volunteers in distant communities attempted to aid victims and government agencies moved to cope with the results of the unexpected.

While the Mount St. Helens disaster was the result of an act of nature, the stimulus for potential changes in the Bering Sea will be the result, at least in part, of changes in the United States' social and cultural structures. As man attempts to extract scarce resources from the arctic to provide petrochemicals and profits for part of the world, he not only alters the physical environment, but the social environment as well. Part of the restructuring represents an expected and rational restructuring as new human organizations are implemented in order to carry out exploration, drilling, pumping and processing of oil and natural gas. Other restructuring is not a part of the rationalization of off-shore

activities, and can be viewed as a necessary but unfortunate alteration to extant social structures. Social restructuring is at the same time imposed upon native peoples. Their traditional natural environments are altered by outsiders and they must reorganize their societies in order to cope with the changes wrought by others.

Finally, considerable evidence documenting the changes to Native American communities as a result of reservation energy development has accumulated over the past decade (see Geisler, et al. , 1982; Jorgensen, et al., 1983, 1978). Impacts experienced by tribes in the continental U.S. provide examples and insights into the likely consequences energy developments hold for Eskimo groups. Examples from the continental U.S. thus provide additional support for forecasting the consequence of harvest disruptions in the Bering Sea to the native inhabitants. Because of their importance for understanding the potential consequences of harvest disruptions for Alaskan natives, it is desirable to briefly discuss the impacts already felt by Native Americans in the continental U.S.

Cultural Consequences to Western American Indians from Energy-Related Developments

Energy-related developments have produced profound effects on many rural regions of the western United States from the Grants Mineral Belt in New Mexico to the Skagit River in northwestern Washington. The consequences of these developments for American Indian societies have been summarized by Jorgensen (1 983), and analyzed at greater length in Jorgensen, et al. (1983, 1978) and Geisler, et al. (1982).

The available evidence indicates that in practically all energy extraction or conversion projects on reservations, and in every

energy-related project near reservations, decision-making and financial control is exclusively in the hands of translational corporations. Employment from energy-related developments on or near reservations goes almost exclusively to non-I ndians even when preferential hiring clauses are included in the tribal/corporation agreements. The very few jobs obtained by Indians are usually restricted to the construction phases of projects and are generally in the most menial employment categories, e.g. , laborors. The few jobs occupied by Native Americans when construction is over and operations begin are typically custodial or maintenance. As an illustration, Navajos have obtained only 3,000 of the 47,000 energy-related jobs available on that reservation between 1957 and 1980. This amounts to slightly more than . 6 percent of the energy employment. As another example, during the peak of the construction-phase at coal-fired power plants near the Northern Cheyenne Reservation, Cheyennes held 34 of' the 895 jobs. After construction, their numbers dropped to 6, slightly less than 4 percent of total plant employment. The post-construction jobs were custodial positions.

Tribal governments have faired no better than individual Indians in their financial interactions with translational energy companies. Revenues accruing to tribes from resources leased and/or extracted, water allocations sold, leased, or given away, and rights-of-way granted have been tiny relative to their collective worth. The revenues have even been small relative to the revenues accruing to states from taxes on powerline poles, overance and property holdings of those same energy operations. It is incomprehensible that tax revenues should exceed the value of the raw materials, but that is too often the case when Native American groups deal with powerful energy firms. This situation is all too often aggravated

when the Bureau of Indian Affairs, in their position as trustee, represents tribal interests.

Western American Indian economies, as measured by personal and tribal income, are steadily losing ground each year in comparison with the non-Indian population of the U.S. Whereas public sector income in the form of jobs, grants, contracts, and transfers in cash and in kind to welfare recipients far exceeded revenues from energy-related production through 1980, the Reagan Administration policies and programs have made deep cuts from all public sector transfers in the past three years. Furthermore, the incomes generated from employment in jobs that are created in either the private or public sector in relation to energy-related developments is spent either in off-reservation towns or in businesses owned by non-Indians. Thus, any multiplier effects which could have aided the economic position of Indian tribes or communities have not materialized.

Surveys of Indians suggest that traditional concerns for land cannot be accommodated to most known mineral extraction techniques. The consequences of oil and gas extractions have caused concern about land and animals in some instances. In other instances oil and gas exploration and production have created personai, social, political, and economic conflicts. Surveys further show that most Indians lack information about the companies doing business on their reservations, about the probable financial beneficiaries of future developments, and about the monetary value of the resources they own. Surveys also report favorable attitudes toward energy developments so long as (1) jobs are provided to natives, (2) no changes occur to the environment, (3] no whites discriminate against Indians, (4) Indian culture is not denigrated by non-Indians, (5)

Indian sacred areas are not defiled, and (6) Indian birthrights are not transformed,

One of the clearest trends resulting from energy developments on or near Indian reservations has been an increase in conflicts. The conflicts have not been restricted to Indian/corporate strife. Tribal members have sued their own elected leaders in federal courts over contracts that tribal authorities have signed with translational energy corporations. Indians whose traditional residences and resource areas for farming and stock-raising have been threatened by energy-related developments have sued corporations and federal agencies for failing to analyze the community's ways of life and dependencies of the tribal people on their traditional areas. Residents in small hamlets on reservations have accused their tribal governments of failing to protect them from discrimination and to protect their land from abuse by employees of energy corporations operating in their midsts. Turnovers of elected and appointed officials in tribal governments have been high, and factional disputes within tribes often focus on issues of energy-related developments. Similar problems are also found in rural non-I ndian communities (Little, 1978, 1977; Little and Greider, 1983).

Within communities, households have been involuntary ly relocated from their traditional residences and resources because of the opening of mines, mills, electricity generating plants. railroads, and related developments. Reciprocity-based kinship networks have been broken as relocates have been forced to sever ties with kinspeople and friends. In some instances sacred shrine areas and burial sites have been damaged by energy-related operations, and in other instances relocates have been separated from

them. Relocates long to return to 'their home areas. They grieve because their progeny cannot reside in those areas.

Other instances of conflict can be illustrative of the possibilities which could face oil developers in Norton Sound and St. George Basin, exploration areas crucial to the well-being of St. Lawrence Islanders. In the Aneth-Montezuma Creek section of the Navajo Reservation gas and oil operations conducted by Texaco, Phillips, and other lessees for over two decades were almost completely staffed by non-i ndians. It was alleged by the local Navajos that the non-I ndian energy company employees ridiculed Navajo behavior, beat and mistreated Navajos on occasion, carelessly spilled oil around the rigs, and recklessly killed cattle and sheep grazing, browsing, or resting near roads or oil operations. Local Navajos had many other complaints, but when they took them to the tribal leadership for help, assistance was not forthcoming. In response, Navajos in the Aneth region rebelled and took over all the gas and oil operations, driving off the workers and completely shutting down operations. The rebels demanded that the oi I leases be voided or renegotiated, that Navajos be hired, that the oil companies make substantial financial contributions to Navajo educations, and that discriminatory acts by non-Navajo employees of the oil companies cease immediately. The oil companies made some concessions, but would not renegotiate leases. The Aneth Navajos also castigated the Navajo Tribal Council for taking the money obtained from oil and lease royalties at Aneth--against the will of the local residents--while providing few resources and services for the Aneth people in return.

In other oil extraction projects, the Wind River Shoshone and the Arapaho of Wyoming have alleged that over $3 billion worth of their oil had been stolen by companies and persons engaged n extracting, storing and

transporting the oil. The allegations have been supported by a federal grand jury and an investigation conducted by the Department of Interior. indictments have been rendered, one person has been convicted, one translational oil company has recognized an "underpay ment" and made compensation for it, and litigation continues. The situation on the Wind River Shoshone and Arapaho reservation is not unique. An oil firm doing business on the Jicarilla Apache Reservation refused to open its books to the tribe. Under federal court order it was forced to do so and a $600,000 underpayment was found. The Tribe assumed control of the oil operation.

These examples of personal mistreatment, economic and political powerlessness, and the hostile and rebellious responses to development, are but harbingers of native/native, non-native/native, corporation /native relations when oil developments are at issue. They perhaps also presage village/ regional corporation relations regarding oil and gas developments.

Cultural Consequences to North Slope Inupiat from Energy- Related Developments

Recently Kruse, Kleinfeld, and Travis (1 982) have summarized the effects of energy developments at Prudhoe Bay among the Eskimo groups of Alaska's North Slope. The discovery of oil on the arctic North Slope spurred oil corporations, the federal government, and the State of Alaska into motion. A result of the activities of corporations, lobbyists and state and federal legislators is the Alaska Native Claims Settlement Act (ANCSA) and all that it portends. The State of Alaska received title to the land under which the Prudhoe Bay oil reserves were located. But State legislation made it possible to form regional governments (boroughs) with

taxing authority over property. Natives dominated the formation of the North Slope Borough which secured its taxing authority only after protracted litigation against the State and oil companies.

In the decade following ANCSA and the production of oil from Prudhoe Bay, few natives have gained employment in the private sectors of the energy and energy-related industry, and fewer yet have gained permanent employment. Gross receipts and profits have accrued to the translational oil companies and the firms that supply them, and major revenues in the form of lease rents and royalties have" accrued to the State. North Slope natives have received few direct benefits from oil production. Yet the North Slope Borough, through its taxing authority, has received large revenues from Prudhoe Bay oil production. These revenues, or public sector unearned income sources, have been supplemented by ANCSA award payments, federal and state contracts and grants, some federal and state agency employment, and many types of federal and state transfer payments to create an atypical dependency economy among Native Americans. Although dependency economies are typical among Native Americans the Inupiate economy is atypical in the sense that public sector income from all sources is extremely high in comparison with that received by Navajo, Ute, Northern Cheyenne, Crow, Hopi, Zuni, Wind River Shoshone, Jicarilla Apache, and other Western American Indian societies.

Tax revenues have been used in a myriad of community improvement projects pianned for and approved by the North Slope Borough. Employment on such projects which have deveioped community infrastructures of varying sizes and configurations throughout North Slope villages, has fallen far short of being full or permanent for those

employed. Low multipliers have operated to keep some monies circulating locally that were earned on borough, Arctic Slope Regional Corporation, state, and federally-related jobs. However, viable investments and industries or businesses that would provide sustained employment and economic growth for North Slope inhabitants have not developed. Oil revenues and ANCSA award monies, when depleted, have no foreseeable replacement, while dependency on petroleum and motorized travel by the natives, which require cash, has increased.

The wealth of the North Slope is illusory inasmuch as it is based on public sector funds, much of which derives from the extraction of non-renewable resources. Other funds derive from one time awards legislation for the extinguishing of native claims to resources and from legislation sustaining human services programs (McBeath, 1981; Luton and Cortese, 1983). Job training and skill development in community improvement project employment have been inadequate to make workers competitive in the private labor market (McBeath, 1981). Interest in such work opportunities among residents of Wainwright, a North Slope village, is low, because living away from the village so as to work at Prudhoe Bay or on off-shore stations interferes with and disrupts important and highly valued subsistence activities (Luton and Cortese, 1983).

Recent research by Luton and Cortese (1983) and Nelson (1982) for the village of Wainwright, and Worl, Worl, and Lonner (1981) for the villages of Barrow and Nuiqsut indicate that considerable cash income is allocated to subsistence activities, e.g., equipment, provisions . petroleum, and repairs. It is clear that subsistence resources are harvested because of preferences to do so, and that natives are wary of activities in the environment which might disturb the naturally-occurring and renewable

resources on which those residents gain large portions of their diets. According to Kruse, Kleinfeld, and Travis (1982:102), in 1977 about half of all North Slope families in their survey acquired half or more of their food from subsistence extraction. Luton and Cortese (1983) estimate a greater contribution to diets from subsistence activities for Wainwright residents in 1982. They add that subsistence behavior in Wainwright is symbollic of what it means to be an Eskimo. Luton and Cortese learned that when Eskimos have been educated and/or employed away from the village, returning to the village to re-establish residence also entails the resumption of "being an Eskimo", i.e. , extracting the naturally-occurring resources that have been the bedrock of native subsistence for generations. They then share those resources. During the spring seasons, they clear out ice cellars of the past year's catch so that, as tradition instructs, the current year's resources will be made available to the Eskimo. These cultural phenomena--linked to naturally-occurring, renewable resources and their uses--are in contradiction to the commodity assumptions of industrialized society as well as the economizing-maximizing principles by which economic men are supposed to make decisions in a market economy.

In 1977, 35 percent of sampled North Slope residents "perceived that village living conditions worsened [since before the oil revenue period] . . . and only 7 [percent] observed that village living conditions had improved" (Kruse, Kleinfeld, Travis 1982). Residents believed that the borough had met their needs, but they did not know whether it had controlled oil development. Community institutions have proliferated, single family housing has proliferated, and average household size has decreased. Yet subsistence extraction, consumption, and distribution

groups have maintained much of their pre-1970s organizational character in size and relations that connect them with each other and their environment. at least in Wainwright (Luton and Cortese 1983).

Similarities and Differences Between Gambell Eskimos and Western American Indians

Gambell Eskimos are different from American Indians as well as similar to them in many ways. An assessment is warranted of significant similarities and differences between them. When joined with the previous discussions of the social and cultural consequences to American Indians in the western United States and to North Slope Inupiat from large-scale, rapid, energy developments the basis will be formed for a comparative framework from which concluding postulates about the consequences from medium and high levels of disruptions to the harvests of naturally-occurring, renewable species can be drawn.

One major difference is the uniqueness of the harsh and challenging arctic environment and the dependence of Gambell's residents for a large majority of their subsistence on the natural resources of. that environment. Western American Indians reside in more salubrious climates and less challenging environments. Whereas some subsistence hunting, gathering, farming, or herding occur on all of the reservations in which energy developments have occurred, only on reservations where food production dominates (farming, stock-raising) are some natives as dependent on the natural environment as are Gambell natives.

A second difference is Gambell's isolation from the mainland. Information flows in and out through air travelers, radio, satellite television, and other means, but Gambell is not even connected by a road

to Savoonga, about 48 miles distant. The closest small city, Nome, the regional hub, is 200 air miles distant. And air travel is expensive.

Western American Indian reservations are not so isolated. Reservations possess one or more paved roads, as well as arteries connecting them to border towns. Practically all reservations are checkerboarded with Anglo residents and non-Indian towns. Regional cities much larger than Nome are accessible by auto and often by bus, and are within 100 miles of all the energy resource-rich reservations in the West.

A third difference is that Gambell Eskimos do not own the majority of their subsistence resources. The fish and game of the ocean surrounding Gambell are controlled by either federal or state governments. Western American Indian tribes, on the other hand, own and control the fish, game, and waters that rise or traverse their reservations.

Crucial differences, then, that distinguish Gambell Eskimos from Western American Indians include dependence on naturally-occurring resources, isolation, local control over ocean fish, and importance of marine mammals. Significant similarities, however, must also be recognized so that we can evaluate some plausible consequences from energy developments which would affect the community of Gambell.

Similarities include the growth of universalistic achievement criteria and orientation, and functional specificity in village and tribal organizations. This is the result of federal and state government domination. Outside domination has led to the creation of formal rules and regulations about access to and use of resources off the reservation; establishment of native forms of government, and defining native government power through legislation such as the Indian Reorganization

Act (Wheeler-Howard Act of 1934); and the establishment of federal and state bureaus, agencies, and offices which either administer native affairs, or receive reports from and provide services to natives. Another similarity is that dependencies on public sector funds characterize both reservation and Gambell economies. A third similarity is that control of commercially viable energy resources from extraction through transformation to energy and sales, is held almost uniformly by multinational corporations. Still another similarity is that both Gambell Eskimos and Western American Indians place non-commodity values on nature. Their views are unlike the dominant society's definition in which there is no currency in ideology, in the courts, or in the market for non-commodity values of nature.

The patterned variables of universality and functional specificity should not be overdrawn because on reservations as well as in Gambell local governmental institutions are shaped by kinship obligations and expectations. Thus, particularism and functional diffuseness also characterize the traditional cultures, characteristics which are persistent even in the face of certain forms of industrialism and modernization.

As suggested above, Gambell residents do not share the definitions of environment, ownership over nature's resources, and economic uses of those resources that are dominant in the United States. But they are well aware of those definitions which conflict with their definitions, and the ideas and values that define the cultural scene in the dominant society (see McClelland, 1961; Hofstadter, 1967; Bennett, 1979; Jorgensen, 1972 for discussions of American economic ideology in relation to competition, development and the environment). Gambell leaders express dismay at the apparent inevitability of oil development and the potential demise of their

culture. As subsistence hunters and fishers they fear the transformation of their way of life through oil developments and the negative spin-offs of those developments.

Gambell natives do not treat the land, plants, animals, and air as commodities, although they process some animal parts, e.g. , skins, walrus tusks, for the commercial market. Yet leaders among them recognize that the dominant economic interpretation of resources is accepted as correct by society's decision-makers at all levels. The acceptance of the "correctness" by decision-makers renders natives powerless in opposing others' plans for development. They recognize that public opinion and the dominance exercised over them by state and federal governments and corporations are rooted in economic and political power. It is not the simple persuasiveness of a group's ideas, but the union of economic control and intellectual leadership which has produced and maintained the powerlessness of Native American societies.

The ideology of Gambell natives, on the other hand, is similar in many ways to the ideologies of Western American Indians. Symbols are assigned to the environment--land, water, air, animals, plants--that incorporate values of tradition, persistence, continuity, beauty, respect, reverence, and the expectation that its features should persist intact for future generations. These symbols are integrated with customs of labor, gifting, sharing, and helping. Neither among Western American Indians nor Gambell natives is the environment symbolized or treated as a commodity. The similarities between Western American Indian ideologies and those of Gambell natives, and the differences of both from the ideology of the dominant society in regard to the environment and its economic uses as well as the economic behavior expected of all persons are

crucial in anticipating cultural consequences from large-scale, rapid industrial developments in Gambell.

Consequences of Harvest Disruptions

Chapters 1-12 have already demonstrated the extent to which the marine environment of St. Lawrence Island provides for the needs of the island residents. The coastal waters provide a large majority of islanders' diet (approximately 80 percent), a substantial proportion of their cash income (approximately $250,000 per annum from carved walrus ivory], and a symbolic and organizational base for their spiritual life. Only a tiny portion of their diet is taken from the land plants which are harvested in the summer, and arctic fox pelts bring in only a very small amount of cash. These are the only terrestrial resources utilized. The marine mammals comprise the greater bulk of protein, minerals, vitamins and carbohydrates. Walruses are the single most important food and cash resource. However, other marine mammals, fish and birds provide subsistence products the importance of which must not be underestimated.

Some commercial foods are purchased in Gambell's two stores, but these amount to only about 20 percent of the diet. Basic food staples such as flour, cereal, sugar, and salt comprise a majority of the commercial food purchased. Such items as baby food and hot and cold drinks are also important store purchases. In spite of these purchases, the basis of life on St. Lawrence Island remains, in 1983, the abundant ecosystem of the Bering Sea. Under present circumstances Gambell could not survive without a bounteous harvest from the sea.

Activities associated with or that are by-products of oil and gas exploration and/or production and transportation do not portend a bright

future for Gambell residents. As things currently stand, the very real possibility for serious disruptions of marine mammal, bird and sea plant harvests are not even balanced by promises of increased taxes, local employment, locally owned business or governmental subsidies. Even if there were promises of economic gain accruing to islanders as a result of oil and gas activities, the experiences of North Slope Eskimos and Western American Indians make such promises appear empty. Substantial economic gains to rank-and-file Indians and Eskimos have simply not accompanied energy developments on or near Native American lands.

Consequences from Medium Level Disruptions

Disruptions to two marine mammal species, or one marine mammal species and. three other species listed in Table 33 or six species other than marine mammals which render them inaccessible for two seasons of the year constitute medium disruptions. If, however, in the fall and winter the disruption of two marine mammal species consists of bearded and ringed or spotted seals then the disruption must be classified as a high level of disruption. In a like manner, if a winter and spring disruption includes Pacific walrus and any species of whale, the disruption must also be considered a high level disruption.

In a general sense, medium harvest disruptions are those which stretch the fabric of Gambell's society, but they do not permanently rend it. Medium level disruptions create many serious social and cultural difficulties for islanders, but the negative consequences can generally be overcome given time for recovery and the absence of immediate additional medium and/or high level disruptions.

Because of the limited number of species available to islanders, to shift hunting and/or fishing efforts from one species to another is, for the

most part, riot *generally* a realistic option, except perhaps during the summer and early fall. While some change in the focus of hunting and fishing is possible, such changes can only moderately alter the consequences of a medium level disruption. Shifting attention to other species would undoubtedly be attempted by hunters and fishers facing a medium harvest disruption. Unfortunately, the shift could perhaps aggravate the situation. Often the shift would of necessity be to less important species. The substituted species are less important because their numbers are restricted *or* they are difficult to capture. There is a strong correlation between efficiency of capture and the size of harvests. When hunters/fishers shift their attention to species which they typically capture in smaller numbers than the disrupted species, the human arid monetary costs of hunting/fishing efforts increase without proportionate increases in harvest. In a sense then, attempts to cope with medium disruptions can inflate the negative consequences of the disruption. Attempts to overcome the difficulties can create additional difficulties as the efforts consume more scarce resources than they produce. The negative consequences of a harvest disruption thus tend to increase in proportion to the temporal length of the disruption.

In any event, the most obvious consequence of a medium level disruption would be *a* gradual depletion of Gambell's reserves. Reserves include stored subsistence products; e.g. , frozen walrus, seal, fish and birds as well as stored greens; cash and other valuable commodities including carvings and skin sewing products; and a psychological sense of well-being. It appears that accumulated physical reserves would last for perhaps three months, after which time scarce resources would be sought

from friends, kin, local businesses, Eskimo regional organizations (profit and non-profit) state and federal government agencies.

Prior to seeking direct aid, hunting and/or fishing crews would engage in more intensive efforts to harvest the disrupted as well as other species. In so doing they might expend abnormally high amounts of human effort as well as capital in order to satisfy their desires to capture and consume the absent species. More gas would be burned, more mechanical breakdowns would plague hunters/fishers and more time would be spent hunting as they attempted to meet village and personal expectations regarding harvested amounts of the disrupted species. Only after some period of unsuccessful hunting/fishing would hunters/fishers reduce their normal efforts to harvest the disrupted species and focus increased efforts on other species. In some instances this would amount to spending more time and effort pursuing species typically allocated less effort. In other instances the focus would be upon species taken only occasionally and accidentally during a given season. In the latter instance, the harvest disruption would exhibit the snowballing effect already mentioned.

In the early stages of the disruption crews would pull together and a heightened sense of group solidarity might appear. Later, conflict and a weakening of the crew boundaries might occur as reduced hunting success leads to accusations of poor hunting skills or even inappropriate spiritual demeanor. Intra-crew and even inter-crew conflicts would likely increase with the frustrations of experiencing "bad hunting luck." In attempts to overcome their adversity, some crew realignments might take place. Individual members of crews might be replaced, but what is more likely is that additional crews might be added as individuals attempt to maximize harvest success. While community and patrician solidarity would remain

strong, the fears and anxieties associated with decreased subsistence harvests would begin to weaken social solidarity, especially at the crew level. In spite of decreases in available subsistence products, the elderly and the weak would continue to be cared for, even to the detriment of the young and healthy, for the sharing ethic would remain. All Gambell residents realize that without cooperation and sharing none can survive the hostile arctic climate.

As individual, family, patrician and community subsistence reserves dwindle, Gambell natives would first turn to their kin in Savoonga for help. inter-community sharing between these two communities is traditional and well-established. Unfortunately, it is highly likely that any harvest disruption experienced in Gambell would be similarly felt in Savoonga, so that in all likelihood Savoonga residents would be making similar requests for food and/or cash of Gambell natives. The net effect would be that neither community would obtain advantages from the other as transfers of goods would more or less balance between the two. If the impacts were disproportionately felt by the two communities, the flow of subsistence goods as well as cash would be unidirectional rather than bidirectional.

When subsistence reserves began to run low and increased hunting /fishing costs made increasing demands on any cash reserves, Gambell residents would be forced to turn to the native store (ANICA) and the private store for credit lines. Additional or increased credit lines would be difficult to obtain for the owner of the private store and his dilemma would be strongly felt. He would be subject to increasing pressure for credit or to purchase growing numbers of ivory carvings, many at inflated prices. Because he owns the store and is subject only to

his own wisdom and resources, the owner "of the private store would be faced with either behaving badly, i.e. , unlike an Eskimo, or sharing what he had and running the risk of going bankrupt. He would not be able to protect himself behind an impersonal shield of bureaucratic rules and regulations which might prohibit extending further credit. Such rules would remove the onus of perceived selfishness from the store owner, depositing the guilt with the organization.. The ANICA store would face a similar dilemma, but would be bound by its own articles of incorporation, regulations which would limit its actions under these conditions. In any event, it is highly likely that the private store would extend *or* increase credit to Gambell residents, the limits of the credit ultimately being determined by the availability of extended credit lines or new credit lines. It is somewhat doubtful that the ANICA store would be able, under the present charter and management system, to extend credit beyond purchasing increased numbers of ivory carvings.

While Gambell's two stores might receive the initial surge of requests for extending credit and a rush of requests to purchase carved ivory products, they would not be the only potential sources of cash approached. It is most unfortunate that Gambell's cash economy would not be able to offer more employment to take up at least some of the slack created by the medium level disruption. Rather, the natives would have to turn to other sources. Aid would undoubtedly be sought from kin residing in Nome, Anchorage, Fairbanks and a variety of communities in the continental United States. Help from kin residing off the island would for the most part come in the form of cash, for few of those living off the island are engaged in subsistence pursuits to any large extent. Even if kin living off the island had reserves of subsistence products at their

disposal, the costs of air-freighting significant amounts of subsistence products would be prohibitive.

Personal requests for direct aid would also go toward various welfare agencies. New families would qualify for Energy Assistance, Food Stamp and perhaps other welfare programs. Kawerak would likely become the focus for increased welfare support requests, especially requests of an emergency variety. Like Kawerak, the two local churches, the Seventh Day Adventists and Presbyterians, would be approached for aid and the regional and/or national leadership would most probably provide some help.

In addition to personal requests for financial support during this medium harvest disruption, village level requests (IRA, City Government, and/or Gambell Native Corporation) would most likely go to appropriate federal and state agencies as well as the Bering Straits Regional Corporation. These requests would be for emergency cash transfers to governmental units to support distressed community members. There is some question as to whether federal or state agencies' could mobilize rapidly enough to alleviate the hardships engendered by a medium level harvest disruption.

During the second season of a medium harvest disruption many household consolidations would begin. Insofar as the new housing is better insulated, movements would be from older to newer housing. The first stage of household consolidation would probably begin with single persons I iving in the oldest section of Gambell. These single persons residing alone would move back to the homes of their parents or their siblings. Household consolidations would reduce fuel and light bills, but would inflict some crowding on family members and increase problems of maintaining sanitary conditions. Further, family quarrels and

disagreements would increase because of the new housing arrangements, and police agencies and the courts would be more frequently called to solve family disputes (see Little, 1977).

Even though less satisfactory living conditions would affect some Gambell residents, and even though local employment would not be available, it is unlikely that out-migration would become a significant factor, at least until late in the second season of the disruption. Community-wide preferences for residing in Gambell rather than on the mainland would inhibit quick decisions to move. Further, jobs on the mainland are difficult to arrange from the island and transportation costs as well as living costs while seeking employment would inhibit most from leaving the island to seek short-term employment in order to support family and kin who remain on the island. Thus, the relatively short-term duration of medium level disruptions would not encourage significant out-migration from Gambell.

At the same time that intra-family and intra-community conflicts increase, criticisms of local governments would also increase. The more acrimonious criticisms would be directed, however, toward state and federal agencies, especially the Bureau of Land Management, Minerals Management Service, Fish and Wildlife Service and the Alaska Department of Fish and Game. Gambell natives would be looking for the causes of their problems, i.e., the harvest disruption. Should transnational energy corporations be responsible because of their exploration or production activities in the area, much hostility would be directed at them. Even if the hostility were directed at a translational corporation, state and federal agencies would not be immune to criticism and hostility. Natives believe that the ultimate responsibility for the Bering Sea ecosystem lies with

government. Without government's active participation energy activities in the Bering Sea would be impossible. Relationships between state and federal agencies and individual residents and/or their three governments could be drastically altered by islander perceptions of the causes of the disruption (see Little and Greider, 1983). Intra-community ruptures would likely be short lived, but conflicts between island residents and outside agencies or groups could well last. for many years.

While the effects of a medium level disruption upon Gambell society cannot be minimized, the society could survive three to six months of relative privation. Given time and the absence of recurring disruptions the older community patterns would reestablish themselves. Hostilities and conflicts between residents would disappear after some time, even if antagonisms toward outside agencies" remained.

Given the limited cash incomes of most Gambell households, it would probably take several years to repay loans or other indebtedness incurred with commercial institutions during the disruption. Cash received from mainland kin would "probably not be repaid, but other loans would be. This may necessitate taking cash employment at some future time when the preference would be for subsistence activities. Loan repayments may even require mainland employment after the disruption has ended. In addition to loan repayments, significant effort would be required to replace depleted stocks of subsistence products as well as to repair or replace hunting equipment worn or damaged in the frantic effort to maintain subsistence harvests in the face of absent species.

Consequences from High Level Disruptions

As already noted, high level disruptions are represented by extending medium level disruptions for an additional season, except when

bearded and ringed or spotted seals are the disrupted species during fall and winter. A further exception occurs when a disruption occurs in the harvest of Pacific walrus and any of the whale species in winter and spring. In both of these instances the level of disruption must be considered high whenever the disruption lasts for *two* rather than three seasons. This is because of the high volume of these species generally harvested during the specified seasons, and also because of their enormous symbolic value.

Insofar as high level disruptions are a logical extension of medium level disruptions, everything stated in the previous section applies to high level disruptions, and the analysis presented there need not be repeated here. High level disruptions represent exaggerations of the consequences of medium level disruptions. However, while medium level disruptions would not generally permanently damage Gambel ['s social and cultural systems, high level disruptions would permanently alter, i.e. , damage, the society. Even though high level disruptions are merely a logical extension of medium level disruptions, some additional comments are necessary to spell out the increased social and cultural difficulties faced by islanders during high level disruptions as well as the consequences derived only from high level disruptions.

Shortages. General shortages would be experienced by all community members. Those better-off in the community would suffer shortages similar to those experienced by community members considerably less well-off, as the sharing ethic more or less equalizes available resources. All members of the community would eat less as food and cash reserves were depleted. Mild to moderate hunger would be commonplace and by the end of six or seven months all personal resources would be depleted as

would most help from the mainland. By this time the specter of the 1878-1879 famine would most certainly be on the minds of most residents. The cultural memory of the famine would add to the psychological and physical discomfort created by the high level harvest disruption and would undoubtedly lead residents to reexamine their cultural roots.

By midway through the third season (or the second season in the case of disruptions to bearded and spotted or ringed seals, or disruptions to walrus and any of the whale species) starvation would threaten the entire village. That state and federal agencies could *or* would move rapidly enough to avoid the most dire of consequences, i.e. , starvation, especially among the infirm, is doubtful. Nevertheless, the extent of either direct or indirect (to village governments) governmental aid, in the form of cash or products assistance, and the temporal extent of the disruption (one-quarter year, one year or longer) will determine the precise nature and extent of the consequences. One thing is certain: if a major disaster were to be averted, substantial relief would be necessary from governmental sources. Short-term or long-term evacuation of some segments of their population may also be necessary.

Migration. The migration of islanders to the mainland begun in the latter part of the medium level disruption (which of necessity precedes a high level disruption), begins in earnest as the medium disruption gains momentum toward a high level harvest disruption. Kin and friends, as well as private and public employment agencies, would be contacted. Mainland kin would be contacted for information about job prospects, and *because* they can provide either permanent or temporary housing for the out-migrants. Nome would be a preferred migration target; it is the closest commercial city to Gambell. However, reasonable employment is

limited in Nome and though not as preferable, other Alaska cities would probably be a more realistic goal. Cities in the continental United States would be less desirable since they are so far removed from home, but some would even risk such an extensive move to secure their family's well-being.

As a general rule, single, work-age males would lead the out-migration as they sought to obtain employment by which they could support family and patrician members who remain on the island. They would be followed by married men with job skills who would leave nuclear family members behind to maintain the household. Finally, single females would attempt to find employment. The hope of these migrants would be that their time on the mainland would be limited to no longer than it would take to repair the damages done to family equipment and food supplies. Depending upon the quality of the employment, the rate of pay, duration of the disruption, and the nature and extent of government aid, some of the migrants might be forced to call for their nuclear or extended families to join them on the mainland.

Clearly, the out-migration to the mainland, whether of short or long duration will alter life on the island. If the mainland migration is permanent, the alteration to Gambell's social structure is likewise permanent. If the migration is of long duration, new associations are formed which replace the functions and activities of the missing persons, and these new associations represent changes in the social structure. Further, long-term migrants learn new ways of behaving while residing on the mainland, and upon their return must reestablish old behavioral patterns or receive the reproval of other residents because of the newfound behaviors; *or* they must alter the behavior of other natives with

whom they interact. Most likely, however, non-migrants and migrants alike will adopt new behavior patterns after the migrants have returned. In any case, the return-migrants must reestablish themselves in the social structure of the community. The structure, however, is not the same as when they left the island. It has changed as the necessary response to roles which had been vacated by the migrant.

The consequences of short-term migrations are not so clear. as the consequences of longer duration or permanent migrations. Most likely, the effects of short-term migration will be determined by the characteristics of the migrants and the locations to which they migrated. It is expected that short-term migrants would return to their former positions in a slightly altered social structure. The community will experience no serious deleterious consequences, returning relatively quickly to normative behavior patterns that existed prior *to* the disruption.

Patriclans. The most serious consequences of high level harvest disruptions will be seen in the deterioration of the patrician structure. Several reasons for the changes in this structure can be enumerated. As already noted, intra-crew bickering even with medium level disruptions will create some weakening of the bonds which bind patrician members. With high level disruptions, conflict will undoubtedly increase, but not to the point where there are permanent ruptures. As the disruption continues beyond the medium level the conflicts will increase also. More importantly, at some point hunting/fishing activities will be drastically curtailed. This cessation of many hunting endeavors could be the result of several factors. First, the cash necessary for running outboard engines and snowmobiles would not be available, and there are no dog teams left in Gambell which could replace motorized vehicles. Second, with reduced

caloric intakes energy to continue the arduous hunting/fishing activities would diminish. Third, the psychological *stress* of continuous hunting with limited or no success would ultimately lead to a withdrawal from hunting/fishing activities by most if not all hunters.

The cessation or drastic reduction of hunting/fishing when combined with limited success would ultimately lead to a breakdown of the clan structure. Without hunting/fishing, and without a successful harvest, there would be no reason to organize for hunting or for the distribution of subsistence products. That is, the functions of the patrician would lessen in importance, or in the worst instance disappear in the face of an extended high-level disruption. This would result in the disappearance of the patricians. Should the patrician structure weaken or disappear, so would the extant social structure of Gambell because the patrician structure of Gambell is the foundation of the overall community structure.

Massive federal aid, if provided over an extended period of time, could not replace the activities around which the community organizes itself. Without extensive hunting/fishing endeavors, the social structure of Gambell would disappear. What it would be replaced with is not clear, but it certainly would not be compatible with the extant structure, for the present structure is based upon men and women actively pursuing a subsistence livelihood in the natural environment.

In conclusion it can only be said that neither medium nor high disruptions to Gambell's harvest of naturally-occurring resources can be treated as trivial matters. While Gambell could most likely recover after a period of time from a medium level disruption, it could most certainly not recover, intact, from a high level disruption. Should a high-level

disruption extend beyond three seasons, governmental aid would become a necessity, and would have *to continue* until the end of the disruption.

With long-term disruptions it is unlikely that any governmental unit would be willing or able to provide the necessary goods and services by which Gambell residents could maintain their lifestyle and culture. The most likely governmental action would be to urge or force migration to the mainland where permanent commercial employment could be found that would sustain at least the physical requirements of living. It is certain that such an action would be perceived by islanders as the destruction of their present way of life and would be found unacceptable to virtually all Gambell residents. Some may even prefer starvation and death to the destruction of their way of life. Unfortunately. other alternatives to cope with ecosystem disasters are not forthcoming.

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