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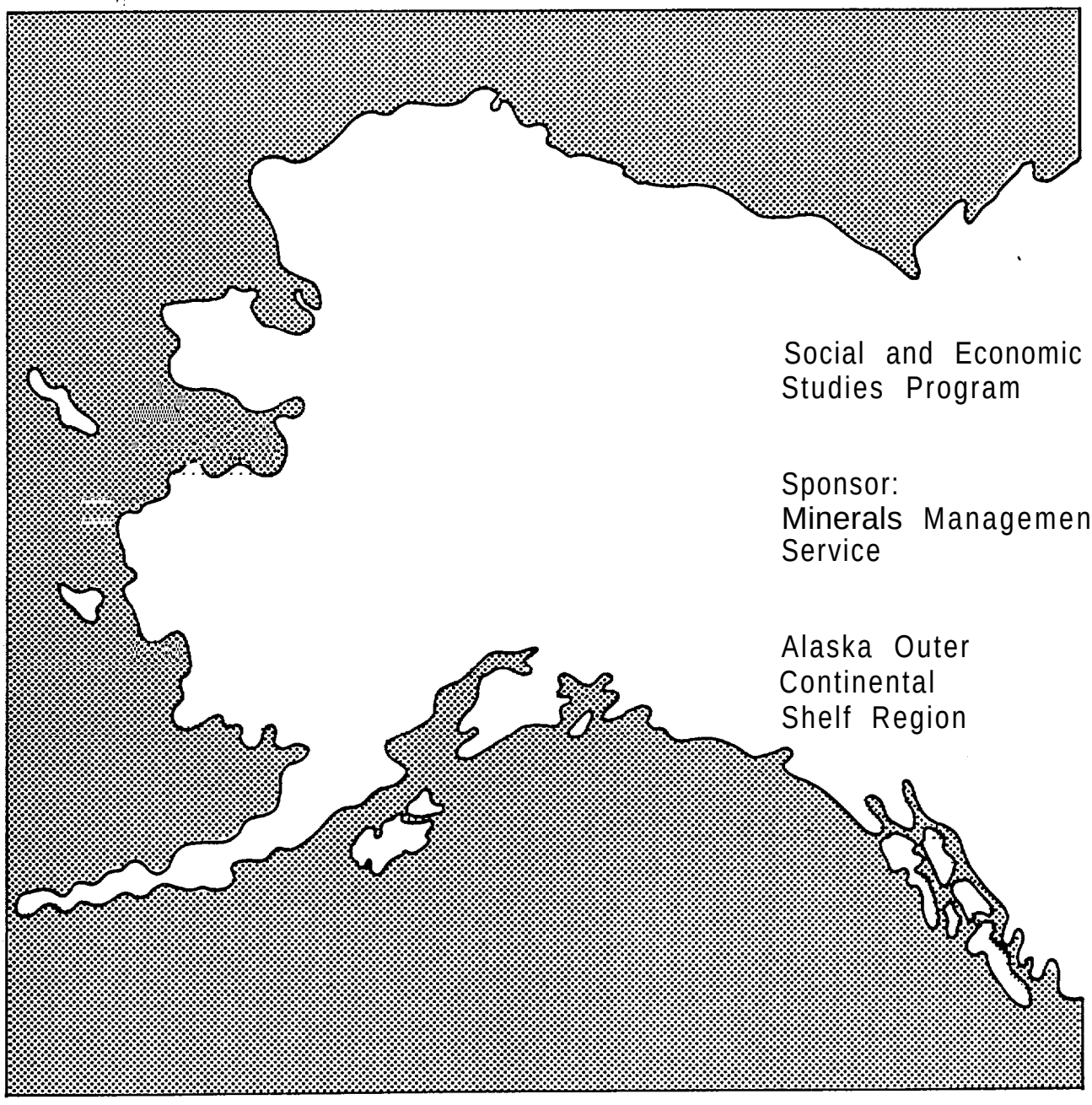

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Subsistence Based Economies

Technical Report Number 95

SUBSISTENCE-BASED ECONOMIES IN COASTAL COMMUNITIES OF SOUTHWEST ALASKA

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NOTICE

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Abstract

This report describes and analyzes the systems of subsistence and renumerative employment in four traditional Yup'ik communities in southwestern and western Alaska. The report analyzes the influences of cash and cash participation on traditional patterns of economy and social life in the study communities. The report examines what happens to traditional subsistence activities with the infusion of cash through commercial and wage employment opportunities. A theory of culture change is developed to account for the" observed changes occurring in the economy and society of the four communities. The theory suggests that only under certain sociopolitical organizations is increased cash market participation associated with the reinforcement of traditional subsistence activities.

It was found that the four study communities (Goodnews Bay, New Stuyahok, Oinhagak, and Togiak) currently were integrating cash and cash-related pursuits so as to support the subsistence sector of the community's economy. Commercial and wage activities were being integrated so that the subsistence and commercial-wage sectors were mutually compatible. However, the development of a local commercial-wage sector has brought the intrusion of certain social and political structures which may have long-term negative effects on the subsistence-based economy.

All four communities were heavily involved in subsistence fishing and hunting in 1983. The subsistence sectors of each community's economy displayed common features: a community-wide seasonal round of fishing and hunting activities; a wide range of species harvested; high production outputs; domestic family groups operating as production firms; production for local use; extensive non-commercial distribution and exchange networks for fish and game products; and traditional land use systems. Fishing for market sale to outside processors was the central

feature of the wage-market section of each community's economy. Commercial fishing for salmon and herring was the major source of monetary income in 1982.

Case households illustrated typical strategies for combining subsistence and commercial-wage activities at the family level. Households typically allied into production and consumption networks of several households (an extended family group). Domestic family networks commonly combined commercial fishing, wage employment, and subsistence activities through flexible scheduling, complements y work roles, and investment of cash into subsistence technology. Case households which were productive in the commercial-wage sector were also productive in the subsistence sector. Highly productive households distributed their surpluses t less productive households, principally through kinship networks. The viability of these four subsistence-based economies was primarily due to the study communities having been able to develop commercial fisheries and a wage employment sector without significant alteration of the traditional "domestic mode" organization of production relations. The domestic mode is characterized in part by: control of the division of labor and production capital by kinship groups; egalitarian, non-stratified production groups; small scale, affordable production capital; open access usufruct rights to resources for society members; and production for use as the principal production goal.

Currently, the traditional domestic mode organization is under strain. Powerful external forces are pushing the domestic mode toward a stratified, industrial-capital organization. One force is the non-egalitarian limited entry permit system which has accompanied the development of a local commercial salmon fishery. This system creates restricted access rights to commercial salmon and a two-class social structure.

The study found that increased incorporation of cash-related activities in and of themselves do not appear to be transforming agents of subsistence based systems. Instead, it is the structural reorganization of production relations that may accompany certain types of commercial-wage development which hold the greatest potential for disrupting subsistence based systems in southwestern Alaska. As the form of production relations are directly influenced by legislation and policy of the urban government, the future viability of subsistence based economies in the four communities may be primarily determined in the socio-political arena, not the economic, if the communities can preserve traditional local control over the sociopolitical organization of the commercial-wage sector.

CHAPTER 1

STUDY BACKGROUND

INTRODUCTION

What happens when cash is injected into a traditional hunting economy? Does cash precipitate a progression of transformations in the economy, society, and culture away from traditional systems toward new socioeconomic patterns? Or, alternately, does cash become integrated into customary patterns of economic activity so as to preserve and reinforce traditional systems of economy, society, and culture? Perhaps effects are intermediate between these two extreme possibilities. This study of the role of cash in the traditional, subsistence-based economies of four southwestern Alaskan communities is designed to answer these questions.

As presented above, the question regarding the effects of cash on traditional subsistence-based economies is an over-simplified statement of highly complex issues. It is not simply the presence or absence of "cash" that potentially results in socioeconomic transformations of traditional systems, but the extent to which traditional systems have been affected by the economic, social, and political organizations underlying market systems which have penetrated rural areas. To understand the relationships between cash and subsistence, it is necessary to direct inquiry toward understanding the organizational infrastructures underpinning the economies of traditional and nation-state

societies. As is shown in this report, as a part of certain sociopolitical organizations, increased cash participation may be associated with the preservation, reinforcement, and development of traditional economies; in the case of other sociopolitical organizations, increased cash participation may be associated with radical transformations in traditional. economic patterns. Consequently, the research focus of this report is not just on whether traditional hunting economies have moved from a cash-poor to a cash-endowed status, but also on whether cash participation has been associated with a movement away from a traditional domestic infrastructure to an industrial-capital infrastructure (the concepts of a "domestic mode of production" and "industrial-capital mode of production" are advanced and, discussed in Chapter 2).

Clear answers to these issues are necessary if the inevitable conflicts between divergent interests catalyzed by resource allocation and development policies are to be satisfactorily resolved in Alaska. That this study is funded in large part through the federal agency associated with outer continental-shelf development is appropriate, for oil and gas development have become increasingly important catalysts for change in the economies and sociopolitical institutions of rural Alaska. New employment opportunities and cash infusions are only secondary derivatives of these developmental policies. At the heart of economic change is the directed transformation of the rural infrastructure, including land and property relations; debt-credit-profit relations regarding production technologies; mechanisms of economic exchange; resource management policies and applications; social welfare

programming; and sociopolitical institutions at the village and regional levels. Previously, traditional institutions dealing with property, technology, resource management, social welfare, and politics were frequently invisible to policy-makers and were of marginal concern to the nation-state. Now, traditional economic and sociopolitical institutions are thrust to the forefront to be reckoned with, because of the economic push to classify lands and secure leases and permits to open up areas with mineral potential. The press of oil and gas development has meant that the nation-state should not ignore traditional systems operating in rural Alaska.

Moreover, the question of the interaction between traditional hunting societies and industrially-based societies in Alaska extends wider than the sphere of oil and gas development. Traditional hunting societies are under pressures in a number of economic arenas. Commercial fisheries development is affecting many coastal, subsistence-based communities in the state. Planned commercial timber extraction holds the potential for multiple effects on traditional communities in southeastern Alaska. State policies on road corridor development and settlement entry may bring previously remote and sparsely populated rural areas within the influence of urban economic sytems. An expanding urban population drawn to the state by development places increasing pressures on fish and game resources. Inquiries into the directions of culture change in rural systems provide information pertinent to all these issues.

An understanding of the potential impacts of these kinds of development on traditional socioeconomic sys tems in Alaska can be

valuable in the formulation and application of policies which are of greatest benefit to all interests involved. With informed perspectives about subsistence-based economies, local 'interests in resources and subsistence uses will be better understood. Policies concerning land and resources can be created which are consistent with the protection and development of existing hunting and fishing economies. Using this information increases the likelihood of involving local, rural representative institutions in the decision-making process, so that local and regional interests are better articulated with the larger political and economic system. By increasing local involvement in decisions and projects concerning local land and resource uses, polities may be created which are consistent with the maintainence and expansion of community and regional self-determination and a greater degree of local self-sufficiency.

PURPOSE OF THE REPORT

The purpose of this report is to describe and analyze the systems of fishing, hunting, trapping, gathering, and remunerative employment in four traditional Yup'ik communities in southwestern Alaska. The report analyzes the influences of cash and cash participation on traditional patterns of economy and social life in the study communities.

The analysis of the interaction of cash and subsistence-based systems is done at several levels -- extended family, community-region, and nation-state. Focusing at the level of the extended family as the social unit of production, distribution, and exchange of subsistence

resources, the study examines how families integrate cash opportunities in the community and region with traditional subsistence activities. Assuming that types of cash employment may entail differential effects, the study explores the social and economic consequences of a family's choice to engage in different types of cash activities: commercial salmon and herring fishing; wage employment such as cannery work, state-federal jobs, and construction; cottage crafts; and commercial trapping. The effects of different levels of earned cash income on subsistence activities conducted by extended family groups are explored as well.

Focusing at the level of communities, the report examines how the collective activities of families aggregate into community and regional socioeconomic systems. The relative contributions of different sectors to the overall community and regional economy are described. The relations between the subsistence sector and the commercial-wage sector of the local economies are examined in detail. How the relative monetary wealth of a community is associated with patterns of resource harvest activities is also analyzed.

At the macro-level of the nation-state, the report examines the interaction of the sociopolitical infrastructures of the traditional and national economies and how these influence economic choice at the community and extended family levels. The report explores how national and state policies and policy applications act as incentives or disincentives to hunters and fishers to engage in traditional economic activities.

A variety of detailed information is presented for each community concerning subsistence and commercial-wage activities. The intent is not only to understand the internal workings of the contemporary economies of four case communities, but to channel this particular information to develop a theory of socioeconomic development with general applicability. A major purpose of the report is to begin to outline a theoretical framework for predicting directions of socioeconomic change in subsistence-based economies. The theory may help to predict when cash participation is associated with the preservation and development of traditional hunting economies and when cash participation is associated with the inhibition and/or transformation of traditional hunting economies into new socioeconomic forms.

METHODOLOGY

General Design

The study used an ethnographic, field-based, comparative case approach in four communities of southwestern Alaska. The. primary methods of data collection involved participant observation of subsistence resource harvest and distribution, commercial fishing, and wage activities in the study communities, combined with in-depth, systematic conversations with key, knowledgeable residents. Four researchers were responsible for data collection in the field, one in each community, accompanied by local assistants proficient in the Yup'ik language. At least three months field time was spent in each

community, timed to correspond with major subsistence activities, primarily during the spring and early summer of 1983. Researchers utilized similar data collection "techniques to develop comparable information across communities.

Additional published materials on the economy and social infrastructure of the communities and the Bristol Bay and Yukon-Kuskokwim delta areas were compiled by a researcher from published and unpublished sources in Juneau, Anchorage, Dillingham, and Bethel. Because of the importance of commercial fishing as an income source in the four study communities, detailed records of commercial salmon and herring catches, earnings, and permit histories in each community were acquired from the State Commercial Fisheries Entry Commission, Juneau. These data enabled a comparative community analysis of trends in the commercial fisheries and provided additional important background data for in-depth case descriptions of households.

Selection of Communities

Four communities were selected to represent examples of subsistence-based, traditional economic systems in southwest Alaska -- Goodnews Bay, New Stuyahok, Quinhagak, and Togiak. Three of the communities (Goodnews Bay, Quinhagak, and Togiak) are on the "cusp" of two major sociocultural and geographic regions. Togiak falls within the northern edge of the Bristol Bay region, while Goodnews Bay and Quinhagak lie within the southern boundary of the Yukon-Kuskokwim delta area, along the southern rim of Kuskokwim Bay (Fig. 1).

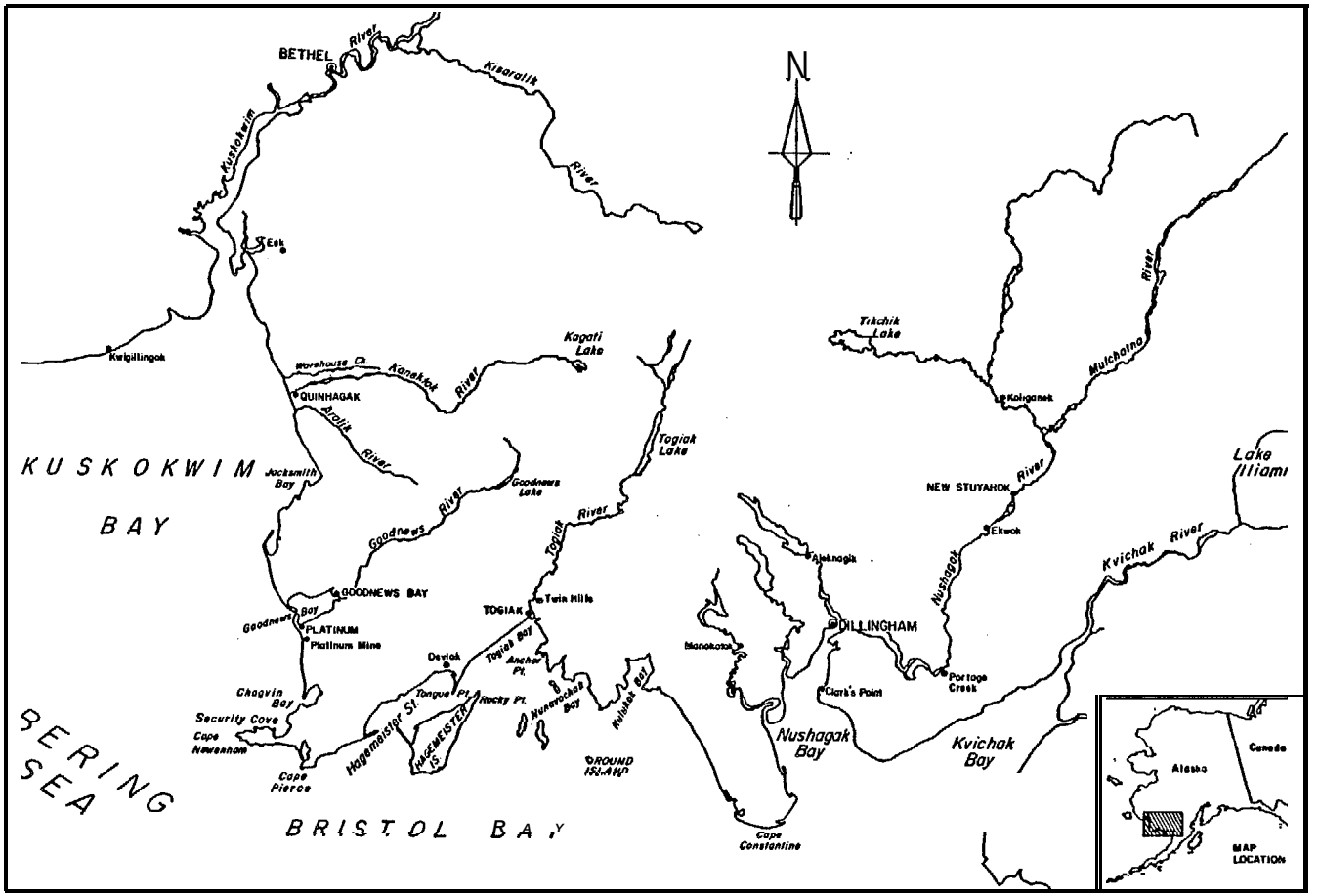

Fig. 1. Map of the study area.

The fourth community, New Stuyahok, lies inland from Dillingham along the Nushagak River. Togiak and New Stuyahok orient toward Bristol Bay and Dillingham for state, federal, and regional "services; transportation; commercial fishing; and trapping. Goodnews Bay and Quinhagak orient toward Bethel and the Yukon-Kuskokwim delta region for the same purposes, although both have a few residents who participate in the Bristol Bay fisheries. As might be expected of settlements on a regional boundary, at times the communities participate in both regions.

The selection of these four communities was based on a careful consideration of the theoretical and empirical requirements of the study design and the feasibility of successful, high-data-yield research. All four communities were known to have subsistence-based, traditional rural economies, with households relying on the proceeds of fishing, hunting, gathering, and trapping of local fish and wildlife as economic mainstays. Contemporary descriptions of their traditional economic systems were lacking. Togiak and Quinhagak represent relatively large communities relative to western Alaska coastal settlements, while New Stuyahok and Goodnews Bay are of moderate sizes. Populations and household sizes in 1982 are depicted in Table 1. The communities were known to be related by ties of marriage and descent, and so they were expected to show intercommunity linkages for the distribution of subsistence products, visiting, and ceremonial exchanges.

Of central importance for the purposes of the project, existing data indicated that there were possibly significant differences in the level of involvement in commercial and wage activities in the case of each community. All were known to be involved in commercial fishing,

TABLE 1. POPULATION AND NUMBER OF HOUSEHOLDS IN STUDY COMMUNITIES.

Community	Population Size	Number of Households
Goodnews Bay[a]	202	50
New Stuyahok[b]	337	55
Quinhagak[b]	427	
Togiak[a]	530	108

[a]1983 census conducted this study.
[b]1982 city census.

commercial trapping, and wage employment (such as with the school system, local government, and seasonal construction). A comparison of 1979 monetary incomes compiled by the federal census (U.S. Bureau of the Census 1980) suggested that households at New Stuyahok earned on average signicantly greater incomes in 1979 than did the other communities, and Quinhagak earned the least (see Table 2). This was Probably due to the greater income potential of the Bristol Bay commercial salmon fishery in comparison with the Kuskokwim River area salmon fishery. Based on knowledge researchers had about the study communities, it was expected that income differences between the study communities were actually greater than indicated in the 1979 census data. Further, historical data suggest that each community had experienced similarities and differences in their past involvement in wage employment. Each community was known to have been involved in the commercial canneries located at Bristol Bay, a historic source of

TABLE 2. AVERAGE HOUSEHOLD INCOME, 1979, FOR STUDY COMMUNITIES. a

Community	Average 1979 Household Income
Goodnews Bay	$12,083
New Stuyahok	$17,000
Quinhagak	$10,375
Togiak	$12,917

[a]Income estimates from U.S. Bureau of the Census 1980.

wage employment for the region. Also, a platinum mine had been in operation near Goodnews Bay since about the 1930s, which was a potential source of jobs for Goodnews Bay, Quinhagak and Togiak residents.

The different kinds and degrees of involvement in commercial and wage employment among the four communities potentially allowed for a comparison of the effects of different economic experiences on subsistence systems at the community level. The patterns of subsistence production and distribution in a relatively high income community (New Stuyahok) could be compared with patterns in medium income communities (Togiak and Goodnews Bay) and a relatively low income community (Quinhagak). Thus, the communities locations (coastal and inland; Bristol Bay and Kuskokwim), sizes (large and moderate), and economic conditions presented sufficient intracommunity and intercommunity variations to enable the testing of multiple research questions concerning cash involvement and subsistence patterns. If there were income effects on subsistence patterns, they" might be expected to

appear under the different economic conditions affecting the four study communities.

Procedures

Meetings were held with representative traditional and city councils in each community to present the project, receive suggestions pertaining to content and methodology, and obtain permission and support to conduct the research. At that time, significant issues, such as confidentiality of human subjects and safeguards in data handling, were discussed and techniques developed acceptable to all parties. The representative community bodies assisted in selecting bilingual assistants for the project and securing field housing facilities.

Field data collection in the four communities stretched from about January 1983 to mid-June 1983, although at New Stuyahok, Togiak, and Quinhagak, previous fieldwork had been conducted by Wright and Wolfe in the fall of 1982 in association with Division of Subsistence, Alaska Department of Fish and Game research. Mapping of subsistence use areas at New Stuyahok and Togiak, presented in this report, was conducted in 1982 by Wright to provide information for the Bristol Bay Cooperative Management Plan. Information about fishing on the Kanektok River by Quinhagak residents had been initiated by Wolfe to provide data for a National Park Service report on the possible inclusion of the Kanektok River in the National Wild and Scenic River system.

Researchers applied a common set of data gathering tools, adapted to the unique circumstances of each community. In each community,

information on the following types of variables was obtained:

1. physical facilities in the community related to the economy;
2. counts of major capital equipment used for subsistence and commercial fishing activities, such as boats, motors, and snowmachines;
3. species utilized within the community;
4. types, timing, and methods of fishing, hunting, trapping, and gathering activities;
5. detailed characteristics of four major subsistence pursuits -- salmon fishing, freshwater fishing, seal hunting, and caribou hunting -- including standard information on timing, location, technology, property relations, composition of groups for production and processing, and methods of distribution and exchange;
6. census information, including number, size, and composition of households;
7. detailed information from a selection of case households, including subsistence activities engaged in the past year, types and level of involvement in commercial and wage activities, strategies for pooling labor and capital in production, and distribution and exchange of resources;
8. number, types, and characteristics of paid employment in the community, including commercial fishing, trapping, state-federal-city wage employment, and private business;
9. economic and political infrastructure of the community; and
10. historic information concerning the economic development of commercial enterprises, such as fisheries, canneries, and wage employment opportunities.

Selection of Households

Twenty case households, five from each community, were selected for in-depth systematic description (Appendix A) and analysis in Chapter 9. The case households were selected to illustrate strategies

that households may use in combining subsistence and cash-related activities. They are not "representative" in any statistical sense, for reasons stated below. Instead, they are designed to illustrate economic strategies that may occur given certain types of economic opportunities. To the extent that these economic opportunities are common in the communities, the case households may be said to be representative of certain groups of households.

Case households were selected to illustrate how five general types of income-generating activities might be strategically integrated with subsistence. The five economic types include: (1) wage employment; (2) simple commodity production with low income; (3) simple commodity production with high income; (4) mixed wage and simple commodity production; and (5) minimal earned income. These five categories were identified based on findings from other subsistence research (described in Chapter 2) which suggest that the manner in which monetary income is acquired by a household may affect subsistence activities more than does the absolute level of monetary earnings.

One general hypothesis is that cash-related activities which are relatively restrictive of a worker's time and mobility (such as a rigidly scheduled, sedentary wage employment) may place more restrictions on subsistence activities than cash-related activities which are relatively flexible in timing and location (such as part-time or seasonal work). For this reason, it seemed advisable to examine wage employment as an occupational type to see how households combined wage employment with subsistence pursuits.

Another general hypothesis was that cash-related activities based

on "simple commodity production" may be more easily integrated with subsistence activities than is wage employment. This may be due to several factors. First, simple commodity production by definition is a form of self-employment in which the worker in a small-scale enterprise produces a product for monetary sale. This form of self-employment may entail flexible schedules which are amenable for integration with subsistence activities. Second, simple commodity production may utilize attitudes, technology, and labor compatible with subsistence pursuits. Third, economies in which simple commodity production is the primary occupational type may operate within a context of ecological and property relationships compatible with fishing and hunting for local consumption. For these reasons, "simple commodity production" was examined as a second economic type.

A third general hypothesis was that households engaged in limited cash-related activities might show another pattern of cash-subsistence integration. On the one hand, these households might have the most flexible time schedules for engaging in subsistence pursuits, which might facilitate subsistence participation. On the other hand, the households might be restricted by low annual monetary incomes. Household members might not have the money to purchase the equipment, gasoline, ammunition, and other items used in subsistence. Finally, low participation in cash-related activities may be due to certain household characteristics (such as an incomplete household workforce, advanced age, disability, or personal problems), which might be associated with depressed subsistence activities. Thus, it seemed advisable to examine "minimal earned income" as a third economic type.

Several factors may be considered to assess the extent to which the economic types were prevalent in each community. Table 3 depicts the percentage of households falling into each economic type during 1983. By far, simple commodity production alone or in combination with wage employment was the predominant form of cash-related activity in the four study communities, engaged in by 55 percent (New Stuyahok) and 77 percent (Togiak) of community households. As discussed in Chapters 5 and 6, commercial salmon fishing was the primary type of simple commodity production in terms of absolute numbers of participants and earned income; other forms were commercial fur trapping, the commercial herring roe fishery, and cottage crafts. The percentages of households engaged in simple commodity production displayed in Table 3 were minimum estimates. The figures were based on persons holding limited entry permits enabling direct sale of salmon; they did not include persons without commercial permits who crewed for shares on boats of permitted fishers (see Chapter 6). If crew participation were counted, the percentage of households engaged in simple commodity production would have increased slightly (for example, 11 households without permits supplied crew members to permitted boats in Togiak).

Table 3 also shows that between approximately 46 percent (Quinhagak) and 80 percent (Goodnews Bay) of community households had members who held some form of wage employment, either alone or in conjunction with simple commodity production. A relatively small number of households depended solely on income from wage employment (from approximately 12 percent in Togiak to 22 percent in Goodnews Bay). Chapters 5 and 6 describe the types and numbers of wage-paying

TABLE 3. HOUSEHOLDS BY TYPE OF INCOME ACTIVITY

Community	Simple Commodity Production	Wage Employment	Mixed Wage-Simple Commodity Production	Other	Total
Quinhagak (N=98)	36 (36.7%)	17 (17.3%)	28 (28.6%)	17 (17.3%)	98 (100.0%)
Togiak[a] (N=108)	30 (30.6%)	12 (12.2%)	45 (45.9%)	11 (11.2%)	98 (100.0%)
New Stuyahok (N=55)	12 (21.8%)	10 (18.2%)	18 (32.7%)	15 (27.3%)	55 (100.0%)
Goodnews Bay (N=50)	(1410%)	11 (22.0%)	29 (58.0%)	3 (6.0%)	50 (100.0%)

[a]From a sample of 98 of 108 households

positions in study communities. As certain wage positions show a high turn-over rate among employees, the percentages in Table 3 might be expected to vary substantially from year to year, much more than does the simple commodity production category where the number of permit holders is relatively stable.

Between 6 percent and 27 percent (New Stuyahok) of households fell into the "other" economic category. Many had members who did not participate in wage employment or in simple commodity production during the past year. Households with marginal participation also were placed in the "other" category, such as households which sold a few furs or held a wage position for only a few days. Most households in this "other" category represented the economic type termed "minimal earned income." They primarily received income through government transfer programs, described in Chapters 5 and 9.

Table 3 enables an assessment of the relative frequencies in which the economic types occurred in the study communities for a judgement of the potential importance of the economic strategies illustrated by each case. The case households which fell into the "mixed wage-simple commodity production" and the "simple commodity production" categories illustrated strategies displayed within relatively common economic types. Case households of the "wage employment" and "minimal earned income'" categories illustrated strategies displayed within less common economic types.

The case households were not selected to be '*representative" in any statistical sampling sense, as might be claimed for a sample drawn randomly from the pool of all community households. A random selection

of independent observational units is a technique allowing the use of descriptive statistics (means, modes, ranges, frequencies) for depicting characteristics of households as economic units. It also allows the testing of hypotheses concerning relationships among variables with various inferential statistics. It is important to point out certain limitations of a randomized selection strategy and why it was not used in this study. There is a high likelihood that a random sampling of households would produce misleading information for analyzing relationships between cash and subsistence, because a central statistical assumption is violated: that is, the assumption that community households are independent observational units. As is discussed in Chapter 9, the economic units for the production and exchange of subsistence and nonsubsistence goods are frequently multihousehold groups working in concert as a single unit. In fact, our analysis of case households is used to suggest that there is a common household developmental cycle, whereby a household passes from participation in a multi-household group to a single-household group, back to a multihousehold group, depending upon the age and kinship relations of members. What this means is that a random sampling of households probably would produce a sample containing (1) complete economic units -- independently functioning households; (2) incomplete economic units -- households functioning as part of multi-household units; and (3) mutually dependent households treated as if each was a dependent unit. Thus, the testing of certain hypotheses is subject to considerable error. This issue is discussed more fully in Chapter 9.

Given this type of social organization, where more than one

household commonly pools labor and capital in production, the best observational units for randomized selection are cooperative family groups (some are single households, others multi-household groups). Initially this requires identifying the pool of cooperative family groups, which may be done through an extended period of participant observation prior to the selection process. This design was not feasible given the three-month duration of the field portion of the study. Consequently, a case-household approach, in which cases are stratified by type of cash activity, was chosen as a more feasible methodology.

Case households were selected following this general procedure. First, households surveyed during fieldwork were classified within each of the four economic types. Then, a single household was selected within each category to be a case. Households selected as cases were parts of different extended kinship groups, so as to represent independent economic units, The households chosen as cases in each category were typically those for which the most background information was available. Due to the complexities of household economic strategies, it was safest to provide interpretations for those households for which researchers had the most information. There may be certain inherent biases following this selection procedure, because the households for which researchers had the most information typically were cooperative households -- that is, households with which the researcher developed good working relations during the relatively brief study period. Consequently, households reluctant to participate in the researcher's schedule of questions and observations tended not to be presented as cases. If these households possess economic

strategies different from the cases, these strategies were not illustrated in this report.

Gear Census

A census of the major capital equipment held by residents was made in each community to enable a comparison of technology used in fishing and hunting (presented in Chapter 5). The items censused were boats, motors, trucks, cars, airplanes, off-road vehicles ("three-wheelers"), and snowmachines.

In Goodnews Bay and Togiak, counts of equipment were made through a questionnaire administered verbally to all households. Counts of the larger pieces of equipment, such as large vessels, planes, and cars also were made through direct observation to cross-check data derived from the interviews.

In Quinhagak and Togiak, a visual count was made of craft in the water or along the shore the Sunday morning before the first opening day of the commercial salmon fishery. Most craft to be utilized during summer were usually fitted with motors and in the water on this day, a peak period of boat activity. Distinguishing active from derelict craft on shore was possible. As Sunday Is an observed day of rest in Quinhagak and Togiak, and most residents were in the community for the opening day, a relatively complete count of trucks, cars, airplanes, and off-road vehicles was made on a Sunday, similar to the census of boats. The count of snowmachines was drawn from the records of the Division of Commercial Fisheries, Alaska Department of Fish and Game,

which routinely determines the number of snowmachines and dogs per household in a door-to-door subsistence salmon survey. The 1981 snowmachine estimate was based on a survey of 53 fishing households, which may slightly overestimate the number of snowmachines per household, since this sample included a high proportion of active fishing households (assuming active households may hold more capital items than do inactive households).

In New Stuyahok, visual counts were made of trucks, cars, airplanes, boats in the 32-foot class, and inboard motors, Estimates of snowmachines, off-road vehicles, small skiffs, and small outboards were made from a survey of a sample of 17 fishing households. As with the Quinhagak snowmachine count, this estimate may have overestimated slightly the number of snowmachines and small craft per household, assuming that fishing households held more capital items.

Subsistence Outputs

Estimates of the quantities of fish and game harvested for subsistence purposes were gathered for all case households, except for Goodnews Bay, where households chose not to divulge this information because of its perceived sensitivity. In addition, estimates of subsistence outputs were gathered from a larger sample of 17 households in New Stuyahok and 12 households in Quinhagak (see Chapter 7). These households represented opportunistic samples chosen from different extended family groups and a cross-section of cash-related activities

(that is, wage employment, simple commodity production, and minimal earned income).

Subsistence information was gathered through in-depth interviews with principal household members and was based on the retrospective recall of hunters and fishers. For large species (such as moose, bearded seal, spotted seal, ringed seal, walrus and caribou) and for species which were taken in small numbers (such as fur bearers), the respondent was asked to recall the actual number harvested during the past year, broken out by seasonal period. In the case of fish species for which actual counts may not be made by harvesters, the respondent was asked to estimate quantities in terms of local units of measure (such as gunny sacks, plastic trash sacks, filled fish racks, and strings of fish) and converted to numbers through standardized conversion factors.

While a certain amount of error necessarily is intrinsic to this method of estimation, it is the only feasible method in a research project lasting three months. Ultimately, an outside researcher must rely on the self-report of fishers and hunters in reconstructing harvest estimates. Except for a few very large species (such as walrus, bearded seal, and bear) in which case the take may be a relatively visible event, it is impossible for a researcher with a long tenure in a community to personally observe the daily harvests of resources in communities which are the size of these study communities. There are no independent estimates of subsistence outputs in the study communities by state or federal agencies, except for annual state estimates of king, red, and chum salmon harvests and commercial fur harvests.

Subsistence salmon harvests in Quinhagak and Goodnews Bay are made by a state fish biologist by means of a door to door survey and are based on self-report of fishers, a procedure similar to that used in this study. The subsistence salmon estimates in Togiak and New Stuyahok are considered extremely unreliable, as they are extrapolations based on mailed harvest calendars by fishers which represent incomplete information and poor return rates. Sealed fur statistics provide only a minimal count of furs harvested in a community, representing furs sold through commercial dealers and excluding that portion of furs retained for subsistence uses. The sealed fur records were used in each community to estimate monetary earnings from commercial trapping.

Because of the small and opportunistic sampling method, estimates of subsistence outputs at New Stuyahok and Quinhagak should be considered illustrative only. They illustrate general levels of output demonstrated by particular households for the year of the study. The subsistence outputs should not be used to extrapolate total community harvests (that is, multiplying average case household outputs by total number of community households). They also should not be used to indicate some average household "subsistence need," or some "typical" yearly take. The sampled households demonstrate that substantial variations occur in productivity among households, such that an "average need" may be a specious concept. Further, substantial variations occur from year to year in the outputs of particular species, depending upon factors of resource availability, accessibility, substitution, and others. Determining "typical" harvest levels requires developing longitudinal information for a larger number of households.

Monetary Income Estimates

In Chapter 5, estimates of the total 1982 monetary incomes of residents of the four study communities are presented, broken out by source. These figures were derived by several methods. Commercial fishing incomes were estimated from records of the Commercial Fisheries Entry Commission, Juneau. The Commercial Fisheries Entry Commission performed a computer search of the records of commercial sales of salmon and herring by fishers registered as residents of the study communities for the Division of Subsistence. Protection of the confidentiality of individual fishers was guaranteed. Non-resident fishermen (those who maintained an address outside the study area or who maintained an address in the study communities without residency there) were excluded from the reports by researchers, based on community census information. Earnings were then totaled. These amounts represent estimated gross earned monetary incomes in the commercial fishery before deductions from equipment depreciation and operating expenses. The commercial fishing records also served as the basis for the analysis of the commercial salmon and herring fisheries in Chapter 6.

Commercial trapping earnings were developed from sealed fur records and Reports of Acquisition of Furs and Hides from commercial buyers, kept by the Alaska Department of Fish and Game, Dillingham regional office (for Togiak and New Stuyahok) and Bethel-St. Mary's regional offices (for Quinhagak and Goodnews Bay). The records show the number of furs sealed, number of sales, buyers, sellers, types of furs sold, and prices. These figures represent a minimum estimate of commercial sales, since a small number of furs shipped out by mail for

sale may never be sealed or recorded.

Wage earnings from employment with the cities and Native village corporations were derived from their respective income tax records and interviews with key officials. The numbers and types of school positions held by residents were determiner? through interviews with local school employees. Total earnings from these positions were extrapolated from" wage scales obtained through the school districts. Earnings of teachers who were seasonal residents of the study communities were excluded from school-related income estimates.

Income from cannery employment was estimated in a manner similar to that of school income. The number and types of positions occupied in cannery work by residents in 1982 was determined by interviews with cannery officials and other key respondents. Total incomes were extrapolated from typical wage scales and seasonal earnings obtained from cannery officials. National Guard-earnings were estimated using average pay scales from the National Guard central office, multiplied by number of members on community rosters. Income from other job categories (such as airline agents, United Utilities, electrical cooperatives, and churches) was determined by contacting central offices and deriving typical earnings for these positions in western Alaskan communities.

Transfer payments were estimated from government records. Records from the Alaska Department of Health and Social Services provided "estimates of payments from public assistance programs -- Aid to Families with Dependent Children (AFDC) and Adult Public Assistance (APA), including Old Age Assistance, Aid to the Permanently Disabled, and Aid

to the Blind. Records were available by community for the months of March, July, and October. Assuming these are index months for a trimester, each month was multiplied by four and summed (Alaska Department of Health and Social Services, Office of Information Systems, Statistical Support Unit, Public Assistance Caseload and Expenditure Reports, by Village, Caseload, and Dollars Paid for OAA, ABL, APD, AFDC, GRM, and GRA; unpublished computer data).

Alaska Department of Health and Social Services records provided estimates of foodstamp payments. Records were kept by community for the months of February, August, and October. Assuming these were index months for a trimester, each month was multiplied by four and summed (Alaska Department of Health and Social Services, Division of Public Assistance, Foodstamp Monthly Participation; unpublished computer data). This agency also provided estimates of cash assistance for home energy costs in low income households, funded by the federal Energy Assistance Program. Records are for the fiscal year July 1982 through June 1983, by community and case.

Records of the Alaska Department of Labor, Employment Security Division,. did not allow researchers to determine unemployment insurance payments by community. Reporting is by grouped communities, with cases and dollar amounts reported for one week per month -- Goodnews Bay/ Platinum (about 4 cases per key week); Quinhagak/Kongiganak (about 16 cases); Togiak/Twin Hills (about 9 cases); and New Stuyahok/16 other communities (about 10 cases) (Alaska Department of Labor, Research and Analysis Section; unpublished computer data). Figures were available from January through May, 1983. Extrapolating these months to a

12-month period would overestimate the year's payments, as winter and spring months typically have the lowest levels of wage employment. Because of the difficulties of breaking out community information and extrapolating accurately, unemployment insurance payments were excluded from transfer payment estimates presented in Chapter 5. It is doubtful that unemployment insurance is a major source of transfer payments, as shown by the relatively small number of cases in each subregional group. Individuals involved in seasonal commercial fishing, the major employment category in the study communities, are not eligible for unemployment compensation. Seasonal cannery workers are eligible, which may account for the higher case load in the Quinhagak/Kongiganak subregion, as Kongiganak residents traditionally engage in cannery work.

Dividend payments were estimated assuming that every community resident applied for and received a $1,000 Permanent Fund Dividend check from the State of Alaska. This may slightly overestimate dividend earnings. However, major drives in each community resulted in nearly complete subscription.

Average household and per capita 1982 monetary incomes (see Chapter 5) were derived by dividing the total estimated earned community incomes by the community's most recent population census (Table 1). These figures represent earned gross income, excluding transfer and dividend payments, before deductions from equipment depreciation and operating expenses in the commercial fishery.

Analysis

Data analysis was conducted at three levels -- extended family, community-region, and national macro-institutions. In each community, households were identified displaying varying types and levels of cash participation and were developed into in-depth case examples. As described above, case households from each community were selected to represent households in which cash participation fell into one of five general types. Information was organized in a standard manner for comparison, including household composition, house characteristics, technology, sources and level of income, and subsistence involvement. These case examples spanning a variety of income types and levels were a basic data set for examining how households, as parts of extended family groups, integrated cash and subsistence activities.

At the community and regional level, information from each community was organized in standard formats by major economic sectors: the commercial-wage sector arid the subsistence sector. Comparisons were made of the sources and level of cash income in each community; types of species utilized through subsistence fishing and hunting; distribution and exchange networks; and systems of land use and occupancy. Detailed comparisons were made of core aspects of each economic sector. In the commercial and wage sector, information on the commercial salmon and herring fisheries was channeled to explore similarities, differences, and trends in the commerical fisheries which might have impacts on the patterns of subsistence and economic development in each community. In the subsistence sector, four central types of

subsistence activities were compared across communities along similar dimensions -- salmon fishing, seal hunting, freshwater fishing, and caribou hunting. The detailed information on the salmon fisheries and subsistence activities provided the major data sets for examining whether structural differences were occurring in the social organization of subsistence and other economic activities associated with different levels of cash income at the community level.

At the macro-institutional level, information on the evolving relationship between traditional and state-federal sociopolitical structures was compiled for the region. Particular areas of interface between the local and external sociopolitical systems were examined -- the commercial export fishery, systems of property relations, social welfare programs, and fish and game management policies. External sociopolitical policies were examined to assess if they operated as incentives or disincentives for continued involvement in traditional fishing and hunting activities.

ORGANIZATION OF THE REPORT

The report's materials follow two organizations. First, the chapters are arranged to present information to facilitate the logical development of a general theory of cash and subsistence. Under this arrangement, Chapter 2 presents the basic theoretical concepts and theoretical relationships underpinning the selection of variables and analysis of data. Information in subsequent chapters cannot be properly understood without understanding the key concepts in Chapter 2,

especially the concepts of "domestic mode of production" and "industrial-capital mode of production." After establishing the theoretical foundation of the study, historical and contemporary descriptions of the study communities are presented in Chapters 3 and 4. Chapters 5 and 6 present detailed information on the monetary sector of the community's economy, followed by Chapters 7 and 8 which address the subsistence sector. Chapter 8 provides an analysis of household strategies for integrating subsistence and cash-related activities, as illustrated by the case households in Appendix A. Finally, the detailed empirical analysis is brought back to the general theory of cash and subsistence in Chapters 10 and 11, which discuss theories of culture change in subsistence-based economies.

A second way the materials are organized Is more implicit, by the three levels of analysis discussed above -- family, community-region, and macro-institutional. This organization is depicted in Figure 2. As shown in this figure, the materials of Chapters 9 and Appendix A relate primarily to the interaction of individual households and extended kinship-based groups and networks. The materials of Chapters 3, 5, 7, and 8 deal primarily with the interaction of family groups and community-regional patterns. The materials of Chapters 6, 10, and 11 relate to the interaction of community-regional patterns with the economic and social institutions of the outside nation-state.

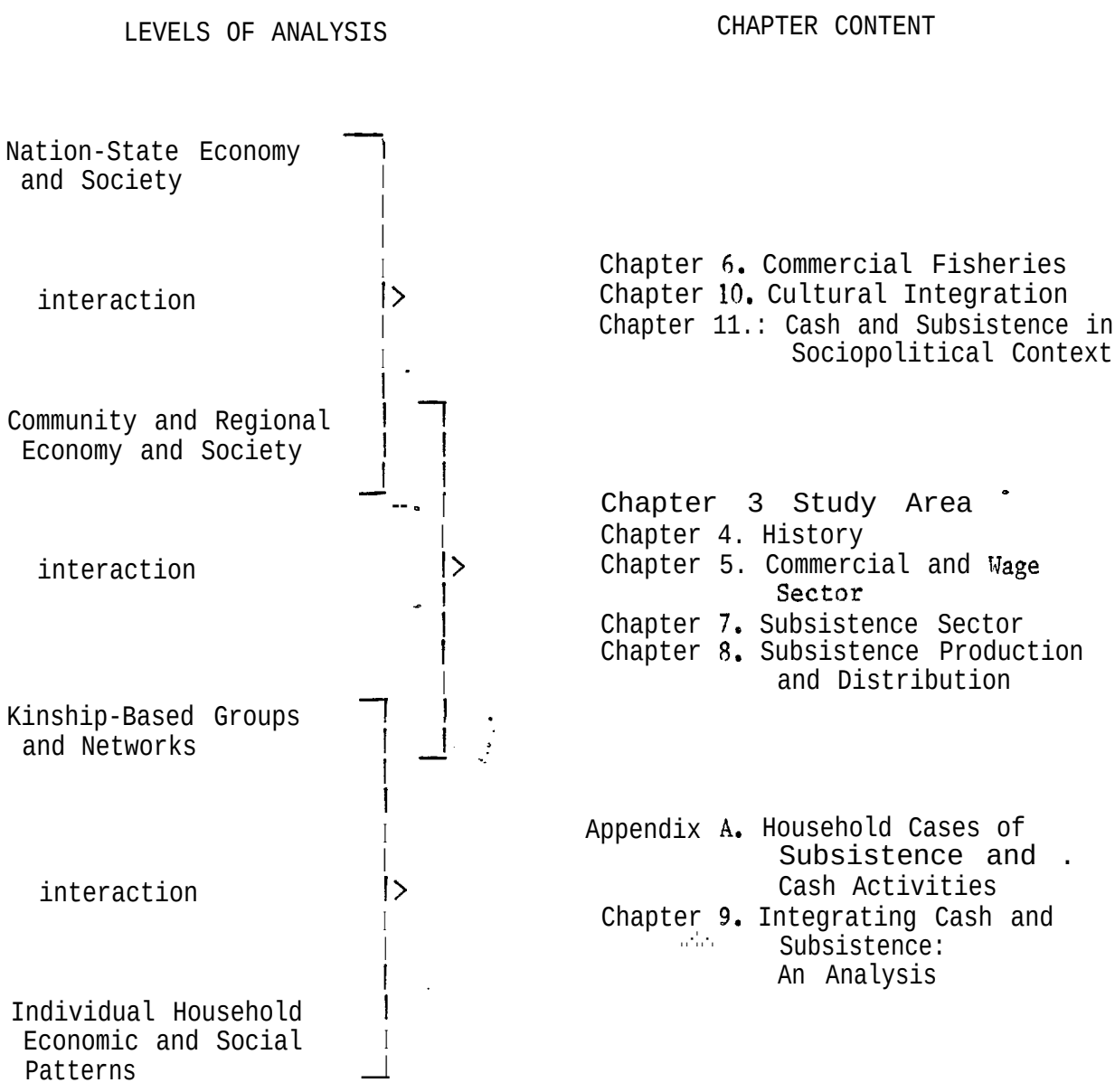

Figure 2. Chapter materials organized by level of theoretical analysis.

CHAPTER 2

THEORETICAL CONSIDERATIONS

INTRODUCTION

> The central question that arises from the developments occurring within the hunting societies of the Canadian north today concerns the nature and diversity of the transformations which occur when hunting and gathering societies become less isolated and must increasingly relate to and respond to nation-state political and bureaucratic structures and to international economic structures. These questions are relevant to a wide range of the surviving societies of hunters and gatherers. It is not simply a question of the transformation of hunters and gatherers into something else: farmers, pastoralists, slum dwellers, ethnic minorities, proletarians, specialized laborers, or welfare recipients. It is also a question of the transformation of hunting societies into new and potentially viable forms of hunting societies, with diverse productive organizations, consumer goods, complex imported technologies, and extensive state intervention and relationships. (Feit 1983: 373)

The theoretical issues raised by Feit concern the complex transformations that occur in hunter-gatherer societies and economies facing increasing intrusion by political, bureaucratic, and international economic structures of dominant nation-states. Feit writes in the context of changes experienced by the Eastern Cree Indian communities of the James Bay region of Quebec, changes occurring through a sequence of political and economic developments in the Canadian north, the most recent being hydroelectric power extraction. The Canadian scenario is similar in many respects to Alaska: northern resource development is effecting rapid transformations in the ecological, political, and economic setting within which traditional hunting societies operate. How these changes impact the hunting societies is the

central question. To describe and analyze these transformations, there is developing relatively complex and far-ranging socioeconomic theory by several Canadian authors, including Feit (1983), Usher (1978, 1981, 1983), Berkes (1981), and others. Although there are certain significant differences between the Canadian and Alaskan experiences, as are discussed subsequently in the chapter, their broad similarities make their theoretical framework a particularly promising starting point for analyzing the current development issues facing the traditional hunter-gatherer economies of Alaska.

The theoretical framework is dynamic. It assumes that current social and economic situations are parts of emergent, constantly changing systems. Socioeconomic change comes about in hunter-gatherer societies not only from pressures imposed from without by intruding economic and political structures, but also from dynamic processes internal to the local socioeconomic system. The theoretical framework recognizes several levels of change. Changes in economy are occurring at the levels of the household, extended family, and community, which should be accounted for by the theory, such as changes in fishing and hunting practices, decision-making, and sources of community income. Concurrently, changes are being brought about at a macroscopic level in regional, societal, and inter-societal systems. The theory must understand local changes as they relate to changes in the forms, functions, and interrelationships of social, political, and economic systems on a global scale.

Central to this dyanamic, multi-leveled theory is a view that the economies of hunter-gatherer societies are organized into a mode of

production distinct from that of the industrial-capital economies. Social, political, and economic changes in hunter-gatherer systems can be fruitfully analyzed as dynamic developments within the organization of the mode of production. In the case of western Alaska, the question is whether a traditional domestic mode of production is undergoing a transformation into other forms through internal dynamics and external forces, such as a simple commodity mode or an industrial capital mode. Such transformations would entail a constellation of changes in the economic, social, and political order of the traditional system.

The following sections outline the theoretical background to the construct of domestic mode of production and summarize some of the key hypotheses deriving from the literature of social change in the Canadian north. These theoretical concepts and relationships will serve to orient the presentation and analysis of materials in subsequent chapters.

THEORETICAL SCHOOLS OF THOUGHT

Two major theoretical streams in anthropology contribute concepts to this emergent theory of culture change. At the base is a general theoretical school usually termed "cultural ecology," after the works of Steward (1955) and Sahlins and Service (1960). A central concern of the cultural ecology school is how sociocultural systems evolve over time in relationship to their environments. Human society and culture are viewed as systems adapting to changing environmental circumstances. Steward (1955) originally postulated that a core of the

sociocultural system was particularly responsive to ecological influences, including the division of labor, residence rules, and social group size, composition, and distribution in space. Pressures from the environment, such as natural resource availability, determined the form and function of this core set of factors. These influences then ramified throughout the sociocultural system to promote changes in spheres secondarily related to the environment, such as ideological systems and political organization.

Theorists following Steward generally have identified the core area of the sociocultural system most directly influenced by selective environmental pressures as subsistence technology, production, and related social organization, by which means food and other scarce material goods are produced, controlled, and distributed. The course of cultural adaptation is steered by what happens in this core of material processes and social institutions. The evolution of sociocultural systems can be traced to major shifts in this core area.

A second school of thought paralleling the cultural ecology school of culture change and emerging in the 1960s and 1970s is known as "historical materialism." It derives from a unification of the dialectic materialist views of Marx with structuralism within a broad framework similar to cultural ecology (Friedman 1972; Godlier 1974). Its purpose was to provide a diachronic theory which could account for the changes which have occurred in human social systems over time and, more particularly, in the economic (in the sense of material/means provisioning) functioning of those systems. It is theoretically motivated by the view that production rather than exchange is the cornerstone of

economic functioning in human social systems and should be the major focus of analytical understanding in explaining human existence. Exchange was an important but secondary analytical focus, which is typically seen as "determined by" rather than "determining" production relationships. Historical materialists identified certain aspects of production, especially the relations of production, as the key or determinant variables driving sociocultural evolution.

BASIC THEORETICAL CONCEPTS

Figure 3 presents an ordering of primary theoretical constructs derived from the two major theoretical streams outlined above -- the cultural ecology and historical materialist schools. The constructs and relationships are modified from Friedman (1972). The names for the constructs, as well as their relationships, analytical importance, and causal primacy, tend to differ from one scholar to another. But the basic intent of the theoretical ordering of reality would find agreement within these theoretical schools.

The major starting point in the analysis of economic systems is the broad construct of a sociocultural system (sometimes referred to as a social formation by historical materialists). In general, a "system" is a set of interacting, Interrelated, or interdependent elements forming a collective entity. A "sociocultural system" is the primary construct naming the social organizations (society) and cultural traditions (culture) unique to human groups. A sociocultural system is that functionally related pattern of elements characteristic of a

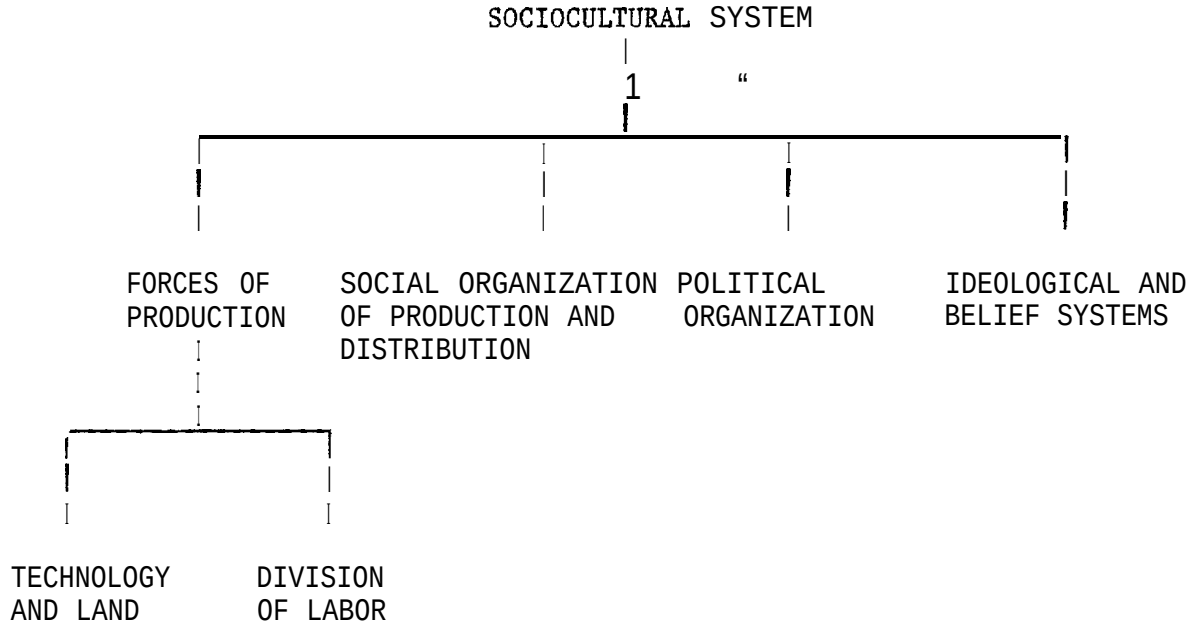

Figure 3. Ordering of major theoretical constructs (after Friedman 1972).

human population within an ecosystem, developed and passed down through learning, including social relationships, technical processes, and systems of beliefs and values. Sociocultural systems evolve over time to enable human populations to successfully adapt to current environmental conditions.

The economy is embedded within the sociocultural system (Polanyi, Arensburg, and Pearson 1957; Dalton 1972). It is that organization of social relations and technological processes through which the material bases of life are produced and exchanged and through which the society is sustained through time in the reproduction of its members and their social groupings. The forces of production of a sociocultural system are composed of the concrete technical objects of production -- land, tools, animals, and so forth -- and the technical division of labor necessary to make the technical objects productive (see Figure 3). They are analogous to the concepts of land, labor, and capital in classical economic thought.

The social organization of production and distribution (sometimes referred to as the relations of production) are the social rules and relations directing the material processes of production in a given set of technoecological conditions (Friedman 1972: 446) The social organization consists in part of a set of socially constituted groups, such as family units, economic firms, corporate organizations, and economic classes. The groups organize and are organized for the performance of the essential activities of production and exchange of goods and services. The organization of production and distribution also consists of rules defining access to, and control and disbursement

of, land, technology, labor, and the proceeds of productive activity. These principles define how the social groups stand in relation to the forces of production.

The political organization of a sociocultural system is those rules, social relations, and institutions used to maintain territorial rights, maintain internal order, and allocate power to make decisions regarding group action (Keesing 1976: 348). It is the sociocultural sphere of institutionalized influence, authority, and power.

Ideological and belief systems are those patterned sets of ideas, values, and sentiments which serve to formulate perceived social realities and to define, direct, and rationalize human action. In some theories, the political and ideological realms are determined by, and serve to rationalize, the dominant order of the economic system. To other theorists, political and belief structures are separate spheres which influence economic processes, neither determining or being determined by them. In the opinion of the authors, how economic organizations, political organizations, and ideological systems relate to each other is an empirical question.

THEORIES OF CHANGE: MARKET RELATIONS AND TECHNOLOGY

A model of culture change with general applicability was developed by Murphy and Steward (1956) from the theoretical framework outlined above. They applied cultural ecological concepts to analyze parallel transformations occurring in the subsistence economies of two pre-dustrial groups -- the hunting and gathering Montagnais of Quebec and

the horticultural Mundurucu of Brazil. According to Murphy and Stewardfs analysis, changes in the social organization of production and distribution, as they related to the forces of production, led to a radical reordering of the sociocultural system. Each group was drawn into credit-barter relationships with traders (fur traders and rubber traders respectively), on whom they became dependent for imported technological goods which had displaced native crafts. Subsistence fishing and hunting among the Montagnais and horticulture among the Mundurucu were redirected toward producing marketable resources -- furs and rubber sap. A mercantile, barter economy was created in which the collector of wild products was tied by bonds of debt and credit to particular merchants.

Growing trade dependencies led to fur-trapping displacing subsistence hunting as the focal emphasis of the economic system. The band's hunting territory became partitioned into discrete, exclusive-access trapping territories (or rubber tapping areas), the most efficient arrangement of land tenure for exploiting dispersed resources by small, potentially competitive work forces. The familistic band organization concurrently disintegrated. Initially the heads of large kinship lines among the Montagnais and hereditary chiefs among the Mundurucu served as intermediaries with the trader, but this disappeared in favor of direct client-patron relations between a nuclear trapping family and merchant. Settlement patterning coalesced about the trading center, with men seasonally visiting traplines using grubstakes borrowed on credit towards future production.

Accordingly, the effects of participation in market trade ramified

throughout the sociocultural system. The band-level, extended-family sociopolitical integration and economic interdependencies broke down, replaced by essentially independent nuclear families dependent on a trader and with marginal attachments to an outside national economy and society. Cooperative subsistence activities were redirected to competitive market harvests. Open access to territorial land systems were replaced by exclusive access traplines. Economic autonomy changed to dependency on imported' food products. These changes were accompanied by loss of cultural forms, such as language, marriage patterns, religion, and values. In summary, the acculturative process catalyzed by production for market sale and technological acquisitions led to disintegration, dependence, and an "irreversible" trend towards assimilation of the hunting peoples into the dominant market economy. "It can be said, therefore, that the aboriginal culture is destined to be replaced by a new type which reaches its culmination when the responsible processes have run their course" (Murphy and Steward 1956: 336).

The Murphy and Steward ecological model falls within a theoretical genre commonly termed "modernization theory." It can be considered a special case of modernization which applies only under certain circumstances. Modernization, which generally underlies most models of development, asserts that the "transition" from "traditional subsistence societies" to "modern industrial societies" is best characterized by a radical reordering of both the nature and social organization of work. One of the major indices of the movement toward modernization is often perceived to be greater participation in the cash-market economy, such as increased wage employment and commercial market exchange.

Concomitant with this greater cash participation, it is argued, is the decrease in traditional economic and social activities.

Modernization theory often posits a constellation of changes as traditional societies undergo a transition to a market-based economy. Increased participation in markets and cash utilization is said to be associated with a change from:

1. high subsistence participation to low subsistence participation;
2. high production for local use to high production for market exchange;
3. domestic family enterprise to non-kin business;
4. extended kinship structure to nucleation of the family;
5. simple, labor-intensive technology to complex, capital-intensive technology;
6. surplus distribution to extended kin groups to individual surplus accumulation and investment;
7. non-stratified groups to stratified occupation-income classes;
8. open-access, traditional land tenure systems to private property land systems;
9. localization, self-sufficiency to delocalization, external dependencies;
10. target marketing to profit maximization; and,
11. high fertility, high mortality to low fertility, low mortality.

This constellation of progressive changes is alleged to occur in association with a greater participation in market activities.

The modernization model commonly assumes that local population is initially dense relative to resources, or becomes so through the demographic transition which follows the introduction of western

medicine and consumer goods. An expanding local population and its demands, in conjunction with demand from the world economy for its local resources, create the conditions where the modernization theory's predictions apply most directly.

The Murphy and Steward model is a special case which may apply under certain conditions. The population density is sparse relative to the resource base in demand. There is limited external demand for land or other resources in the territory occupied by the population. Economic factors are such that extraction of resources for exchange within the external commercial economy is feasible with local labor and capital. And there has not been a degradation of resources on which the local population depends for subsistence uses.

The hypothetical outcomes predicted by Murphy and Steward's ecological model of change are both provocative and potentially testable. When advanced in 1956, they were based on secondary ethnographic information. Since then, an accumulating body of information on hunting and gathering societies in contemporary Canadian and Alaskan groups suggests the relationships cannot be supported as advanced. It is especially unclear whether increasing linkages with outside markets and the incorporation of new imported technologies necessarily lead to a decline in hunting, fishing, gathering, and trapping for subsistence use.

CONTEMPORARY SUBSISTENCE FINDINGS

Recent studies of hunting societies in rural Canada and Alaska have indicated a continued high harvest of wild resources for local,

traditional uses in communities participating in mercantile trade relations and utilizing imported technologies. Feit (1983) found that hunting continued to hold a decisive place among economic activities for the James Bay Cree, a group adjacent to the Montagnais group referred to in Murphy and Steward's analysis. Trapping for commercial. export had not submerged hunting, fishing, and trapping activities for subsistence use. Data on community-wide patterns of production indicated that fur-pelt sales provided $36,149 of income in 1968-69, whereas subsistence production accounted for 206,453 pounds of butchered food worth an estimated replacement value of $185,902 (Feit 1983: 380). Similar relative values of fur and subsistence foods were summarized by Feit for other communities, shown in Table 4 reproduced from his report. From these figures, Feit concluded that subsistence hunting had remained the predominant use of wildlife resources and the predominant harvest activity in these communities, contrary to predictions (1983: 381; also cf., Usher 1976).

Recent studies quantifying the level of subsistence production within rural communities in western Alaska have shown similar results (Wolfe 1979, 1981; Behnke 1982) (Table 5). Table 5 summarizes total annual outputs per capita of commercial salmon sales, fur sales, and subsistence food among sampled households in six communities on the Yukon River delta and one community (Nondalton) from the Bristol Bay region. It shows that on the average, the replacement values of subsistence foods are about 3 times the value of commercial salmon sales and 25 times the value of fur sales. These high outputs suggest that subsistence fishing and hunting in western Alaska, as in Canada,

TABLE 4. COMPARISON OF INCOMES DERIVED FROM FUR-PELT SALES AND SUBSISTENCE-FOOD HARVEST, EASTERN CREE COMMUNITIES, VARIOUS YEARS. [a]

Year	Communities	Cash Value of Fur-Pelt Sales	Cash Value of Subsistence Foods
1968-69	Waswanipi	$ 36,146	$ 185,902
1969-70	Waswanipi	27,585	169,694
1970-71	"Eastern Cree	300,000	3,864,300
1971-72	Fort George	20,180	526,487
1973-74	Fort George	72,413	782,299
1971-72	Paint Hills	16,238	162,636
1971-72	Eastmain	14,962	66,769
1974-75	Eastern Cree	384,340	3,632,713

[a]Reproduced from Feit (1983: 380).

TABLE 5. COMPARISON OF PER CAPITA INCOMES DERIVED FROM COMMERCIAL SALMON AND FUR SALES AND SUBSISTENCE FOOD HARVEST, SEVEN WESTERN ALASKA COMMUNITIES.

Year	Community	Number of Households Sampled	Per Capita Salmon Sales	Per Capita Fur Sales	Per Capita Cash Value of Subsistence Harvests[a]	Source
1981	Alakanuk	21	$ 798	$ 179	$ 3,375	Wolfe 1981
1981	Emmonak	18	1,227	129	2,827	Wolfe 1981
1976	Kotlik	8	300	80	1,800	Wolfe 1979
1981	Kotlik	14	2,943	331	2,364	Wolfe 1981
1981	Mt. Village	16	2,056	214	3,781	Wolfe 1981
1980	Nondalton	14	879		4,773	Behnke 1982
1981	Sheldon Point	7	888	246	6,457	Wolfe 1981
1981	Stebbins	12	69	41	4,675	Wolfe 1981

[a]To enable a direct comparison with Table 4, subsistence values are based on a replacement cost of $4.62 per pound dressed weight (1980, 1981) and $2.50 per pound (Kotlik, 1976), values calculated by Wolfe (1979: 225; 1981: 143) from local store prices.

continue to produce more income than is produced by fishing and trapping for commercial sale.

One prediction of the Murphy and Steward model that is supported by Canadian and Alaskan studies is the growing acquisition of modern, imported technology by fishing and hunting peoples. The material cultures of the aboriginal fishing and hunting economies have undergone radical transformation. The utilization of imported technologies has meant that the fishing and hunting economies have become reliant upon external markets for production material, such as snowmachines, ammunition, nets, gasoline, and trapping equipment. The economies must maintain some level of market relations to acquire these products.

The ramifications of the acquisition of new technology for the sociocultural system are complex (Bernard and Pelto 1972). One has been an increase in the efficiencies of production; new technology allows a saving of labor in production. There are polarized views about how new technology is related to levels of subsistence output. On the one hand, there is the view that increasing market participation and technological dependency are associated with decreased subsistence output: hunting and fishing change from economic activities to recreational activities (this view is described and refuted by Usher 1981). On the other hand there is the view that new technologically-based efficiencies in production lead to increased outputs potentially threatening the biological status of particular species.

As mentioned above, most recent studies do not support the first view -- that is, high-level subsistence use is not turning into

low-level recreational use. Further, there is little evidence that increasing efficiencies in production are associated with large expansions in subsistence production. Levels of demand for subsistence products seem to be set by factors other than the technical tools used in procurement, such as the limited size of local consumption networks, production for "use value" rather than "exchange value," usufruct rights restricting access to resource areas, traditional resource conservation ethics, storage and processing constraints, and the relative cost-return ratios of alternative species (Usher 1981, 1983; Wolfe and Behnke 1982; Berkes 1981). In some cases new technology has resulted in a decentralization of use areas proximal to modern villages, a return to a pattern of resource use which preceded the relatively recent congregation of people in villages on a year-round basis (Richard Nelson, pers. comm., 1983). The fears of resource managers that new technology leads to biologically dangerous overproduction by-and-large are unsupported. However, continued research in this area seems warranted concerning the effects of technology on particular species and use of particular geographic areas.

Wolfe (1979) has shown that production capital is invested by fishermen and hunters to maximize their utility in subsistence production in the fishing and hunting economies on the Yukon River delta. Cash is invested into a particular constellation of harvest activities which brings the overall highest subsistence returns per dollar. Wolfe suggested that this investment strategy was followed in part because low and unpredictable cash flows in the region required a prudent investment of scarce cash in subsistence pursuits.

It appears that new and potentially viable forms of hunting societies are developing utilizing the imported technologies. What organizational forms and types of linkages with outside economic systems have been created to maintain these socioeconomic systems is now the central question.

As a step toward understanding linkages between rural and outside systems, a "mixed, subsistence-based socioeconomic system" has been advanced as a taxonomically distinct type of local economy in Alaska (Lonner 1980; Wolfe 1979, 1981; Wolfe and Ellanna 1983). Several elements have been identified as characterizing this type of socioeconomic system. First, there is a community-wide seasonal round of fishing and hunting activities. The economic activities of a community follow a yearly cycle regulated by the seasonal appearance and availability of fish and game resources. The seasonal round is a regular pattern, although fluctuations appear in it from year to year. Second, there are high production outputs of fish and game, reflecting high dependencies of the community on wild -resources. The harvest of fish and game is the most dependable source 'of employment and income in kind from year to year. Consequently, the economic system is called "subsistence-based." Third, fishing and hunting occur within kinship-based units, termed a domestic mode of production. The major economic firms are domestic groups. Capital and labor are controlled within these domestic units. A fourth characteristic of a subsistence-based system is the presence of extensive, non-commercial distribution and exchange networks. Fish and game are shared, distributed, and exchanged in non-commercial transactions frequently and in large quantities. Households which are marginal or non-producers typically use

the resources harvested by another household, received through the distribution and exchange network (cf., Langdon and Worl 1981). A fifth characteristic is the presence of traditional systems of land use and occupancy. The fishing and hunting areas used by communities are influenced by systems of non-codified customary laws defining rights of access. Traplines, fishcamps, set net sites, drainages, and other areas frequently are recognized as the customary use areas of particular kinship groups and communities. The systems of land use represent a sociopolitical organization of fishing and hunting, whereby access to resources is defined and controlled (cf. Usher 1983; Feit 1983). A final characteristic of a subsistence-based system is that it is a mixed economy: food production for subsistence use is mixed with monetary employment in the community and region. The economy is composed of a "'subsistence sector" and a "cash," or "market sector." Money may be gained through several channels -- the commercial sale of fish and furs, wage employment, cottage industries, and state and federal transfers are possible income sources. Typically, but not exclusively, monetary incomes at the community level are relatively low and unreliable from year to year, and communities cannot function solely on these monetary earnings. Money is invested in the equipment for fishing and hunting for subsistence uses, the most reliable sector.

This schematic representation of a "mixed, subsistence-based economy" is less of a theoretically functional system as a trait list, a heuristic framework designed to direct socioeconomic inquiry. A compilation of studies guided by this trait constellation has shown substantial variations in the forms and function of socioeconomic

systems falling within this general type (cf., Wolfe and Ellanna 1983).

One area where substantial differences arise is in the types of monetary income sources within the "cash sector." In some communities, such as Yup'ik communities in western Alaska, Nondalton in southwestern Alaska, and Tyonek in southcentral Alaska, wage-paying occupations are relatively few, highly seasonal, low-paying, and part-time (Wolfe 1983; Behnke 1983; Fall 1983). In others, such as regional centers like Nome (Ellanna 1983) and communities of the North Slope Borough (Kruse, Kleinfeld, and Travis 1982), wage employment is the major source of monetary income. In still other communities, exportable renewable resources provide a base for the cash sector, such as commercial fish, walrus ivory, furs, and reindeer industries (Wolfe 1983; Behnke 1983).

The extent to which an infusion of cash into a community modifies aspects of the subsistence sector (such as the seasonal round, level-of output, and distribution and exchange networks) may turn on the degree to which the sources of cash generation and subsistence activities are mutually supportive. Apparently, market and wage-related activities, when strategically integrated into a traditional schedule of fishing and hunting activities, may be associated with success in subsistence production. Wolfe (1979, 1981) found that seasonal commercial salmon fishing in Yukon Delta Yup'ik communities was particularly compatible with subsistence production. Commercial fishing could be conducted concurrently with salmon fishing for subsistence use, utilizing the same capital equipment, skills, and knowledge required for subsistence fishing. The moderate, stable flow of monetary income was invested to

support subsistence pursuits the remainder of the year. Behnke (1983) found that participation in commercial fishing by Nondalton residents was less easily integrated into subsistence pursuits when it required summer relocations away from traditional fishing and hunting areas and competition within fisheries undergoing increasing capitalization and unstable market conditions.

VanStone (1960) found that one successful strategy for integrating wage employment and subsistence activities at Point Hope in 1956 was through seasonal scheduling. By scheduling wage employment during short periods of lax subsistence activity, blocks of time were opened the remainder of the year for subsistence fishing and hunting.

Kruse, Kleinfeld, and Travis (1982) described the relationships between subsistence and wage employment created by the North Slope Borough with oil tax revenues. A part-time work pattern prevailed among males: Inupiat men worked on average 17 weeks per year in wage employment, and 50 percent responded that they preferred part-time work schedules. North Slope Borough employment policies provided leaves of absence for subsistence activities and lenient rehiring practices for employees irregularly absent from work. The purchase of labor-saving technology facilitated successful hunting and fishing on weekends, leaves of absence, vacations, and between employment periods. Under these conditions, the researchers found that high income levels from wage employment were associated" with more time in subsistence pursuits and a higher variety of subsistence products harvested. Apparently, on the North Slope fishing and hunting are being integrated with wage work in a similar fashion as was documented by VanStone at Point Hope

in the 1950s.

Feit (1983) found that among James Bay Cree communities, winter wage employment reduced subsistence harvests. This was because wage employment was located away from productive winter hunting areas. Those who did not intensively hunt at bush camps during winter harvested an average of 41 percent as much subsistence foods by weight on an annual basis as those who did, However", all full-time employed males who were not aged or infirm reported some hunting, and non-intensive hunters still produced 27 percent of the total community harvest by weight. Related to this, Kruse, Kleinfeld, and Travis (1982) found that only a small percentage of Alaska Natives on the North Slope (14-17 percent) had ever taken non-local, wage employment in connection with pipeline. construction and Prudhoe Bay development. Hobart (1982) summarized Canadian cases which showed that rotational schedules in industrial employment made non-local wage work more compatible with subsistence fishing and hunting activities among Canadian Inuit. Typical schedules were one week home for two weeks at non-local work, and two weeks home for two weeks at non-local work. Thus, increasing geographic distance of a wage job from subsistence use areas may deter subsistence output in the absence of special work schedules.

This selective summary of findings from contemporary subsistence research suggests that hunters commonly seek ways to strategically integrate market or wage-related activities with subsistence activities, particularly through special scheduling of activities and acquisition of labor-saving fishing and hunting technologies. Participation in cash activities per se implies little concerning whether a person

continues to fish and hunt for subsistence use. It also implies little about the transformations which may be occurring in the hunting society associated with the strategic integration of the market and subsistence sectors. A more detailed theory is required for identifying which forms of market and wage-related activities, production organizations, imported technologies, and local/macroinstitutional relationships are more or less viable in relationship to subsistence systems.

THEORY OF CHANGE: MODE OF PRODUCTION

Within the school of historical materialism, the social organization of production and distribution are advanced as key or determinant variables driving economic processes. The rules and relations of production are instrumental in influencing:

1. the use to be made of the environment given the technological possibilities;
2. the division of labor -- who works at what tasks with what level of intensity;
3. the forms of appropriation and distribution of the social product and use of surpluses; and
4. the determination of rates of surplus generation and rates of profit.

The theoretical emphasis is toward understanding the types of organizational forms through which cash is generated.

Several social organizational forms have been advanced within historical materialism under the general term "modes of production." Theoretically, different modes of production are related through a process of historical evolution -- one mode evolves into another

through the operation of internal and external forces. Examples of preindustrial modes advanced in the literature include "primitive communism," "feudalism," "Asiatic," and "lineage mode of production" (cf., Hindess and Hirst 1975; Godelier 1972, 1977; O'Laughlin 1975). By and large, these taxonomic types have proven to be too general or unrefined to be of use in examining the diversity in known hunting and gathering cultures. Three modes of production that are potentially fruitful for understanding the relation of market involvement and subsistence in Alaskan and Canadian hunting societies are the "domestic mode of production," "industrial-capital mode of production," and the "petty commodity mode of production."

Domestic Mode of Production

Sahlins (1972) advanced the concept of a "domestic mode of production" to describe social organizational relationships within hunting and gathering economies. In Sahlin's typology, there are several characteristics of a domestic mode: (1) relations of production derive from socially defined kinship categories; (2) surplus value in production is collectively appropriated within the kinship-based domestic unit, typically a household or network of households; and (3) production is overwhelmingly directed toward use rather than exchange. As described by Sahlins, in the domestic mode, production is instituted by domestic groups, ordinarily ordered as families of one kind or another. The domestic unit is to the domestic mode as the manor is to the feudalistic mode and the corporation to the industrial-capital

mode: each is the dominant production institution of its time and place. Each has a characteristic division of labor, technology, forms of property, economic objectives, and social and exchange relations.

Under the domestic mode, the family contains within itself the division of labor dominant in the society as a whole. Labor is allocated to productive tasks generally by age, sex, and kinship relations. There are few other principles. Technology is small-scale and atomized, usually wielded autonomously by the domestic production group. Processes of production are unitary rather than decomposed: the domestic unit sees production through from beginning to end. Domestic groups have access to the society's holdings of land and natural resources. Families enjoy the usufruct, the right to use the traditional territory of the community, band, or tribe. There is no class of landless paupers.

Sahlins contends that the domestic mode of production leads to self-limited production, which he terms "underproduction" in the sense that production outputs realized on a community level are substantially less than potentially achievable from the land, technology, and labor force. One reason is that production is directed toward consumption by the local domestic unit, a "production for use." Maintaining the livelihood of producers is the concrete, limited social objective which serves as a cut-off principle in production. Surpluses which the economy is capable of, as for trade and sale, are not realized. A second reason for restricted production is that a fair percentage of domestic groups" persistently fail to produce their own livelihood, although organized to do so. Random and specific environmental and

social causes lead to failures by a significant number of households each year (Sahlins estimated from 20-30 percent). Failing households are supported by gifts and general distribution from producers rationalized through kinship relations.

The domestic mode has the potential for evolving into other modes of production under certain environmental and sociopolitical contexts. For instance, distribution networks may evolve into stable, centralized distribution systems, as occurs under lineage systems with chieftainships. An example is the ramage system of historic Polynesia where surpluses produced by lineage segments were collected by a centralized politico-religious authority and redistributed to the society in the form of collective public works, general welfare benefits, and standing armies (Sahlins 1972). Left on its own, the domestic mode tends toward self-limited production by geographically and socially dispersed groups.

The Industrial-Capital Mode of Production

The industrial-capital mode of production is the taxonomic designation for the social organization of production and exchange systems within modern nation-states. Its general characteristics of organization stand in contrast to the domestic mode of production. In brief, economic production occurs within firms such as corporations and governmental agencies, which are typically separate from family groups. Economic firms are constituted through 'impersonal principles of contract. The family becomes the central consumption unit, but is not a

production unit. Production is for exchange purposes and the firm's objective is to maximize profits relative to investments.

Since producers are separate from consumers, the social distribution of products and services is primarily accomplished through market mechanisms, an impersonal exchange network for buying and selling goods linking groups of firms and individuals through a class of middlemen. In the markets are established levels of supply and demand and prices for goods, services, and labor.

The division of labor is complex and typically stratified and differentiated within social classes identified by occupation, income, wealth, and educational criteria. Land and capital in production are the holdings of firms and bureaucratic structures controlled by certain societal segments. The majority of people sell their labor as workers to firms holding capital and land, receiving compensation as wages used in the purchase of goods and services on the market. The political organization also transcends kinship structures. Economic processes are integrated under the umbrella of a state political organization, which establishes and enforces principles of the jural, legal, and social order underlying economic institutions. Typically, the industrial-capital mode of production characterizes economic systems based on capital-intensive agriculture, manufacturing, and governmental services and does not typify .hunting-gathering societies.

Petty Commodity Mode of Production

A mode of production alleged to be transitional between the domestic and industrial-capital modes has been termed the "petty commodity mode of production" (Kahn 1978). Other terms for similar transitional modes include "simple commodity production" and "merchant-capital production." Kahn (1978) states that this organizational form is distinguished by small-scale production for market exchange rather than for use as the primary aim of production. Similar to the domestic mode, there is no institutionalized class of non-producers and all producers are separate and equal. However, production groups become atomized and comprise much smaller nucleated units which individually wield the means of production. There is no wage form. Further, there is no collective appropriation of surplus value. Communal systems of property ownership and surplus redistribution are absent.

Of the emergence of petty commodity relations, Kahn (1978: 114) notes, "historically, petty commodity production has often been associated with the breakdown of tribal society and the dissolution of communal rights in property which accompany such a breakdown." The results are independent and equal producers facing a market system where all factors of production except labor are mobile and can be obtained through exchange. Independent and equal producers compete against one another in a market system with finite, but aggregative, value potential. Purportedly, under these conditions production units disengage from one another and operate under independent profit motives.

The petty commodity system has internal contradictions that lead

to its eventual demise. Kahn suggests that eventual technological advantages of certain producers over others lead to production disparities and the disappearance of impoverished producers. One route to production disparities is that increasing production costs due to technological elaboration leads to a reduction in the rate of return, requiring increases in the level of production output to maintain or enhance a producer's standard of living. In some cases this can lead to competition for limited market access. In other cases, it can lead to increasing competition for limited resources to convert for market sale, squeezing out the inefficient producer. In either case, the independent and egalitarian nature of petty commodity production disappears. In its stead there emerges a non-producing class of laborers, representing a labor market utilized by producers. who remain in the system. The shift in relations of production to a--class structure and non-egalitarian ownership over technology and resources transforms the system into some other production mode, such as a feudal or capital mode of production.

INTERACTION BETWEEN MODES

The mixed, subsistence-based economies of Alaska and Canada may be fruitfully examined as modes of production in certain stages of modification under the influence of the industrial-capital mode of outside nation-states. That is, one can analyze the organizational forms of subsistence-based economies as adaptive responses to external forces from the industrial-capital mode (Fig. 4).

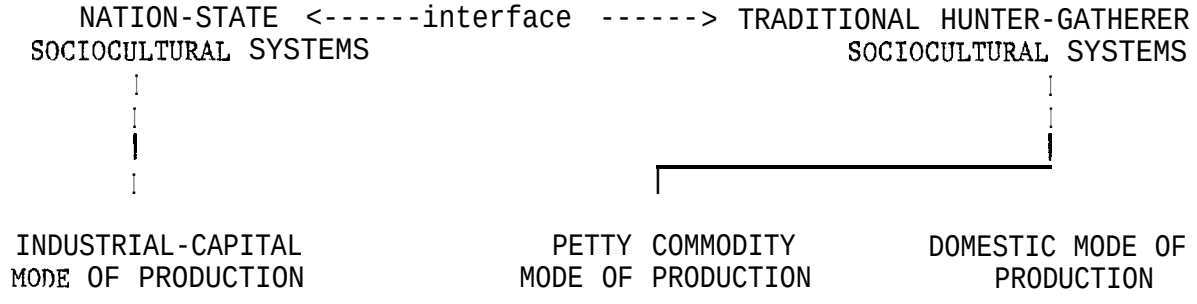

Figure 4. Interaction of traditional hunter-gatherer sociocultural systems with nation-state sociocultural systems, with characteristic modes of production.

Responses by a hunting society to external forces within this theoretical framework is provided by Feit's analysis of the James Bay Cree, partially described above. According to Feit (1983), the first transformation of Canadian Cree hunting societies was to merchant-capital relations. The system developed a mutually beneficial economic relationship between the trader and trapper which, countering the predictions of Murphy and Steward (1956), was compatible with subsistence fishing and hunting. There was not a breakdown of effective group cooperation under this system nor a significant degree of individualized, exclusive control of subsistence resources. Instead, a band organization was maintained with small band segments geographically dispersed in hunting territories within the subarctic forest for the purpose of game hunting and fur trapping during a six- to nine-month season. For instance, among the Waswanipi Cree in 1969-70, there were 21 winter hunting groups composed of 41 family units. Access to hunting territories for the purpose of subsistence hunting was determined through a system of granting and exchanging privileges by "owners" of the territory (the heads of the hunting group using the territory) with hunters from other hunting territories. The territory system maintained economic and social interdependencies within the larger community. Fur trapping and winter hunting were compatible operations, conducted concurrently and maintained at high levels.

Government policies of Canada supported the merchant-capital system during the 1930s and 1940s, granting legal recognition to traditional Cree hunting territories, passing laws excluding non-Native trappers, and managing resources to improve beaver populations. When

the world fur market collapsed, the government provided limited transfer payments in lump sums in autumn to compensate for the contraction of Hudson Bay Company credit. 'L'he intent was to shore up the hunting economy through limited subsidy to prevent the Cree from becoming completely dependent on government support.

The 1960s saw a shift in political administrative policy toward transforming mercantile relations to industrial relations into the region, one visible aspect being the promotion of the wage sector and the creation of a labor market. Lump-sum subsidies were replaced by monthly welfare payments in smaller amounts. Federal housing with mortgages and fixed expenses, located in the vicinity of schools, bureaucratic agencies and wage jobs, created a repayment schedule tied to regular income flows. This occurred concurrently with mining development, commercial forestry operations, increased competition from Euro-Canadian sportsmen for wild resources, and increased application and enforcement of standard and inflexible game laws.

The results were economic and social conditions created through administrative policy, which acted as disincentives to the maintenance of winter hunting camps, trapping, and subsistence hunting. Thes e mechanisms of directed culture change pushed workers from a self-employed status to an industrially-employed status. This marked a period of increasing dependence of the Cree on nation-state programs and institutions. The end result was a loss of autonomy of economic action, the reduction of utility of cooperative hunting endeavors, and the nucleation of the social group (Feit 1983).

With the negotiation of the James Bay and Northern Quebec Agreement

in 1974-75 between the James Bay Cree, Northern Quebec Inuit, the governments of Canada and Quebec, and the James Bay Corporation, a comprehensive land claims settlement was developed, which reinstated incentives for hunting once again. The settlement provided, among other things: (1) definition and recognition of aboriginal hunting rights; (2) effective involvement of the Cree in management of wildlife and environment; (3) regulation of the allocation of wildlife between indigenous hunters and sportsmen, including priority to the former; (4) regulation of the environmental impacts of development activities; and (5) reduction of the dependence of hunters on world-market conditions, government policy, and government programs. One novel feature of the program was an Income Security Program for Cree hunters, trappers, and fishermen, which provided a guaranteed income to those who elected to hunt. A per diem payment, paid four times yearly, was made for every day up to 240 days spent "in the bush" in hunting and related traditional activities. The program apparently stimulated a resurgence of fishing and hunting activities for longer periods in the bush (Feit 1983).

The James Bay Cree case has been described in some detail here because it presents interesting points of similarities and contrasts to the economic and political experiences of the western Alaska Yup'ik. In western Alaska, the primary economic linkage with exterior markets and macroinstitutions has been through commercial fisheries, which have not suffered disruptions as has the fur industry. Among the Cree, wage employment became the predominant source of income following the collapse of the fur market and the intervention of national and

provincial government policies. Thus, circa 1968-72, wage employment comprised 33-40 percent of total community income, compared with fur-pelt sales of 6-7 percent, transfer payments of 17-18 percent, and income in kind from bush foods of 37-40 percent (Feit 1983: 383). Integrating wage labor with hunting activities became a major consideration in the community's economy.

By contrast, as will be shown in subsequent chapters, the commercial fisheries of western Alaska have expanded as sources of cash income for local communities, due to maturing markets and political efforts to protect local participation through a limited entry system (Kresge, Fison, and Gasbarro 1974; Langdon 1979; Pennoyer, Middleton, and Morris 1965). One may expect differences in the evolution of the traditional domestic mode of production in western Alaska communities because of the different organization associated with fisheries production compared with that of wage employment.

Additional factors at work clarifying the situation in western Alaska are suggested in other comparative case studies. Faris (1977) examined the potentials of small-scale peasant economies based on commercial export fisheries for conversion to an industrial-capital mode of production. He postulated that internal mechanisms within the small-scale, fisheries-based economy of a Newfoundland outport fishing community mitigated against differential accumulation of capital and class formation. The common property quality of open water fishing meant control of resources could be gained internally only through capitalization of catchment techniques. In the system he described, capitalization was difficult because the rules of partible inheritance

broke up family capital holdings within the domestic mode. Differential access to resources could come about only through outside political influences, such as licensing regulations requiring capital-intensive gear, selective pricing for offshore versus inshore fish, refusal of the state. to enforce territorial waters against outside competitors, and transfer payments favoring the selling of labor rather than products. Faris' analysis suggests that a different set of factors must be considered in the conversion of fishing economies into an industrial-capital mode as opposed to the conversion of fur-trapping economies.

Kriedte, Medick, and Schlumbohm (1981) reconstructed the processes which led to the emergence of the capitalist mode of production from the vantage point of a European peasant household economy. They established from historic sources that the pre-industrial peasant household of central Europe operated according to the principles of the domestic mode of production. However, the domestic mode interfaced with a developed system of market exchange, which allowed the household to produce speciality items for exchange. Although this resembled petty commodity production, the authors claimed this took place with the conditions of the domestic mode of production. This system developed under several conditions. The European peasants, at least in certain areas, owned their land (property rights were well-established) or had a strong usufruct claim through a feudal lord. A substantial portion of their production was appropriated through taxes or paid to feudal lords. The peasant was subjected to other demands for labor and capital by external politico-juridical forces. Additionally, a

system of property holding included partible inheritance.

The nexus of change in this set of factors was increasing population. The inheritance system led to subdividing the land to a point at which resources could no longer be obtained in enough quantity to provide for subsistence. The household resorted more and more to market production under petty commodity conditions to obtain sustenance. Ultimately, a class of producers was created which could not be absorbed into the domestic-petty commodity mode of production. Following Chayanov, the authors suggested that the "final crisis of industrial commodity production in the countryside appeared to be largely a consequence of the 'marginal labour' and 'self-exploitation' of the traditional peasant family economy during its disintegration" (Kriedt et al. 1981:40).

Another set of conditions was described by Gross et al (1979) of four Brazilian Indian groups in different degrees of contact with wage labor and the larger Brazilian cash economy. They found that as long as a resource base remained undegraded and adequate for the traditional subsistence needs of the community, then response to the availability of wage labor was limited and seasonal by the groups. The general pattern was that of "target marketing'* for cash through wage labor or limited commercial marketing. That is, persons participated in the market sector only until a goal of cash was met, after which participation was terminated. Traditional patterns of subsistence production, distribution, and exchange were maintained in this context. One group even submitted cash to traditional exchange networks.

Nietschmann's (1973) study of the Miskito Indians of Nicaragua

demonstrated what may happen under a different set of conditions. Nietschmann found a mixed economy which began with limited production for commercial exchange of local subsistence resources. Under the opportunities for intensifying production of commercial exchange (sea turtles), fishermen established debt relations for vessels and outboards which required substantially increased production of turtles to meet costs. This resulted in declines in the turtle population, declines in the amount of subsistence turtle meat available to the community, an attenuation of traditional exchange networks, and the lapsing of cooperative domestic and communal forms of labor. Thus increasing capitalization and environmental degradation pressured the system toward change away from the traditional system.

THEORY OF CULTURE CHANGE: CURRENT QUESTIONS IN WESTERN ALASKA

Examining traditional hunting societies from the theoretical perspective of cultural ecology and historical materialism enables the framing of several theoretical questions pertaining to the subsistence-based economies of western Alaska. A general question is how transformations of an economic system relate to transformations in the core set of social relations organizing the economic system. More specifically, can changes in subsistence-based economies be understood as resulting from a shift from traditional domestic mode relations to exogenous industrial-capital mode relations?

A central indicator of transforming relations is the development of structural differentiation in production capabilities among segments

of the local society. An industrial-capital mode is built on a stratified system of social relations in production; a domestic mode is built on an egalitarian structure. In a stratified system, there are structural principles which provide differential privilege and control of production, distribution, and consumption to certain status groups (Sahlins 1958). In a stratified society, the attribution of prestige, privilege, and control over economic factors are fixed by social mechanisms, such as inheritance, election, appointment, or class membership. Marks of differential rights and control include: differential access to land, labor, and capital; differential authority over regulation of production; rights of enforcement of regulations; differential accumulation and investment; and rights of symbols of differentiation (Sahlins 1958). An economically egalitarian organization is one in which the attribution of prestige, privilege, and control over economic factors is based on age, sex, and personal characteristics, which are universal principles of status allocation among social groups. If these are the only principles of allocation of prestige, privilege, and control over economic factors, the society is egalitarian in the economic realm, for differentiation is at the minimum level which occurs in organized human society (Sahlins 1958).

A tentative theoretical statement can be advanced concerning cash and subsistence related to the level of stratification in the organization of production. As long as the relations of production and clistribution remain in a relatively egalitarian, domestic mode, cash generation will be associated with the maintenance (or increase) of subsistence fishing and hunting and non-commercial distribution. If the

relations of production and distribution shift to a stratified, industrial-capital mode, cash generation will be associated with a decrease in subsistence fishing and hunting and non-commercial distribution.

Under egalitarian conditions, there is a structural continuity in the organization and functioning of the socioeconomic system. Innovations resulting from cash generation may be functionally integrated into the previous organization. Change in subsistence participation is gradual and cumulative. Under stratified conditions, there has been a radical, internal transformation in the relations to production in the socioeconomic system. There are structural principles which restrict access to and control of capital and land for subsistence production to certain social segments. Other social segments may be forced out of subsistence production into some other production form, such as wage labor. Changes in subsistence participation may be great and discontinuous: cessation of subsistence fishing and hunting by particular social segments; substantial reductions in levels of output; shifts from non-commercial distribution and exchange networks to market systems of exchange; corporate and other business forms as the primary production entities; nucleation of consumption groups; decreasing community autonomy in food supply; and so forth.

A transition from traditional domestic relations to industrial-capital relations might be fostered through mechanisms internal and external to the local socioeconomic system. Similarly, there may be countervailing factors within and outside the local socioeconomic system, which may resist a transformation. Several factors can be

explored as potential mechanisms for promoting and inhibiting structural differentiation in the local economy leading to stratification in relations of production.

Can differentiation occur through differential capital formation?

Differentiation might occur if structural factors restrict access to appropriate subsistence technology for particular social segments. Differentiation might come about under certain conditions:

1. certain social segments have access to sources of cash generation for investment into subsistence technology, while others do not;
2. politically imposed limitations of technology discourages capital investment, making it prohibitive for some segments to participate; and
3. increasing capitalization of production makes it too expensive for certain segments to participate.

An indirect route to differentiation is by certain social segments being driven out of fishing for commercial sale through capitalization problems, which in turn pushes persons into insecure labor markets and reduced monetary income for subsistence investment.

Can differentiation occur through differential control of the resource base?

Differentiation might occur if structural factors restrict access to and control of the natural resource base to particular social segments. Conditions which might foster differentiation are:

1. access to the commercial resource base is unevenly distributed throughout the community, as through expansion of the population beyond the number of limited entry permits; concentration

of permits in particular community segments; sale of entry permits outside the community; and government programs encouraging local divestment of permits;

2. creation and implementation of land classification system entailing exclusive and controlled rights of access, such as state and federal land classifications and conveyances (refuges, settlement entry, minerals development, etc.), and landed property systems with private control and rent extraction potentials;

3. state and federal resource management utilizing seasons, open-closed areas, bag limits, and means and methods to restrict access to resources; and

4. reductions in or degradation of the resource base through overexploitation caused by unrestricted access and competition with outside commercial and recreational user groups.

Can differentiation occur through differential accumulation of wealth?

Differentiation might occur if certain social segments come to enjoy differential accumulation of goods which are translatable into differential privilege and control in the economic sphere. Differential accumulation of wealth in some systems becomes associated with rights to consume more strategic goods, rights to subsidize production through strategic investment, and rights of possession, aggregation, and taxation. Wealth may become embodied in lands and resources, capital, and labor, which in turn become structurally recognized in a system of stratified social positions.

Are there internal mechanisms which inhibit differentiation?

There may be factors internal to the traditional socioeconomic system which may inhibit differentiation. These include the following:

1. ignoring, resisting, or reinterpreting exclusionary landed property systems and land use, classification systems imposed from outside, while maintaining traditional land tenure systems providing group members universal access to resources;

2. development of systems enabling all social segments to procure cash for investment in subsistence technology and permits for commercial production;

3. operation of economic leveling mechanisms which spread wealth differences across all social segments; and

4. development of systems restricting outside competition for local resources.

These internal factors may serve to negate the external factors which are pressuring the system to shift toward non-egalitarian, stratified relations of production, distribution, and consumption,

The theory of change outlined above focuses on the factors which promote or resist changes in the social organization of production from egalitarian to stratified relations. According to this theory, the potential transformation of hunting societies is not just from a cash-poor to a cash-endowed condition. It is from a self-employed status to an industrially-employed status. Under industrial-capital relations, the worker holds less control over the conditions of work, such as its rhythms, geographic locations, and factors of production in land and capital. There is a loss of autonomy which may result in a decrease in subsistence involvement by the worker, depending upon the constellation of changes in land, property, and capital relations which accompany the industrial-capital mode.

This emerging theory of social change can be examined in light of the evidence from the fishing communities of western Alaska. Answers to these types of theoretical issues in the four study communities may

help advance a general model of culture change pertinent to the transformations affecting other contemporary hunting societies of the north.

CHAPTER 3

STUDY AREA

INTRODUCTION

This chapter is intended to provide a description of the communities studied in terms of their natural setting; individual histories; the composition of their populations; their political, economic, and organizational structures; and finally their respective relationships to the larger regions of which they are a part. The description will be guided by the focus of the study -- that is, the relationship between cash and subsistence activities. The chapter isolates and describes salient features of the communities that relate directly or indirectly to the problems posed in the study.

GEOGRAPHIC LOCATION

The community of Togiak is depicted in Figure 5. It is located on the northwestern edge of Bristol Bay approximately 70 miles from Dillingham, the current regional center (see Fig. 1). The village is situated along the western shore at the head of Togiak Bay, approximately one mile from the mouth of the Togiak River. Twin Hills, a neighboring community approximately five miles to the east of Togiak, is located near the mouth of the Togiak River on the shore of its eastern channel. Situated behind Togiak is a slough called Nassurluq, which means "young girl*' in Yup'ik. According to local legend, two

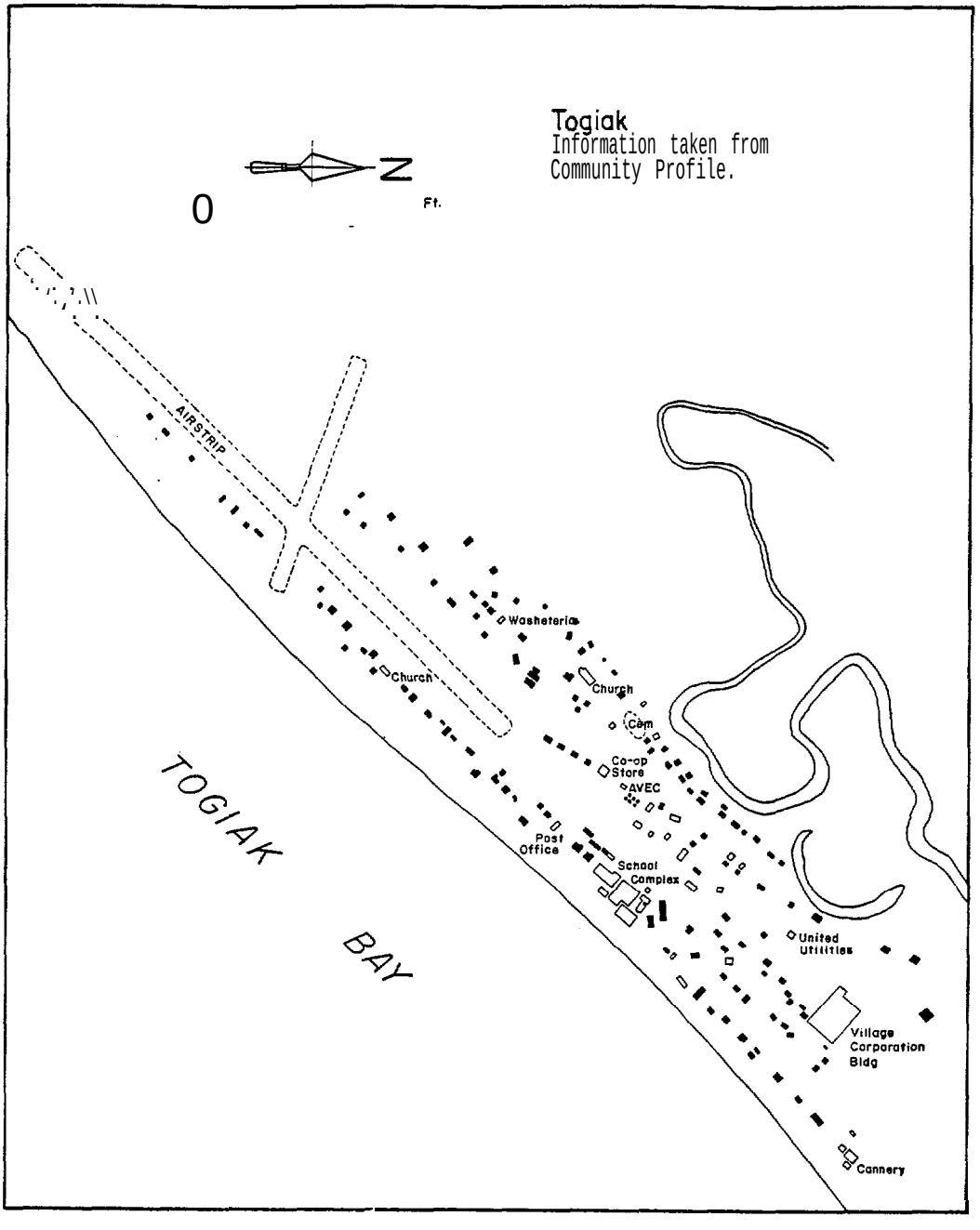

Fig. 5. The community of Togiak, 1983.

young girls drowned in the slough early in the village's history. Today, Yup'ik speakers often call Togiak after the name of the slough, (i.e. Nassurluq). To the east of Togiak Bay is Kulukak Bay, the site of a previously abandoned village which had residents who were renowned sea mammal hunters. Further to the east lies Nushagak Bay. To the west is Cape Newenham and the eastern edge of Kuskokwim Bay. Togiak, because of its location, is oriented towards the river, the interior, and the sea for its economic and social life.

The community of New Stuyahok is depicted in Figure 6. It is located on the west bank of the Nushagak River about 80 miles upriver, or 50 miles by air, northwest of Dillingham (see Fig. 1). Three other communities are located on the Nushagak. Ekwok is approximately 10 miles downriver from New Stuyahok; 36 miles further downstream (about 35 miles upriver from Dillingham) lies Portage Creek. Koliganek is located 30 miles upriver from New Stuyahok, or 22 miles above the confluence of the Nushagak River and its main tributary, the Mulchatna River. New Stuyahok is the largest of the four upriver communities, with more than half the area's 600 residents living there. The present village site was selected in the early 1940s by residents of "Old Stuyahok," which was located about 25 miles up the Mulchatna from the Nushagak because of flooding of the old site, and a desire to move closer to Nushagak Bay to facilitate schooling and transportation. Residents from several small communities and reindeer camps in the vicinity of the confluence of the Nushagak and Mulchatna rivers moved into the new community during the 1940s and 1950s. Additional residents came from Nushagak River and Bay and from the Togiak area.

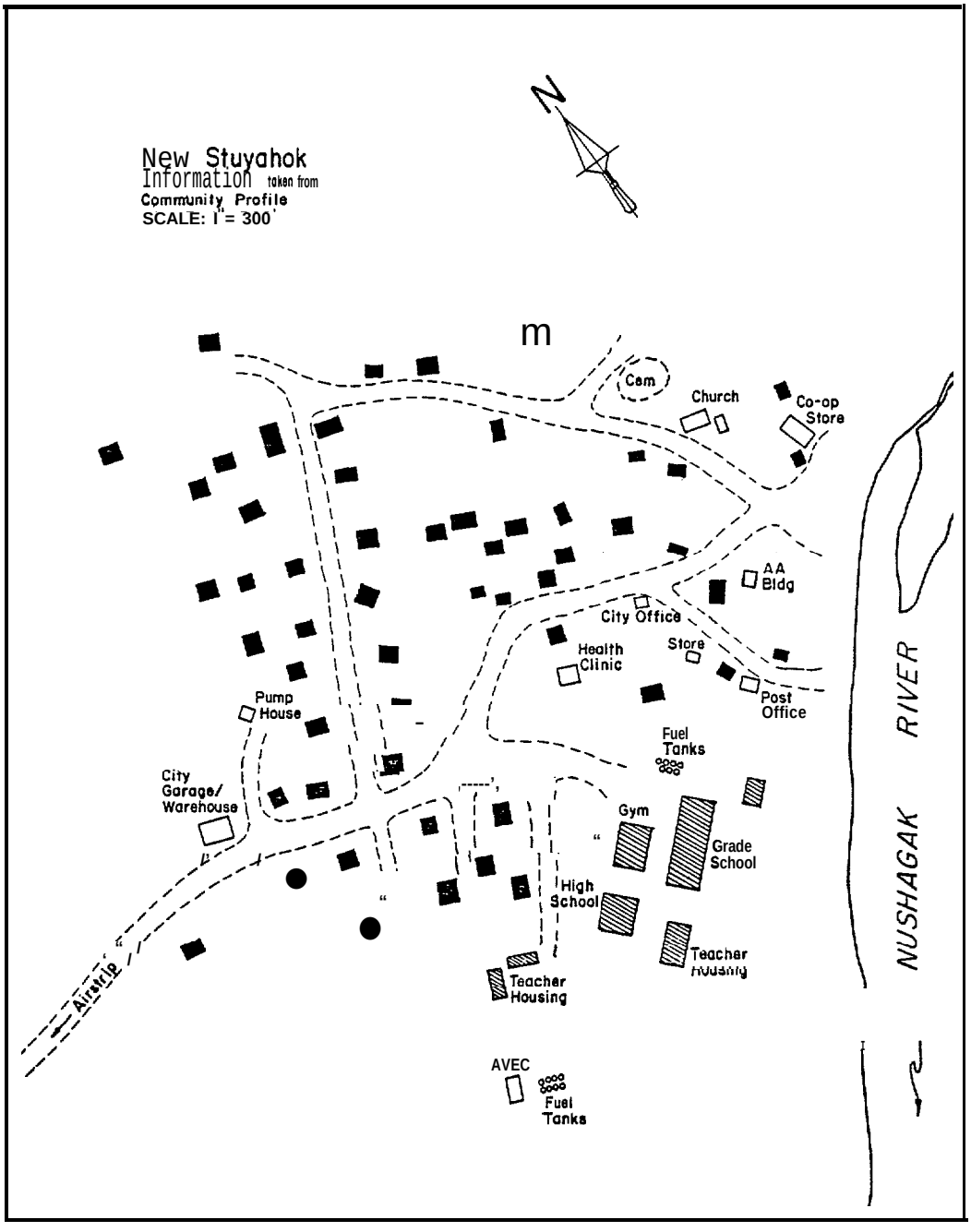

Fig. 6. The community of New Stuyahok, 1983.

New Stuyahok residents are oriented principally toward the river and the interior. However, the Nushagak Bay area is important for commercial economic activities and some aspects of social life. During the summer salmon season, about half the families in New Stuyahok move downriver to fish camps at Lewis Point, on the lower stretch of the Nushagak River 12 miles above Dillingham.

The community of Goodnews Bay is depicted in Figure 7, It is located at the mouth of the Goodnews River on the northeast shore of Goodnews Bay, a small, sheltered bay along the southern coastline of the larger Kuskokwim Bay (see Fig. 1). The community of Platinum is located on a spit between Kuskokwim Bay and at the southern edge of Goodnews Ray. The village of Goodnews Bay lies approximately 40 miles west of Togiak. Overland travel by snowmachine is quite common between Goodnews Bay and Togiak in the winter. Because of the community's location, the economic and social lives of Goodnews Bay residents are oriented toward both the river and the sea.

The community of Quinhagak is depicted in Figure 8. It lies on the southern coast of Kuskokwim Bay at the mouth of the Kanektok River (see Fig. 1). It is one of four contemporary communities along or near the southern edge of Kuskokwim Bay. Eek (1980 population was 228) lies 32 air miles to the northeast. Goodnews Bay and Platinum (1980 populations of 168 and 55 respectively) lie about 45 air miles to the southwest. The lights of Kwigillingok (1980 population was 354), one of two communities along the northern shore at a distance of 45 miles, can sometimes be seen across the waters of the Bay.

Quinhagak's name (Kuineraq, meaning "making of a new river")

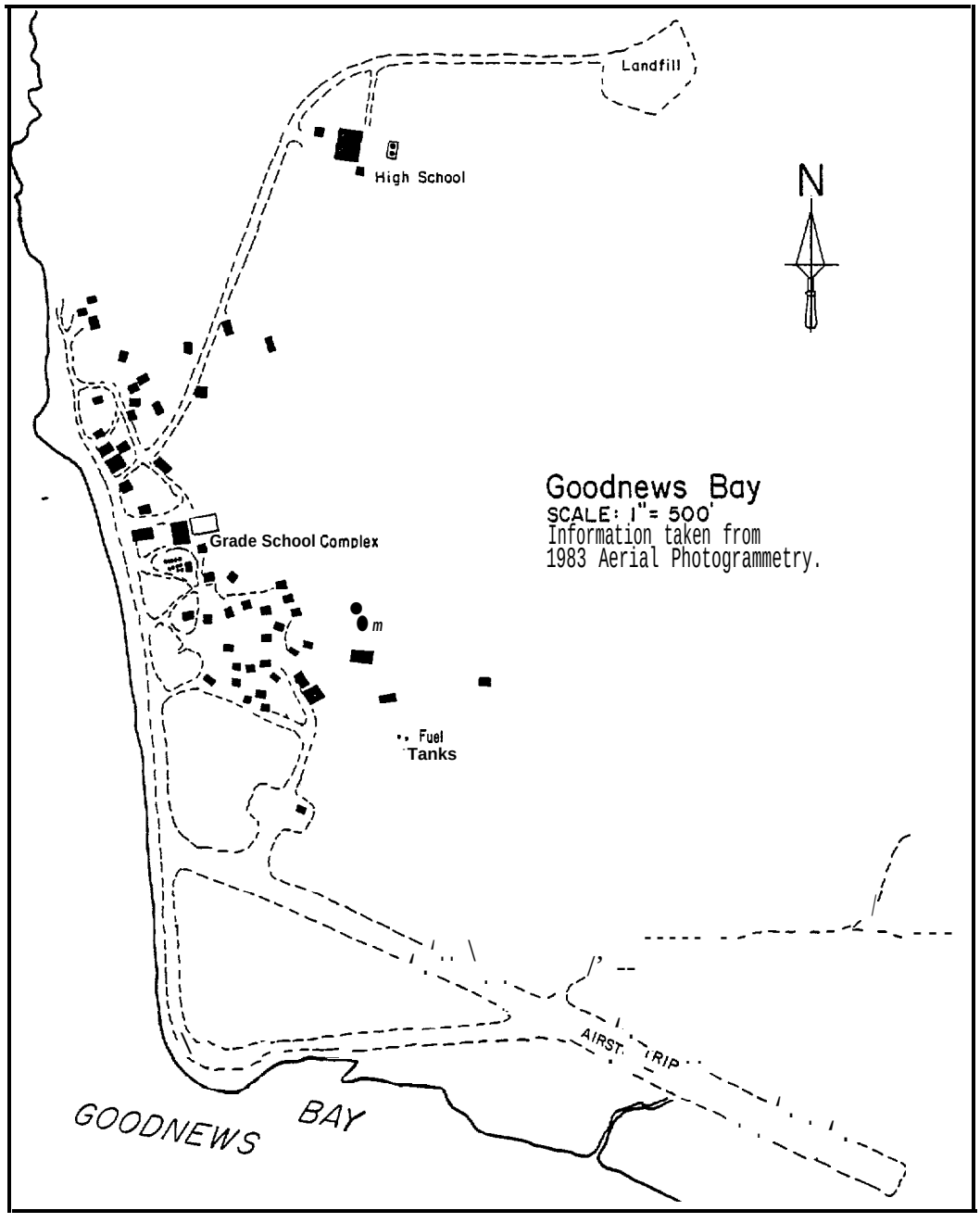

Fig. 7. The community of Goodnews Bay, 1983.

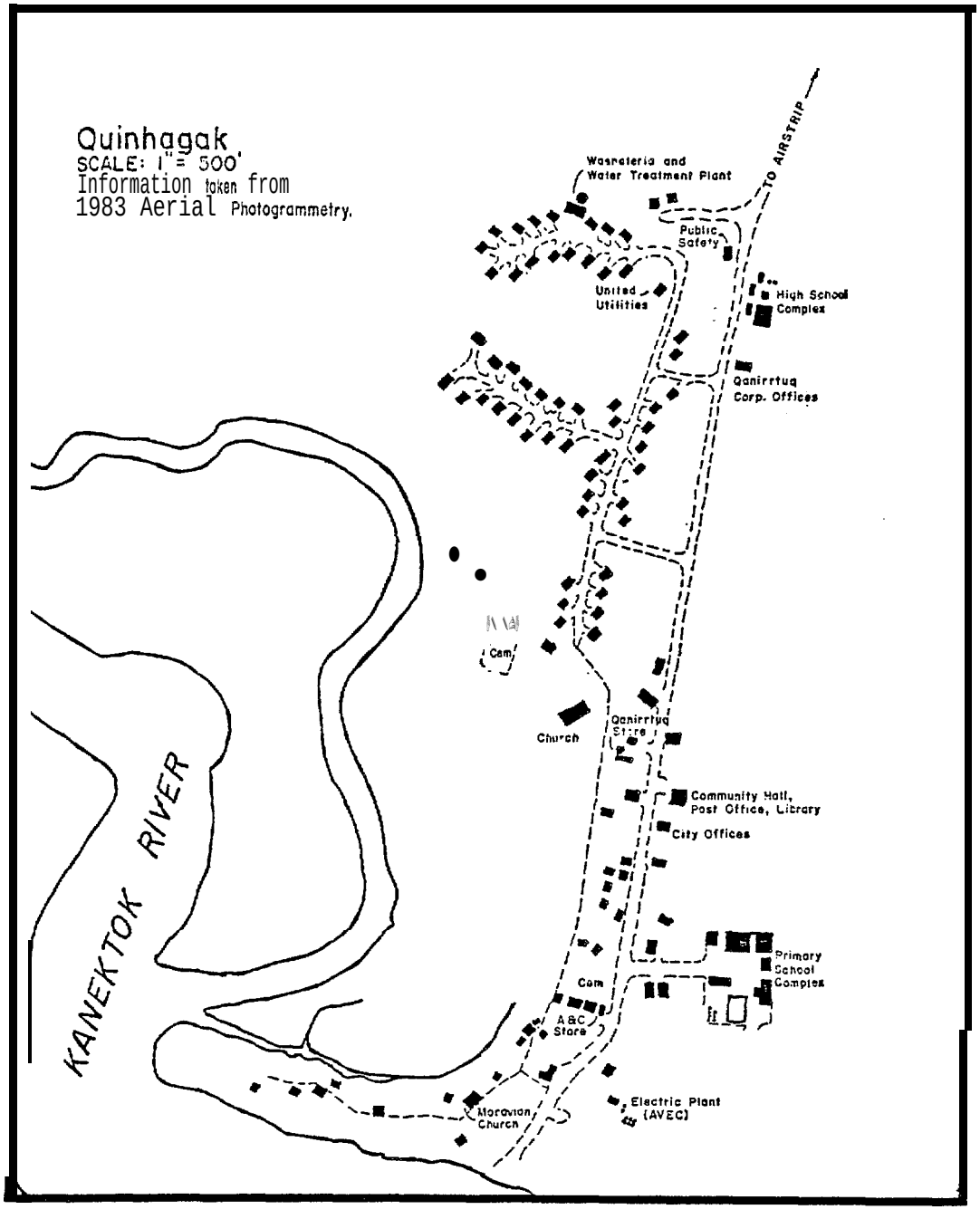

Fig. 8. The community of Quinhagak, 1983.

derives from the changing landscape. Long ago, according to elders, the mouth of the Kanektok River used to enter Kuskokwim Bay several miles to the north. The river's shifting meanderings cut off this outlet and began forming a new channel farther south, along which was established the community of Quinhagak, named for the birth of the emerging watercourse.

As in the case of Togiak, New Stuyahok, and Goodnews Bay, no roads connect Quinhagak with outside urban areas. Bethel, the regional center for the sprawling Yukon-Kuskokwim Delta, is a 45-minute bush flight from Quinhagak, about 75 miles to the northeast. During winter months when snow conditions allow, a network of snowmachine trails connect Quinhagak with other villages in the area. The trail connecting Bethel and the communities along the southern coast of Kuskokwim Bay is an historic mail run, traditionally connecting the Moravian churches and village trading stations by winter dogteam. Currently, the trail is marked with reflectors each winter to guide snowmachine traffic. During summer, intercommunity travel is by small skiffs. Quinhagak residents regularly travel up and down the coast of Kuskokwim Bay between Eek and Goodnews Bay. Less commonly, trips are made up the Kuskokwim River to Bethel and around Cape Newenham to Togiak.

NATURAL RESOURCES AND PHYSICAL CHARACTERISTICS

Togiak Bay is an important area for the community of Togiak, although it is used for commercial fishing by residents of Goodnews

Bay and Quinhagak. The bay is a shallow bay, particularly at low tide, and is characterized by numerous shoals and sandbars. This feature makes entry by large V-hulled boats hazardous for those not knowledgeable of the bay. The bay and the open sea beyond are the habitat of various pinnipeds. Hagemeister Island and the four smaller "walrus" islands are regular haulout areas for walrus, sea lion, and spotted seal. Gray whale and belukha are also seasonally found in the vicinity. All five species of Pacific salmon migrate into the bay and up the Togiak River, beginning in June with the king, sockeye, and chum and ending with the pinks and coho in September. Sockeye, (red) salmon is by far the most abundant species to migrate into Bristol Bay. Other anadromous fish available locally include large runs of arctic char and relatively smaller numbers of steelhead trout.

Herring is another migratory fish that is significant as a subsistence resource, and, more recently, a commercial resource. Herring roe on kelp has been a part of the local diet historically, and herring were dried for human and animal consumption. Both have now taken on significant commercial value. The herring roe are deposited on kelp beds in Togiak Bay and the surrounding bays to the east and west of Togiak Bay. Smelt, capelin, halibut, and cod are other marine fish available in the bay. Freshwater fish are abundant in local rivers, lakes, and streams, including northern pike, lake trout, rainbow trout, whitefish, grayling, and burbot.

The shores of Togiak Bay are bordered on the eastern side by a series of rocky, boulder-strewn headlands from 10 to 100 feet high and topped by tundra. The surrounding area consists predominately of flats

or gently rolling hills, which range in elevation from sea level to 300 feet. The landscape is typical of tundra habitat, with trees absent except for small willows that line the watercourses. Travel over this terrain by foot or vehicle in the summer and fall is almost impossible. The flora consists of a thick, spongy matting of mosses, lichens, sedges, grasses, and other plants, such as berry-bearing bushes and flowers.

On the western side of the bay, the tundra is more patchy. The mountains extend almost to the sea and the elevation reaches more than 2,000 feet. Caribou frequented the area historically, but are now concentrated further inland. Currently a herd of reindeer is kept on Hagemeister Island. In the immediate vicinity of Togiak, the landscape is gently rolling and covered with tundra and a patchwork of ponds and streams. A variety of clams and many types of invertebrates inhabit the shore and intertidal pools. Further inland there are a variety of small mammals, including voles and ground squirrels.

The river valleys and rolling tundra surrounding Togiak support brown bears, small numbers of moose, and an occasional wolf. The moose inhabit the area along the river and streams, especially in winter, while bears can be found in the same area in the summer. The variety and numbers of the small mammals are abundant. The area supports beavers in large numbers, as well as land otters, minks, ground squirrels, porcupines, muskrats, and red foxes. Wolverines, tundra hares, snowshoe hares, and weasels are also found in lesser numbers. Most of these animals are found up the Togiak River or along one of the neighboring streams and lakes.

From its mouth through its middle course, the Togiak River is broad with a fairly strong current. The banks are covered with small willows and scrub, with cottonwood and birch found halfway to Lake Togiak. In the vicinity of Lake Togiak, some 75 miles upriver, white spruce makes its first appearance. Lake Togiak is a narrow body of water some 30 miles long and 2 miles wide. From Lake Togiak to the mouth of the Togiak River, the surrounding area widens with the ridges and hills receding and tundra dominating the landscape. At the mouth the distance to the mountains is some 20 miles. The course of the river is dotted with the remnants of past settlements and evidence of temporary and permanent fish and trapping camps. The river is traveled in the spring and fall by boat. In the winter, snowmachines are used to travel upriver, crossing overland since the river itself is frozen unevenly making travel. on it difficult.

Birds are abundant in the Togiak area. In the spring, the marine waters support thousands of sea birds. Togiak Bay and associated mud flats and wetlands provide habitat for waterfowl and other shore birds during migration and nesting. Five species of geese, whistling swans, and sandhill cranes, and numerous species of ducks, remain in the area during spring and summer months.

Prevailing weather conditions in the Togiak area come from the south and west from April through September and out of the north and northeast during the remainder of the year. Freeze-up begins in mid to late November and break-up begins in late April for the bay, followed shortly by the break-up of the lake and river. Average summer temperatures range from 37 to 66 degrees Fahrenheit. Average winter

temperatures range from 4 to 30 degrees Fahrenheit. Precipitation ranges over the year between 20 to 26 inches, with most occurring in the summer. The area is characterized by constant winds, with Occasional strong winds of 60 to 70 miles per hour. Although in general temperatures are not extreme, wind chill is a common problem in or near Togiak. As one goes inland or upriver, it becomes less of a concern.

Residents of the Togiak area orient their economic activities both toward the sea and the rivers, taking advantage of the seasonal abundance of both ecosystems. Because of the weather conditions, the interior/ riverine area is utilized in the winter and summer activities are maritime-oriented. This was also the traditional pattern. The seasonal round and location of economic activities are, to a large extent, structured by the seasonal ebb and flow of locally available natural resources.

New Stuyahok is located near the center of the Nushagak basin, on a low (100-300 feet in elevation), flat to gently rolling plain. The basin is bounded on the west by the Wood River Lakes, to the north by the Nushagak Hills, to the east by the Alaska Range and a low divide between the Nushagak and Kvichak rivers, and to the south by the waters of Bristol Bay.

The rivers of the area are very important to area residents, providing avenues for travel and supporting abundant renewable resources. The Nushagak River flows through the basin from north to south . Its main tributary, the Mulchatna River, drains a large area to the northeast. The Nuyakuk River drains the Tikchik Lake system in

the northwest. The Wood River Lakes feed into the head of Nushagak Bay through the Wood River. Many tributaries of the Mulchatna, such as the Stuyahok, Old Man, Koktuli, Swan, Nushagak, Klutuk, and Kokwok, are also used. Sloughs, common along the Nushagak and Mulchatna rivers; ponds, and lakes are important sources of a variety of resources. All five species of Pacific salmon run in great numbers up the Nushagak River. Pike, whitefish, grayling, trout, suckers, and numerous other types of fish are also abundant in the waters of the basin. Many furbearers are found in association with the river and lake systems: beavers, river otters, and minks are particularly numerous. In the spring, and to a lesser extent in the fall, migrating waterfowl are common on sloughs, rivers, lakes, and ponds in the basin,

Forests of spruce and deciduous trees, and' tundra are the two major vegetation types which cover nearly all of the land in the Nushagak basin. Forests are best developed on bottomlands along rivers and streams. Tundra covers most of the flat or rolling uplands. Resources found in the forest and shrub communities include moose, porcupines, furbearers, showshoe hares, spruce grouse, willow ptarmigans, berries, firewood, and some vegetables and herbs. Caribou, arctic hares, furbearers, ptarmigans, berries, and herbs and vegetables inhabit the tundra.

The community of Goodnews Bay sits at the head of the bay of the same name and at the mouth of the Goodnews River. Dominant topographical features in the vicinity of the village include rolling hills and mountains (some reaching an altitude of 3,000 feet), tidal flats, a large but shallow bay of predominately fresh water, and the meandering

Goodnews River. Goodnews Bay is shallow, even at high tide, and requires great care and precision in navigation. Goodnews River originates at Goodnews Lake in the Ahklun Mountains and meanders over shallow, gravel-bottomed channels to the mouth some 65 miles away. Vegetation includes willows, alder, herbs, berry bushes, and other grasses, flowers and the like.

As in the other study areas, all five species of salmon spawn in the Goodnews River. Additionally, there is an abundance of freshwater fish, including grayling, rainbow trout, lake trout, and arctic char. While whitefish are not present in the Goodnews River, they do inhabit Goodnews Bay. The lower portion of the river is a nesting area for migratory waterfowl. Rock ptarmigans, willow ptarmigans, and spruce grouse are found upriver, but only willow ptarmigans are found on the coast.

Both large and small terrestrial mammals are found in the vicinity of the community of Goodnews Bay. These include brown bears, wolves, moose, wolverines, minks, muskrats, least and short-tailed weasels, porcupines, red and arctic ground squirrels, land otters, red and arctic foxes, snowshoe hares, beavers, and occasionally, lynx. Marine mammals in the bay include spotted, bearded, and ringed seals and more rarely, belukha, sea lions and walrus.

Quinhagak is located at the mouth of the Kanektok River and near the north mouth of the Arolik River, which empties into the ocean about four miles to the south. Unlike Togiak and Goodnews Bay, Quinhagak is not located on a small bay. The coastline is relatively straight and featureless at Quinhagak. The nearest embayments, Jacksmith Bay and

Carter Bay, lie down the coast about 20 and 40 miles respectively.

The Ahklun Mountains are about 32 miles distant from Quinhagak to the east and 20 miles to the south, for the mountains approach nearer to the shoreline to the southwest until near Jacksmith Bay the hills meet the sea. Elevations of peaks in the Ahklun Mountains commonly range between 3,000 to 4,500 feet and are intersected by narrow mountain valleys and basins about 1,000 feet above sea level.

The Kanektok River originates at Kagati Lake within the Ahklun Mountains. The clear waters of the Kanektok River fall rapidly down sand and gravel courses eastward about 95 miles to enter the vast flats comprising Kuskokwim Bay. Unlike the Togiak River, the Kanektok River is relatively difficult to navigate by skiff from about 30 miles upstream. Its swift currents, ever-changing gravel bars, and twisting channels overhung with sweepers require skillful boatsmanship. Most boat travel occurs along the lower portions of the River, where the braided river channels broaden and currents diminish. Unlike the Togiak River, which is commonly navigated to Lake Togiak, the Kanektok River is infrequently traveled by boat to its source at Kagati Lake during summer. Kagati Lake is more frequently visited during winter, especially by residents from Kwethluk along the Kuskokwim River, who access the mountain basin from the Kwethluk drainage. The Arolik River, which empties near Quinhagak, arises from several sources in the Ahklun Mountains. The Arolik bifurcates into two main branches about five miles inland and jogs southward toward the mountains. The waters of the Arolik are swift, clear, and shallow. Its headwaters were a region of considerable prospecting activity in the 1930s.

Where the Kanektok and Arolik rivers enter Kuskokwim Bay, the mudflats blend land with sea. The water is so transparent above the mud, it is difficult to distinguish where tidal flats end and ocean begins. From the air during summer, the channel of the Kanektok is obvious as it enters the brown offshore shoals. The deeper troughs snake elusively into Kuskokwim Bay toward the main channel formed by the discharge of the Kuskokwim River. It is common for visiting boats and barges to miss bends in the channel and run aground, inert until the next high tide. The local population intimately knows this tortuous area of mud, water, and extreme tidal flux. The more stable underwater troughs and sandbars have Yup'ik names memorized by expert hunters and fishers. The good hunter carries this mental map to assist in navigating the dangerous waters in all conditions -- rain, fog, winds, tides, ice, and snow.

Like the Togiak, Goodnews, and Nushagak rivers, the Kanektok and Arolik rivers are remarkably productive systems. Five species of Pacific salmon migrate upriver in summer in large numbers, the most abundant species being kings and silvers. The sockeye (red) run is not large. The rivers also produce large populations of arctic char (Dolly Varden), which seasonally migrate to and from the sea. Other abundant species occurring in the Kanektok and Arolik rivers are round whitefish, grayling, and rainbow trout.

The coastal plains between the mountains and the sea are covered with moist tundra interspersed with numerous melt ponds and small streams. Vegetation includes sedges, reindeer lichens, cranberries, blueberries, cottongrass, bistort, monkshood, buttercups, violets, and

louseworts. Willows, alders, and dwarf birch with occasional stands of balsam poplar are located along the middle reaches of the rivers. There are no large trees such as those that occur near New Stuyahok, and large wood for building and fuel is scarce. Logs for construction are usually secured from driftwood deposited by the Kuskokwim River at spring break-up along the local beaches.

Resident species in upriver areas include brown bears, moose, an expanding beaver population, foxes, land otters, a few minks, snowshoe hares, arctic hares, ptarmigans, and an occasional wolverine, lynx, and wolf. In the mountainous areas there are large numbers of parka squirrels, small herds of caribou and ferral reindeer, marmots, and an occasional porcupine. Geese, ducks, swans, cranes, sea ducks, and other migratory waterfowl pass through the area during spring and fall, with a few species summering along the coastal skirt of flat tundra.

The major marine resources of Kuskokwim Bay in the vicinity of Quinhagak are seasonally migrating marine mammals -- bearded, spotted, and ringed seal; walrus; and, less frequently, belukha, ribbon seal, and Pacific white-sided dolphin. Sea lions are encountered along the sand spits and coves further down the coast toward Goodnews Bay. Historically, large groups of belukha frequented the south shore of Kuskokwim Bay and were hunted in whale drives along the spits of Jacksmith and Carter bays. Currently, only a few belukha are seen each year.

Smelt is an important marine fish resource which inhabits the lower reaches of the Kanektok River in large numbers from January through early June. Other coastal fishes include cisco, starry

flounder, and sole. In rivers up the coast toward Eek there are cod, blackfish, burbot, and large broad whitefish, species which do not live in large numbers in the Kanektok and Arolik drainages because of the clear waters and sandy-bottomed lakes. 'derring do not frequent the area, but occur along the gravel beaches of Goodnews Bay and Security Cove 55 miles to the southwest.

The nearest weather station to Quinhagak is at Platinum near Goodnews Bay. At Platinum average summer temperatures range between 38 degrees to 57 degrees Fahrenheit, while average winter temperatures range from 7 degrees to 29 degrees Fahrenheit. Average annual precipitation is 22 inches of rain and 43 inches of snow (Selkregg 1976:14). Freeze-up of the Kanektok River to an extent which allows transportation by snowmachine occurs between late October and late November, depending upon annual temperatures. Because of its Swift current, portions of the Kanektok River remain clear of ice throughout the year. Break-up of the river's ice generally occurs from late March to mid-April except near the mouth, which clears from late April to mid-May. Ocean ice begins to form after November, but is generally not firm enough to allow travel until about January. The edge of the land fast ice varies from about five to ten miles during winter. As spring approaches, the open ocean moves closer to land as sections of ice break loose during the change of tides.

POPULATION

Togiak

According to Petroff's 1884 census, there were approximately 2,200 Yup'ik speakers occupying the "Togiagamute" area, focused on the site of Old Togiak across the bay from the current community. Although this figure is considered suspect by Oswalt (1967), he estimates that the population approximated 1,000 in 1880.

Table 6 presents the historical population trends of Togiak (not including Old Togiak) from 1920 to 1983. These trends reflect migrations of people from elsewhere in the Bristol Bay area and from the Kuskokwim.

TABLE 6. HISTORICAL POPULATION TRENDS, TOGIAK, 1920-1983.

Year	Population
1920	91
1929	71
1939	10
1950	108
1960	220
1970	383
1980	470
1981	511
1982	507
1983	530

There are a number of facets to this historic demographic profile. First, the substantial increase in the Togiak population from the 1940s

onward in part resulted from migration to the Togiak area and in part from an increase in birthrate. Most of the people moving into Togiak during the 1940s and subsequently were from villages and communities similar in structure and composition to that of Togiak. One reason for moving to Togiak was the opportunities it presented in the fishing industry. A cannery was established in Togiak in the 1950s, and commercial fishing was beginning to increase at that time. Access to the commercial fishery is the most obvious difference between Togiak and many of the western villages from which the Yup'ik immigrants came. A second reason for the rapid increase in the population of some villages in Alaska resulted from efforts of the Bureau of Indian Affairs to enroll children in schools located in a single village to service a larger area. A school was established in Togiak in 1950, and people from the surrounding villages upriver and on the bay moved into Togiak after this time.

A complete census of Togiak by household was conducted during the field segment of this project. As shown in Table 6, in April 1983, Togiak had a population of 530 permanent residents. This figure does not include school teachers or other temporary residents. During the summer this figure may increase by 50 to 100 persons, who temporarily reside in Togiak for reasons of employment, fishing, subsistence resource harvesting, visiting and the like.

The present population of Togiak is made up of descendants from earlier residents of Yup'ik villages located near and along Togiak Bay and the shore of the river. In addition, the population is composed of many recent migrants from the Bethel area. Table 7 indicates the area from which Togiak household heads have emigrated.

TABLE 7, PLACES OF BIRTH OF HOUSEHOLD HEADS, TOGIAK, 1983.

Location	Percentage
New Togiak	20 (N=37)
Osviak	16 (N=30)
Central Bering Sea Coast	13 (N=24)
Togiak River	12 (N=22)
Kuskokwim River	11 (N=20)
Bristol Bay	10 (N=19)
Old Togiak	06 (N=11)
Tundra Villages	03 (N=05)
Other	09 (N=16)
TOTAL	100 (N=189)

The population profiles for 1970, 1980, and 1983 (Figure 9, 10, and 11 respectively) depict the demographic trends of Togiak. They reflect a number of patterns that are particularly interesting. Between 1970 and 1983, the population was getting older, from a median age of 14 in 1970 to a median age of 21 in 1983. To a large extent, this may be the outcome of youths over the age of 14 and young adults remaining in the community. This suggests that migration out of the community may be declining, although a decrease in birthrate or increase in life expectancy could also affect median age. The population profiles indicate relative stability in young to young adult male and female cohorts. The sex ratio in the community is skewed, with more males than females.

Single women in their reproductive years are not scarce in Togiak. Interestingly, the rate of reproduction has declined between 1970 and

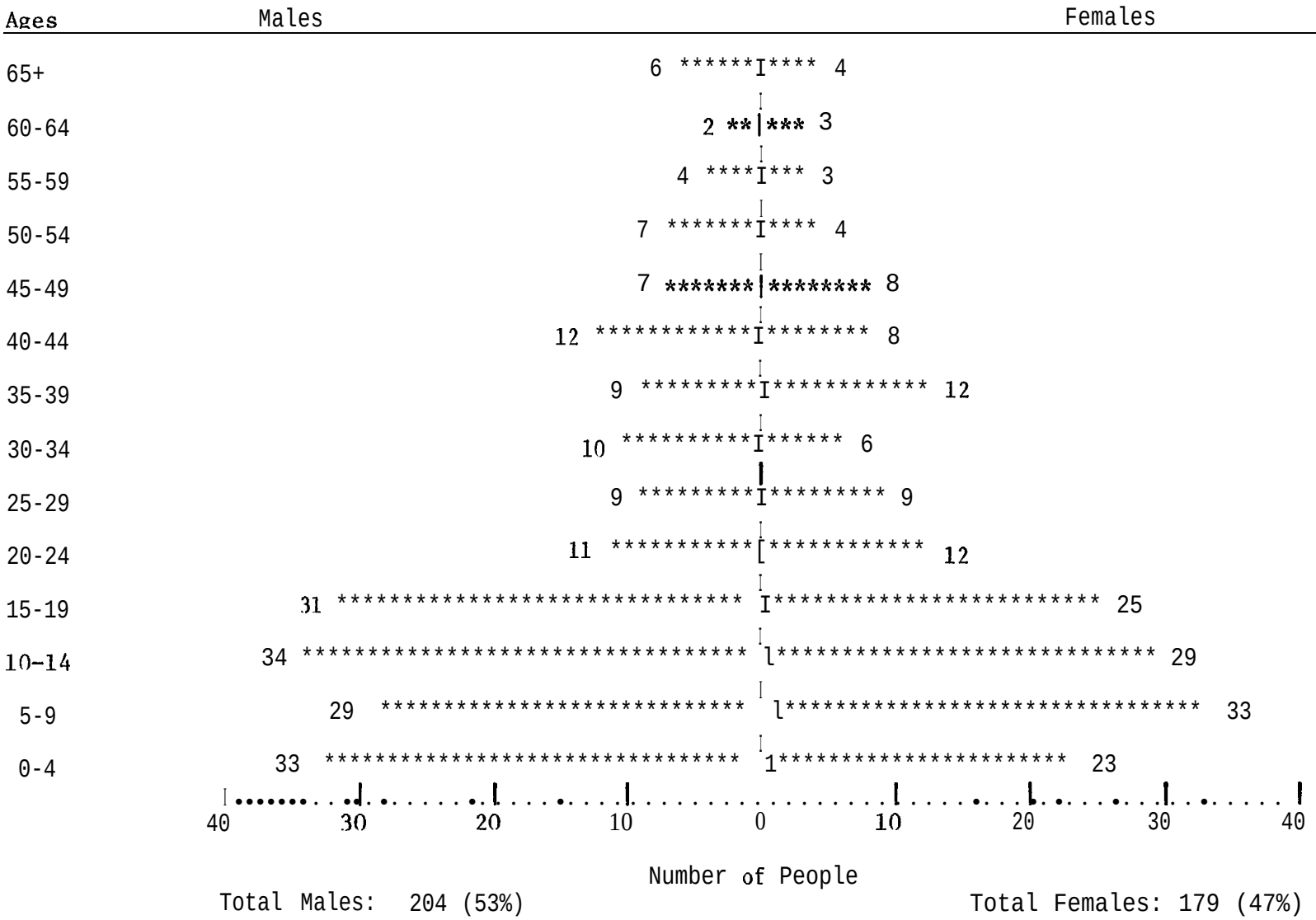

Figure 9. Population profile by age and sex, Togiak, 1970.

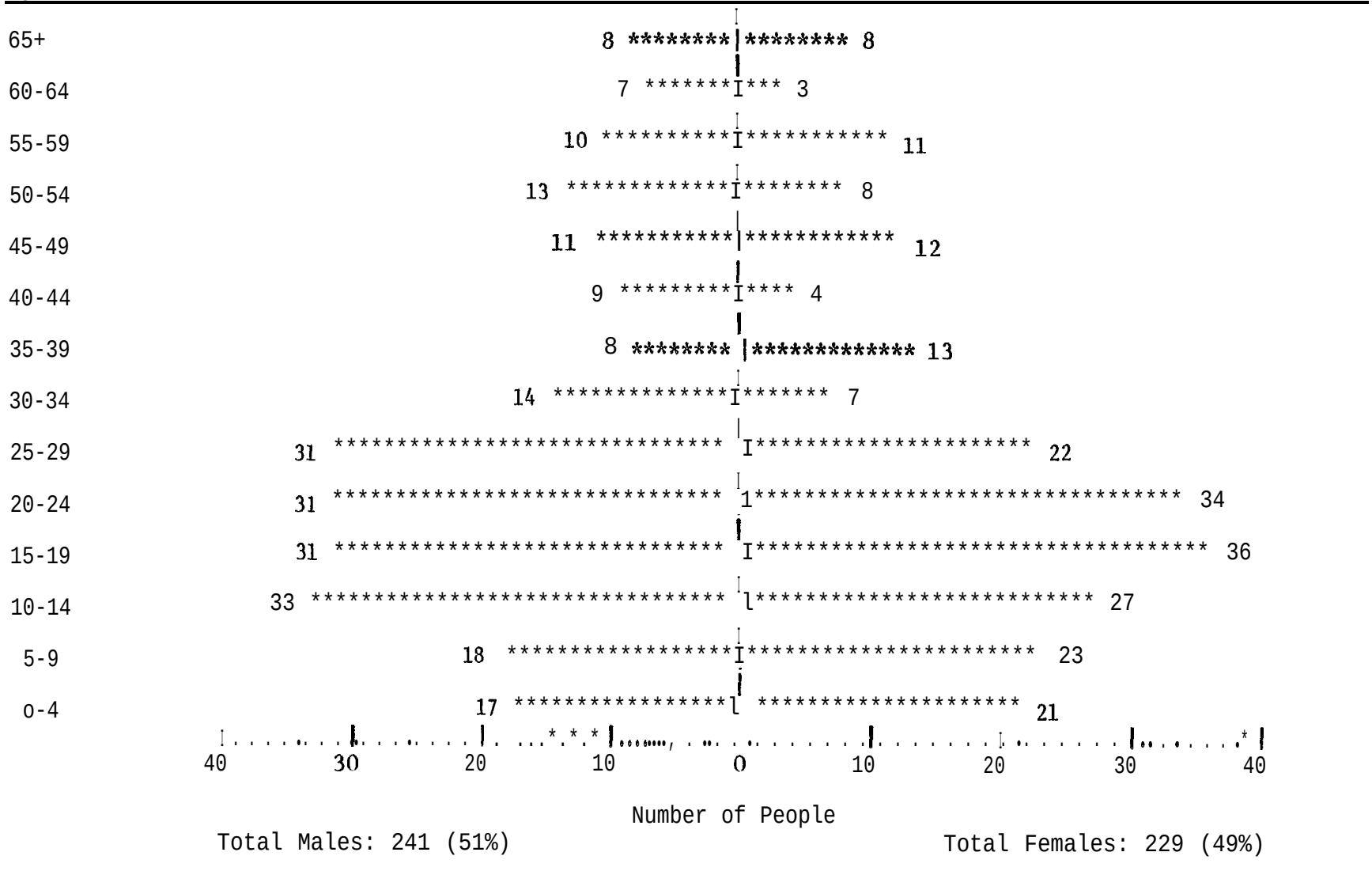

Figure 10. Population profile by age and sex, Togiak, 1980.

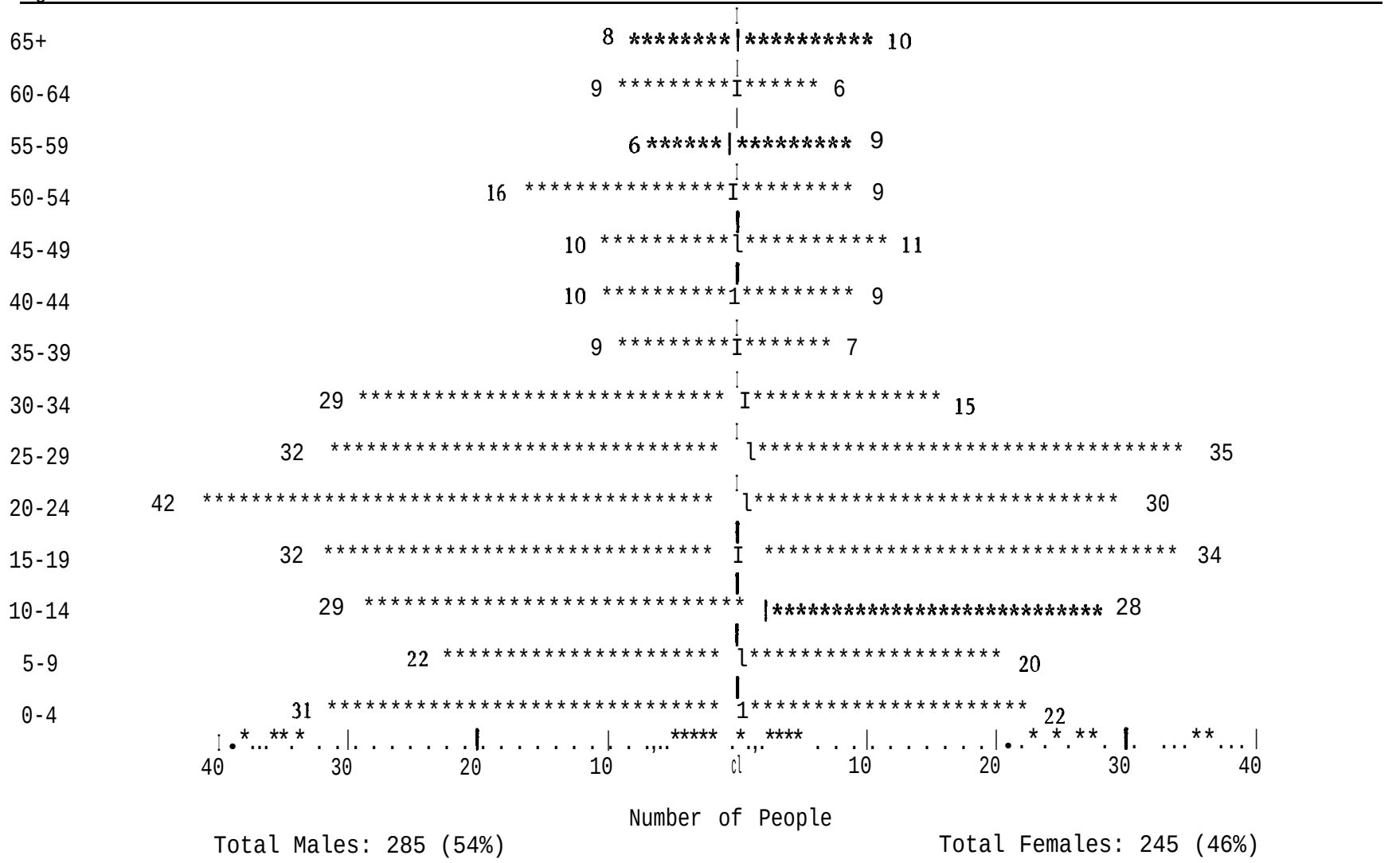

Figure 11. Population profile by age and sex, Togiak, 1983.

1983. This was particularly the case in 1980. The majority of adults between 18 and 35 (reproductively active years) were unmarried. There were single adults under the age of 35 in the case of females and 45 in the case of males. Both Togiak males and females bring spouses to reside in the community after marriage. Of those spouses coming from other communities, 54 percent were females and 46 percent were male. A key feature, reflected in the population profiles and confirmed in interviews, is that the youth of Togiak do not want to leave. Many young people who attend college or a trade school plan to return to Togiak and-apply their skills if possible. Most marriages are exogamous -- that is, with a person from outside the community. Minimally, Togiak should grow steadily through natural increase.

Table 8 indicates a steady growth by natural increase of both New Stuyahok and Togiak. Togiak is somewhat more uniform year to year than

TABLE 8. VITAL STATISTICS, 1968-1979, TOGIAK AND NEW STUYAHOK

	Togiak		New Stuyahok	
Year	Births	Deaths	Births	Deaths
1968	10	3	12	1
1969	8	0	4	1
1970	14	2	9	0
1971	9	2	4	0
1972	13	1	7	2
1973	9	1	5	1
1974	7	3	5	2
1975	5	0	7	2
1976	9	3	9	1
1977	10	2	5	0
1978	10	2	16	2
1979	9	3	6	0
	$\bar{x}$ = 9.4		x = 7.4	
	sd = 2.4		sd = 3.6	

New Stuyahok. This difference in pattern cannot be analyzed with the limited data on marriage gathered in the course of this study.

The current population of Togiak is approximately 544 persons, including temporary residents such as teachers. This population is divided among 116 households. The permanent population of 530 is distributed among 108 households. This core population is the focus of the Togiak analysis in this study. 'Households vary in size and composition, from one person to 13, with a mean of 4.9 persons. As noted previously, between 1970 and 1983, the population was getting older, with a median age of 21, or 6 years older than in 1970. Most of the households are composed of two generations consisting of a husband, wife, and their offspring. However, households are not always the significant units of analysis for subsistence production, consumption, and distribution of resources. Often a number of such households are closely allied, coordinating their strategies in regard to such activities. Many of the households, if operating autonomously, would not have sufficient labor to provide for all their cash and subsistence needs given the economic conditions of Togiak in relationship to the seasonal variability of subsistence resources. In short, there are some households with no viable labor force, particularly those households with very old people and very young children. There are households that have many consumers and a short supply of producers, such as single parent households. Also, there are households where consumers and producers are equally represented.

The ethnic composition of the community remains largely Yup'ik Eskimo with Yup'ik as the language of choice for the majority of

community members. Excluding the temporary school teachers and their families (14 in total), there are 15 non-Natives who have married members of the community or who are living in a Yup'ik family. Of the permanent residents, 98 percent of the population is Yup'ik Eskimo. The dominant language is Yup'ik, since 76 percent of the Togiak students (grades K through 12) speak Yup'ik either exclusively or predominantly, with only 4 percent speaking English exclusively. The latter category includes some recent in-migrants to Togiak and perhaps some offspring of mixed marriages.

Goodnews Bay

The first recorded population for the village at the mouth of the Goodnews River, Mumtrak, was recorded in 1880. In that year and in 1890, the village's population was 162 individuals (Petroff 1884). The 1920 census indicated that the population of Mumtrak had declined to 138 (Rollins 1978). The present village, Goodnews Bay, was founded in the early 1930s with the establishment of a BIA school and a post office at a site located approximately .2 miles northwest of the village of Mumtrak. The population of the community of Goodnews Bay came from both Mumtrak, a Kuskowagmiut village, and from the Chingigmiut village of Kinegnak, which was located approximately 35 miles to the south (Payne et al. 1982). The two different origins of the population of Goodnews Bay may, in part, explain the community factionalism which was observed in the context of this study.

While the population of Goodnews Bay (Mumtrak, and later, Goodnews Bay) has fluctuated over time, according to census statistics (Table 9),

TABLE 9. HISTORIC POPULATION TRENDS, GOODNEWS BAY, 1880 to 1983.[a]

Year	Population	Households
1880	162	
1890	162	
1920	138	
1939	48	
1950	100	
1960	154	
1970	218	
1980	168	40
1981	167	
1982	173	
1983	202	50

[a]Rollins 1978

there were periods of both population decline and recovery over time. These data may reflect the dynamics of migration in and out of the community or the impact of diseases, such as the whooping cough epidemic that occurred in 1940 in which everyone under the age of 15 perished (Payne et al. 1982).

Population profiles for 1970, 1980, and 1983 are presented in Figures 12, 13, and 14 respectively. In examining these profiles and comparing them to the other study communities, it is obvious that Goodnews Bayfs population is growing at a lesser rate than that of the other three study communities. Second, comparison of the 1970 and 1980 population statistics (Table 10) indicates that not only did the size of the population change (in 1980 there were 50 fewer individuals than in 1970, a reduction of 23 percent), but also the composition of the population had undergone transformation. In 1970 the population was composed of 49 percent males and 51 percent females; in 1980 these

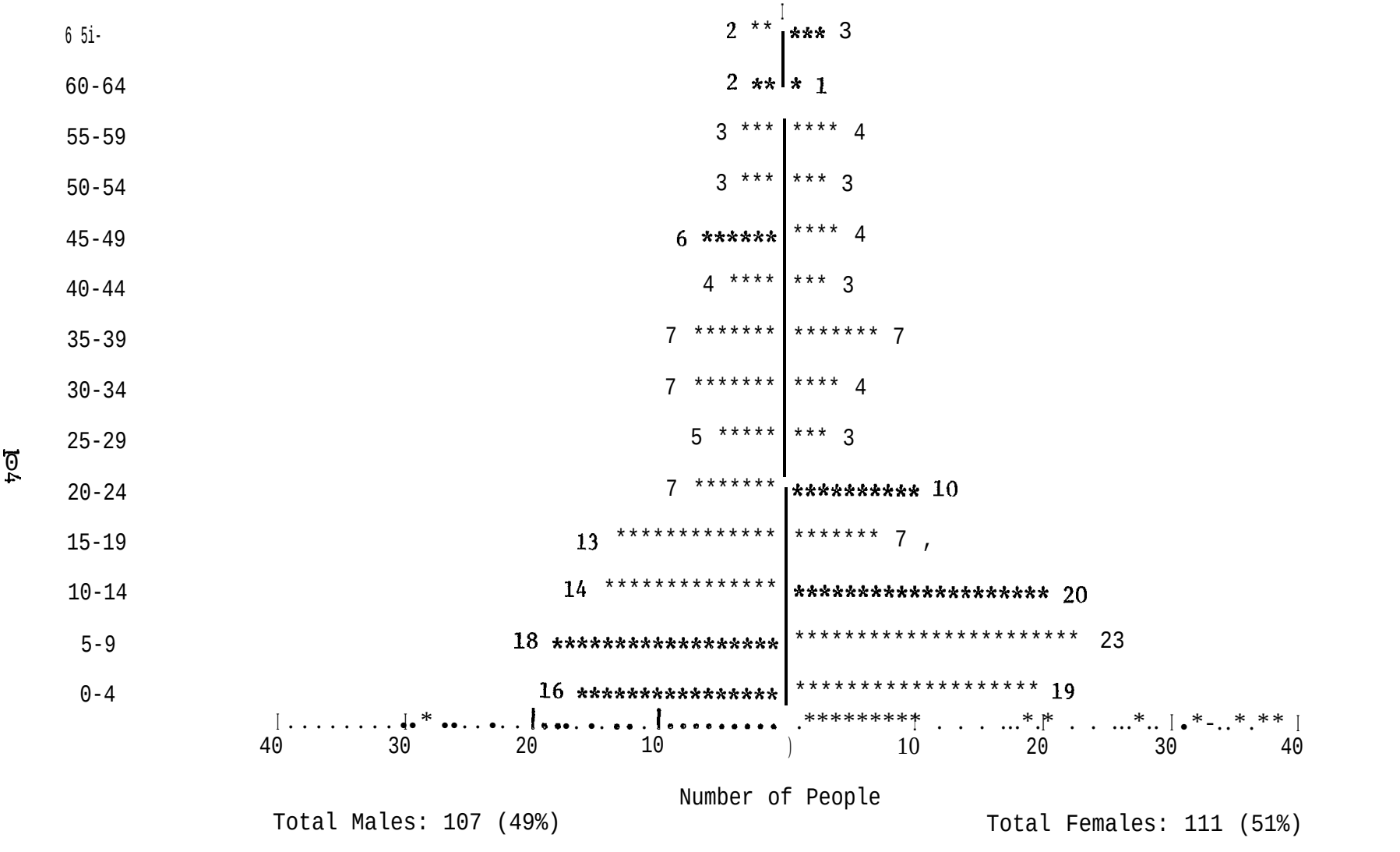

Figure 12. Population profile by age and sex, Goodnews Bay, 1970.

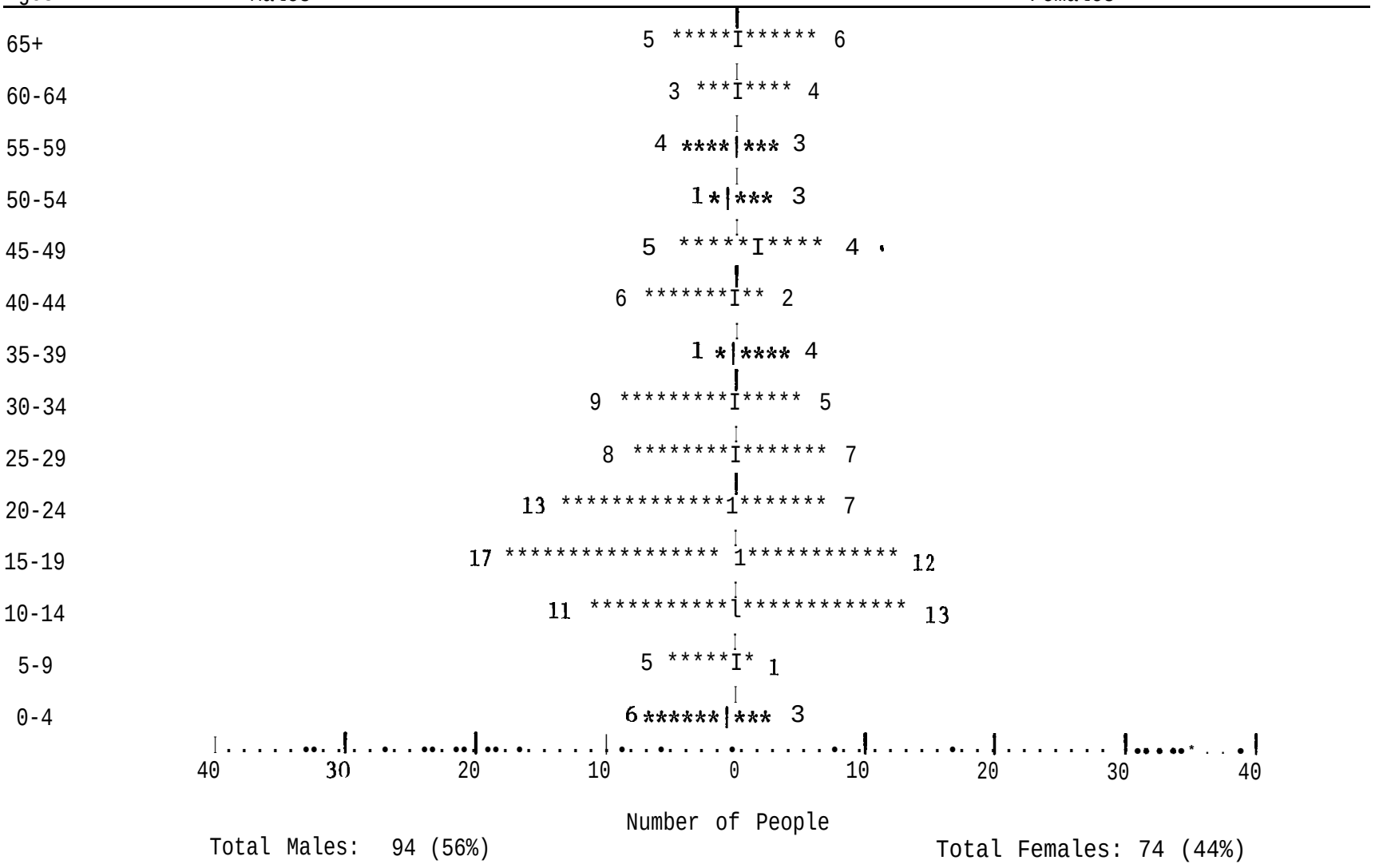

Figure 13. Population profile by age and sex, Goodnews Bay, 1980.

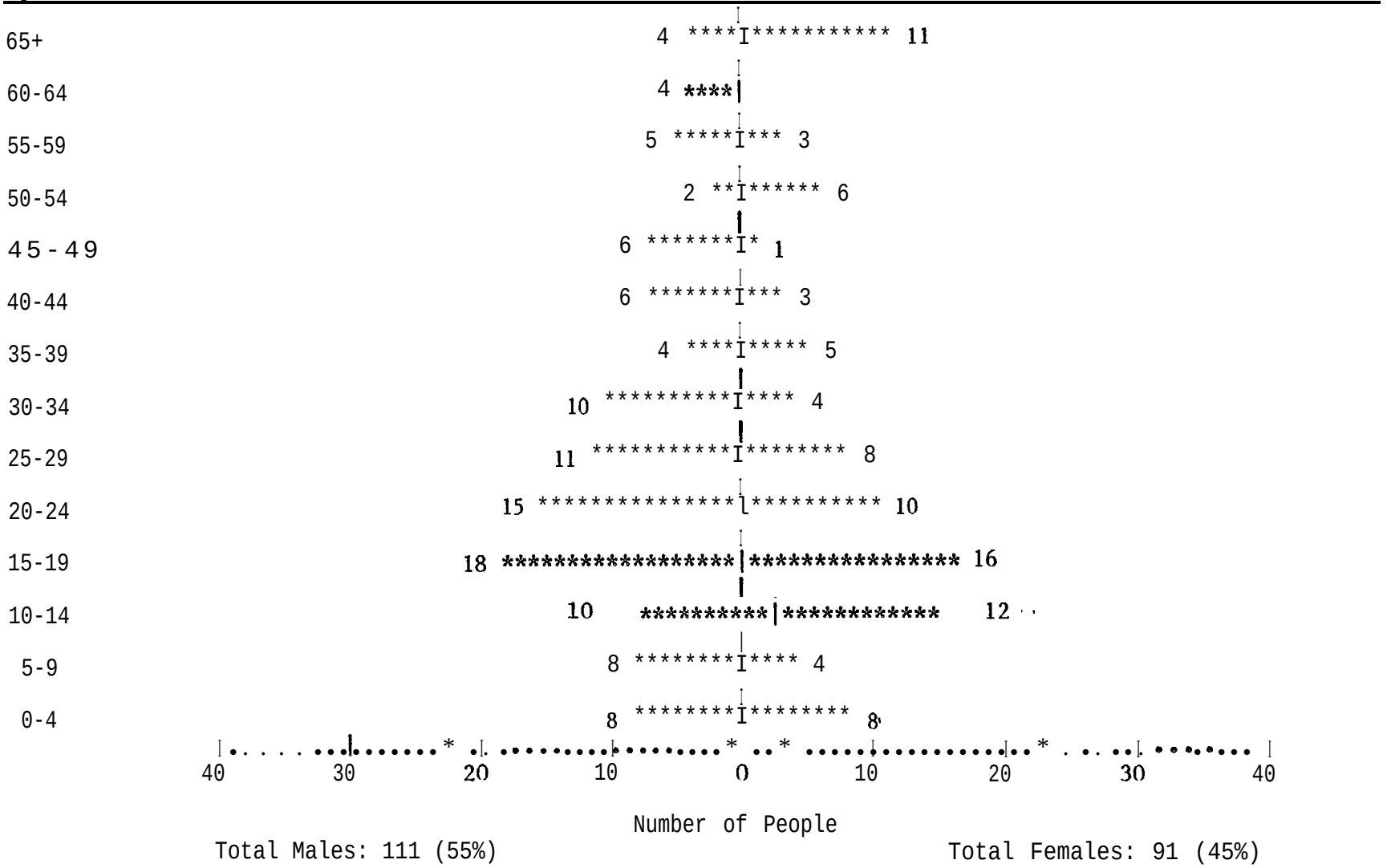

Figure 14. Population profile by age and sex, Goodnews Bay, 1983.

TABLE 10. CHANGES IN POPULATION COHORTS FOR GOODNEWS BAY, 1970 TO 1980.

Age 1970	Age 1980	1970 M	1970 F	1970 T	1980 M	1980 F	1980 T	Changea M	Changea F	Changea T
55 i-	6 5-i-	7	8	15	5	6	11	-2	-2	-4
50 - 54	60 - 64	3	3	6	3	4	7	0	-1-1	+1
45 - 49	55 - 59	6	4	10	4	3	7	-2	-1	-3
40 - 44	50 - 54	4	3	7	1	3	4	-3	0	-3
35 - 39	45 - 49	7	7	14	5	4	9	-2	-3	-5
30 - 34	40 - 44	7	4	11	6	2	8	-1	-2	-3
25 - 29	35 - 39	5	3	8	1	4′	5	-4	-1-l	-3
20 - 24	30 - 34	7	10	17	9	5	14	+2	-5	-3
15 - 19	25 - 29	13	7	20	8	7	15	-5	0	-5
10 - 14	20 - 24	14	20	34	13	7	20	-1	-13	-14
5 - 9	15 - 19	18	23	41	17	12	29	-1	-11	-12
0 - 4	10 - 14	16	19	35	11	13	24	-5	-6	-11
-- --	5 - 9	--	--	--	5	1	6	--	--	--
-- --	0 - 4	--	--	--	6	3	9	--	--	--
	Totals	107 (49%)	111 (51%)	218	94 (56%)	74 (63%)	168	-24	-41	-65

a M = male; F = female; T = total

percentages had changed to 56 percent and 44 percent respectively. Of the 50 individuals lost to the population, 37, or 74 percent, were females. Additionally, within the female cohorts aged 20 to 35 years, there was a reduction of 18 individuals. The corresponding male cohorts lost only four individuals. This loss of potentially reproductive females may explain the decline in the number of children less than 10 years of age between 1970 and 1980 (76 as compared to 15). It would appear that the majority of the outmigrants were females.

A comparison with 1983 data is not possible because of the unequal time interval.

It has been documented that the Yup'ik people of the Yukon-Kuskokwim delta demonstrated strong matrilocal tendencies (Nelson 1899:292; Edmonds 1966:70; Oswalt 1967:203). Ackerman (1983) stated that in 1967 these trends could still be observed at Goodnews Bay. Of the 30 marriages in 1983, only three were composed of females from some place other than Goodnews Bay. Two of these females were born prior to the founding of Goodnews Bay and were married to males who were also from other villages. Therefore, only one of the 30 marriages active in the community in 1983 was between a Goodnews Bay male and a female from elsewhere. The data indicate that in 1983 there still existed culturally advocated matrilocality in Goodnews Bay. Consequently, marriageable females are still instrumental in recruiting males into the community. Thus the recent loss of these females to the population has implications for community growth. Further, there are recent marriages between Goodnews Bay females and Togiak males. These couples are residing in Togiak rather than in Goodnews Bay. Payne et al. (1982) states that such unions were rare in 1967. This apparent

change in the traditional postmarital residence pattern of the village of Togiak might in part explain the rapid growth of that community and the relatively slow growth of Goodnews Bay.

In 1983 there were 50 households in Goodnews Bay with a mean size of 4.0 persons. The ethnic composition of the population consisted of three non-Natives and the remaining were Yup'ik. The majority of the households consisted of two generations, including married pairs and their offspring and other two-generational combinations. Households varied in size and ratio between consumers and producers, with some households unable to supply their own labor, as was noted in Togiak. In terms of household structure, Goodnews Bay is similar in form and pattern to the other study communities.

New Stuyahok

New Stuyahok historically has reflected a steady growth from the 1950s as depicted in Table 11. Its largest increases came in the 1960s and 1970s as a result of in-migration, natural increase, and marriages to outsiders who came to reside in New Stuyahok.

TABLE 11. HISTORIC POPULATION TRENDS, NEW STUYAHOK, 1950-1982

Year	Population
1950	88
1960	145
1970	216
1980	331
1981	327
1982	337

Sources: U.S. Department of Commerce, Bureau of the Census 1950-1980; for 1981 and 1982, data came from the New Stuyahok village census, which included non-permanent residents such as teachers.

The current population of New Stuyahok is composed primarily of western Yup'ik Eskimo. Of the 331 residents in 1980, the split between male and female was balanced (51 percent and 49 percent respectively). It is a young population with a median age of 20. There are 55 households in the village, excluding the non-resident school teachers, with a mean size of 5.5 persons. Of the 304 members of permanent households, three (1 percent) are not of Yup'ik descent.

The population profiles for 1970 and 1980, presented in Figures 15 and 16 respectively, are similar to that of Togiak. The 1970 profile is characterized by a median age of 14, with only 22 percent of the population over the age of 30 and only 3 persons over the age of 65. The 1980 population profile indicates a median age of 20, with 31 percent of the population over the age of 30 and only 18 persons over the age of 65. In general, the population of New Stuyahok is getting older, mortality has declined, and the birthrate is low in relationship to the number of potentially reproductively active adults in the community. In sum, the demographic pattern in New Stuyahok appears to be similar to that of Togiak. There was no complete census of New Stuyahok done in conjunction with this study, so a 1983 population profile could not be included.

Quinhagak

Quinhagak is an old village whose origin predates historic contact. Historically, it has been one of the largest communities along Kuskokwim Bay. Quinhagak's population has grown steadily according to

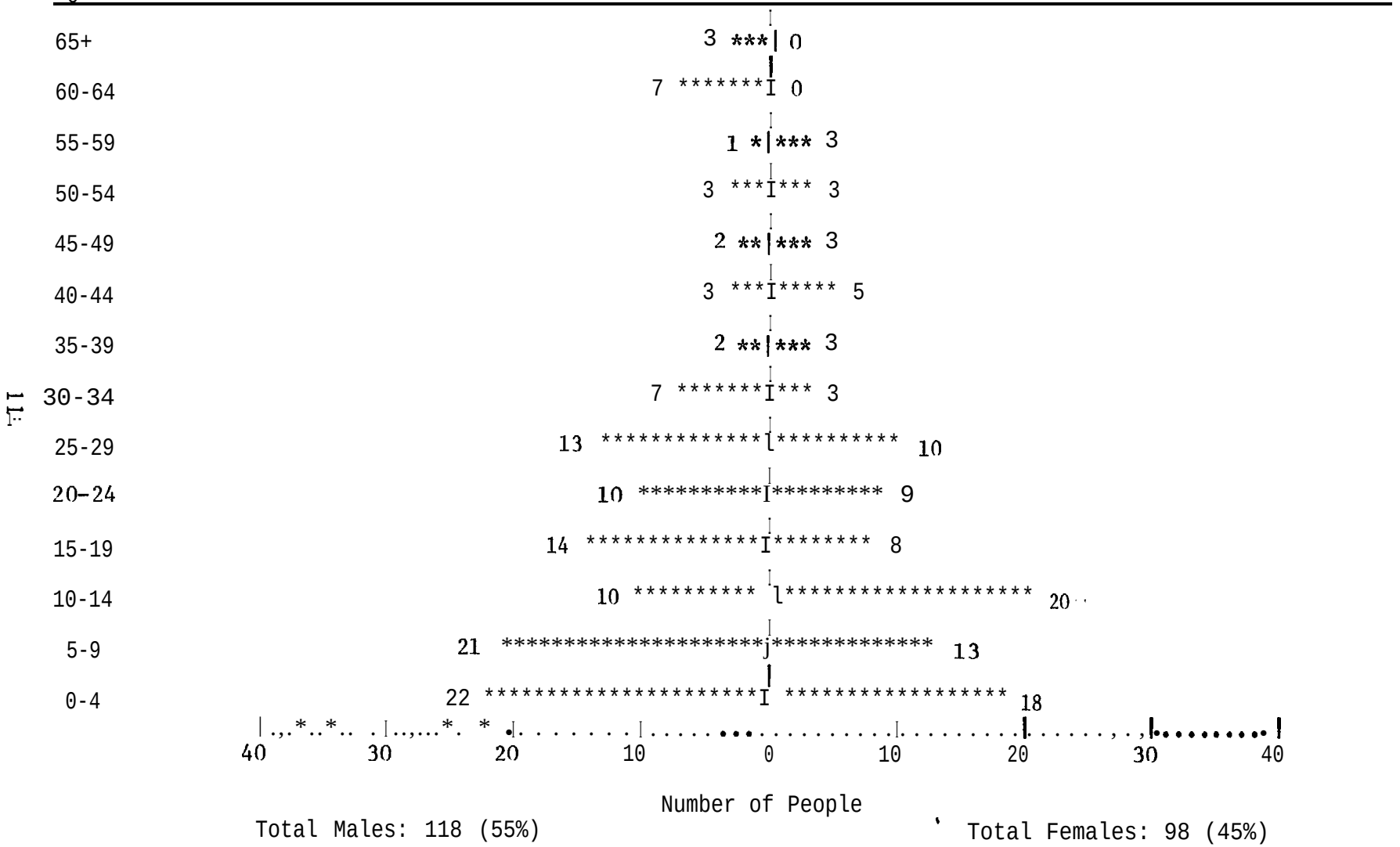

Figure 15. Population profile by age and sex, New Stuyahok, 1970.

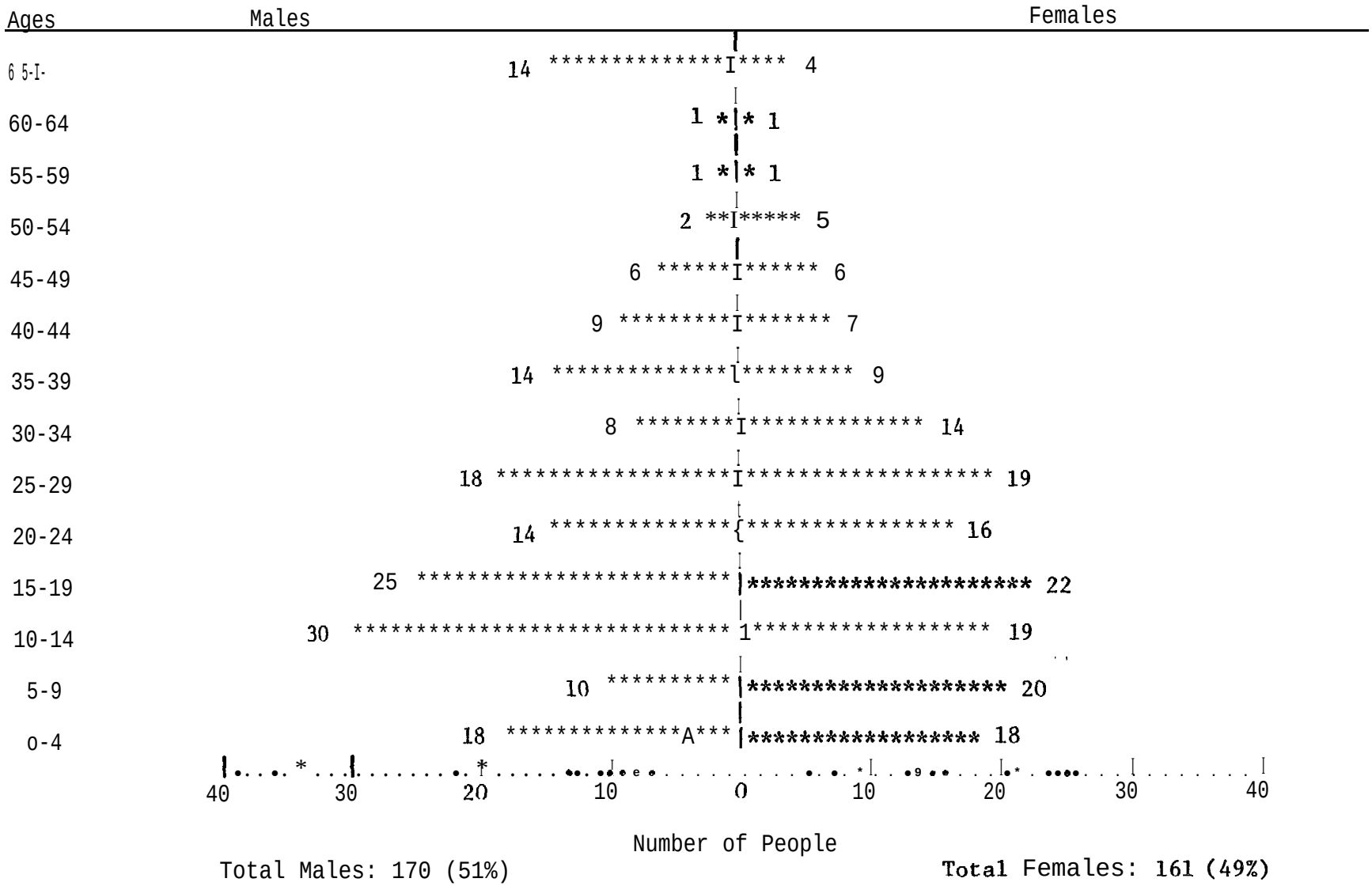

Figure 16. Population profile by age and sex, New Stuyahok, 1980.

TABLE 12. HISTORIC POPULATION TRENDS, QUINHAGAK, 1880-1982.[a]

Year	Population
1880	83
1890	190
1900	201
1910	111
1920	193
1929	- 230
1939	224
1950	194
1960	228
1970	340
1980	412
1982	427

[a]From U. S. census statistics, except for 1982 which came from a census conducted by the City of Quinhagak.

United States census statistics, shown in Table 12. From its first enumeration in 1880 from a community of 83 persons in 6 houses and one qasgiq (the community house which also served as the men's residence), to a community of 427 persons residing in 97 households, according to a 1982 census conducted by the City of Quinhagak.

To a large extent, Quinhagak has grown through a consolidation of several other settlements within the coastal plain of southern Kuskokwim Bay (Rollins 1978). Table 13 lists the communities and total population from Eek River to Cape Newenham as enumerated in 1880, 1890, and 1980. Unlike the censuses for the intervening years, the counts for these three years were relatively complete within the region. In 1880 there were at least 12 villages ranging in size from 8 to 162 persons, with a minimum total population of 878 persons. In 1890 there were 11 villages enumerated with a total of 1,030 persons.

TABLE 13. POPULATION OF SOUTHERN KUSKOKWIM BAY, FROM EEK RIVER TO CAPE NEWENHAM, 1880, 1890, and 1980[a]

Approximate Location	Community	1880	Community	1890	Community	1980
Eek River	Akooligamute	162	Ahguliagamiut	106	Eek	228
	Kakhuiyagmute	8				
	Shovenagamute	58	Shovenagamute	62		
Apokak Slough	Apokagamute	94	Ahpokagamute	210		
	Itiutagamute	40	Chimingyangamute	40		
Kuskokwak Creek	Kuskokvagmute	24	Kuskohkagamiut	115		
Warehouse Creek	Shineyagamute	40	Shinyagmiut	7		
Kanektok River	Quinehahamute	83	Quinhaghmiut	109	Quinhagak	412
Arolik River	Agaligamute	120	Aguliagamiut	94		
Jacksmith Bay	Takiketagmute	21				
Carter Bay	Kl-changamute	18	Kl-changamiut	49		
Goodnews Bay	Mumtrahamute	162	Mumtrahamiut	162	Goodnews Bay	168
Goodnews Bay					Platinum	55
Security Cove	Tzahavgamute	48	Kinegnagmiut	76		
Total Population		878		1,030		863

a From United States census Information (Rollins 1978).

In 1980, there were 4 communities with a combined population of 863 persons. Thus, the past century has seen a reduction in the number of communities in the area. These figures also show that whereas Quinhagak's population has increased five-fold, the contemporary population along southern Kuskokwim Bay is about the same as it was in 1880.

Although precise regional trends cannot be reconstructed from historic records, it seems likely that population levels of southern Kuskokwim Bay communities have fluctuated markedly throughout the past century. Major epidemics are known to have swept through the region, repeatedly devastating local communities time and again. Major documented epidemics include smallpox in 1842-44; measles and influenza in 1900; Spanish influenza in 1919; and tuberculosis in the 1930s-50s. The 1900 epidemic alone probably reduced local populations by at least 25 percent (Wolfe 1982). The populations apparently have continued to rebuild between these periodic disasters through natural increase and in-migration of people from the north. It is only now in the 1980s that the region's population appears to have recovered to its 1880 level. It may still be below the population levels that existed prior to the 1842-44 smallpox epidemic.

Many of the adults currently residing in Quinhagak were born and raised in other area communities, especially the villages previously located at Jacksmith Bay and along the Arolik, Kuskokwak, and Apokak rivers. Quinhagak became a focus for the area's population when the Moravian church established a school there in the late 1800s. With the vigorous enforcement of mandatory public school attendance for

school-aged children in the 1950s, most families still residing in smaller, dispersed settlements along the coast were forced to relocate to Quinhagak, Eek, Goodnews Bay, or Platinum. Thus, Quinhagak's growth has not been due primarily to natural increase, but through a consolidation of many small, spatially dispersed settlements.

The contemporary population pyramids in Figures 17 and 18 depict a healthy, expanding population at Quinhagak. The broad base of the population shows that Quinhagak is currently growing by natural increase. The balanced sex ratio (48 percent female and 52 percent male in 1980) indicates that overall there has not been a disproportionate loss of males or females through death, out-migration, or out-marriage. However, in fact more women than men have been lost to Quinhagak between 1970 and 1980. Following lo-year cohorts during this decade, Table 14 shows an average decrease in women by 14.8 percent and an average decrease in men by only 5.6 percent. What proportion of the attrition is due to death or out-migration is not known. The relatively higher declines among the cohorts in their 20s and 30s and lower declines among the cohorts in their 40s and 50s suggest absences from the community among a segment of the young adult population, perhaps due to schooling and employment, and perhaps returns to the community at a later date. It also may reflect higher death rates in the young adult group. Overall, Quinhagak appears to be a healthy, growing rural community.

Quinhagak's population is primarily of Yup'ik Eskimo descent. Of the 412 individuals enumerated in the 1980 census, 402 (97.6 percent) were Alaska Natives. Household sizes are relatively large by United

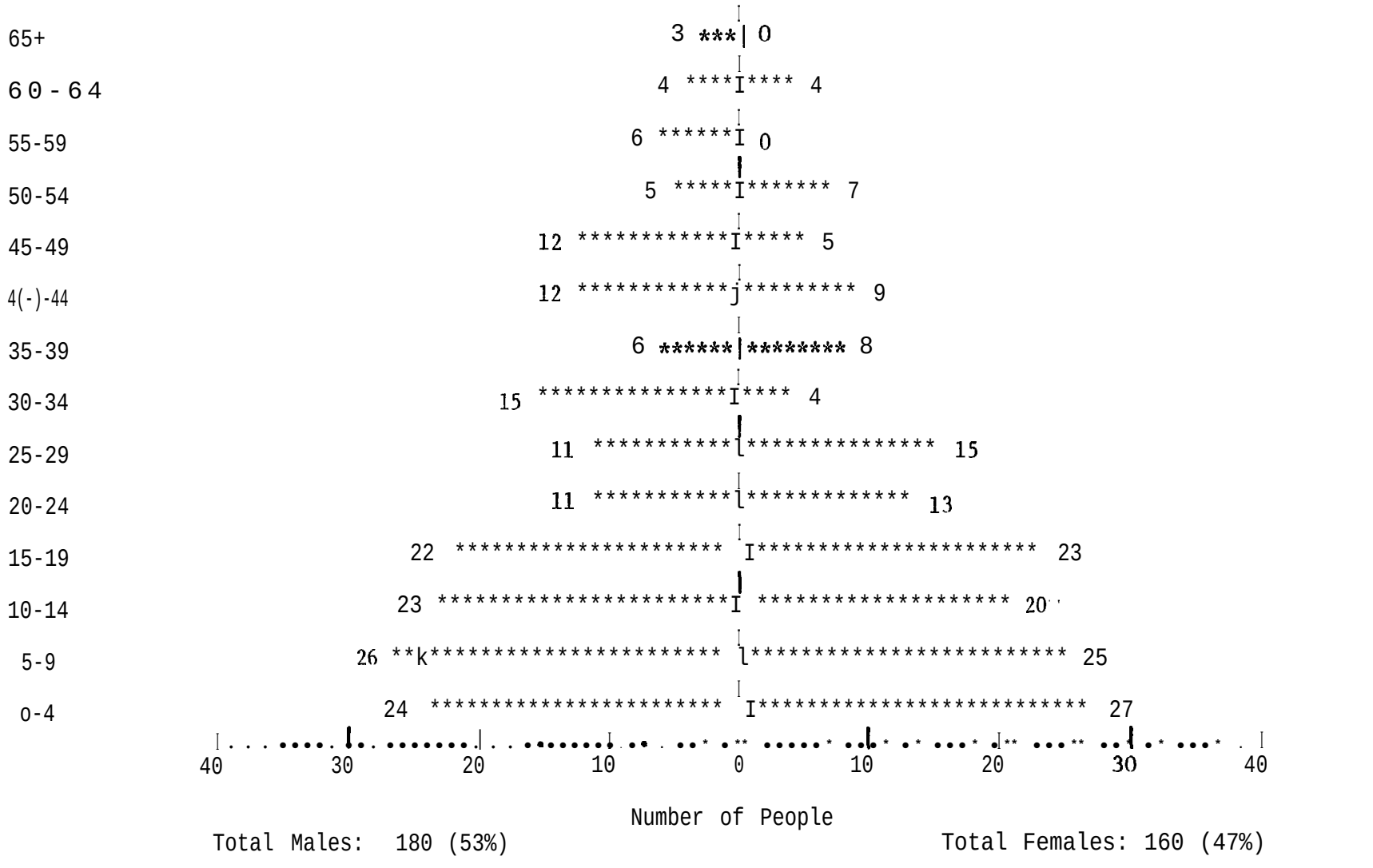

Figure 17. Population profile by age and sex, Quinhagak, 1970.

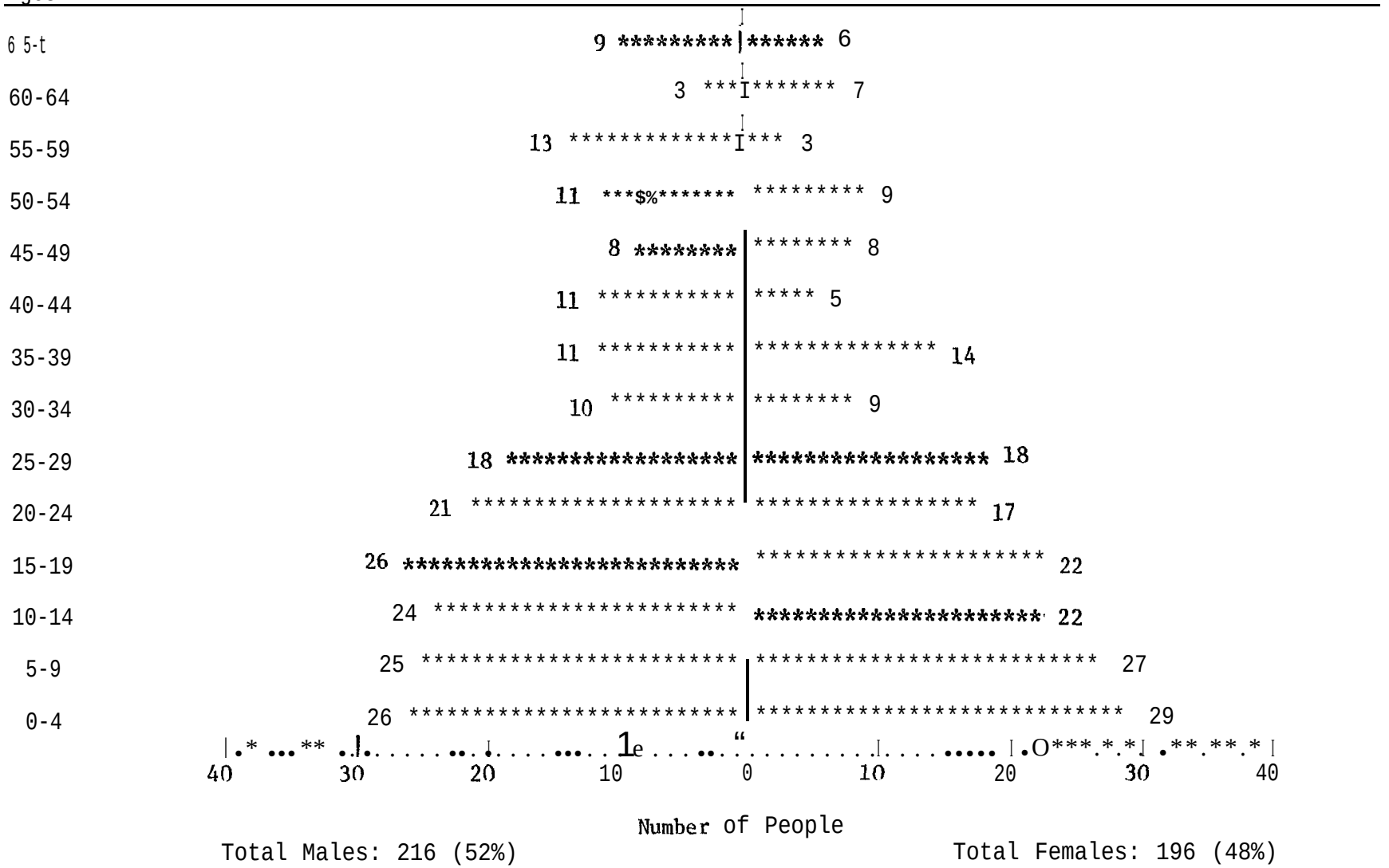

Figure 18. Population profile by age and sex, Quinhagak, 1980.

TABLE 14. CHANGE IN SIZE OF TEN-YEAR COHORTS BETWEEN THE 1970 AND 1980 CENSUSES, QUINHAGAK

Ten-year Cohorts, 1970/1980	Males 1970	Males 1980	Percent Change	Females 1970	Females 1980	Percent Change	Total 1970	Total 1980	Percent Change
0-9 /10-19	50	50	(-).(-)%	52	44	-15.4%	102	94	- 7.8%
10-19/20-29	45	39	-13.3%	43	35	-18.6%	88	74	-15.9%
20-29/30-39	22	21	- 4.5%	28	23	-17.9%	50	44	-12.0%
30-39/40-49	21	19	- 9.5%	12	13	+ 8.3%	33	32	- 3.0%
40-49/50-59	24	24	0.0%	14	12	-14.3%	38	36	- 5.3%
Totals	162	153	- 5.6%	149	127	-14.8%	311	280	-10.0%

States standards: 5.0 persons per household according to the 1980 census, and 4.4 persons per household according to the 1982 Quinhagak City census. Mobility between houses and fluidity among household members have been relatively high since 55 new housing units were constructed in 1979, freeing up a number of old houses in the old village. Unmarried sons and daughters frequently take up residence in the older units, physically but not functionally separate from their parental houses. Consequently, the 97 houses are actually an inflated count of the number of independently functioning household units.

COMMUNITY PROFILES

Togiak

The village of Togiak was incorporated as a second class city in 1969. It has two governing bodies: a city council and a traditional council. The city council is composed of six members from which the mayor and vice president are elected and the secretary and city treasurer are appointed. Members are elected annually to the council for staggered terms. The council meets at least once weekly during the winter and less regularly during the summer fishing months. Municipal powers assumed by the city government include local control over streets, sewers and sewage treatment facilities; police protection and detention facilities; water service; community centers; garbage and solid waste collection and disposal; and fire protection service and facilities. Togiak also assesses a two percent sales tax which is used to cover city expenses. Finally, the city receives and administers funds from

state and federal revenue sharing programs, municipal cash assistance funds, proceeds from the state's raw fish tax, funds from health and social services, and a share from the electrical and telephone cooperatives.

The traditional or IRA (Indian Reorganization Act) council also has governmental authority as an official representative of the local Native population. In the Togiak case, the IRA council is composed of the same members as the city council, and members switch hats, depending on the issues. Although the traditional council is eligible to administer various federal programs, it leaves such administration to the regional corporation, Bristol Bay Native Association (BBNA). This includes programs such as local health care, college assistance programs, social services, employment assistance, and job training programs. To date the traditional council has not assumed its potential functions, but has left much of its authority to receive and administer programs to other organizations.

The third political organization with some governing authority and legal status is the village corporation, Togiak Natives Ltd. (TNL). It is a product of the Alaska Native Claims Settlement Act (ANCSA) of 1971. It has a board, elected from its membership, consisting off four members and a president. TNL's primary authority is over lands granted to its stockholders under ANCSA, which were equal to 6.56 townships or 151,215 acres of federal lands. The village corporation has received interim conveyances of 143,725 acres as of April 1981. TNL owns the surface rights to the land and Bristol Bay Native Corporation, the regional profit corporation, owns subsurface rights. Currently, TNL

has been using corporation funds to invest in a building which will house a retail market and a fish processing plant.

To date the conveyed ANCSA includes the shore and the lands inland from Tongue Point to Kulukak Bay. This includes a vast inland range, which ends upriver approximately 30 miles at the old village site of Kashiagmiut. The conveyed land is bordered by the Togiak National Wildlife Refuge, an area used quite extensively by all of the communities in the region for hunting, trapping, and other subsistence activities. The village of Togiak is a federal townsite of 76.10 acres, with certain sites deeded to residents and to the city. Finally, there are approximately 71 Native allotment claims located near Togiak that were made under the provisions of the Alaska Native Allotment Act (ANAA) of 1906. Under ANAA, a Native could receive up to 160 acres of land providing the claimant could show five years of continuous use and occupancy. No claim has been accepted since 1971, as ANAA was repealed with the passage of ANCSA. In summary, the lands near and around Togiak are controlled by Natives under ANCSA and through their regional and village corporations. The bordering area is a wildlife refuge under the control of the federal government. Individual allotments through ANAA are located in various areas of the Togiak drainage and bays.

Housing is important to consider in the context of this study, because it potentially places a financial obligation on a household, thereby necessitating a minimum cash income. All of the houses in Togiak are of frame construction. Between 1970 and 1980, the number of houses in the community increased by 57 percent. Most of these houses were constructed after 1976. The housing boom in Togiak not only

provided needed housing, but it provided jobs and training for those who needed both. Currently, Togiak has a relatively large force of skilled carpenters. This pattern was the outcome of a BIA and local policy to give community residents priority access to construction jobs.

Generally, there are three types of houses in Togiak: state or federally funded houses; owner-financed houses, which are highly variable in size and design; and the pre-subsidized houses, which are small and of plywood construction. Owner-financed houses are usually quite large, ranging in size from 1,000 to over 3,000 square feet. Generally, these homes are owned by individuals with high earnings, whether from fishing or from some other source or combination of sources. It appears from all indications that housing is a major investment in Togiak, a way in which surplus capital is spent.

Presently, housing materials may be ordered through two local entrepreneurs, and payment does not have to be made until after the fishing season. Orders are taken in the spring and the materials are shipped from Seattle by barge. This indicates that there is some *'target marketing" for fishermen, in that they plan in advance, to some degree, their major cash requirements. The village corporation (TNL) contributes the land, if required, on which the new houses will be constructed. It is estimated that eight new houses will be built in 1983-84 in Togiak.

Non-resident housing in Togiak includes six teacher residences, two bunkhouses for fish buyers, two TNL trailers, and large, newly completed living quarters for construction crews, which may be

fashioned into a hotel in the future. Additionally, the city has overnight and short-term accommodations for visitors in the water pump house .

New Stuyahok

The village of New Stuyahok was incorporated as a second class city in 1972. It has a seven-member city council led by a mayor, vice-mayor, and secretary/treasurer. These positions are selected from the council, which is elected for staggered terms. Elections are held annually each October. The City of New Stuyahok has an administrator, which is a salaried, full-time position. The city council holds regular meetings, during which they make decisions concerning the allocation of funds and other city concerns. As a second class city, New Stuyahok is eligible to assume various municipal powers. Those functions assumed by the city include, but are not limited to, authority over streets and sidewalks; sewers and sewage treatment facilities; health services and the clinic, a part of police protection (shared with the state); and water, garbage systems and solid waste collection facilities; city office, and developing fire protection service and facilities (Fall 1983). New Stuyahok's main source of revenues comes from its participation in state and federal revenue sharing programs, the state's municipal assistance program, health and social services funds, and energy assistance.

New Stuyahok's Native population is represented by a traditional council (IRA). The council consists of a president, vice president,

secretary/treasurer, sergeant-at-arms, and three members. This seven-member council is not the same as the city council, and there is no overlap in membership. The traditional council is eligible to administer a variety of federal programs, but, as in the Togiak case, it has relinquished its authority to BBNA. This traditional council has not actively employed its authority outside of community cultural and social concerns, but rather has left it to other organizations.

New Stuyahok has a political body which is associated with the local Russian Orthodox Church. Although the church council has no formal authority outside of church matters, it does have some force in the community in regard to local, Native concerns. The church council consists of a chief, a second chief, and lay readers. The two major positions were selected by community consensus and the Russian Orthodox priest many years ago. The church council is similar to a group of elders. This council and its influence are unique to New Stuyahok and not found in the other study villages.

Another political/governmental organization is the village corporation, Stuyahok Ltd., which consists of a board elected from the membership (and president and four members). Its main governmental function is concerned with the conveyance and administration of their entitlement of 115,850 acres of land under ANCSA, of which 107,680 acres have been conveyed to the village corporation.

All of New Stuyahok ANCSA lands lie along the Nushagak and lower Mulchatna rivers. They are bordered downriver by village selections of Ekwok and upriver on the Nushagak by Koliganek's selections. Lands to

the east and west off the river are either state patented or selected lands. No specific data on Native allotments were gathered in the context of the study, but some New Stuyahok residents have allotments as far up the Mulchatna River as Swan River. The New Stuyahok summer salmon fish campsite at Lewis Point was selected by the Dillingham Village Corporation. However, title is being transferred to New Stuyahok family "associations" who use the area (under ANCSA 14c provisions).

Most houses in New Stuyahok are owner-built and of frame construction. A few old log or roughcut lumber homes remain in use from shortly after the settlement of the community in the 1950s. During 1982 and 1983, almost every older dwelling was refurbished for use, mostly by younger couples, due to the housing shortage in the community. There was an Alaska State Housing Authority (ASHA) funded building program in 1971 and 1972, during which 17 homes were built. Since that time, all new homes have been owner-financed. The most recently built owner-financed homes were constructed after good fishing years in 1978 and 1979 by relatively younger, successful fishermen. There is a plan to construct 30 new federally-funded (HUD) houses in the community during 1984 and 1985.

Goodnews Bay

The City of Goodnews Bay was incorporated as a second class city in 1970. It has a seven-member city council, which includes a mayor and vice mayor. In 1983 only two of the seven members were males. In

addition to the city council, there was also a seven-member traditional (IRA) council and a secretary, but in the spring of 1983, only four of the seven council positions were filled.

Neither of the councils were meeting regularly in spring and summer 1983, and it was frequently difficult for the councils to obtain a quorum. The lack of a functional "western" governmental system was, in part, reflected by the minimal number of grants and capital improvement projects awarded to the community. Field data suggest that community factionalism may be a factor in the level at which local government organizations were functioning in 1983.

Under ANCSA, the community of Goodnews Bay selected 115,200 acres under section 12(a) and 31,8,82 acres under section 12(d). To date, no interim conveyance of Goodnews Bay land has occurred. The lands selected are located along the north and middle forks of the Goodnews River, along the north shore of Goodnews Bay, and along the Bering Sea coast northeast of Goodnews Bay. Although specific data on Native allotments were not gathered in the context of this study, field data suggest that there are few Native allotments in the Goodnews Bay area.

Patterns of land "ownership" and therefore, the location of houses in the community, are based upon kinship affiliations. In spring 1983, most of the residences were less than 15 years old, although a few older houses were still occupied. Houses are generally located adjacent to existing structures belonging to a family. In many cases, several kinsmen have had new houses constructed in close proximity at a new site in the community.

Table 15 presents data on Goodnews Bay housing in 1983.

TABLE 15. SURVEY OF OCCUPIED DWELLINGS IN GOODNEWS BAY, SPRING 1983.

House Type	Number
Tarpaper-covered small structures (less than 800 square feet)	8
Tarpaper-covered large structures (more than 800 square feet)	4
Frame houses	4
Government housing 1970-1975	19
Government housing 1976-1980	4
Government housing 1981-1983	11
Total housing units	50

In addition to the 50 occupied dwellings, there are approximately 19 unoccupied habitable dwellings in the community. The village corporation has a duplex and four apartments for rent to non-permanent community residents or visitors. The majority of the newer homes in Goodnews Bay were obtained through federally-subsidized housing programs.

Quinhagak

The Native village of Quinhagak was incorporated in 1948 under the Indian Reorganization Act. Currently, Quinhagak is a second class city represented by two governing bodies -- a seven-member IRA council and a seven-member city council. In addition, a five-member board governs the

business of the Native profit corporation, Qanirtuuq Inc., formed under ANCSA. Tenure of board members is one year, while city council terms are three yearns. There is also a land planner hired by Qanirtuuq Corporation and a city planner working for the city council.

As of May 1983, there was not much overlap among members of the three bodies. The 19 positions were held by 17 different individuals. Thus, unlike Togiak where city and IRA business is conducted by essentially the same core of persons, in Quinhagak authority is dispersed more widely among the community's population.

The division of responsibilities among the three governmental bodies at Quinhagak is similar to that at Togiak. The city council has assumed control over streets, water, sewage, police, detention facilities, community center, garbage and waste disposal, and fire protection. The city has been aggressive in securing grants for capital improvement projects, and receives and administers funds from state and federal revenue sharing and municipal assistance programs. The tribal council considers major decisions affecting the Native community, especially concerning lands and subsistence, but largely leaves program administration to the city council, board, and the region's Association of Village Council Presidents (AVCP). The Qanirtuuq board handles profit corporation activities, especially land conveyances, the corporation store, community fuel and oil supply, and local development ventures. Of the three groups, the city council is probably the most active on a monthly basis.

In addition to the tribal, city, and corporate bodies, community authority is vested in a collectivity of "elders" (tegganeq) . The

bilaterally extended kinship groups within the community commonly contain one or several persons recognized as elders -- the eldest heads of the family line or positions associated with the church organization. In Quinhagak, elders are accorded high respect and carry considerable weight of authority in particular matters of social life by virtue of their age, knowledge, and experience. Pronouncements made by elders generally carry influence within their respective kinship lines and in the community as a whole. Elders may occasionally join together in deliberative action, but more typically function singularly. The number of persons recognized as elders is variable, as these are statuses acquired with advancing age, experience, and personal qualities, and not voted offices, At least 13 individuals were identified to the researcher as elders in May 1983.

Land ownership in the southern Kuskokwim Bay region resembles a patchwork quilt. Ownership and control of the lands, waters, and resources are divided in a complex jural web among state, federal, Native, and private parties. The land system is relatively new and evolving, being spearheaded within the past two decades through the procedural requirements of ANCSA. Boundaries, land classifications, and jurisdictions exist on paper and not on the landscape. The implications of the system on local people as yet belong to a speculative future.

On the ground, land use in the region still follows traditional and customary systems of land use and occupancy, described more fully in Chapter 8. Residents typically are aware that the land about them has been subdivided and classified on paper by outsiders, land that

traditionally has been recognized as home territory. But typically, boundaries are not known, nor are the special rules accruing to each land class understood.

The formal land system is still evolving. From ANCSA regulation, the Native village of Quinhagak has interim conveyance to 103,052 surface acres. Calista Corporation, the regional profit corporation for the Yukon-Kuskokwim delta, has interim conveyance to the subsurface lands of the community's surface holdings. Quinhagak's land selections include approximately the lower 20 miles of the Kanektok River drainage; several miles of coastal lands, including the Kanektok and North Arolik river mouths; and the section of the Arolik River between the coast and mountains.

Interim conveyance documents, which transfer the surface and subsurface estates, indicate that the bed of the Kanektok River is excluded from Native holdings. The U.S. Bureau of Land Management (BLM) has administratively determined that the portion of the Kanektok River within the Native village holdings is navigable and therefore owned by the State of Alaska. By federal law, the state is entitled to the bed of navigable waterways and owns the natural resources on and under the beds of those waterways. Should upstream portions of the Kanektok River also be determined navigable, additional land beneath the river could be transferred to state ownership. By law, the state is entitled to periodic point easements at intervals along the banks of navigable rivers. These have not as yet been determined along the Kanektok River.

In addition to interim conveyed Native lands, there is a group of

individual Native land selections for future conveyance, including the coastal area between the south mouth of the Arolik River and Jacksmith Bay, and at least 33 non-contiguous allotment sites along the Kanektok River within the Togiak National Wildlife Refuge (NWR). A large portion of the allotments filed by Quinhagak residents are pending litigation. The claims were filed, but lost and unprocessed before the filing deadline.

Two major federal wildlife refuges were established by the Alaska National Interest Lands Conservation Act (ANILCA) in December 1980 in the area surrounding Quinhagak Native land -- the 4.1 million acre Togiak NWR and wilderness and the 19.6 million acre Yukon Delta NWR. The Togiak NWR's northern boundaries parallel the northern banks of the Kanektok River and extend east, so that the uppermost 75 miles of the river, including Kagati Lake, lie within the refuge. Land north of this boundary falls within the jurisdiction of the Yukon Delta NWR. The Kanektok River and Ahklun Mountains within the Togiak NWR are also designated wilderness areas under the National Wilderness Preservation System established by the Wilderness Act of 1964. The Togiak NWR is administered from Dillingham, while the Yukon Delta NWR is administered from Bethel.

The remaining uplands along the southern Kuskokwim Bay not conveyed in Native selections or part of the federal system are unclassified lands owned by the federal government and managed by BLM, comprising the mountains between Jacksmith and Goodnews bays. It is likely that these lands were not originally included in the refuge system because of their minerals potential and prospecting history during the 1930s.

The area's geology is favorable for deposits of gold, silver, platinum, copper and zinc. There are several minerals claims in the region of uncertain status, 13 of which are on the upper portions of the Kanektok River within Togiak NWR boundaries. Because of their isolated configuration, the BLM-managed lands have been proposed as additions to the Togiak NWR under one alternative land option within the Bristol Bay Cooperative Management Plan.

Housing in Quinhagak has been affected by the continual erosion of the Kanektok River as it swings past the community and undermines its gravel foundation. The old village site has been its victim. The area where most of Quinhagak's houses were once located has been crumbling into the river as its high banks dissolve during stormy north winds and high tides. A thin promontory is all that remains of the old village, dotted with a few surviving frame and plywood houses and fish racks. A growing loop of water and sand covers where the village once was.

The new community has been relocating away from the banks in successive moves over the past 15 years. The community is now relatively stretched out accross lands between two gooseneck of the Kanektok River. The river is adjacent to the community in three locations -- at the landing strip, near the AVCP housing development, and at the old village docking area.

An initial move away from the river occurred between 1969-70, when there were six HUD houses built in Quinhagak through ASHA. Reportedly, these homes were given to recipients without charge because of problems of faulty construction. Six additional frame homes were planned for construction in fall of 1983. In 1979, a major relocation occurred

when 55 housing units were built on gravel pads reached by gravel roads in a carefully ordered subdivision. Several other homes have been built recently in Quinhagak through private financing, and a few persons have dragged older houses from the old village to more stable land. The 1980 census listed 82 housing units in Quinhagak, 78 owner-occupied and 4 rented. The city's 1982 census listed 97 separate, occupied houses.

COMMUNITY SERVICES

This section is intended to provide a summary of available community facilities and services for each of the study communities. Since there are similarities between the study communities, services for all communities are discussed as a unit to avoid repetition. In all cases, the development of community services and associated infrastructures has been closely linked to the acquisition of federal and state grants. Once these monies have established services and related infrastructures, residents and community governments have had to find the means to maintain them. The maintenance of services and infrastructures provides steady wage employment for a few residents. Conversely, these services account for a sizable portion of household expenditures in a given year. Table 16 depicts available services in the study communities since 1983.

All of the communities of the study are provided electric power through the Alaska Village Electrical Cooperative (AVEC), which uses diesel-powered generators. Togiak was connected in 1970, Goodnews

TABLE 16. PUBLIC SERVICES IN TOGIAK, NEW STUYAHOK, GOODNEWS BAY, AND QUINHAGAK, 1983

Service	Togiak	New Stuyahok	Goodnews Bay	Quinhagak
Electricity	AVEC	AVEC	AVEC	AVEC
Household sewage system	yes	yes	no	no
Household water system	yes	yes	no	no
Telephones	yes	1 (village phone)	yes	yes
Cable T.V.	yes	no	no	no
Fire station	yes	yes (under constr.)	no	no
Laundromat	yes	no	no	yes
School system	yes	yes	yes	yes
Airport maintenance	yes	yes	yes	yes
Post office	yes	yes	yes	yes
City library	no	no	no	yes
Health aides	yes	yes	yes	yes
Garbage pickup	yes	yes	no	no
Cemetery maintenance	no	yes	no	no
Fuel storage	yes	yes (under constr.)	yes	yes
City police	yes	yes	yes	yes

Bay in 1971, New Stuyahok in 1972, and Quinhagak in 1975. A $5 membership fee is charged for the initial hookup. Rates for a residential unit are 37.2/kwh plus 10.94/kwh fuel surcharge. Because of a state subsidy for the first 600 kilowatt hours each month, the monthly rate is 24.45/kwh for the first 600 kwhs and 48.14/kwh thereafter each month. It is not uncommon to find homes with disconnected services. During the winter, bills in excess of $200 monthly are not uncommon in Togiak. There are a few who have opted out of the service and purchased individual generators for household needs. Complaints concerning the expense of electricity are common, but disconnecting the service is something most households want to avoid, even if it requires borrowing funds.

Fuel for oil stoves is one of the fixed costs in running a household in all of the communities. Although wood is used to some extent in Quinhagak and New Stuyahok, and to a larger extent for sweatbaths in all the villages, fuel oil is the mainstay for heating homes in all the communities. Further, most of the houses, old and new, are in need of weatherization. Insulation was only minimally used in the recent building construction programs. A recent study of energy in a number of communities, including Togiak and Goodnews Bay, points out that excessive fuel costs for rural residents are in part due to the tremendous heat loss from inadequate weatherization (Northern Technical Services 1981).

Most of the communities have some storage facility from which residents can purchase oil. For example, Togiak has a large fuel storage facility, but also has access to the fuel storage of the cannery, Togiak Fish, which is across the bay. On the other hand, New Stuyahok

does not have adequate storage capacity to meet its utility requirements, and residents are required to purchase fuel oil individually in Dillingham and then transport it by boat to the village or purchase it from a barge at 10 cents/gallon increase ($1.35 a gallon) over the price in Dillingham. The remainder of the communities fall between Togiak and New Stuyahok in having adequate storage facilities to meet their annual requirement of fuel oil. Goodnews Bay received a grant of $100,000 to improve its bulk fuel storage facility. In the spring and summer of 1983 there was a shortage of gasoline but no shortage of heating oil.

Although heating oil is a constant expense, it varies among the study communities. For example, according to a recent energy study by Northern Technical Services (1981), Togiak residents consume approximately 244,300 gallons of fuel oil annually, with 130,000 gallons of this used for residential consumption. Fuel costs in Togiak average about $100 for a 55-gallon drum or approximately $1.80/gallon. Thus the expense of community home owners is close to $234,000 or about $2,166 annually per household. In 1981 it was estimated in the same study that fuel and electricity costs consumed 26 percent of a household's income in Togiak.

In Quinhagak, stove oil cost $2.03 per gallon in June 1983. Propane with bottle trade-in was $80.70, and without trade-in was $105.70 per bottle. As an example of fuel expenses, one household of five persons reported using eight 55-gallon drums of fuel oil purchased from the barge in July for $1.50 per gallon ($661), five bottles of propane ($404), and about $966 of electricity at between $70-$90 per

month. Fuel oil, propane, and electrical expenses totalled $2,030. The costs would have been $2,266 if the fuel oil had been purchased at village prices. This household's only earned income was $4,500 from commercial fishing during the summer of 1982, so the fuel and electrical bill comprised almost half the household's earned annual income. Because of high fuel and electrical expenses, many Quinhagak households conserve money by substituting wood for fuel oil. A large proportion of houses have wood-burning stoves as well as oil stoves.

In contrast, some New Stuyahok" residents use wood for household heating, especially younger families. Fuel oil is less expensive in comparison to Togiak or the Kuskokwim Bay villages. The average home uses approximately 20 drums a year for an average cost of about $1,500. The cost of electricity is the same as that of Togiak.

Currently, Togiak and New Stuyahok have the only fully operational household water and sewage systems among the communities studied. In Togiak the system was established in 1976 with funds from the U.S. Public Health Service (PHS). The water system was established the same year and has had a problem of water shortage until 1983. The City of Togiak charges households $38 monthly for water and sewer service. The city employs two installation/maintenance workers, one full-time and one part-time. Most houses, the school, and Kachemak Seafoods are connected to the system.

Goodnews Bay has had a history of problems with its sewer and water system since its installation by PHS in 1968. The problems, ranging from environmental conditions to inadequate maintenance, have resulted in the system's currently unusable state. Presently, drinking

water is obtained from the local stream, rainwater collection, and by melting ice and snow. Honeybuckets and a dump are used for sewage disposal.

Land conditions in Quinhagak are not conducive to the successful operation of sewage facilities because the ground is wet and has some permafrost. Because the community must pay for maintenance and on-going support costs Quinhagak decided it could not afford piped facilities, so water development has not expanded beyond the washeteria. Quinhagak's washeteria and safe water facility is a source of year-round, full-time employment. It was built in 1979 and is owned and managed by the city. Water is drawn from the Kanektok River and pumped into the plant for treatment with chlorine and fluoride. Part of it is used for drinking and is dispersed at a watering point located at the side of the washeteria. Residents pay a flat weekly or monthly fee and may obtain water at any time. Galvanized trash cans are filled with water and hauled on the back of sledges pulled by all terrain vehicles or snowmobiles. This water source is also used for the community's laundromat, showers, and high school. The successful operation of the laundromat is an important function for the community's health and well-being. Well water drawn in Quinhagak has excessively high levels of iron and is therefore not usable. The Kanektok River is clear, compared with the Kuskokwim River; however, at times of the year, such as during break-up, it needs to be filtered for organic debris. The chlorination is designed to destroy giardiella and potential contamination from sewage and honeybuckets, which are dumped in sewage bunkers, settling lagoons, and ponds on the tundra around town.

New Stuyahok's sewer system will be upgraded next year at a substantial cost. The current system was installed in 1971 by PHS. The system is maintained by the city. A monthly fee is charged for the sewer and water systems, and almost all of the houses are connected to these systems. The city employs two workers part-time to keep the systems operational.

Solid waste disposal occurs at controlled dump sites in Togiak and New Stuyahok. Each of these cities employs two individuals to provide this service. Quinhagak and Goodnews Bay do not have this service.

All of the communities studied have similar systems of communication. Radio, television, and regular mail service also provide communication with the world outside of the study communities. Each of the communities receives two television channels. KLDG is the radio station for all of Bristol Bay, and it broadcasts messages five times daily to communities in the region. KYUK in Bethel provides radio service to the Yukon-Kuskokwim delta. It also carries messages each day to villages and fish camps. Each of the communities receives regular, daily mail service from the regional centers. Many of the homes and boats have VHF systems which are used to communicate with other communities, fishing or hunting boats, and camps. Almost every house has a citizen's band radio, which is used like a telephone for intra-village communication.

Since intra-village communication is conducted primarily by citizen's band radio, most telephone calls are long distance. As a consequence, telephone bills are extremely high, averaging in Togiak, for example, $150-$200 monthly. It does not take many calls to

neighboring communities or other locations within the state to accumulate such costs. The acceptance of such technology is another tie to the larger system requiring a certain level of income for maintenance. In Quinhagak, because of the high costs, many households have disconnected their phones. United Utilities has only one or two part-time employees in each community, as major repairs or additions to the system are conducted by traveling crews stationed in Bethel.

In the study communities, the telephone system was installed in most homes by early 1982. Prior to that, there was only one community telephone, requiring an attendant, similar to the present situation in New Stuyahok. According to the United Utilities 1983 telephone directory, there are 73 households with telephones in Togiak, 53 households in Quinhagak, and 22 households in Goodnews Bay. Basic costs are the same for all communities; the initial hookup charge is $71.50 and the monthly service charge is $17.75, to which long distance charges are added.

The study villages and surrounding communities are easily accessible by air and water. However, the only roads in the communities are those which connect parts of the town, and the town with the dumps, sewage facility, airstrips, and the like. The roads in each of the communities are unimproved gravel and provide the principal travel routes in the summer. The miles of road range from about one mile in New Stuyahok to about four miles in Quinhagak and Togiak. The beaches can also be used as a route to travel around the bay during the summer months. As previously mentioned, the roads are maintained by the city through contracting with the airport maintenance contractor. During

the winter the roads are used, but travel routes open to the interior and to other communities as the tundra freezes and is covered by snow and ice. In New Stuyahok, roads are not gravel, so they are very muddy and difficult to traverse during freeze-up. The bays freeze over, providing an ice highway to the communities and facilities in the vicinity of Goodnews Bay and Togiak. Land travel is much easier in the winter than in the summer.

Transportation in and around the villages is highly varied. There are cars, trucks and pickups, three- and four-wheel all-terrain vehicles, motorcycles, snowmachines, boats, and in Togiak, a few airplanes. Tables comparing the number and type of transportation among the communities are found in Chapter 5. Pickup trucks are not used simply for transportation, but are used within the villages for hauling, ferrying people and cargo to and from the airport, hauling boats out of the water, and other tasks. All-terrain vehicles are used for transportation and for short subsistence-related trips on the tundra, river shores, or the beaches when and where boats and snowmachines are not usable. The Quinhagak all-terrain vehicles are used to haul water on sledges. Snowmachines are the major transportation and subsistence mode of transportation during the winter. They are used for hunting, trapping, fishing, and visiting neighboring villages. Skiffs are the major subsistence transportation in the summer, and for winter sealing, as well as for use in commercial fishing. Locally-owned airplanes are used for subsistence only in Togiak by a few residents. They are used to fly to the Alaska Peninsula or to New Stuyahok for caribou hunting and to ferry people to and from other villages for participation in

village festivities. These are ways in which capital items and new technology are incorporated into traditional activities.

Each of the communities has a year-round airport with a gravel strip which requires regular maintenance. Qualifications for the job require professional skill in operating a large road grader. This prerequisite limits the field of eligibles. The Alaska Department of Transporation's regional office administers contracts with individuals to maintain the airport. These individuals are frequently contracted by the city to maintain the roads. In each community there is one such job, which is demanding in terms of time during certain seasons and under particular weather conditions. A road grader and dump truck are supplied by the Department of Transportation for maintaining the airstrip. In 1983, the runway in Quinhagak was lengthened from 1,900 to 2,800 feet, in part to attract fly-in commercial salmon buyers. Currently a new airstrip is being constructed in Togiak, which is 2,000 feet longer than the older one. The new facility will also have accompanying structures for storage. It will accommodate jet aircraft, so it is hoped that direct Anchorage flights may reduce air shipment costs to community residents, as well as give them access to larger markets.

Commercial air service into the communities is regular and daily. Togiak and New Stuyahok are serviced by airlines out of Dillingham. There is a regularly scheduled mail flight in addition to three to ten non-scheduled flights daily by Yute, Armstrong, and Southwest Air. Each of these airlines flies single engine, five- to six-passenger craft. Seat fare from Togiak to Dillingham is $30 cash ($35 for

accounts). Most flights to Dillingham are for the purposes of shopping, government business, or health care. Charters to other communities, such as Goodnews Bay, Quinhagak, and even Bethel, are not uncommon for Togiak residents.

Large volumes of air freight are either chartered in with smaller craft or flown in on special orders by the larger, multi-engine aircraft. Freight is also flown in by commercial fish cargo planes on their empty runs. This is often done without cost to community residents. New Stuyahok residents cut freight costs by hauling manageable goods (not too heavy or bulky) such as fuel in drums, appliances, construction materials, and the like up the river from Dillingham in their 32 foot fishing boats. It is not uncommon for an individual to make two or three trips to get supplies. Grubstakes and building materials may be purchased through a cannery.

Goodnews Bay and Quinhagak also have regularly scheduled mail flights and varying numbers of flights daily, principally from Bethel. There are two airlines based in Bethel, Wien and Seairmotive, which fly into these communities. In addition, a privately-owned air taxi service is located at Quinhagak owned by a non-local person. It flies passengers between Bethel, Quinhagak, and other communities around Kuskokwim Bay. Goodnews Bay receives fewer flights than other communities because of its distance from the centers and the low volume of traffic. The charge for a single fare from Goodnews Bay to Bethel is $55 and from Quinhagak $25. Residents of Goodnews Bay frequently charter flights to Togiak and Dillingham. The airstrips in the two Kuskokwim Bay communities are adequate to accommodate large, multi-engine planes for hauling freight

and fish.

Barges are the common method of getting large, bulky, heavy items; large quantities of many kinds of merchandise, including food and fuel; to the villages in the spring and fall. In addition to the commercial barges, such as the Soreneson Lighterage fuel barge from Dillingham, the BIA ship "North Star 111" brings in freight every spring. In order to place an order for transport on the barge, the order must be paid for before the barge leaves its home port. Thus boats, furniture, food, and other orders must be paid in advance, sometimes requiring a large outlay of money. Winter caches of food are often brought in on the "North Star III." Some attempts by village corporations have been made to reduce freight costs by purchasing their own barge, in the case of Quinhagak, or by taking advantage of incoming air vans and barges that will haul freight to the community for little or no charge.

In summary, the communities have transportation systems both internally, with roads, vehicles, and boats, and externally, with commercial aircraft based in regional centers, and barges. The system of roads and vehicles is limited, however. Freight is generally expensive, and some attempts have been made to alleviate the cost of shipping goods into the villages by the village profit corporations. Presently, this has not had a large effect on the cost of living in any of the villages. The villages are dependent on regular service by barge to bring in fuel oil, gasoline, and other necessities. Scheduled aircraft insure rapid communication with the outside world and a quick means of securing goods at a high cost.

Although employment has not been associated with fire fighting

facilities, the development and construction of fire stations creates temporary jobs and, perhaps, a part-time maintenance position to care for the facility and equipment. Although Togiak has a fire truck, it does not have a station. In Quinhagak, Togiak, and New Stuyahok, fire stations will be built this year from municipal grants. In 1981 Togiak received an $81,000 municipal grant for fire fighting equipment. The construction of the fire stations is to be done in late summer so that local residents can provide the labor and the projects do not conflict with primary fishing periods.

As previously discussed, each community in the study has a health clinic and a number of health aides. Funding and personnel for the clinics have come from a variety of sources over the years. Presently, both in Togiak and New Stuyahok, the clinics are owned by the cities, leased by the PHS, and staff is funded in part by Bristol Bay Area Health Corporation (BBAHC), and in part by the City of New Stuyahok in that community. Goodnews Bay is also under the administration of BBAHC. However, the Goodnews Bay clinic is located in the grade school, with only one health aide and one alternate, both of whom are local residents. Quinhagak is under the jurisdiction of the Yukon-Kuskokwim Health Corporation (YKHC). The remaining study communities ' clinics are staffed by two primary health aides and one alternate, who work six hours daily but are also available for emergencies. These aides are local residents who have received special training with annual follow-up training. Serious cases are treated at the hospital in Kanakanak or Bethel, with critical cases receiving treatment at the Alaska Native Medical Center in Anchorage. In addition, each community has a local

resident who is employed and trained by BBAHC or YKHC as an alcohol counselor. Treatment at the clinic is free of charge to Native patients. Funds are channeled to the communities through jobs and the leasing of the facility by PHS.

Each of the communities has assumed police powers. Local residents hold the city positions of police officer and the State Village Public Safety Officer (VPSO) positions. In most cases, there are three community police positions, including the police chief and from one to two VPSOS, but only the police chief is a full-time position. In New Stuyahok the city has employed two part-time city police to assist the one VPSO. The VPSO positions are full-time, year-round jobs. These positions are considered essential to the community, as they perform duties of a peace officer, lead search and rescue missions, and conduct criminal investigations. The personnel which hold these positions are all Yup'ik speakers and local residents trained in police work. In the case of Togiak, each of the officers takes leave during the summer fishing season and a local non-Native who has married into the community substitutes for him. The regular VPSOS help out on weekends when most of the fishers return to the village. This is an example of a preference for fishing over wage employment.

The school system in each of the communities is one of the larger local employers. School systems pay relatively high wages for all positions held by local residents. Most of the teaching positions are held by outsiders, but other positions are all held by local residents, primarily families. The school has been a fairly good source of income for both married and single women.

In the study communities there is a federally funded preschool program and grades kindergarten through 12. The schools in all communities are relatively modern facilities. Each community participates in a regional school district and has input into divisions through an elected advisory committee. Final approval of most actions is up to the school administration and the regional school board. The regional school board is composed of seven local residents representing several subregions elected by residents of the entire region.

Input into the school systems is also achieved by a school board composed of local residents. There has been an explicit attempt to integrate the school curriculum with traditional values and practices. This is accomplished, in part, through hi-lingual classes, recruiting older people to offer classes in some traditional practice, and courses in Native survival skills. The communities seem to take an active role in the schools and their activities. Also the school districts adjust the school year to accommodate students' participation in family fishing activities.

New Stuyahok is Russian Orthodox and the other study communities are affiliated with the Moravian denomination. Details about the functioning of the Moravian church in Quinhagak and Goodnews Bay might provide insight into this institution in these communities. An old Moravian sanctuary and church building are located at the old village of Quinhagak, which is eroding into the Kanektok River. In 1983 a new sanctuary was under construction by volunteer workers near the center of town. Church services are well-attended on Sundays, a day of rest when many persons do not hunt or fish. The Moravian church has an

has an ordained minister and assistant in Quinhagak. The joint congregation for Goodnews Bay and Platinum is led by a lay pastor, supervised by the minister in Quinhagak. Each congregation has two bodies of elected officials: the Board of Elders, which looks after the spiritual needs of the congregation; and the Board of Trustees, whose three members take care of finances and church property.

COMMUNITY BUSINESS SECTOR

Locally-Owned Businesses

only Togiak has a well-developed business sector, including private stores, canneries, air taxis, a lumber company, a privately owned reindeer herd, and dealer franchises on a number of products. Quinhagak has a family-owned store which carries food and dry goods. In the other communities there appears to be very little commercial activity on the part of local residents. In Togiak there are several businesses, such as "mom and pop" stores, variety stores, and dealerships owned by fishermen. In Goodnews Bay these types of businesses are Native corporation-owned. In one sense this is understandable, since only high income fishermen would have a large enough infusion of capital at one time to buy sufficient merchandise to start and maintain such an enterprise. To some extent, these investments may reflect the wealth of Togiak in comparison to the other study communities. There have been attempts by residents in the other communities to develop private stores. For example, in Quinhagak a few years ago a

number of families formed a cooperative store. Reportedly, it failed in part because it extended too much credit to customers who did not pay their debts. In Togiak, however, most of the stores are single family businesses and generally conduct only a cash and carry business. Because these stores are family-owned and operated, they are not a source of general employment. Further, these stores are often open only during certain seasons, in part because their stocks do not last an entire year. Most stocks are purchased at one time, and when gone, no more will be purchased until after fishing or whenever the annual order is submitted.

The largest grocery and all-purpose stores in the villages are generally owned by the village profit corporation and operated as a cooperative. In the case of Quinhagak there is an additional family-owned store and, in the case of Goodnews Bay, access to the Platinumrs Commercial Company store. These stores employ local personnel including managers and clerks. They generally provide credit, cash checks, and are often an outlet for local cottage industry products, such as skin hats, gloves, boots, and other Native crafts. The Platinum Commercial Company, which has a history of carrying goods for the non-Native mine employees, is the best stocked of the stores. Table 17 compares the number of goods carried in each of the main village stores with the Consumer Price Index Survey (CPIS) and with each other. As indicated in the table, of the 89 items listed by the CPIS, the range is from 42 to 68 percent carried in the village stores. The following will describe the salient characteristics of the stores in each village.

TABLE 17. NUMBER OF GOODS CARRIEI) IN STUDY COMMUNITY STORES

Type of Product	Consumer Price List	Quinhagak		Togiak		New Stuyahok	Goodnews Bay		
		A&C	Corp.	Coop.	TNL	Corp.	Corp.	PCor p.	Pcc
Cereal and bakery goods	8	8	6	6	7	8	7	5	7
Meat, poultry, fish	10	6	1	2	6	6	7	4	10
Dairy products	7	3	2	1	4	3	5	2	6
Fruits and vegetables	9	4	0	0	8	5	2	2	2
Processed fruits and vegetables	7	6	5	3	6	7	7	5	7
Miscellaneous	11	7	6	7	7	9	7	5	9
Prepared and partially prepared	7	6	3	2	7	5	6	5	7
Housekeeping supplies	15	8	9	8	6	10	7	5	9
Toilet goods	8	7	5	5	6	7	7	2	7
Over-the-counter drugs	1	1	1	1	1	1	1	0	1
Pet foods	4	0	0	0	0	0	0	0	3
Tobacco	2	2	2	2	2	2	2	2	2
TOTAL	89 (loo%)	58 (65%)	40 (45%)	37 (42%)	60 (67%)	61 (68%)	61 (68%)	39 (44%)	71 (81%)

Togiak has two large retail stores. One is a cooperative store, which was formed in 1970 through the assistance of the Community Enterprise Development Corporation (CEDC). It employs a manager, a clerk, and a relief clerk. Its major attraction over other retail stores is that it pays a ten percent dividend based upon total purchases for the period. Second, it offers credit on all stock, and credit purchases can be paid off over an extended period of time. There is a credit limit which cannot be exceeded which apparently is determined on an individual basis.

The second major retail store is owned and operated by the village corporation and opened for business in June 1983. It employs a manager and from two to three clerks working different shifts. Because of its newness, it is not known what the policy will be toward credit in the future, but presently it is a cash and carry supermarket. Credit is provided for only for the purchase of three-wheelers, aluminum boats, and outboard motors. In contrast to the cooperative, the corporation store does not carry clothing, firearms, traps, and other such goods. It is about half the size of the cooperative but better stocked. It orders fresh produce, fruit, and bread and other perishables on a regular basis. The corporation store has a greater freezer and cooler capacity, amply stocked, than does the cooperative store.

Prior to opening the grocery store, the village corporation, TNL, acquired a franchise from Suzuki to sell four-wheelers, outboard motors, and associated products. It also sells Lund aluminum boats. These are sold to residents with a very small down payment and a liberal payback policy which is interest-free. The first shipment of

Suzuki vehicles and motors came in March, and within a very short period of time there were approximately 15 four-wheelers on the streets. The liberal payback policy with no interest can be viewed as a community service but it is also a practice of the cooperative store, city, and other community institutions. TNL reportedly entered the retail business to effect savings which could be passed on to local residents.

The cannery, Togiak Fish, has a store which is stocked mainly with processed or frozen foods and a few other household supplies. During the winter the cannery caretaker runs the store and the fuel station. Last year the caretaker was not a local resident, although he was a long-term cannery employee. Credit is extended to only those persons who sell fish to the cannery. There is a maximum of $500 monthly credit for food, starting in January or February. Credit for fuel and boat parts is also extended to the same category of people, except that the amount of credit is determined on a case by case basis. The cannery no longer loans cash or buys boats and equipment for fishers. This was a practice that ended several years ago. There were approximately 39 persons from Togiak who had accounts with Togiak Fish in the winter of 1983. The credit account is cleared at the end of each fishing season.

There are six family-owned stores in Togiak, which carry a variety of foods and other goods. They are generally open at irregular hours or upon demand. They are staffed by family members who are generally not paid a wage. The categories of items sold in any one store is quite limited and most purchases are based on cash. The families who

operate these stores are all successful fishermen. The number of limited entry permits they own range from two to eight, indicating the potential income on a household basis.

In contrast to Togiak, New Stuyahok has one major retail store, which is now owned by the village corporation. Three years ago it was a cooperative store similar to that in Togiak. It carries food, dry goods, hardware, sports merchandise, and other products. It employs a manager, two half-time clerks, and two part-time helpers who stock shelves and clean up. Credit is extended, but the rules by which credit is allocated are unknown. The second store is privately owned by a family which is composed of life-long residents of New Stuyahok. It is opened irregularly or on demand. The corporation store is comparatively well-stocked including a fair supply of fresh fruits and vegetables. It is comparable to the Togiak '*supermarket" in terms of goods stocked, Categories of foods which tend not to be carried include meats, dairy products, and pet foods. Lunch meats and chicken are the most common meat products carried.

In Goodnews Bay there is only one store in the community, owned and operated by the village corporation. It is primarily a grocery store, although it does carry some tools and dry goods. lumber, used for boat construction, and fishing gear, including herring and salmon nets, are sold by the corporation but not in the store. Household furnishings are ordered through the corporation, and in 1983 the demand for such goods was high with at least ten percent of the households placing orders. The store also supplies fuel oil and gasoline, but the supply of gasoline was inadequate in 1983 to meet the year's

demand. By June residents had to go to Platinum to purchase fuel. Credit is extended to local residents, but all accounts are to be paid in full by the end of June yearly. Between January 1982 and May 1983, average household food purchases in Goodnews Bay increased from $575 per month to $710 per month, not including purchases made in Platinum or Dillingham.

The Platinum corporation store is small and poorly stocked. However, it did carry the largest supply of snowmachine parts of all study community stores. The Platinum Commercial Company (PCC) is the best stocked of all the stores carrying 71 percent of the items on the CPIS list plus a large number of other items, such as outboard motors, three-wheelers, microwaves, firearms, gas, magazines, and fishing equipment (see Table 17). PCC is owned and operated by Swanson Brothers, who have a chain of stores in remote communities.

Currently there are only two stores in Quinhagak: the Qanirtuuq store, owned and operated by the Qanirtuuq Corporation (the village profit corporation); and the A and C Store, a family-held corporation. Both stores are general stores, but are limited in the stock of food and other items carried, as indicated in the inventories of Table 17. The A and C Store is a family business, employing the owner and two clerks, who are part of the owner's extended family. A and C Store has a good credit standing, and receives large barge shipments in spring and fall. It also regularly flies in small quantities of supplies by mail plane from Bethel, such as paper goods, soda pop, and a few varieties of fresh produce, bread, and eggs. The Qanirtuuq Corporation store sells a larger volume of motors, boats, machine parts,

and fuel than it does foods and dry goods. It is the local source of gasoline, propane, and stove oil. The Qanirtuuq store also receives barge shipments. There have been plans to expand the store, although presently it is housed in a small, single-roomed, one-story building.

Although both Qanirtuuq and A and C extend credit to customers, the extent of the credit is not known. Debts are usually paid off at the end of the commercial salmon season. The Qanirtuuq store regularly purchases boats, motors, three-wheelers, and snowmachines on order for residents, arid sells them for a small down payment and very liberal monthly payments with no interest on the loans. For example, in June 1983, 14 aluminum boats were unloaded from the barge and stacked by the Qanirtuuq store. These were picked up by residents and the supply exhausted in a couple of days. They were used for commercial fishing. The boats may be paid off at the end of the commercial season if the persons who ordered them had a good year. The liberal loan policy is viewed as a community service.

It is interesting to note that there are no small, household "mom and pop" stores in Quinhagak. There used to be some operated in the past from the old village, but these folded about the time that village families relocated to the new subdivision. None of these did a large volume of business. The stores were not well-stocked but were more specialized, selling only candy and soda pop or some other select set of goods.

Canneries and Fish Processors

According to a BIA study of rural communities of western Alaska (Kresge et al. 1974), in the past the canneries were a major source of income for many villages of Bristol Bay. Village residents as far away as the Kuskokwim River were recruited by Bristol Bay canneries. Quinhagak neatly illustrates this point. From mid-June to mid-August, adult men left the villages to work at Bristol Bay canneries, especially the Ekuk cannery in the case of Quinhagak. The villages became communities composed primarily of women and children. Today, the pattern is quite different in Quinhagak, where only three adult men and a dozen or so adolescents travel to work in the canneries. The shift began with the development of the commercial salmon fishery, in the 1960s. Togiak and the other communities report a similar pattern.

Togiak is the only community in the study area to have canneries in close proximity to or within its jurisdiction. The oldest cannery is Togiak Fish, which was first established in the 1950s. A BIA study of the 1960s suggested that it was a principal source of income for the residents of Togiak (Kresge et al. 1974). Further, it was suggested that employment opportunities created by this cannery were a major factor in the high rates of Native migration to Togiak (Kresge et al. 1974). The cannery has the capability of canning, freezing, and preparing fresh fish. In the past it did both, but in 1983 the only operation during the month of June was freezing. Seasonally, it employs a "large force of laborers, skilled and unskilled, in various capacities. In addition, it has a cafeteria, restaurant, fuel depot, general grocery

store, Evinrude outboard motor dealership and repair shop, and docking facilities, all requiring seasonal labor. The wage rates range from approximately $5 to in excess of $10 hourly for straight time and half again as much for overtime. Very few residents of the community work for Togiak Fish today as they did in the past. In June 1983, only eight adult women were employed, and most of them had been working there for many seasons. Most of the youths or other potential workers have opted to crew on a boat even though the income could be less. In 1983 the manager of the cannery indicated that he wanted to interest local villagers in working for them because they now must hire out of Anchorage and pay for each employee's round-trip airfare in addition to board and room. However, the cannery, once a major source of income, is now perceived locally as a potential source, to be considered only if commercial fishing opportunities decrease. The pattern indicates quite clearly that villagers prefer participation in the commercial fishery to cannery employment.

The second cannery, Kachemak Seafoods, is located in Togiak proper. It was first established in the 1970s and has a number of associated structures. The owner was killed in 1982, and the future of the cannery has been in question. This past summer it was leased by Bonanza Seafood in a joint venture with the village profit corporation, TNL. This cannery operates a small grocery store, which stocks primarily perishables, such as fresh milk, eggs, meats, and the like. Also, the store sells fishing gear. In 1983 credit was not extended since it was attempting to pay fishers by the catch and not at the end of the season. The exchange on a cash basis was, to some extent, forced upon

its management. The cannery operated on a credit basis previously, hut upon the death of the owner, legal issues prevented many local fishers from receiving their income due from the sale of fish to the cannery the previous season. As a result, Bonanza was forced to pay cash and, in return, required cash for purchases from its store.

Although Bonanza Seafoods did not process the salmon beyond cleaning and gutting, it did hire a sizable labor force in 1983. Interestingly, all of the unskilled labor and line crew were temporary or permanent residents of Togiak. The greatest proportion were teenagers who were unable to crew with a local fisherman. There were mainly experienced adult women on the line preparing the fish for shipping. According to the manager, he had hired approximately 30 people to work two, 12-hour shifts daily. The wage rate averaged $5 per hour, depending on experience. The cannery intended to remain open through the silver run which begins in August. Many of the laborers were just waiting to hire on a fishing boat and perceived the cannery work as a stop-gap measure until they could hire on as a crew member. A number of outsiders reported that they came to Togiak for the purpose of crewing on a boat.

The village corporation, TNL, is planning to open a fish processing plant in Togiak. The building for housing the operation was built in 1982 and has recently been used as a warehouse, dealership for Suzukis, and the location of the new grocery store and visitors* quarters. Should the processing plant he in operation next year, it is not clear what the effect will be on the other canneries. However, it will mean additional seasonal jobs for Togiak residents and perhaps

an associated increase in outsiders migrating seasonally to Togiak to take advantage of the employment opportunities. If the TNL processing plant is successful, local residents may control the production, processing, and to some extent the distribution of the local commercial fishery.

Finally, there are temporary fish buyers stationed in Togiak during the summer season. Ball Brothers, a non-local fish buyer and processor, has a bunk house and equipment in Togiak, although they did not buy fish this year. However, an Anchorage buyer also had a crew in Togiak. In both of these cases, local people were hired to buy the fish and provide most of the associated labor preparing fish for transportation to the processing plant. In the case of one non-local buyer, his local contractor employed only members of his immediate family. This contractor is a Togiak resident who does not have a commercial fishing permit. In the case of Ball Bros., their buyer was a local non-Native male married to a Togiak Native and living in a buyer's facility. He hired a number of local laborers for the 1982 season.

Over the years the fish processing operations have offered a unique employment opportunity for Togiak residents. Since the development of the commercial salmon and, more recently, herring fishery, most of the adult males have elected to enter the fishery either as captain or crew. Between wage employment in the cannery and commercial fishing, the latter appears to be most desirable to local people. However, the fish processing provides an alternative not found in the other study communities and makes Togiak attractive to outsiders. Seasonal employment in the Togiak area is high, with very

few jobs filled by local residents. Finally, local residents are attempting to get more control over their local fishery through the development of their own fish processing plant. Not only will they be involved in the harvesting of salmon and herring, but also with the processing and distribution functions of the operation.

CONNECTIONS TO REGIONAL CENTERS AND OTHER VILLAGES

Each of the study communities is tied into a larger region through a network of ties that include political and governmental, service-related, and kinship or familial interrelationships. An interesting feature of the network is that it is structured by both more '*traditional'" factors, such as kinship, and by aspects of a "western" institutional framework which operates through various governmental agenties. The points of contact between the villagers and "western,'" structured, political institutions are primarily council or city and agency personnel, while more traditional linkages between communities occur through familial and familiarly-based individual contacts (kinship relations, marriage, trading partners, and ritual activities). The following is a general indication of the type and content of the relationships between the villages and the region in which they are located.

Government and Service-Related Relationships

This section describes the various governmental, Native, and private agencies that provide services to the villages and the content of

those services. The last decade has been a period of growth for the villages in terms of the development of the political and organizational capabilities necessary to take advantage of various funds and resources. Some of the villages appear to be more formally organized than others in a "western" institutional sense. However, it has been the non-profit corporations which most clearly have assisted villages in acquiring grants and other services and resources from state and federal governments. In the Bristol Bay Region, frequently a village will contact the Bristol Bay Native Association (BBNA) and request assistance in writing a grant or indicate that funds are required for a particular project. BBNA will send the appropriate person to assist. It appears that it has been through such organizations that local villagers are learning to operate within "western" bureaucracies. In this regard, the regional corporations have also been instrumental in assisting communities to meet the requirements of the funding source by helping them organize the administrative arms of their governments. In fact, most communities prefer to install individuals in administrative or board positions who has some experience in dealing with bureaucracies. Generally, women fill these positions because of their training and experience, but also because men consider administration or other types of paper work as "women's work." In some cases, women are more available to assume office positions because they may be less frequently absent from the community.

The provision of health care is a second major set of relationships with the villages. The functions of the Bristol Bay Area Health Corporation and Yukon-Kuskokwim Health Corporation have been discussed

previously in this chapter. These corporations and the regional hospitals train and assist village health aides and provide periodic visits by nurses, doctors, and dentists. The regional hospitals provide free health services to Natives.

The regional school system is another important service-related connection to the region. Aside from the large amount of income generated at the local level through employment and other service-related activities, the contact is largely political. The local Community School Committee (CSC) articulates with the regional school board, which in turn, advises and approves the superintendent's decisions. Togiak and New Stuyahok have two persons each on the regional school board. It has been through such contact that programs which emphasize traditional values, bilingualism, and other curricula, have been adopted for implementation at the local level. This has been one of the ways by which control over the school, its personnel, and its curriculum have been attempted at the local level. For example, the termination of a teacher may occur if the local CSC requests it. As previously mentioned, the teaching of Yup'ik, traditional crafts, survival skills, and the like have all been implemented in the curriculum of many community schools at the request of the local school board and supported by the regional board which has overlapping membership.

There are a number of federal and state agencies which administer public assistance programs, such as food stamps, old age assistance, aid for dependent children, longevity bonus, social security, and others. Information about these programs is received from a clerk or special administrator locally hired for setting up and and facilitating

such programs at the community level. It is through such local personnel that villagers become informed about various public assistance programs and eligibility is determined.

Alaska Legal Services (ALS) has been instrumental in assisting local communities in understanding their position on various matters related to land, resource access, subsistence, commercial fishing, and the like. In Togiak, for example, an ALS lawyer met with the community, at the communities' request, to explain their position in respect to the Limited Entry Permit system. ALS has often been called upon to brief community leadership on its responsibilities, limitations, and rights as a second class city as well as other jurisdictional matters.

The fishermen are members of the regional fishing cooperative, which attempts to set and negotiate fish prices with the canneries or buyers and coordinate the regional fishery. In the cases of Togiak and New Stuyahok, most fishermen in the Bristol Bay fishery belong in the Western Alaska Cooperative Market Association, which consists primarily of fishers from the Nushagak district. Quinhagak has a fishing association referred to as the Incorporated Fishermen of Quinhagak, who meet among themselves but also meet with the larger group, the Bering Sea Fisherman's Marketing Association. The IFQ entered into a contract with the American Pacific Fisheries in August 1983 to fly coho salmon from Quinhagak to markets outside Alaska. This is an attempt by fishers to gain more local control over the market and to stabilize the buying and selling prices of the fishery. Goodnews Bay does not have a fishing cooperative.

The University of Alaska, Fairbanks Rural Education and Cross-Cultural Education (XCED) programs offer localized instruction to village students by instructors based in Dillingham who attempt to visit communities in which students are enrolled three to four days monthly. This program provides local residents an opportunity to receive college degrees and assume more teaching positions in the elementary or secondary schools. In New Stuyahok, an XCED student graduated from the University of Alaska in spring 1983 and began teaching in the New Stuyahok school in fall 1983.

These are some of the major agencies which have well-established relationships with the study communities. Each community may take greater or lesser advantage of these resources. The nature of this kind of contact is highly formal and principally bureaucratic, as compared with primary connections between communities based on informal relationships of a kinship or ritual nature.

Kinship Relations and the Region

Many marriages in the study communities are exogamous, in that one of the spouses comes from another village. Consequently, people in one community have primary kinsmen in communities other than the one in which they are resident after marriage. Further, it is to these communities that persons often travel to visit and exchange goods. Fishing partners, trading partners, and ritual associates may also come from these same communities. In-married spouses in Togiak primarily come from

the communities of Goodnews Bay and Manokotak, and to a lesser degree, from other communities of the central Bering Sea coast and Kuskokwim River and delta, as indicated in Table 7.

New Stuyahok parallels Togiak to a large extent, in that most spouses come from other communities, primarily the villages of the Nushagak River. Additionally, people refer to relatives in most of the communities in northwestern Bristol Bay, In the case of New Stuyahok, Russian Orthodox Church activities take people to other villages on the Nushagak River, Nushagak Bay, Iliamna Lake, and the Kvichak River area. Religious activities associated with the Moravian church provide the same visiting opportunities for the other three study communities.

Of Goodnews Bay's 30 functioning marriages in 1983, 17 (57 percent) were endogamous and 13 (43 percent) were exogamous. As previously discussed, the majority of these exogamous marriages were between Goodnews Bay fenales and males from other communities. The geographic extent of the kinship network was enhanced by offspring and siblings who had left the community to reside elsewhere.

Special relationships are sometimes developed between communities in regard to subsistence resources. For example, New Stuyahok is a riverine community 50 miles from a good sea mammal hunting area. On the other hand, New Stuyahok is close to a large caribou herd. Togiak has an abundant sea mammal population and no caribou. Some residents of Togiak travel to New Stuyahok to hunt caribou. They always bring gifts of sea mammal products to the host community. Last year one group brought a walrus and, in return, New Stuyahok residents gave them a

large number of caribou which were already butchered. Togiak also has a similar kind of trade relationship with Manokotak. Blackfish are not plentiful in the Togiak River, but they are in the Igushik River. Often seal oil is taken to Manokotak and blackfish are given in return. Also, berries are often harvested by traveling to Kuskokwim River villages and villages like Aleknagik. It could be stated with little exaggeration that many persons maintain a network of relatives in several villages throughout a region. The networks between communities are largely based on kinship links that are renewed through visiting and trading. The regional and interregional networks are structured by kinship, reinforced by marriage, and enhanced by visiting.

CHAPTER 4

HISTORICAL BACKGROUND OF THE REGION

INTRODUCTION

The Bristol Bay and Kuskokwim Bay areas have had different but related histories of economic and political development. This chapter provides a brief description outlining the major events which have affected the development of trade, commercial activities, wage employment, and political/governmental organization in the two study areas. Community-specific descriptions are presented only where there has been a differential effect of the general process on study villages. Although a number of events are important in the socioeconomic development of regions, discussion will focus on (1) commercial trade, credit, and money; (2) canneries and wage employment; (3) mining and reindeer herding; (4) commercial fisheries; (5) state government; (6) Alaska Native Claims Settlement Act (ANCSA); (7) municipal government; (8) the Molly Hootch case; (9) Alaska National Interest Lands Conservation Act (ANILCA); and (10) coastal zone management programs.

COMMERCIAL TRADE, CREDIT, AND MONEY

The first sustained exposure to commercial trade occurred no later than 1818 via Russian fur traders with the establishment of Alexandrovski Redoubt, which was located on the eastern shore of

Nushagak Bay. By 1820 the fur traders had made contact with the Yup'ik-speaking populations of Togiak Bay and Togiak River; and by 1824 they had established trade with the people of the Kuskokwim River and surrounding area. Ten years after the establishment of Alexandrovski Redoubt along the Nushagak, the traders were receiving over 4,000 beaver and otter skins annually from various Native groups located along the drainages and bays between the Alaska Peninsula and the Kuskokwim River (VanStone 1967:6-10). The trappers traded furs for cloth; wool blankets; metal products such as knives, flint, spears, needles, pots, cups, mirrors, copper rings; and personal adornment, such as clothing, earrings, bracelets, and the like. The Russians provided credit to the Natives, which would be cleared each year with an adequate harvest of furs. There is some evidence that the Russians paid a wage to some Natives to accompany Russian leaders on fur trapping expeditions. However, the general trend appeared to be one of trading furs for commodities. Eventually, trading stations were established along the Kuskokwim River, and a temporary station was established along Togiak Bay. Thus, the contact with the Russians produced a number of patterns which may not have been part of the indigenous system: commercial trade, credit/debt relations, and some experience with money as a medium of exchange.

Debt relations were modified upon the arrival of the Americans under the direction of the Alaska Commercial Company (ACC), which took over the Russian American Company following the purchase of Alaska in 1867. The ACC subsequently monopolized fur trade in Alaska. Even though the ACC severely restricted credit to Natives, the Nushagak

Bay and the Kuskokwim River trading posts conducted a flourishing business in furs. At various periods between 1880 and the 1890s, the main trading post retained outposts at Togiak and Ugashik as well as up the Nushagak River. Trapping activity declined after the beginning of the salmon fishing industry in the 1880s, but remained highly productive into the 1930s. For instance, "in 1924 furs valued at more than $250,000 were taken out of the entire southwestern Alaska region" (VanStone 1967:61). The fur market after World War II has been subject to extensive fluctuations and has suffered marked declines in demand and price for most fur species. Because of vagaries in the market, fur trapping for commercial sale has declined in intensity and output in southwest Alaska. Yet, beaver trapping still plays an important role in each of the study communities (see Chapter 5) mainly as a source of food and to some extent as a source of skins for commercial sale as well as family use.

In summary, the Yup'ik-speakers of the Bristol Bay and Kuskokwim Bay areas have had a long history of commercial trade, credit/debt relations and money transactions with representatives of an external economic system. Most of the trapping was done while hunting and harvesting other resources for domestic consumption Importantly, the Nushagak and Kuskokwim rivers emerged as important trade centers, a point of contact between the Natives and the external markets. Working for wages, however, was an economic activity which never fully developed until the beginnings of the commercial fishery toward the end of the 19th century.

CANNERIES AND WAGE EMPLOYMENT

Working for wages began in earnest with the development of the salmon fishery in Bristol Bay and the establishment of fish saltries and, later, canneries. Commercial salting of fish began during the 1870s by ACC, while the first cannery was not established until 1884 by the Arctic Packing Company. This was the first cannery to operate in the Bering Sea. Subsequently, canneries began to proliferate in the Nushagak Bay area, so that by 1908 there were ten canneries owned by six companies. In similar fashions, canneries began appearing on the Kvichak side of the bay at the mouth of the Naknek River. From these central locations and initial development, the Bristol Bay canned salmon industry expanded to the Egegik and Ugashik drainages. In the Kuskokwim area there were several small mild-cure operations that were initiated in the 1920s, which operated for many years, but no further development of the commercial industry took place until about 1960.

Many of these canneries were built close to Yup'ik villages, some within a mile, yet very few Natives were employed. For instance, out of the 488 persons employed by 3 canneries in 1897, only 40 were Native (VanStone 1967:70). Many of the Natives who were employed worked in the saltries rather than in the canneries. A Chinese labor force dominated the processing activities.

Those Natives employed in the salmon industry worked mainly during the peak of processing activities when almost unlimited help was required. Wages were paid to all the employees and the rates varied according to age, experience, and reliability. For example, in 1902

an adult male with experience and proven reliability received $2.25 per day, while an unproven male adult would receive $2.00 per day. Even children were hired to pile cans at $.50 per day. The major argument by officials against hiring local Natives and for importing Chinese was that the former were totally unreliable. According to historic information, it was common for Natives to quit after a few days work to go hunting or fishing for their own domestic needs or to quit if the work became too demanding or conditions intolerable. On the other hand, Chinese laborers were bound by contract, transported from their homeland, and were in no position to protest working. VanStone (1967:78) observed in this connection that "the canneries could never hope to obtain such a hold over local labor." Subsequently, legal restrictions (the Chinese Exclusion Act of 1904) on the importation of Chinese laborers limited their entry, yet Native hire did not increase. Filipino and Mexican workers began to fill the void. As late as 1937, only 194 of 4,328 cannery workers in southwest Alaska were local Natives (VanStone 1967:79).

In summary, Natives were effectively kept out of the harvest sector of the Bristol Bay Fishery, and they were kept out of the processing sector by discrimination on the part of cannery operators and the industry's perception that Alaskan Natives were not reliable employees. This kept their numbers in the wage employment sector to a minimum well into the 1930s.

The second world war brought major changes to economic patterns of the area. Labor became scarce and canneries could no longer rely on outsiders because of military service and increased opportunities in

military-related industries. It was during this period that Alaskan Natives were able to penetrate both the processing and harvesting sectors. The canneries were increasingly forced to draw upon local Native labor from many villages of western and central (middle Yukon) Alaska, in addition to Bristol Bay and Kuskokwim Bay villages. This pattern persisted well into the 1960s. Airstrips were constructed in local communities, which made cannery recruitment much easier after the war. Canneries were able to fly into remote villages and pick up work crews easily and as they were needed. After the war, canneries used all Native crews for processing and, to a large extent, fishing.

Each of the study communities became involved with the canneries. Togiak villagers would travel by boat to Dillingham each season and camp on the beaches below the community, where they would put up fish for their own consumption and do wage labor for the canneries. This pattern continued until the late 1950s, when a cannery was finally opened next to the site of Old Togiak near the mouth of the Togiak River. Villagers from New Stuyahok would travel downriver to work at the canneries at Clark's Point and Ekuk, where relatives continue to reside. Even today, many villagers travel to Lewis Point to subsistence and commercial fish. Men and youths were transported by airplane yearly from Quinhagak to work in the canneries at Ekuk. As local villagers began to participate in increasing numbers as fishermen, however, cannery work became less and less Native-dominated, until today only a few Natives from the study communities work in canneries. For instance, during the 1983 season, out of the 50 or so employees of Togiak Fish, 9 were from Togiak. Only about 3 household heads and 15 adolescents

and young adults from Quinhagak worked in a cannery this past season. In earlier years, nearly all of the adult males worked seasonally at a cannery leaving a village of women and children.

In summary, the processing sector of the salmon industry in Bristol Bay was dominated by Alaska Natives from World War II until the late 1960s, when they began to participate in the harvesting sector of the fishery. The move appears to be voluntary, as there is no evidence to the suggest that the canneries were attempting to force them out. As one manager related, it would be more "efficient and economic" if we could hire local people, but they are not interested in sufficient numbers, so recruitment takes place in Anchorage and Seattle. In fact, it was further observed, "they prefer to fish" and would quit immediately when presented with the opportunity to crew. Historically, then, the local economic pattern has gone from simple commodity production in the fur trades, to wage employment in the canneries, and a return to simple commodity production with increased participation as fishermen in the salmon industry.

MINING AND REINDEER HERDING

Mining has never played an important role along the Nushagak and Togiak drainages, aside from small placer mines that were worked by individuals. No placer mines of any commercial importance were ever located in the Bristol Bay or Kuskokwim areas. The Goodnews Bay area, on the other hand, was found to have commercial quantities of platinum. During the 1930s, a platinum mine was opened about 11 miles from

Goodnews Bay, at the site of the present community of Platinum. However, local participation in the mining operation by Goodnews Bay residents was never very large, although there were a few villagers who did make careers of working for the mine. Informants indicate that the number of local families working for the mine never exceeded five at any given time. In 1983 there were no Goodnews Bay villagers working for the mine, even though the mining company reported that they made attempts to recruit local residents. The potential seasonal earnings at the mine are greater than those of most local fishermen. Reportedly, a laborer can earn between $11,200 and $16,800 during the summer. Yet, even non-fishermen have not pursued jobs with the mine. Nearly all of the mine employees are temporary workers recruited from regional centers. A common reason for not working at the mine, according to some local Goodnews Bay residents, is that there is a requirement that employees must live at the mine for the season. Whatever the reasons for not working at the mine, the pattern has been well established. Before harvesting of fish became profitable in Goodnews Bay, villagers commercially fished in the Bristol Bay fishery or worked in one of the canneries. Consequently, the mining operation has not significantly affected the local economy, except to provide a broader range of commodities for Goodnews Bay residents to purchase from the mining company store (see Chapter 3).

Reindeer herding began in the Kuskokwim drainage and Bristol Bay area in the early 1900s. This industry, developed by Sheldon Jackson, was ostensibly initiated to improve and change the Native economy. The concentration of herding activities was in the Kuskokwim drainage

and northwestern Alaska. Although there are numerous stories describing the development of reindeer herding in Bristol Bay, by the mid-1940s there was no trace of the reindeer herds (VanStone 1967:87). Numerous problems contributed to the loss of the herds, but the major ones were poor herding techniques and the necessity of seasonal mobility. Although Lapps were imported for the primary purpose of instructing local people in the management of herds, this goal was met with only marginal success. Moreover, the nomadic requirements of herding did not fit well with Native residential practices or the seasonal round of fishing and hunting. Other contributing factors were poor markets and predation.

Older villagers who participated in the industry as young men remember the herds well. In New Stuyahok a majority of men over the age of 50, who lived in the Bristol Bay area during the 1920s and 1930s, was actively involved in the reindeer industry. This pattern appears to hold for the other study communities and many other communities of the study areas. Today, Togiak is the only community to have a reindeer herd. It is kept on Hagemeister Island, which solves migratory and predation problems. The owner of the herd purchased it from the village corporation in the late 1970s, The reindeer are originally from the Nunivak Island herd. The original size of the herd, which has subsequently increased in size, was about 125 animals. He markets reindeer meat in Togiak, Platinum, Dillingham, and other local communities. The herd has proved to be quite successful as a renewable, economically valuable resource, and also as an entrepreneurial activity.

COMMERCIAL FISHERY

The Bristol Bay and Kuskokwim areas have significantly different histories of commercial fisheries development, although the Togiak district has a history which is more similar to the development in the Kuskokwim area, while the Nushagak district has played a major role in the development of the Bristol Bay fishery since its inception. The Bristol Bay commercial salmon industry began in the early part of the 1880s, as noted previously, with the establishment of a cannery on the southwestern shore of Nushagak Bay opposite the site which later became known as Dillingham. Expansion of the industry was rapid and problematic. Intensified fishing efforts on Naknek, Kvichak, and Nushagak river stocks ultimately led to declines, and a curtailment of effort was required by federal managers in the 1930s.

During the decades prior to World War II, Alaskan Natives were kept out of the harvesting sector of the Bristol Bay fishery by strong unions controlled by fishermen from California and Seattle. Although Natives from many communities in Alaska, in addition to Bristol Bay villages, began to work increasingly in the canneries, it was not until World War II when many of the non-Alaskan fishermen were serving in the military that Alaskan Natives were able to penetrate the harvesting sector in significant numbers. After the war, the practice of recruiting all Native crews from separate villages became widespread in the industry.

The entry of Bristol Bay Natives into the commercial fisheries involved a long struggle. VanStone (1967:81) indicates that it was

not until 1961 that many Nushagak village fishermen were able to get boats, when the canneries got rid of the older sailboat-type vessels as they upgraded their fleets with newer, more efficient power boats.

The Togiak fishery did not develop as a commercial fishery until after World War II, when buying scows from canneries near Dillingham began coming over to fish. The first recorded commercial harvests for the Togiak district do not appear in the Department of Fish and Game records until 1954. These early buying efforts were haphazard, and consequently many Togiak families continued to move to Dillingham to camp on the beaches for the summer. With the establishment of a cannery in Togiak in the late 1950s, a stable local buyer of fish became available to village residents of Togiak allowing the development of a local fishery. The response of Togiak village residents was virtually immediate; with a few exceptions, they ceased the long journey and arduous camp phase on Dillingham's beaches and stayed home to fish the Togiak district salmon for sale to the cannery at Old Togiak. Togiak men and their sons did the harvesting while many of the wives and daughters went to work in the cannery. The pattern today includes an increasing participation of women in the harvesting sector of the fishery either as captain or crew (see Chapter 6).

The commercial fishery in the Kuskokwim area is more recent than that of the Togiak district. Prior to 1960, there was virtually no commercial fishery in the Kuskokwim drainage. In addition to the mild-cure operation operated in the 1920s, dog teams were utilized in the 1930s to haul dried salmon to the McGrath area, where it was sold for dog food. Commercial fishing did not develop further until 1960.

From 1960 until 1968, markets were available only for kings, cohos, and reds. It is likely that declines in king salmon from the Columbia River caught in southeast Alaska, British Columbia, Washington, and Oregon caused fish brokers to look for new supplies. Prior to that time, the tremendous distance of the Kuskokwim River from established markets, the relatively small supply of fish, and the lack of infrastructure to support the commercial salmon industry had all combined to make commercial exploitation of Kuskokwim salmon unfeasible. Subsistence catches of Kuskokwim salmon were not surpassed by commercial catches until 1969, when a commercial market for chum salmon had been established.

The previous discussion of the history of the Kuskokwim commercial salmon fishery pertains to the fishery as it is conducted in the lower Kuskokwim district near Bethel. In Quinhagak and Goodnews Bay the commercial fishery is even more recent than in the Bethel area. Alaska Department of Fish and Game statistics for the commercial salmon fishery in Goodnews Bay only go back to 1968. As late as 1973, the total recorded commercial salmon fishery at Goodnews Bay was 3,510 fish. Although commercial salmon catches for the Quinhagak district were initially reported in 1960, in 1966 the recorded commercial salmon catch for the district was only 4,186 fish (see Chapter 6). In both the Goodnews Bay and Quinhagak cases, the lack of development of the local commercial salmon fisheries can be linked to relatively small runs, poor transportation access, and a lack of buying and processing infrastructure. The situation for the Kuskokwim area is apparently worsened by industry's perception that the quality of fish from the area is poor.

STATE GOVERNMENT

With the signing of the Alaska Statehood Act into law in 1959, the penetration of state government into the earlier province of the federal government was set into motion. Alaskafs political and economic life traditionally revolved around an axis of federal and territorial relations. Most of the employment in Alaska was through federal agencies, including the Department of Defense, Bureau of Indian Affairs, Department of Transportation, Bureau of Land Management, and the like. With statehood came new powers, as Alaska was elevated to the status of a sovereign state with full powers of self-determination, representation in the U.S. Congress, and commensurate authority previously vested in agencies of the federal government (Kresge et al. 1977:46-49).

Aside from these standard features, some of the more important provisions of the Statehood Act included (Kresge, et al. 1977):

1) a land grant of 103 million acres or 28 percent of Alaskavs total lands;

2) receipt of 90 percent of the revenues from federal oil and mineral lease sales, rentals, and royalties (excluding Continental Shelf lands);

3) a transitional grant of $28 million to be paid out over a five-year period; and,

4) the transfer of natural resource management functions.

The establishment of state government set into motion a new set of principles of political organization and participation in rural areas that had been previously the province of Bureau of Indian Affairs (BIA) and U.S. Fish and Wildlife Service (USFWS). The State articulated with

rural communities by establishing local governments as an extension of state organization. This paved the way for the exercise of other powers, including education, taxation, and police. Thus, the State began to take over the control of education from the BIA in the early 1960s. In Togiak and New Stuyahok the State assumed BIA educational responsibilities in 1967, but it was 1980 before the BIA was removed from the Kuskokwim area.

A major point of contention between the state and rural communities arose over land, which eventually led to the Alaska Native Claims Settlement Act (ANCSA). While the Statehood Act recognized the right of Natives to lands which they formerly had used and occupied, it did not provide a means for them to gain access to those lands. Thus, the first point of conflict between state and Native rights involved state protection and establishment of a recreation area, an action which made traditional hunting and trapping lands available to urban sportsmen and other recreational users. This occurred in 1961, and the conflict over Native subsistence rights has continued into the present.

A second conflict which arose between the state and Natives concerned state land selections. Threats to Native use areas by a state land selection committee provided impetus for the formation of a united Native front, which called for a land freeze to be imposed until all Native land claims have been resolved. The Secretary of Interior imposed a '*land freeze" in 1966 in response to mounting pressures from Alaskan Natives. As a result of increased encroachments on their land use areas, Natives were able to organize effectively, forming the Alaska Federation of Natives (AFN), to preserve their lands and

resources. Along with growing Native political strength, both state and national leaders began to recognize the need to resolve the issue. However, the final urgency to" resolve Native claims emerged from the need to permit construction of the trans-Alaska pipeline (Kresge et al. 1977:74-76; Arnold 1976:93-137).

ALASKA NATIVE CLAIMS LAND SETTLEMENT ACT (ANCSA)

In December 1971 the U.S. Government passed the Alaska Native Claims Settlement Act. with the declaration that:

> (a) there is an immediate need for a fair and just settlement of all claims by Natives and Native groups of Alaska based on aboriginal land claims;
>
> (b) the settlement should be accomplished rapidly with certainty and conformity with the real economic and social needs of the Natives, without litigation, with maximum participation by Natives affecting their rights and property... ' (Arnold 1976:301)

In essence this act provided Natives with title to 44 million acres of land; a cash settlement of nearly a $1 billion; and a set of institutions to manage the assets, i.e, village and regional corporations. As observed by Kresge (1977:76) the principles of this act are clear cut, but "its implementation procedures are extraordinarily complex, and its ultimate implications difficult to discern.

In the allocation of lands under ANCSA, village corporations were to receive 22 million acres, with the remaining going to the regional corporations. The amount of land going to the villages was determined on the basis of their respective population counts in the 1970 U.S. Census. In addition, the village corporations have only surface rights

to the lands selected, while the regional corporation retains subsurface rights to all lands selected. Once village and regional corporations made their land selections, they are to transfer some tracts to individuals, some to organizations, and some to municipal governments, and retain the remainder.

The monetary compensation came from congressional appropriations and mineral revenues from state and federal lands in Alaska. According to the act, an Alaska Native Fund was to be established in the U.S. Treasury and authorized to appropriate and pay out, over an n-year period, $462.5 million. The remaining $500 million, derived from actual mineral revenues from state and federal lands, would be made in payments until the total amount was reached. Payments were made only to regional corporations. They, in turn, were to pay out part of the compensation to individual Natives and village corporations, and retain part. The amount given to each village corporation was determined upon the proportion of members it had to the total regional membership (see Chapter 3 for a discussion of land transfers and other implementations of ANCSA provisions on the study communities).

The total impact of ANCSA on villagers has yet to be fully understood, but it did set into motion a transfer of land and resources to private, Native ownership as well as relatively large infusions of money for Native use and investment. Thus, while ANCSA provided the institutional and fiscal basis for Native economic and social development which would better articulate with capitalist market systems and the state/federal bureaucracy, it also provided the impetus for sociocultural change through concepts of private property ownership and

corporate structures. Self-determination was a crucial feature of ANCSA, and it meant that Native corporations could set their own goals for the use of the lands and monies belonging to their shareholders.

Finally, ANCSA provided a land base for Alaskan Natives. Although not co-extensive with use areas, it nonetheless secured some traditional residential and high use lands from loss to state and federal selection. However, management of fish and game resources on Native and federal lands was retained primarily by the State of Alaska. A Fish and Game Advisory Committee (FGAC system) was designed to have input into this management scheme. Each region or subregion had a committee composed of local residents, which was to be informed and provide input about any issues involving fish and game management. Each committee advised the Boards of Game and Fisheries of its recommendations. After the passage of ANILCA in 1980, a regional council system, with each council composed of the chairs of fish and game advisory committees in each of the six ANILCA regions, was set into motion to provide input into fish and game management. The recommendations of regional councils were to have more than advisory weight with the Boards of-Game and Fisheries. This system had become functional by 1983, and thus the passage of ANCSA had established Alaskan Natives as a political and economic force (in a western sense) in the state. The study communities and their regions were involved, to greater or lesser degrees, in these systems in 1983.

MUNICIPAL GOVERNMENT

B

During the same "period of the struggle to settle Native land claims, a second important development was taking place in rural villages. After statehood, villages were reclassified as fourth class cities, meaning they had few if any municipal powers. In 1972 all fourth class cities were reclassified as second class cities. This legislative action provided the basis for the rural villages to develop municipal governments having numerous municipal powers, including taxation, and a formal organization to receive federal and state community assistance and revenue sharing monies. It was at this point that villages in the Bristol Bay and Kuskokwim areas began to develop an infrastructure for public services funded by federal and state grants, implemented through local organizations, and employing local residents. Togiak was classified as a second class city in 1969, New Stuyahok in 1970, and Goodnews Bay and Quinhagak in 1972. The leadership in many of the communities was unprepared for implementing effectively all of the potential involved in this shift of status. As a consequence, the development of westernized local governmental organizations and actions was differently patterned even in the study communities, with Togiak and Quinhagak the most developed and New Stuyahok and Goodnews Bay the least (see Chapter 3 and 5).

THE MOLLY HOOTCH CASE

A third important process was initiated shortly after ANCSA, but was not made into law and realized at the local level until the late 1970s . Originally filed by Alaska Legal Services on the behalf of rural Native school children in 1972, the Hootch case, named for a Yup'ik girl from Emmonak, resulted in a 1976 settlement, in which the State of Alaska promised to provide secondary school facilities and programs for children in their home villages (Tundra Drums 1981). Up to this point, most Native children were required to attend secondary schools in some other part of the state or outside Alaska. Court jurisdiction was provided in order to insure compliance by the State. The total number of villages with programs through the 12th grade went from 1 in 1975-76 to 75 in 1982-83 (Tundra Drums 1981).

The settlement also requires the State of Alaska to ensure villages have a say in how the schools are run. This point was tested in the courts and found in favor of the villages. A provision in the consent decree specifically requires community involvement in the planning of newly established schools. According to the decree, officials from 16 school districts, which include Hootch villages, are required to meet with each community to plan and later to evaluate each year's program. The plans and evaluations are to be submitted to the Department of Education.

The Hootch decision has had a significant impact on villagers economically and socially. Nearly $200 million has been spent on construction programs in villages as a direct result of the settlement.

With the schools came state jobs, teachers and additional village revenues (Anchorage Times 1982). Additionally, parents and their representatives have become directly involved in the curriculum. Bicultural programs have been developed, Native values and crafts have been integrated into many of the high school curricula. The Hootch decision was an important step in self-determination by providing the community with a legal means for developing control and influence over their children's education and and place of residence during months in which they are participating in formal education.

ALASKA NATIONAL INTEREST LANDS Conservation ACT (ANILCA)

In Section 17(d)(2) of ANCSA, the Secretary of Interior was authorized to withdraw from "all forms of appropriation under the public land laws, including the mining and mineral leasing laws, up to, but not exceeding, 80 million acres of unreserved public lands...which the the Secretary deems suitable for addition to or creation as units of the National Park, Forest, Wildlife Refuge, and Wild and Scenic Rivers Systems" (Arnold 1976:322). The U.S. Congress was given until 1978 to enact legislation implementing this section of ANCSA. Because both houses of Congress failed to pass legislation, the Secretary of Interior withdrew lands and subsequently President Carter designated 56 million acres as national monuments. By November 1980 the House and the Senate were able to pass a compromise bill which created 106 million acres of new conservation units and which affected a total of 131 million acres. This act became known as ANILCA (Alaska National Interest

Lands Conservation Act). Statehood provided a transfer of lands to the State of Alaska, ANCSA provided a transfer of lands to Natives for private ownership, and ANILCA was intended to transfer lands for the public interest.

ANILCA is a relatively unique approach to land conservation. Rather than selecting parcels on the basis of scenery or some other single value, the effort was made to include entire ecosystems in the protected status. For example, an attempt was made to insure the continuity of wildlife habitats. This was done through a variety of land classifications. A central objective was to maintain cultural integrity for Native communities and ways of life in rural areas, including provisions to continue subsistence activities in protected areas. Finally, there was an attempt to exclude from selection mineralized zones and areas with known oil and gas deposits.

The designated lands for conservation included parks, wildlife refuges, wilderness areas, and 25 free-flowing rivers (Alaska Geographic 1981). Within the study areas under ANILCA, three areas were selected as wildlife refuges and part of one was classified as a wilderness area. Of direct concern is Togiak National Wildlife Refuge, which is bordered on the north by the Yukon Delta National Wildlife Refuge, on the east by Wood-Tikchik State Park, on the west by Kuskokwim Bay, and on the south and east by Bristol Bay. The Togiak Refuge absorbs the former Cape Newenham National Wildlife Refuge. Hagemeister Island is part of the Maritime National Wildlife Refuge located at the northwest corner of Togiak Bay. At least six Native villages use the refuge

for subsistence hunting and fishing. It is important to note that ANILCA was amended to specifically allow fishing, hunting and trapping for subsistence uses; continuance of pre-existing homestead rights or traditional seasonal or permanent residential rights; construction of homes in such areas; use of motorized vehicles, boats, and other traditonal patterns of transportation; and road construction to provide access to private lands. Thus, three of the communities share major borders with wildlife refuges and the sea, and only New Stuyahok is not *'protected" in this manner.

ANILCA clearly supports Native subsistence practices and provides a mechanism for insuring that the State complies with the settlement in regard to subsistence. Although yet to be tested, the indication is that if the State fails to maintain a responsible framework for the protection of subsistence practices, it will lose its managerial role over the natural resources on federal lands. As a consequence, over the last few years the Boards of Game and Fisheries have worked to devise an "equitable" system which meets the needs of all interested parties, including subsistence users, sportsmen, conservationists, and commercial fishermen. Because the state is unable to use ethnicity as a criteria for defining subsistence uses, to date it has applied eight criteria to communities on a case-by-case basis.

COASTAL ZONE MANAGEMENT

Although originally developed at the federal level in 1972 under the Federal Coastal Zone Management Act (FCZMA) and at the state level

in 1977 with the Alaska Coastal Management Act (ACMA), the efforts to develop a coastal zone management program in the study areas have been initiated in more recent years. Most village residents are unaware of the process and progress in the formation of coastal zone management plans. Alaska's program is unique compared to the rest of the states, in that it provides for the creation of local coastal management districts which can in turn develop local programs. Thus, Bristol Bay and the Kuskokwim areas are two management districts. Once a program developed at the district level is approved by federal and state governments, it will become law. This means that all federal or state action will have to be consistent with the approved programs. Hence, such programs could be of critical importance concerning such issues ranging from wildlife and fish or oil and gas development, including energy, land, minerals, recreation, subsistence, and other related issues.

In this respect, the Bristol Bay Coastal Management Program is of particular interest. In its report it has identified a number of issues that are of local concern and unique, in some respects, to Bristol Bay. Although Natives makeup the majority of the population in the district, subsistence is not identified as a major issue (BBCRSA Board 1982). The reason for this position is not clear, but it is not commensurate with local perceptions of important issues. As indicated in this study, most community residents were so concerned that their subsistence rights may be withdrawn that they were hesitant to discuss harvest areas and levels of harvest with the researchers.

In summary, it is readily apparent that the Native populations of the Bristol Bay and Kuskokwim areas have had a long history of contact with western economic and political systems. Commercial trade and wage employment are not novel to the areas, yet the populations have tended to gravitate toward simple commodity production in the forms of trapping and commercial fishing when given the opportunity. The study communities are still developing western political institutions to meet contemporary demands resulting from increased outside contact and influence.

CHAPTER 5

THE COMMERCIAL AND WAGE SECTOR: GENERAL CHARACTERISTICS

INTRODUCTION

The purpose of this chapter is to provide a description of the sources of monetary income in the study communities, including income distribution by individual and household, community income, and income security for the local populations. This chapter explores one sphere of economic activity in the study communities, which may be termed the "commercial and wage sector." This sector of the economy includes production of commodities for monetary sale on markets, especially trade requiring transportation of commodities outside the region (commerce). In addition to commercial activities, the sector includes the provision of goods, services, and labor for remunerative compensation, especially in payments at spaced intervals (wages). Other terms for this sphere of economic activity might include "business sector" or "industrial sector."* However, these terms are less appropriate for the study communities because economic establishments such as factories, manufacturing firms, with the exception of fish processing, and stores are not common in the region. Most monetary income is generated through production for commercial sale or wage employment. Another alternative designation for this economic sphere is "monetary" or "market" sector (Chapter 2). However, these terms create confusion, because the presence of "money" or "markets" is not what distinguishes this set of economic endeavors. The "subsistence sector," a second

sphere of economic activites in the study communities, also involves money and markets; money is used to purchase equipment from outside markets for subsistence fishing and hunting. In addition, as described in Chapter 7, some traditional forms of subsistence exchange use money and local markets in small-scale transactions.

For these reasons, this economic sphere is referred to as a "commercial and wage sector", highlighting production for commerce and the selling of labor for wages, the principal sources of monetary income in the study communities. Division of the socioeconomic system into a "subsistence sector"' and a "commercial and wage sector*' is for purposes of description and analysis. It is not meant to imply that there is a radical schism in the economic organization or functioning of the communities. As will be shown, a large number of residents in each community are involved in both spheres of economic activity to differing degrees. A major question to be explored is the extent to which commercial activities, wage employment, and subsistence activities are interactive. This question will be examined at the household level and macroinstitutional level in subsequent chapters.

A brief background history of trade and wage employment in the Bristol Bay and Kuskokwim regions was presented in Chapter 4. This chapter discusses sources of cash in each community, levels of community and household income by source, and types of capital and technology used in production. A more detailed examination of the commercial fishery is provided in Chapter 6. Household strategies for integrating commercial, wage, and subsistence activities are described in Appendix A and analyzed in Chapter 9.

SOURCES OF CASH

This section describes and compares the various sources of cash in each of the communities in relationship to types of occupations, seasonal demands for wage labor, temporal requirements of jobs, and wage scales. There are essentially four basic forms of cash generation, within which are a number of "subtypes." The first is termed "simple commodity production" for commercial markets, including trapping of furbearers for commercial purposes, commercial harvesting of fish, and cottage crafts destined for the market, The second form of cash generation is wage employment, which includes all sources of monetary remuneration with wages for a person's labor. The third source of cash is transfer payments, which include unemployment compensation, food stamps, public assistance, and Alaska State dividend payments. Finally, cash is generated by the development of independent businesses, which rely primarily upon local support. The level of participation in cash generation activities, the amount of cash generated in any one type of occupation, and distribution of these activities by age, sex, and household will vary among the communities. This variation will be described and compared among the study communities.

Simple Commodity Production for Sale

As described above, this category includes commercial fur trapping, commercial fishing, and the making of crafts for sale. As noted in Chapter 4, the first contact between Natives and Russians was

an economic one involving the exchange of goods. The outcome, a relationship of trade involving both goods and cash, was adapted to by the Natives of the region. Today residents in southwestern and western Alaska continue to trap for furs for commercial sale, but the magnitude of this activity has decreased. The amount of cash trapping generates today is less than three percent of the income of each study community. In fact, many of the trappers report that the sale of furs barely covers expenses for a season. However, trapping beaver in particular is an important source of food in the late winter as well as a source of cash. Beaver is considered by those in the study communities to be an excellent source of meat which they readily consume and exchange. Table 18 presents the income in each community from trapping, the percentage of community income derived from trapping, and the number of persons involved in this activity. It can readily be seen that fur trapping is a minor source of income for the study communities, with New Stuyahok demonstrating the greatest involvement of persons and the highest income.

TABLE 18. COMMERCIAL FUR TRAPPING IN THE STUDY COMMUNITIES.

Community	Income	Number of Trappers	Percentage of Community Income[a]
Quinhagak	$17,000	34	1.1
Goodnews Bay	$ 4,500	5	0.4
Togiak	$10,000	28	0.2
New Stuyahok	$19,000	46	2.7
TOTAL	$50,500	113	0.6

[a]Calculated without a consideration of transfer and dividend payments.

Trapping is largely controlled by regulations passed by the Board of Game, but it is also influenced by seasonal factors. Although beaver pelts are reportedly good at any time, they are prime in coloration and and leather quality for the export market in the winter. The regulatory season for beaver currently is restricted to the late winter months between January and March. In Bristol Bay the annual beaver round-up marks the end of the season and a time when the fur is sold to commercial buyers.

Trapping requires short blocks of time in order to check traplines. In Togiak, trappers often will set up camps near trapping areas and remain there for a few days to a week or so. Most of the local trappers return to Togiak on the weekends and some will return each night, depending on the location of the trapline. Those who trap at Togiak River travel approximately 35 miles from Togiak. Most trappers have a partner upon whom they rely for assistance and with whom they travel and camp. Partners may change from year to year. There are some individuals who trap alone, but in Togiak these trappers usually trap closer to the village and return to the community nightly.

In New Stuyahok, it is not uncommon for trappers to check their traplines on a daily basis and return to the village the same day after sets are made at the beginning of the season. However, it requires at least three to four hours, if not more, to complete the task.

In Quinhagak, there were 34 persons selling fur commercially, according to Alaska Department of Fish and Game statistics (ADF&G 1982c). There were about a half dozen individuals who intensively

trapped and hunted forbearers. A few ran traplines from winter camps. The top six trappers accounted for 45 percent of the total earned income from fur sales in the community. Most others procured furs through less intensive efforts, such as occasionally setting traps or taking furbearers while on day hunting trips from the winter community.

As indicated in Table 18, trapping is limited to a few individuals in Goodnews Bay. Of the five recorded trappers, one is not currently living in the village. One of the most successful trappers also earns the highest income from the Goodnews Bay commercial fishery and has a large extended family who participates in subsistence harvest activities. During winter months this individual has extended periods of time available for camping in his trapping endeavors. This single individual accounts for over 50 percent of the total community trapping income.

Successful trapping requires travel and time for the regular preparation, setting, and checking of traps in addition to skinning the catch and preparing it for market. For some, a successful trapping season may require from two to three weeks, with only short periods of time available for anything else. In summary, blocks of time are required between January and March to actively participate in commercial fur trapping or, at a minimum, short spans of time on a regular basis during the season.

Income is quite low from trapping, with the highest per active trapper earned at Goodnews Bay (a mean of $900), followed by Quinhagak, New Stuyahok, and Togiak with means of $500, $413, and S357 respectively.

As reported, most trappers barely cover expenses from trapping unless the red fox is abundant and the pelts are in good shape. A 1983 price list for beaver showed blankets selling for only about $28 to $37, large pelts from $16 to $24, depending upon color and density of guard hairs. Fox pelts sold for an average of $67 each at Quinhagak, and mink for an average of $45 apiece. In Togiak and New Stuyahok, fox fur was very poor this past season and not very salable. Other furbearers trapped include otter, lynx, wolf, wolverine, mink, and marten, but these are taken in much smaller numbers. In New Stuyahok, of 20 households interviewed, half reported setting traps for furbearers other than beaver. This is also the case in Goodnews Bay. On the other hand, in Togiak very few of the trappers set traps for any species other than beaver. Including Togiak and New Stuyahok harvests, 755 beaver furs were tagged in 1983 for commercial sales. In short, productivity is still relatively high in fur harvests, but its significance as a source of income has markedly decreased. A major value of the fur industry at the local level is that it subsidizes subsistence harvests which would have to be paid from some other source. It provides opportunities to pursue other subsistence resources and also provides the raw materials for skin crafts which are used by the household or sold on the commercial market.

It is difficult to determine the extent to which villagers are involved in the production of crafts for commercial sale. Both males and females are engaged in producing traditional crafts, primarily for family use or for gifts. However, some people occasionally sell such crafts if approached by a potential buyer. For example, in all study

study communities the local cooperative and corporation stores provide a place to display crafts for sale, including skin crafts, ivory carvings, and the like. In Togiak there were three major producers of beaver hats, seal boots, beaver and seal gloves, and the like. Yet there were many others who would make such items for sale upon request. In Togiak there were only two or three persons who carved ivory regularly to sell, yet there were others who would do so upon request. It appears that New Stuyahok and Goodnews Bay are very similar to Togiak and Quinhagak, in that most of the traditional crafts are made for personal use or gifts and only a few are produced to sell. In New Stuyahok fur hats and mittens are produced largely for the non-local market, although some locals may buy them as gifts. Most women in their 30s and older are skilled in making certain crafts, particularly if they are married. A wife normally will make fur hats and other winter gear for her husband and children.

Different crafts require different time commitments and levels of experience. Many of the crafts, like weaving grass baskets, skin sewing, and others can be done while resting, visiting, or watching television. In Togiak, skins are often sent out to be tanned at an average cost of $35. Crafts made of professionally tanned skins are more easily sold. In Quinhagak, some of the seal skins are sent out to be tanned, but most of the furs are processed locally. The beaver hats made in the communities of Eek, Quinhagak, and Goodnews Bay are considered some of the finest on the Yukon-Kuskokwim delta and sell in Bethel for about $150 apiece. Squirrel parkas sewed in this area are luxury items rarely seen for sale, but valued at thousands of dollars

when shown at craft displays. Seal skin boots retail at about $80-$200, depending upon quality, in Bethel. There are about four major outlets for Native crafts in Bethel, the largest being the Yugtarvik Museum. A distinctive style of doll has been developed in the Eek and Quinhagak area, with wooden faces and fur clothing, which sell beginning at about $65 each.

The primary description and analysis of commercial fishing as a source of cash for each of the study communities are provided in Chapter 6. This is intended to be a brief introduction. As noted in Chapter 4, the Togiak fishery began in 1954 with the establishment of the cannery located across the bay for the present community. Villagers from the Kuskokwim Bay region did not develop a fishery until the 1960s, and its production only began to increase in the 1970s. As in the Togiak case, the development of a stable salmon market took time. Today there is still a marked difference in the income generating potential of the Quinhagak fishery as opposed to the Togiak fishery, with the latter having much better markets and consequently larger harvests of commercial grade fish. New Stuyahok residents fish the Nushagak River, which is generally the most productive fishery in the study area, but this fishery is also dominated by highly competitive non-local fishermen.

Participation by the study communities in commercial fishing has been increasing steadily but has been restricted, to a large extent, by the limited entry permit system implemented in 1974 in the Bristol Bay region. Table 19 provides a listing of the total limited entry salmon permits by community.

TABLE 19. COMMERCIAL SALMON LIMITED ENTRY PERMITS, 1982.

Communities	Total Permits	Permits/Household [a]
Togiak	133	1.23
Quinhagak[b]	91	.93
Goodnews Bay[c]	45	,90
New Stuyahok	32[d]	.58

[a]Number of households: Togiak = 108; Quinhagak = 98; Goodnews Bay = 50; and New Stuyahok = 55.
[b]Quinhagak has 86 Kuskokwim and 5 Bristol Bay permits.
[c]Goodnews Bay has 34 Kuskokwim and 7 Bristol Bay permits.
[d]Two of these are interim permits.

Table 19 indicates that in 1983 Togiak had 135 Bristol Bay salmon permits, (89 drift and 46 set net). Although the average number of permits per household for the entire community was 1.23, the actual distribution was among only 73 households for an average of 1.82 per household holding permits. There were 116 active salmon permits in 1982, indicating that 17 permits were not used during that year.

Quinhagak had the second highest number of permits with 91 or .93 per household for the entire community. However, the distribution of permits was actually among 71 households for an average 1.28 per household holding permits. There were 27 households in Quinhagak which did have a fishing permit. There were 85 active salmon permits in 1982, indicating that only 6 permits were not used in Quinhagak last year.

The statistics from Goodnews Bay indicate that in 1982 there were .90 permits per household for the entire community, but the actual distribution was among 29 households or 1.46 permits per fishing

household holding permits. There were 22 households without a fishing permit. In 1982, 36 permits were used, leaving 9 salmon permits unused for the season. "

Finally, in 1982 New Stuyahok had the fewest permits per household, with 32 Bristol Bay drift permits or an average of .58 permits per household for the entire community. The actual distribution was among 30 households, or 1.1 permit per household holding fishing permits. There were 25 households in New Stuyahok which did not have a permit in 1982. All of the permits were used in the 1982 season.

These data indicate that 68 percent of the households in Togiak can potentially take part in the fishery, compared to 78 percent in Quinhagak, 68 percent in Goodnews Bay, and 51 percent in New Stuyahok. It would appear that New Stuyahok is relatively permit poor, slightly more than half of the households participating in the fishery. In summary, each of these communities actively participates in the commercial fishery, but the data suggest that relatively fewer New Stuyahok residents obtain incomes from commercial fishing.

Most of the commercial fishing takes place during the late spring and early summer months in Bristol Bay and, to some extent, in Kuskokwim Bay. Because communities like Goodnews Bay and Quinhagak rely on a commercial harvest of silvers more than does Togiak or New Stuyahok, residents will fish well into August. The herring season, which occurs in mid-May, initiates commercial fishing activity. Commencing in 1967, the herring fishery remained of minor economic importance to non-local fishermen until its growth after 1977. Herring and roe-on-kelp have always been important food sources for local residents of the Togiak

region, but not for Quinhagak, Goodnews Bay, and New Stuyahok residents. The openings are well-controlled by the Department of Fish and Game and limited over the two-week period of herring migration and spawning. Very few residents of Togiak take part in the herring sac roe fishery. In 1982 only 19 fishers participated, with an average income of $1,542. On the other hand, 53 Togiak fishers participated in the roe-on-kelp fishery, for an average earning of $1,921. Generally there are only two to three openings for roe-on-kelp during the herring season. Those residents who participate usually spend a day or two in the kelping areas and also pursue various subsistence resources, such as hunting sea mammals, which are coincident with the herring run. In Quinhagak in 1982, 16 fishers participated in the sac roe harvest for a mean income of $2,818. These fishers traveled by boat to Security Cove to participate in the herring fishery, which required an extended stay away from Quinhagak. There were 34 fishers from Goodnews Bay participating in the herring sac roe fishery, for a mean income of $3,700 in 1982. Recently, New Stuyahok began to participate in the herring fishery in the Togiak run, although their level of participation has been low. Few are prepared to actively take part that early in the season or to travel all the way to less familiar Togiak when ice and weather conditions are unpredictable.

The commercial salmon fishery commences in early June and can last until mid-August. Openings are more often irregular in the Nushagak River and closely controlled and monitored by Department of Fish and Game personnel, since it is a major fishery in the area. The best markets and the biggest run of fish are in the Nushagak River.

Consequently, the competition is keen and preparedness is critical. However, the run of red salmon is short, peaking around July 4, and lasting from two and a half to three weeks. Commercial fishing for New Stuyahok fishermen is therefore short but intense, but may be extended by fishing for kings in June, pinks in July, and silvers in August. All five species run in large numbers in the Nushagak, although pinks are only available in even-numbered years. Togiak, on the other hand, has a much more leisurely fishery. The salmon begin trickling into the bay by mid-June and continue through August, with a peak in the red salmon run occurring during the first part of July and ending with a fair silver run. Most Togiak fishermen fish through July, but only participate lightly in the silver run. Togiak fishermen generally fish five days and/or nights and then spend the weekends at home or traveling. Most residents do not fish or hunt on Sunday due to religious restrictions, even if the fishery remains open. Thus, Togiak fishermen usually take the weekend off for other activities. Subsistence fishing takes place in the river and the bay at the same time as commercial fishing.

The Quinhagak fishery is much more controlled than that of Togiak. The commercial season opens about mid-June with either 1 or 2 12-hour openings per week in order to insure adequate escapement. Unlike Togiak Bay, subsistence nets only can be set between commercial periods during the commercial season. Later in the season (mid-July through September 7), there are 3 12-hour subsistence fishing periods a week. Goodnews Bay is similar to the Quinhagak pattern, except that later in

the season, especially during the silver run, the opening is expanded from 12-hours to 3 or more 24-hour openings per week.

Commercial fishing provides the study communities with potentially large amounts of income over a short period of time, which allows fishermen to engage in many other commercial and non-commercial activities the remainder of the year. The fishing income for each of these communities in 1982 is a significant portion of the total income from all sources for the study communities. Commercial fishing incomes for the study communities in 1982 are presented in Table 20, along with the percentage of the gross income for each village derived from commercial fishing.

It is readily apparent that in 1982 Togiak was most heavily reliant upon commercial fishing as compared with the other study communities. Togiak fishermen earned more income than all other study communities combined during this year. On the other hand, New Stuyahok was affected

TABLE 20. COMMERCIAL FISHING GROSS INCOME BY COMMUNITY, 1982.[a]

Community	Number of Fishermen	Income	Mean Income	Percent of Total Community Income
Quinhagak	100	$ 796,000	$ 7,962	51.5
Goodnews Bay	51	$ 546,000	$11,255	52.0
Togiak	136	$3,061,000	$22,507	77.9
New Stuyahok	31[b]	$ 495,000	$15,968	62.0

[a]Calculated without transfer and dividend payments; not limited to the salmon fishery.

[b]One permit was fished by a relative from another community. His income is not included here.

by the 1982 strike, which resulted in one of their least productive years since 1976. Characteristically, New Stuyahok fishermen earn in excess of $700,000 from commercial fishing each season. Quinhagak has the least productive fishery and Togiak appears to have had the best in 1982. Refer to Chapter 6 for a more detailed analysis of the commercial fisheries of the study communities.

Wage Employment

As noted in Chapter 4, the Natives of Bristol Bay and the Kuskokwim Bay and Kuskokwim River areas have had a lengthy, although sporadic, history of wage employment beginning with Russian contact. It was employment in the fish salteries and canneries during the late 19th and early decades of the 20th centuries which provided some cash income for Natives of the area. As discussed in Chapter 4, the importance of the canneries as sources of wages declined as participation in commercial fishing and other sources of cash employment became increasingly available to community residents. When city status-was established, sources of state and federal funds for community services became available. As discussed in Chapter 3, a number of jobs were created through the development of services and an infrastructure to provide such services. Tables 21 to 24 present the types and numbers of positions, full-time and part-time; sources of funding; time requirements; and scale of income associated with services and infrastructure in the study communities in 1983.

TABLE 21. SOURCES OF WAGE EMPLOYMENT, QUINHAGAK, 1983.

Employer and Position	FT/PT	Seasonality	Scale
City of Quinhagak			
Accounting Clerk	6 hr/5 day wk	12 mo	$ 7.00hr
Clerk	6 hr/5 day wk	12 mo	$ 7.00 hr
City Administrator	6 hr/5 day wk	12 mo	$ 8.00 hr
City Planner	4 hr/5 day wk	12 mo	$ 8.00 hr
Washeteria Attendant (3)	4 hr/5 day wk	12 mo	$ 5.50 hr
Washeteria Maintenance	5 hr/6 day wk	12 mo	$ 7.00 hr
Janitorial Maintenance (2)	4-7 hr/5 day wk	12 mo	$ 8.00 hr
Laborers	variable	variable	$ 8.00 hr
Project Foreman	variable	variable	$ 9.00 hr
Heavy Equipment Operator	varible	variable	$10.00 hr
VPSO Chief of Police	7.5 hr/5 day wk	12 mo	$10.00 hr
Assistant Chief of Police	8 hr/5 day wk	12 mo	$ 8.00 hr
Patrol Officer (3)	4-8 hr/5 day wk	12 mo	$ 7.00 hr
Clerk Matron, Jail	4 hr/5 day wk	12 mo	$ 7.00 hr
Health Clerk	6 hr/5 day wk	12 mo	$ 7.00 hr
City Government			
Mayor			
Vice Mayor	$25 stipend/meeting, 1-3 meetings/mo		
Council Members (5)			
State School District			
Cook (4)	5 hr/5 day wk	9 mo	$11.56 hr
Custodian (2)	5 hr/5 day wk	9 mo	$11.02 hr
Maintenance-Mechanic (3)	7.5 hr/5 day wk	12 mo	$16.20 hr
Associate Teacher (3)	7.5 hr/5 day wk	9 mo	$12.00 hr
Teacher Aide (5)	5-7.5hr/5 day wk	9 mo	$11.02 hr
Activity Aide	3 hr/5 day wk	9 mo	$11.02 hr
Librarian	7.5 hr/5 day wk	9 mo	$16.20 hr
Teacher (1 local)	7.5 hr/5 day WIC	9 mo	$20.00 hr

TABLE 21. -- CONTINUED

Employer and Position	FT/ PT	Seasonality	Scale
Other State/Federal/AVCP			
U.S. Postal Clerk (2)	4 hr/5 day wk	12 mo	$7,000+ yr
YKHC Village Alcoholism Education Counselor	7 hr/5 day wk	12 mo	$ 9.23 hr
YKHC Health Aide (1.5)	6 hr/5 day wk	12 mo	$ 8.00hr
Magistrate	15 hr/wk	12 mo	$14.25 hr
Airport Maintenance	variable	12 mo	$10.00 hr
Librarian	5 hr/5 day wk	9 mo	$ 8.50 hr
Food Stamp Fee Agent	$8-12 per application		
Other Wage Employment			
Alaska Village Electrical Cooperative	variable	12 mo	$ 8.00 hr
United Utilities	10 hr/wk	12 mo	$ 6.00 hr
Airline Agent (2)	variable	12 mo	$500-700 mo
Qanirtuuq Corporation			
Chairperson and Board (4)	$30 stipend/meeting, 1 meeting minimum/mo		
Accountant	7 hr/5 day wk	12 mo	$ 7.00 hr
Land Planner	7 hr/5 day wk	12 mo	$ 8.00 hr
Store (4)	7 hr/5 day wk	12 mo	$ 7.00-8.00hr
Secretary	7 hr/5 day wk	12 mo	$ 7.00 hr

TABLE 22. SOURCES OF WAGE EMPLOYMENT', GOODNEWS BAY, 1983.

Employer and Position	FT/ PT	Seasonality	Scale
City of Goodnews Bay			
City Administrator	8 hr/5 day wk	12 mo	$ 8.00 hr
City Clerk	8 hr/5 day wk	12 mo	$ 7.00 hr
Laborers	variable		
Project Foreman	variable		
VPSO		12 mo	$1,338.00 mo
Chief of Police	8 hr/5 day wk	12 mo	$ 9.00 hr
Patrol Officer	variable	12 mo	$ 7.00 hr
Health Aide	4 hr/5 day wk	12 mo	$ 7.00 hr
Alternate Health Aide (2)	variable		
State School District			
Cook (2)	5 hr/5 day wk	9 mo	$11.56 hr
Substitute Cook (2)	variable		$11.56 hr
Custodian (2)	5 hr/5 day wk	9 mo	$11.02 hr
Maintenance-Mechanic (1)	7.5 hr/5 day wk	12 mo	$16.20 hr
Associate Teacher (1)	7.5 hr/5 day wk	9 mo	$12.00 hr
Teacher Aide (5)	7.5 hr/5 day wk	9 mo	$11.02 hr
Laborer (1)	7.5 hr/5 day wk	9 mo	$ 9.97 hr
Clerk Typist (1)	7.5 hr/5 day wk	9 mo	$11.02 hr
Other State/Federal/AVCP			
U.S. Postal Clerk	4 hr/5 day wk	12 mo	$7,000.00+ yr
Airport Maintenance	variable	12 mo	$3,000.00 to $6,000.00+ yr
Food Stamp Fee Agent	variable		$8.00- $12.00 per application
National Guard (16)	8 hr x 39 days @ yr		$2,500.00 yr

TABLE 22. -- CONTINUED

Employer and Position	FT/PT	Seasonality	Scale
Goodnew Bay Corporation			
Manager	variable	12 mo	$ 7.00 hr
Accountant	variable	12 mo	$ 7.00 hr
Store (4)	8 hr/5 day wk	12 mo	$ 7.00 hr
Oil and Gas Manager	8 hr/5 day wk	12 mo	$ 7.00 hr
Laborers	variable		
Other Wage Employment			
AVEC	variable	12 mo	$ 8.00 hr
AVEC relief	variable		$ 8.00 hr
United Utilities (2)	<20 hr wk	12 mo	$ 6.00 hr
Airline Agent	variable	12 mo	$500.00+ mo

TABLE 23. SOURCES OF WAGE EMPLOYMENT, TOGIAK, 1983.

Employer and Position	FT/PT	Seasonality	Scale
City of Togiak			
City Administrator	7 hr/5 day wk	10 mo	$ 6.00 hr
City Clerk	7 hr/5 day wk	12 mo	$ 6.00 hr
Land Planner	4 hr/5 day wk	10 mo	$ 6.00 hr
Accounting Clerk	6 hr/5 day wk	12 mo	$ 6.00 hr
Water and Sewer (2)	8 hr/5 day wk	12 mo	$ 7.00 hr
Garbage Collector (2)	6 hr/5 day wk	12 mo	$ 5.00 hr
Warehouse Mechanic (2)	8 hr/5 day wk	10 mo	$ 5.00 hr
Janitorial Maintenance	2 hr/5 day wk	10 mo	$ 5.00hr
Restaurant Staff (4)	6 hr/variable	12 mo	$ 5.00 hr
Dog Catcher (2)	variable	variable	$ 5.00 hr
Chief of Police	7 hr/variable	10 mo	$ 7.00 hr
Police Officer (2)	variable	9-10 mo	$ 6..00 hr
Temporary Laborer (numerous)	variable	variable	$ 7.00 hr
Southwest Region Schools			
Custodian (2)	8 hr/5 day wk	9 mo	$11.47 hr
Cook (2)	5 hr/5 day wk	9 mo	$11.47 hr
Cook Substitute	variable	variable	$11.47 hr
Teacher (2)	8 hr/5 day wk	9 mo	$22.00 hr
Special Education Teacher	8 hr/5 day wk	9 mo	$18.00 hr
Bilingual Teacher Aide	8 hr/5 day wk	9 mo	$15.00 hr
Teacher Aide (2)	8 hr/5 day wk	9 mo	$11.47 hr
Teacher Aide (2)	4 hr/5 day wk	9 mo	$11.47 hr
Librarian	4 hr/5 day wk	9 mo	$11.47 hr
Substitute (20)	(equivalent to 3 full-time teaching positions)		

TABLE 23. -- CONTINUED

Employer and Position	FT/ PT	Seasonality	Scale
Other State/Federal/AVCP			
U.S. Postmistress	8 hr/5-6 day wk	12 mo	$14.00 hr
U.S. Postal Clerk	4 hr/5-6 day wk	12 mo	$10.00 hr
BBAHC Health Aide (2)	6 hr/5-6 day wk	12 mo	$ 7.00 hr
BBAHC Health Aide Alternate	variable	variable	$ 7.00 hr .
BBAHC Alcoholism Counselor	6 hr/5-6 day wk	12 mo	$ 7.00hr
JOM & Indian Education Activity	7 hr/5 day wk	9 mo	$ 7.00hr
JOM & Indian Education Assistant	variable	9 mo	$ 5.00 hr
JOM & Indian Education Preschool	4 hr/5 day wk	9 mo	$ 5.00 hr
Airport Maintenance	variable	variable	$3,000.00 yr
Food Stamp Fee Agent	$8-12 per application		
VPSO (2)	8 hr/5 day wk	9-10 mo	$17,000.00 yr
National Guard (18)	39 days/yr	winter	$2,500.00 yr
Weather Observers	daily/variable	12 mo	

TABLE 23. -- CONTINUED

Employer and Position	FT/PT	Seasonality	Scale
Other Wage Employment			
AVEC (2)	1-2 hr daily	12 mo	$ 8.00 hr
United Utilities	20 hr/wk	12 mo	$ 6.00 hr
Airline Agent (3)	variable	12 mo	$200-500 mo
Togiak Fish Cannery	seasonal	2 1/2 mo	$5.00-7.00 hr
Kachemak Seafoods	seasonal	2 1/2 mo	$4.00-6.00 hr
Clerk Coop. Store	7 hr/6 day wk	12 mo	$7.00 hr
Manager Coop. Store	7 hr/6 day wk	10 mo	5% of gross
Fuel Custodian (private)	variable	9 mo	$5,000.00 yr
Six Family Stores	variable	flexible	variable
Togiak Natives Ltd. Corporation			
Business Manager	7 hr/5 day wk	12 mo	$ 8.00 hr
Secretary	7 hr/5 day wk	10 mo	$ 8.00 hr
Store Employee (6)	6 hr/5 day wk	12 mo	$ 6.00 hr
Construction Labor (9)	variable	variable	$15.00 hr

TABLE 24. SOURCES OF WAGE EMPLOYMENT, NEW STUYAHOK, 1983.

Employer and Position	FT/PT	Seasonality	Scale
City of New Stuyahok			
Administrator	FT	10-11 mo	$12,000 yr
Clerk/Secretary	FT	12 mo	$10,000 yr
AVEC (2)	PT	variable	$ 4,000 yr
Garbage Collectors (2)	PT	flexible	$ 3,000 yr
Janitor Maintenance	PT	12 mo	$ 3,000 yr
Police Officers (2)	PT	10 mo	$ 5,000 yr
Temporary Employment	variable	winter	
Southwest Region Schools			
Custodian (2)	8 hr	9-10 mo	$19,000 yr
Cook (2)	FT	9 mo	$ 9,000 yr
Secretary	FT	9 mo	$14,000 yr
Librarian	PT	9 mo	$ 6,000 yr
Special Education Teacher	FT	9 mo	$12,200 yr
Teacher Aide	FT	9 mo	$12,200 yr
Bilingual Aide	FT	9 mo	$14,700 yr
Teacher Aide	PT	9 mo	$ 6,000 yr
Substitutes (numerous)	variable	variable	$ 9,000 yr

TABLE 24. -- CONTINUED

Employer and Position	FT/ PT	Seasonality	Scale
Other State/Federal/AVCP			
U.S. Postmaster	PT	12 mo	$10,000 yr
BBAHC Health Aide (2)	FT	12 mo	$12,900 yr
BBAHC Alternate Aide (2)	variable	variable	
JOM & Indian Education Coordinator	FT	9 mo	$ 7,000 yr
JOM & Indian Education Assistant	PT	variable	$ 1,000 yr
VPSO	FT	12 mo	$14,000 yr
Airport Maintenance	PT	Winter	$ 4,500 yr
Food Stamp Fee Agent	PT	$8-12 per application	
Stuyahok Corporation			
Store Manager	Flexible	10 mo	5% of gross
Store Clerk (2)	PT	10-12 mo	sales
Store Stocker	PT	variable	
Secretary	PT	flexible "	$ 6,000 yr
Administrator	FT	flexible	$10,000 yr
Manager (no salary at present)			
Other Wage Employment			
Cannery (4)	FT	1-2 1/2 mo	$ 7-12. hr
Mail Hauler	PT	12 mo	$ 3,000 yr
Private Store	PT	irregular	

overall, the largest employer with permanent positions in each of the communities is the school district, with the city being the second largest employer except in Togiak and New Stuyahok, where the city and school district have a comparable number of positions. The school districts pay the best wages for full-time and part-time employment, with the exception of seasonal and temporary construction employment. Economic conditions have changed in each of the communities over the past few decades. The cannery is no longer an important source of income for most community residents.

Following is a brief description and comparison of the wage employment sector in terms of levels of participation in various types of employment, seasonality and time requirements, and scale of earnings. This will be accomplished by examining the positions according to major employers.

Canneries. Prior to the start of the commercial salmon fishery in each of the study communities, men and, in some cases, women left the villages to work in canneries located on the shore on the Nushagak Bay. In fact, villages like Quinhagak became communities of women and children for a month or so each summer. Recruiters went into the more remote communities, picked up the workers, and flew them to the Nushagak district. Young boys began working at the canneries at about the age of 16 years. When the commercial fishery commenced in the Kuskokwim Bay region, most adult men quit going to the cannery. For instance, in Quinhagak only 3 adult men currently go, along with about 15 adolescents and young adults. They primarily work at Ekuk rather than at the processor in Bethel, In New Stuyahok, only one adult male and

three women work for the Peter Pan Seafoods cannery. On the other hand, Togiak has two local canneries with a third processor to open in the 1984 season. In 1983 a large number of local residents, primarily adolescents or young adults, were employed by one of the two canneries. There were at least ten adult women but no adult men employed. The largest employer of local residents was Kachemak Seafoods, which is located in Togiak. Except for key personnel, this cannery employed only local residents (approximately 40 during the month of June). Togiak Fish employed about eight adult women from Togiak, and the rest of the personnel were non-local.

Wages at the canneries varied. The Ekuk cannery started at $6.10 per hour with time-and-a-half for 'overtime. This is about the same wage as paid by Peter Pan and other canneries of the Nushagak River. Beginners wages at Togiak Fish are approximately the same as Peter Pan, but Kachemak Seafoods started workers at $5.00/hr for inexperienced help and $5.50/hr for experienced employees. The Nushagak canneries operate from mid-June through July, and the Togiak canneries operate well into August. Both Nushagak and Togiak canneries have overtime schedules during the intense periods of the fishery. The work is long, hard, and strenuous. The canneries, except for Kachemak Seafoods in Togiak, furnishes room and board. If a worker stays through the season, the total earnings range from $3,000 to $7,000. Also, a person can draw some unemployment during the winter for the period worked in the cannery.

It is instructive to explore the reasons why men switched to commercial fishing from cannery work when given the opportunity.

Currently there appears to be some economic motivation, since even the lowest average fishing wage (in Quinhagak) is as great as the maximum cannery wage for a season. However, the earning differential was considerably smaller in the 1950s and early 1960s when people opted for fishing over cannery employment. Although fishermen have greater potential earnings on the average than a cannery worker, they also can suffer greater losses especially if they have equipment failure.

Most of the reasons given for quitting cannery work were social rather than economic in nature, including long working hours and the presence of alcohol abuse at the canneries. There are other possible factors. The cannery worker gives up some degree of autonomy and freedom in working for an employer, whereas commercial fishing is done for oneself and for one's kinsmen. Labor is sold to a boss who controls the pace and duration of work. Moreover, there is little correspondence between level of effort and earnings. On the other hand, commercial fishing preserves the relative autonomy of the hunter and fisherman. The fisherman controls his own labor, establishes his own schedule, and directly reaps the benefits (and losses) of his effort. Fishing also holds potential for substantially larger profits. Thus, the development of local fisheries deflected workers away from wage labor to simple commodity production which is more consistent with traditional fishing and hunting activities. It is not surprising, then, that local participation in cannery work commonly involves youth and young adults. It is often the only source of cash available to these age groups.

State and federally funded jobs. The primary and secondary schools provide some of the most secure and high-paying jobs in each of the

study communities. Both Quinhagak and Goodnews Bay constructed new high schools in 1980 and 1981, respectively. Togiak has had a kindergarten through 12th grade school system since 1959, and its school was renovated in 1973 and 1974.

As shown in Tables 21 to 24, there were 20 positions held by local residents in the Quinhagak school, 13 positions in the Goodnews Bay school, 13 positions in the Togiak school, and 10 positions in the New Stuyahok school. The positions range from custodian/maintenance personnel to teachers and teacher aides. The remainder of the school positions are held by non-locals. Most of the non-resident teachers leave the villages during summer months. Of the 15 teaching positions in Quinhagak and Togiak, 1 teaching position in Quinhagak was held by a locally-born resident and 2 of the teachers in Togiak have married local residents and live in Togiak year-round.

The school year for most full-time positions is 188 days, although in Quinhagak the cooks and janitor work 3 to 4 weeks longer. The maintenance positions in Quinhagak and Goodnews Bay are year-round. Salaries are relatively high and work times are strictly scheduled. All positions start at around $11,00 per hour and range from 4 to 8 hours, 5 days a week. It is interesting to note that in most cases, should a person need time off, there is always someone trained and available to replace them for whatever period of time. This includes teachers as well as custodians.

Finally, it is noteworthy that most of the local jobs are held by women. For example, in 1982-83 in Quinhagak 14 of the 20 positions were filled by women. In Togiak 8 of the 11 positions were filled by women,

if the 2 in-married school teachers were excluded. In New Stuyahok six of ten positions were filled by women. Thus, the school system is providing a source of employment for women in the study communities. It was reported that younger people are aware of the positions available in the school system and are studying to fill them in the future. Currently, there are five students from Togiak working on college degrees in education, who are hoping to work eventually at the local school.

Other state and federal jobs in the villages include primarily postal workers, health aides, airport maintenance, security, and the military. The time requirements for these jobs are highly variable. The postal and health aide positions require regular hours, ranging from four to eight, at least five days a week. On the other hand, airport maintenance workers, weather observers, and members of the National Guard have much more flexible hours and the National Guard does not meet during the spring, summer, and fall. Thus, the 18 National Guardsmen of Togiak, 16 of Goodnews Bay, and 31 of Quinhagak are not required to break up their weeks or summers to fulfill their National Guard obligations. The income for the year is minimally $45,000 for the entire community of Togiak, while the Goodnews Bay community income is around $40,000. Guardsmen individual salaries are approximately $2,500 per year. The postal and health aide positions require regular attendance. They are usually held by women and are some of the only positions to be active during summer months. On the other hand, the men who hold the two VPSO positions in Togiak take leave for the summer and return to full-time duties in the fall.

The income generated from these jobs is much less then the income , generated by the school system, but it is fairly high given the fewer temporal restrictions associated with the majority of these jobs. The full-time positions range between $7,000 and $25,000 annually, which is equivalent to or greater than the incomes of some fishermen, especially in Quinhagak. In short, many positions associated with state and federal government funds are relatively high-paying and secure sources of income for these communities.

City and corporation jobs. Most of the city positions are the result of an effort by various state and local agencies to develop serviced and associated infrastructure within the study communities. The positions now funded by the city to provide these services are presented in Tables 21 to 24. In a comparative perspective, it appears that Togiak and Quinhagak have developed a large number of service and administrative jobs, whereas Goodnews Bay and New Stuyahok have a less well-developed service-related Infrastructure. The City of Quinhagak, as shown in Table 21, employs at least 17 full- or part-time persons; Goodnews Bay, Table 22, has 7 regular employees; Togiak, Table 23, employs 18 persons if the 2 dog catchers are excluded (they rarely work); and the City of New Stuyahok, Table 24, has 9 employees. The types of work include administrative, security, water and sewage, garbage collection, and maintenance positions. The City of Togiak has developed two businesses, which employ people, provide a necessary service, and earn the city an income. The most recent Togiak business is a restaurant, which employs a least four people over the year and earns a substantial income, particularly during the summer. The other

is an automotive repair shop, which employs two trained mechanics on a salary and commission basis. This shop maintains the city's trucks and equipment, but also repairs residents vehicles and outboard motors. Finally, the study community governments provide temporary construction work during many years. Each new building or housing program employs local persons hired by the city. The pay for such temporary employment is highly variable but remains within the range of city hourly pay presented in Tables 21 to 24.

City jobs in Quinhagak and Goodnews Bay are scheduled on a 12-month basis, with regular hours ranging from 4 to 8, 5 days a week. These city services are fully operative during the summer fishing season. In Togiak and New Stuyahok there are fewer city employees during the summer fishing season. Moreover, those jobs which are critical to the functioning of the city governments are either held by persons not involved in commercial fishing or else substitutes are enlisted during the period of the regular employees' absence. It appears to be anticipated by residents that the city will function with a skeletal or substitute crew during the summer.

In Quinhagak, there appears to be more of an effort to keep city services operating during the summer. The commercial fishing schedule of two 12-hour open periods a week, 6pm to 6am, allows fishermen to maintain their summer wage positions by working double shifts. There is some seasonal absenteeism due to fishing, especially for secondary positions in city services, such as assistants in the water plant, janitorial jobs, and VPSO positions. Fishing leaves of absences are granted by the City Council, but some jobs simply turn over when summer

approaches. There has been a selection process over time whereby some full-time wage positions have come to be held by persons without limited entry permits, because they are not faced with scheduling conflicts when summer arrives. Of wage positions in the community, 75 percent were held by persons without limited entry permits. Thus, unlike Togiak and Goodnews Bay, in Quinhagak a type of differentiation by employment between those working as commercial fishermen and those working at wage employment appears to he developing.

Positions associated with the city pay, on the whole, a much lower wage than do state and federal positions. In Togiak, city hourly rates are nearly half that payed by the school district. Yet the hours are quite flexible, the income is steady, and the positions relatively secure. It is not uncommon for men in various city positions to take one or two weeks off in the winter to hunt, trap, and participate in other subsistence activities.

In each of the communities, the local village profit corporation has developed some local employment. This employment is usually associated with grocery or general store businesses. Togiak's first store commenced business in June 1983. In Togiak, the corporation has been a source of building construction work during the winter and spring months over the past two years. In Goodnews Bay the corporation has employees which staff the store. Quinhagak has considered the possibility of developing its own buying and processing capabilities. The wages paid by the corporations are quite good, ranging from $6 to $15 per hour. The work schedules vary between 10 and 12 months with a fair

amount of flexibility. The daily work schedule is highly variable for everyone except store employees.

Other wage employment. This category includes private employment and income from non-local sources, such as from commercial airlines and the telephone utility. Employees are all part-time, working less than 20 hours per week; they are often on call. Airline employees typically work irregular hours, and if they are fishermen, they will train other members of the family to take over in their absence. The utilities try to employ two persons, so that one is always free to leave, thus providing scheduling flexibility. In Togiak both AVEC employees are fishermen, and they either must return each morning or evening to set the fuel valve or have someone else do it.

Transfer Payments

Last, various forms of governmental subsidy to community residents are described. These include unemployment benefits, food stamps, public assistance, and state dividend payments. Table 25 presents the comparative value of transfer payments to the study communities, excluding unemployment insurance and the 1982 dividend check. It was not possible to calculate unemployment benefits to the study communities from state records, as study communities were combined with other villages into subregions. Although unemployment payments are a source of income for a number of persons in each community over the course of the year, it is impossible to determine the level of participation of any one community or the amount of income generated from this source.

Table 25 shows that Quinhagak has the largest amount of income from transfer payments, while Togiak, New Stuyahok, and Goodnews Bay receive substantially less. It is not clear whether this pattern reflects a difference in relative wealth or a more efficient fee agent. Table 25 presents the annual per capita payment of public assistance, food stamps, and energy assistance. Public assistance programs are administered by the Department of Health and Social Services. These programs include Aid to Families With Dependent Children (AFDC) and the Adult Public Assistance Programs (APA), including Old Age Assistance, Aid to the Permanently Disabled, and Aid to the Blind. Table 25 indicates that the per capita payment in Quinhagak is $338, followed by Goodnews Bay with $318, New Stuyahok with $190, and Togiak with $130. Public assistance in the communities comes primarily in the form of AFDC or APA for the elderly. The latter is a supplement to federal social security payments. The monthly AFDC payment for two children and one adult is approximately $614. For an elderly couple living together, both of whom are eligible, benefits under APA are $802 monthly.

The food stamp program is also administered by the Department of Health and Social Services. Recipients must meet eligibility requirements, including resources and income criteria. For example, the maximum allowable monthly income for a household of four which has no more than $1,500 in cash, savings, and other liquid assets, is $1,260. Table 25 indicates that Quinhagak received $136,388 worth of foodstamps in 1982, while the other study communities received less than $35,000.

TABLE 25. TRANSFER PAYMENTS BY COMMUNITY.

Public Assistance	Average Cases/ Month	Annual Per Capita Payments[a]	Total Annual Payments
Goodnews Bay	18	$318	$ 55,080
Quinhagak	45	$338	$144,516
New Stuyahok	14	$190	$ 63,994
Togiak	27	$130	$ 65,880
Food stamps			
Goodnews Bay	8	$201	$ 34,708
Quinhagak	34	$319	$136,388
New Stuyahok	6	$ 68	$ 23,012
Togiak	5	$ 50	$ 25,112
Energy Assistance			
Goodnews Bay	22	$ 87	$ 15,000
Quinhagak	36	$ 59	$ 25,000
New Stuyahok	40	$ 89	$ 30,000
Togiak	64	$ 92	$ 47,000
Total			
Goodnews Bay		$606	$104,788
Quinhagak		$716	$305,904
New Stuyahok		$347	$116,996
Togiak		$272	$137,992

[a]Calculated using 1982 population totals.

Energy assistance is provided to communities under the federally-funded Energy Assistance Program. It provides cash assistance for home energy costs to low income households. The maximum allowable gross monthly income for a family of four is $1,637. The benefits varied from $250 to $825 depending on fuel costs, income, and geographic location. Cash payments are generally made directly to the energy supplier.

Transfer payments into the communities represent varying percentages of the total incomes of the study communities. In Quinhagak, they represented 13.4 percent of the total community income in 1982, excluding the dividend; in New Stuyahok 9.6 percent; in Goodnews Bay 7.9 percent; and in Togiak 3.0 percent, all excluding dividend payments. Because of"'poor earnings in 1982 due to the fishermen's strike, the percentage does not reflect the general pattern for New Stuyahok. The major form of transfer payments is public assistance, with the largest amount providing old age assistance in the form of a supplement to federal social security benefits. It is largely through such programs that the elderly have an income, as most of them have not worked the necessary quarters (40) to be eligible for social security, or their earnings were so low that they receive only minimum benefits.

Finally, it is assumed in this study that each of the residents of the study communities have received their 1982 dividend payment of $1,000." That means that the community of Quinhagak received a one-time cash income of about $425,000, Goodnews Bay $173,000, Togiak $530,000, and New Stuyahok $304,000. By combining the transfer payments with the dividend payments, the percentage of income they represent to the

respective communities for 1982 is as follows: Quinhagak, 32.1 percent; Goodnews Bay, 20.9 percent; Togiak, 14.5 percent; and New Stuyahok, 34.3 percent. This indicates that in 1982, transfer payments represented a substantial portion of each community's income. Since the dividends were a one-time source of income, they are not significant over the long run for the study communities.

To summarize, the sources of income for individuals or families within these communities include simple commodity production for sale, wage employment, and transfer payments. Of the three general types, simple commodity production, particularly in the form of commercial fishing, is the largest single source of income for the communities. Wage employment second, with city, state, and federally-funded positions providing the major sources of income in this category. Transfer payments, excluding the one time dividend payment, are a significant source of income for the elderly in each of the communities, as they are no longer part of the commercial fishing or wage employment work force. This suggests that transfer payments are not supporting persons who are capable of work or the unemployed, but rather those persons who no longer are able to perform in the work force due to a number of factors such as age.

Finally, wage employment is a significant source of income for those individuals or families who do not have a fishing permit. Each of the study communities has a large number" of households, which does not have a salmon fishing permit. Household strategies and options are considered in Chapter 9.

INCOME SECURITY AND LEVELS OF INCOME

The following is a description of the levels of income for each community in addition to household and individual distribution. This is followed by a discussion of the relative security of income in each of the study communities. There are at least two different types of community income which can be described: that which is generated by the city through a variety of sources, including grants, taxes, and other federal or state revenues; and sources of income to the individual within the community, including small commodity production, wage employment, transfer payments, and other sources of income as from business ventures, rents, and the like. Is is easier to describe and calculate the former than the latter, in that each city has an annual audit which reflects expenditures and revenues by sources. Individual income is always an estimate, since records are available only for certain types of income, and individuals do not accurately remember their income from all sources over the course of the year. Therefore, total income from individual earnings are estimated.

Table 26 presents the annual revenues for each of the communities for fiscal year 1982. The major sources of revenue for each of the communities are sales tax for Quinhagak and Togiak; charges for services, such as water and sewer; enterprise revenues, such as sale of fuel or the Togiak restaurant; other internally-generated revenues, such as rents to the health clinics; and revenues from other governmental agencies. It is readily apparent that Goodnews Bay does not even approximate the revenues of either Quinhagak or Togiak. On the

TABLE 26. ANNUAL REVENUES, FY 1982.

		Quinhagak	Goodnews Bay		Togiak	New Stuyahok
Revenues						
Sales tax	(1.0%)	11,267	0	(2.0%)	31,077	0
Services		26,437	0		29,239	0
Enterprise revenues		40,826	0		61,268	8,250
Other revenues						
Rents/leases		606	4,588		23,770	0
Fines		329	0		1,425	0
Miscellaneous		0	4,449		11,282	0
Revenues from other governments						
Federal revenue sharing		24,101	0		6,295	0
State revenue sharing		28,372	0		17,045	30,819
Municipal assistance refd.		478	32,971		104,713	0
Other						
Fish tax		0	0		22,949	0
Municipal aid and grants		165,040	49,274		332,456	352,000
Energy audits		10,530	0		22,887	0
Municipal assistance		82,136	0		16,670	64,811
RDA grant		27,000	0		100,000	0
Library aide		5,415	0		0	0
	Total	422,537	91,283		781,107	455,965

other hand, New Stuyahok received a large number of assistance grants in 1982, but has no other internally-generated sources of revenue. In short, Quinhagak and Togiak appear to have the most developed services and related infrastructures. In this way they appear to be much more secure in their ability to meet local needs on a continuing basis and also to be able to secure funds from resources outside of the community. As previously discussed, in Goodnews Bay there are indications that the community does not have a fully functional "western" government and therefore has been unable to develop a fully functional service infrastructure. On the other hand, New Stuyahok is only now beginning to take advantage of these external funding sources. For example, in fiscal year 1981 they had a total annual revenue of approximately $44,000. They too have no municipally developed infrastructure. This is reflected in the number of positions associated with the city (two full-time and seven part-time jobs). Moreover, until this past fiscal year, the community had not received an assistance grant other than revenue sharing since 1975. This past year New Stuyahok secured over $400,000 in municipal assistance grants. As previously discussed, there are plans to expand the water and sewer system in 1984. The situation may be changing in the community, which would mean an increasing development of an infrastructure which would imply new sources of income for residents in the form of maintenance, operation, and administrative positions.

In examination of Table 26, it is evident that both Quinhagak and Togiak have activated a number of municipal powers invested in second class cities. Both have established a sales tax (1.0 percent

in Quinhagak and 2.0 percent in Togiak). In addition, they levy fines, provide services such as water and sewage disposal, and, as previously discussed, have developed a number of enterprises. Goodnews Bay and New Stuyahok do not have the same level of municipal development.

Individual incomes have been increasing in the study communities over the past five years. Tables 27 to 30 present the sources of monetary income, the amount from the source, and its percentage contribution to the total income for each study community. Income is calculated with and without transfer and dividend payments. Tables 27 to 30 indicate that the largest single source of income is commercial fishing followed by wage employment. Togiak residents derived the greatest percentage of earnings from commercial fishing. In fact, income from employment is nearly equal to that derived from fishing in Quinhagak {51.5 percent Is earned by fishing and 47.2 percent is derived from wage employment in Quinhagak; 52 percent is derived from fishing and 47.6 percent is derived from wage employment in Goodnews Bay). New Stuyahok had one of its poorest fishing years in 1982 because of the strike, and hence the figures do not reflect the more normal pattern. Yet fishing provided the community with 62 percent of its income in this poor year.

Togiak residents earn the smallest percentage of their incomes (22.8 percent) from wage employment; New Stuyahok residents earn 35.7 percent from wage employment; and Quinhagak and Goodnews Bay residents earn the most from wage employment (47.2 percent and 47.6 percent respectively). As previously mentioned, state and federal governments are the most important employer, especially regional school systems,

TABLE 27. 1982 ESTIMATED MONETARY INCOME, QUINHAGAK, BY SOURCE.

	Without Transfer and Dividend Payments		With Transfer and Dividend Payments	
Source of Income[a]	Income	Percentage	Income	Percentage
Commercial fishery	$796,000	51.5	$796,000	35.0
State and federal employment	$466,000	30.1	$466,000	20.5
City of Quinhagak	$153,000	9.8	$153,000	6.7
Qanirtuuq Corporation	$ 50,000	3.2	$ 50,000	2.2
Commercial trapping	$ 17,000	1.1	$ 17,000	(-).7
Other employment	$ 64,000	4.1	$ 64,000	2.8
Transfer payments[c]			$306,000	13.4
Dividend payments			$425,000	18.7
Total	1,546,000	100.0	$2,277,000	100.0

[a]Excludes income from a family-operated store, charter service, and non-resident teachers.

[b]Includes employment by AVEC, United Utilities, Sea Airmotive, Wein Air Alaska, and non-local canneries.

[c]Includes public assistance, food stamps, and energy assistance.

TABLE 28. 1982 ESTIMATED MONETARY INCOME, TOGIAK, BY SOURCE.

Source of Income[a]	Without Transfer and Dividend Payments		With Transfer and Dividend Payments	
	Income	Percentage	Income	Percentage
Commercial fishery	$3,061,000	77.9	$3,061,000	66.6
State and federal employment	$ 398,000	10.1	$ 398,000	8.7
City of Togiak	$ 171,000	4.4	$ 171,000	3.7
Togiak Natives Ltd	$ 86,000	2.2	$ 86,000	1.9
Commercial trapping	$ 10,000	0.2	$ 10,000	0.2
Cannery employment	$ 60,000	1.5	$ 60,000	1.3
Other employment	$ 141,000	3.6	$ 141,000	3.1
Transfer payments[c]			$ 138,000	3.0
Dividend payments			$ 530,000	11.5
Total	$3,927,000	99.9	$4,595,000	100.0

[a]Excludes income from non-resident teachers, family-operated stores, and temporary employment.

[b]Includes employment by AVEC, Cooperative Store, United Utilities, airline agents, airline pilots, and private fuel distributor.

[c]Includes public assistance, food stamps, and energy assistance.

TABLE 29. 1982 ESTIMATED MONETARY INCOME, GOODNEWS BAY, BY SOURCE.

	Without Transfer and Dividend Payments		With Transfer and Dividend Payments	
Source of Incomes	Income	Percentage	Income	Percentage
Commercial fishery	$546,000	52.0	$546,000	41*0
State and federal employment	$258,000	24.6	$258,000	19.4
City of Goodnews Bay	$ 98,000	9.3	$ 98,000	7.3
Goodnews Bay Corp.	$121,000	11.5	$121,000	9.0
Commercial trapping	$ 4,500	0.4	$ 4,500	0.4
Other employment	$ 23,000	2.2	$ 23,000	1.7
Transfer payments[c]			$109,000	8.2
Dividend payments			$173,000	13.0
-Total	$1,050,500	100.0	$1,332,500	100.0

[a]Excludes income from non-resident teachers, family-operated stores, and temporary employment.

[b]Includes employment by AVEC , Corporation Store, United Utilities, and airline agents.

[c]Includes public assistance, food stamps, and energy assistance.

TABLE 30. 1982 ESTIMATED MONETARY INCOME, NEW STUYAHOK, BY SOURCE.

	Without Transfer and Dividend Payments		With Transfer and Dividend Payments	
Source of Income[a]	Income	Percentage	Income	Percentage
Commercial fishery	$495,000	62.0	$495,000	40.7
State and federal employment	$175,000	21.9	$175,000	14.4
City of New Stuyahok	$ 65,000	8.1	$ 65,000	5*4
Stuyahok Corporation	$ 20,000	2.5	$ 20,000	1.6
Commercial trapping	$ 19,000	2.4	$ 19,000	1.6
Cannery	$ 10,000	1.3	$ 10,000	0.8
Other employment[b]	$ 15,000	1.9	s 15,000	1.2
Transfer payments[c]			$117,000	9.6
Dividend payments			$300,000	24.7
Total	$799,000	100.0	$1,216,000	100.0

[a]Excludes income from non-resident teachers, family-operated stores, and temporary employment.

[b]Includes employment by AVEC , Cooperative Store, United Utilities, airline agents, and private fuel distributor.

[c]Includes public assistance, food stamps, and energy assistance.

City employment is much lower in terms of total earnings, but it does provide a sizable number of steady, full-time positions, except in New Stuyahok. Both the city and the village corporations are seeking ways to benefit the community by providing services and a source of income for the residents. In both Togiak and Quinhagak the corporations are pursuing various means to gain a greater control over the local fishery by developing processing capabilities. This would allow greater security in the fishery and expanded employment potential. Both the cities and the corporations tend to be fairly flexible in their requisites for hours worked and time taken off by employees to pursue either subsistence hunting or commercial fishing. As noted earlier, Togiak and New Stuyahok operate with only a skeletal crew during the summer months. Moreover, a leave of absence for a week or two for subsistence or other travel is granted by the city to its employees with little equivocation, although it has been reported that Quinhagak tries to enforce a_ stricter policy of job attendance. In general, local employment offers flexibility in hours and absences that would not be accepted by employers originating from outside the community.

Table 31 presents estimated earned and total average household and per capita incomes for the study communities. Earned income figures do not include income derived from transfer payments or the one-time $1,000 per person dividend payment. Total income statistics include transfer and dividend payments and are quite inflated because of the $1,000 per capita 1982 dividend, which is not expected in future years. As Table 31 suggests, there is a considerable range of both household arid per capita income, with Togiak having the greatest earned and total incomes and New Stuyahok the least of the study communities.

TABLE 31. 1982 EARNED AND TOTAL AVERAGE HOUSEHOLD AND PER CAPITA MONETARY INCOME IN THE STUDY COMMUNITIES.[a]

Communities	Estimated Earned Mean Household Income	Estimated Total Mean Household Income[b]	Estimated Earned Mean Per Capita Income	Estimated Total Mean Per Capita Income[b]
Togiak	$36,361	<42,546	$ 7,746	$ 9,063
Goodnews Bay	$21,010	$26,500	$ 6,072	$ 7,679
Quinhagak	$15,938	$23,474	$ 3,620	$ 5,333
New Stuyahok	$14,527	$22,109	$ 2,371	$ 3,608

[a]Estimated gross earned monetary income before deductions from equipment depreciation and operating expenses in the commercial fishery. Based on 1982 U.S. Census population data and monetary incomes presented in Tables 27, 28, 29, and 30.

[b]These figures include transfer payments and the one-time $1,000 per person dividend.

It could be anticipated that under normal conditions, Quinhagak would be the community with the lowest cash income, as the fishery is not as lucrative and sources of wage income are more limited than in Togiak. New Stuyahok's monetary income in 1982 was unusually low because of the strike. The Quinhagak fishery will only improve when the markets for selling fish expand, as a surplus of unharvested fish historically have been available, but the commercial outlets are not well developed in the Kuskokwim area. Both Goodnews Bay and Togiak have excellent markets, with the latter having the best outside the Nushagak district, Wage labor has developed in all of the communities. There are currently steady jobs with the school, health agencies, post office, and the city.

Efforts are being made to develop additional sources of income and employment within the communities through the village corporation. However, many of the wage employment opportunities depend on state and federal funding sources which are subject to annual change. Al though it has expanded in recent years, the cash economy in the study communities remains a somewhat insecure sector. It is most stable in Togiak.

CAPITAL AND TECHNOLOGY

A more detailed analysis of technology is provided in the chapters on subsistence and commercial fishing. It is particularly noteworthy, however, that capital generated through commercial ventures, such as fishing and wage employment, is" reinvested into technology for further commercial ventures, subsistence, and more traditional pursuits. Tables 32 and 33 present the vehicles, aircraft, boats, and motors in the study communities and reflect the degree of investment in technology and the relative wealth of the communities. Table 32 presents the vehicles found in each of the communities. The number of cars, trucks, and boats reflects the wealth of Togiak. There is nearly one car or truck per household in Togiak compared to .10 in Goodnews Bay. Vehicles such as trucks are used to haul everything from garbage to fish. There are five airplanes in Togiak, which are used for a variety of traditional and subsistence activities. For example, some of the hunters will fly to the Alaska Peninsula to hunt caribou in one of the local planes. One local plane owner flies to many of the song fests and other traditional activities, and transports others to and from the festivities.

TABLE 32. VEHICLES AND AIRCRAFT,
TOGIAK, QUINHAGAK, NEW STUYAHOK, AND GOODNEWS BAY.

	Trucks and Cars		Snowmachines		Three-Wheelers		Airplanes	
Community	Total	Per Hhld	Total	Per Hhld	Total	Per Hhld	Total	Per Hhld
Togiak[a]	90	.83	137	1.27	110	1.02	5	.05
Quinhagak[a]	22	.22	-	1.07[b]	90	.92	0[d]	.00
New Stuyahok[a]	7	.13	873	1.59	20[c]	.36	0	.00
Goodnews Bay[a]	5	.10	53	1.10	36	.72	0	.00

[a]Togiak households, N=108; Quinhagak households N=98; New Stuyahok, N=55; Goodnews Bay, N=50

[b]ADFG Commercial Fisheries, 1981, estimate of snowmachines per fishing-household.

[c]Extrapolated from a sample of households.

[d]Excludes airplanes from a privately-owned charter service based in Quinhagak.

TABLE 33. BOATS AND MOTORS,
QUINHAGAK, TOGIAK, NEW STUYAHOK, AND GOODNEWS BAY[a]

	Quinhagak		Togiak		New Stuyahok		Goodnews Bay	
Craft/ Motors	Total	Per Hhld.	Total	Per Hhld.	Total	Per Hhld.	Total	Per Hhld.
Aluminum Herring	7	.07	0	.00	0	.00	0	.00
Wooden skiff	24	.24	5	.05	4b	.07	0	.00
Aluminum skiff	72	.73	123	1.14	35b	.63	28	.56
Togiak skiff (24-30)	6	.06	104	.96	3	.05	29	.58
Fiberglass (26-30)	0	.00	9	.08	0	.00	0	.00
32-foot wood	0	.00	0	.00	10	.18	0	.00
32-foot fiberglass	0	.00	3	.03	15	.27	5	.01
Total craft	109	1.11	244	2.27	67	1.22	62	1.15
<35 HP	37	.38	130	1.20	65b	1.19	34	.68
35 - 75	42	.43					14	.28
55 - 85	27	.28	59	.55	4b	.07	12	.24
90+	1	.01	45	.42	0	.00	4	.08
Inboards	0	.00	15	.14	25	.45	2	.04
Total motors	107	1.10	249	2.30	69"	1.25	66	1.32

[a]Households are: Quinhagak 98; Togiak 108; New Stuyahok 55; and Goodnews Bay 50.
[b]Extrapolated from a sample of households.

Togiak has 2.3 boats per household, almost twice that of the other communities (Quinhagak, 1.1; Goodnews Bay 1.2; New Stuyahok, 1.2). Snowmachines and all-terrain vehicles are found in large numbers in all of the communities, but the largest number is found in New Stuyahok, where snow conditions are advantageous to the use of snowmachines and residents are heavily dependent on terrestrial resources. New Stuyahok has fewer three-wheelers, as there are no beaches on which to operate them.

Table 33 depicts the types of boats and motors present in all of the communities. In Togiak and New Stuyahok, there is a clear division between commercial craft and subsistence craft. The large boats are not used as frequently for subsistence activities, although in Togiak they are used for subsistence activities in the spring. New Stuyahok has invested substantially in larger craft and more expensive technology, whereas Togiak, for the most part, has retained the wooden skiff for commercial fishing and the aluminum skiff for subsistence and set net activities. At Quinhagak, essentially the same. watercraft are used for all subsistence and commercial activities -- the aluminum skiff, which has been replacing the larger wooden skiffs over the past decade or so. Some Quinhagak residents have purchased specialized herring boats, although they use them for salmon fishing as well. Except for New Stuyahok residents, who fish Nushagak Bay, there has not been a high investment in expensive technology for commercial purposes.

Ownership of the technical means of subsistence production can be by the individual, household or a larger kinship grouping. Thus, in

many cases, boats may be owned by the fisherman, but they may also be available for use by anyone in the sharing group, however it is defined. However, this pattern varies by community. This set of relationships will be dealt with in a later chapter. It is sufficient to point out that control over the technical means of production is often vested in a larger group and less frequently rests with an individual.

CHAPTER 6

THE COMMERCIAL FISHERIES

INTRODUCTION

Commercial fisheries for salmon and herring are primary sources of cash and the economic foundation of the cash sector of all four communities in this study, although to different degrees as discussed in Chapter 3. This chapter provides a detailed comparative analysis of the nature and characteristics of the commercial fisheries in each community. First, a brief history of the commercial" salmon fisheries in the study areas and communities is presented along with an overview of the characteristics of the two management areas in which the commercial fisheries take place. This is followed by a detailed comparative analysis of a number of topics concerning the salmon fishery, including: (1) permit types, distribution, use and transfers; (2) technology; (3) markets and prices; (4) earnings and costs; (5) distribution of earnings; and (6) the social organization of production. The herring fisheries are discussed in a separate section after the salmon fisheries.

HISTORICAL BACKGROUND OF FISHERIES DEVELOPMENT

The two areas considered in this study (Bristol. Bay and Kuskokwim Bay) have significantly different histories of fisheries development,

although the Togiak district is more similar to the development in the Kuskokwim area, while the Nushagak district has played a major role in the development of the Bristol Bay fishery since its inception.

Chapter 4 provided an overview of the history of the study areas. As discussed in Chapter 4, the Bristol Bay commercial salmon industry began in the early part of the 1880s with the establishment of a cannery at a site on the southwest shore of Nushagak Bay opposite contemporary Dillingham. Salmon from the Nushagak River were canned at a number of sites around Nushagak Bay reaching a peak of about ten canneries in 1908 (VanStone 1967:72). In similar fashion, canneries began appearing on the Kvichak side of the bay at the mouth of the Naknek River. From these central locations and initial development, the Bristol Bay canned salmon industry expanded to. the Egegik and Ugashik drainages. Intensified efforts on the Naknek, Kvichak, and Nushagak river stocks ultimately led to declines, and a curtailment of effort was required by federal managers in the 1930s.

As suggested in Chapter 4, during the decades prior to World War II, Alaskan Natives were kept out of the harvesting sector of the Bristol Bay fishery by strong unions controlled by fishermen from California and Seattle. Discrimination by cannery operators and the industry's perception that Alaskan Natives were not reliable workers kept their numbers to a minimum even in the canneries themselves well into the 1930s. Alaskan Natives from many villages of west and central (middle Yukon) Alaska, in addition to Bristol Bay villagers, began to work in the canneries in the 1930s, but it was not until World War 11 when many of the non-Alaskan fishermen were serving in the military that

Alaskan Natives were able to penetrate the harvesting sector in significant numbers. After the war, the practice of recruiting all-Native crews from separate villages became widespread in the industry.

The entry of Bristol Bay Natives into the commercial fisheries being conducted on their doorsteps was a long struggle. Villagers from New Stuyahok traditionally came down to work at the canneries at Clarkfs Point and Ekuk where relatives continue to reside. VanStone (1967:81) indicates that it was not until 1961 that many Nushagak village fishermen were able to get boats when the canneries got rid of the older sailboat-type vessels as they upgraded their fleets with newer, more efficient power boats.

Villagers from Togiak and the western part of the bay came to Dillingham, where they camped on the beaches below the community to put up fish and do wage labor for the canneries. The Togiak fishery did not develop as a commercial fishery until after World War II, when buying scows from canneries near Dillingham began coming over to fish. The first recorded commercial harvests for the Togiak district do not appear in Department of Fish and Game records until 1954. These early buying efforts were haphazard, and consequently many Togiak families continued to move to Dillingham to camp on the beaches for the summer. A cannery was finally opened next to the site of Old Togiak near the mouth of the Togiak River in the late 1950s. With the establishment of the cannery, a stable local buyer of fish became available to village residents of Togiak allowing the development of a local fishery. . The response of Togiak village residents was virtually immediate; with a few exceptions, they ceased the long journey and arduous camp phase on

Dillingham's beaches and stayed home to fish the Togiak district salmon and sell them to the cannery at Old Togiak. Togiak men and their sons did the harvesting while many of the wives and daughters went to work in the cannery.

The commercial fishery in the Kuskokwim area is more recent than that of the Togiak district. Prior to 1960, there was virtually no commercial fishery to speak of in the Kuskokwim drainage. In the 1920s there were several small mild-cure operations which operated for many years. During the 1930s when dog teams were intensely utilized for freight hauling, salmon were caught, dried, and sold for dog food in the McGrath area.

No further development of the commercial fishery took place until about 1960. From 1960 until 1968 markets were available only for kings, cohos, and reds. It is likely that declines in king salmon from the Columbia River caught in southeast Alaska, British Columbia, Washington, and Oregon caused fish brokers to look for new supplies. Prior to that time, the tremendous distance of the Kuskokwim River from established markets, the relatively small supply of fish, and the lack of infrastructure to support the commercial salmon industry had all combined to make commercial exploitation of Kuskokwim salmon unfeasible. Subsistence catches of Kuskokwim salmon were not surpassed by commercial catches until 1969, when a commercial market for chum salmon had been established.

The previous discussion of the history of the Kuskokwim commercial salmon fishery pertains to the fishery as it is conducted in the lower Kuskokwim district near Bethel. In Quinhagak and Goodnews Bay

the commercial fishery is even more recent than that of the Bethel area. Alaska Department of Fish and Game statistics for the commercial salmon fishery in Goodnews Bay only go back to 1968. As recent as 1973, the total recorded commercial salmon fishery was 3,510 fish, Although commercial salmon catches for the Quinhagak district are reported as far back as 1960, as recently as 1966 the recorded commercial salmon catch for the district was only 4,186 fish. In both the Goodnews Bay and Quinhagak cases, the lack of development of the local commercial salmon fisheries can be linked to relatively small supplies, poor transportation access, and lack of infrastructure. The situation for the Kuskokwim area is apparently worsened by industry's perception that the quality of fish from the area is poor.

THE BRISTOL BAY AND KUSKOKWIM FISHERY MANAGEMENT AREAS

The communities fall into two distinct fishery management areas, as established by the Board of Fisheries and managed by the Alaska Department of Fish and Game. New Stuyahok and Togiak lie within the boundaries of the Bristol Bay area, home of the largest sockeye salmon run in the world, and fishermen from these two communities fish virtually exclusively in the Bristol Bay area. Total commercial harvests from 1976 to 1982 ranged from 6,718,302 fish to 28,070,252, with catches surpassing 15,000,000 fish in all years from 1978 to 1982. The total ex-vessel dollar value of the Bristol Bay salmon fishery over the 1976 to 1982 period ranged from a low of $21,948,000 in 1976 to a high of $138,405,000 in 1979. Sockeye salmon generally make up from 70 to 93

percent of total catch, comprising a higher percentage in odd-numbered years. In addition to being the most abundant species, sockeye salmon also provide the vast majority of earnings from commercial sale in the Bristol Bay area.

Goodnews Bay and Quinhagak lie within the boundaries of the Kuskokwim area, which borders the Bristol Bay area on the north and west. Although the preponderant majority of fishermen from these two villages fish in the Kuskokwim area, a small minority (less than 10 percent) fish in the Bristol Bay area. In the Kuskokwim districts, total commercial harvests over the 1976 to 1982 period ranged from 447,903 to 1,088,723 fish. Total ex-vessel value from the Kuskokwim area salmon has increased from $1,380,229 in 1976 to an all-time high of $4,213,954 in 1982. These statistics include Bethel harvest totals. Except for 1982 when coho were the most numerous species caught in the area, chum salmon have been the most numerous species caught by Kuskokwim area fishermen, ranging from 52 to 56 percent of the total area catch. Chums do not provide the majority of earnings, however, due to the low relative value of this species. Roughly equal proportions of value on an area basis are provided by-king salmon, whose larger size and higher price combine for substantial earnings. In 1982, for example (a year when the chum run was weak relative to other species), the 325,471 chum salmon caught and sold in the area were worth s514,244 (7.2 pounds average weight x S.22 per pound). The 59,816 king salmon caught and sold, however, brought $1,040,798 to area fishermen (21.8 pounds average weight x $.82 per pound). In previous years the total value produced by the two species tended to be more equal than it was in 1982.

Each area is subdivided into a number of districts by Department of Fish and Game personnel for the purpose of managing the fishery. The Bristol Bay area is divided into five districts, which are from southeast to northwest around the bay: Ugashik, Egegik, Naknek-Kvichak, Nushagak, and Togiak. The Kuskokwim area is also divided into five districts, which are from southwest to northeast: Goodnews Bay (district 5), Quinhagak (district 4), Lower Kuskokwim (district 1), Middle Kuskokwim (district 2), and Upper Kuskokwim (district 3).

Comparative total salmon catches for the districts in which the communities are located are presented in Table 34. The tremendous differences in salmon available to be caught in each of these districts is self-evident. Based on the last 5-year average figures, the Nushagak district is by far the most productive, with the Togiak district being the second most productive, producing only 12.8 percent of the salmon caught in the Nushagak district. The relative abundance of the Togiak fishery compared to that of the Kuskokwim area is also apparent. The Quinhagak district averaged only 14.7 percent of the Togiak district catch, and the Goodnews Bay district averaged only 57.9 percent of the Quinhagak district catch. Comparing the most abundant district with the least abundant district reveals that the 5-year average catch in the Goodnews Bay district was 1.1 percent of the 5-year average catch in the Nushagak district.

In neither the Bristol Bay area nor the Kuskokwim area are the four districts compared in Table 34 dominant in the sense of having the most commercial catch or fishermen of any district in the area. In the Bristol Bay area the dominant district is the Naknek-Kvichak

TABLE 34. TOTAL SALMON CATCH BY DISTRICT, 1975-1982.

Year	Bristol Bay Area		Kuskokwim Area	
	Nushagak District	Togiak District	Goodnews Bay District	Quinhagak District
1975	827,715	316,827	35,058	58,973
1976	2,873,538	520,062	38,651	109,048
1977	1,659,379	570,995	26,954	77,546
1978	8,300,533	885,895	42,087	111,869
1979	4,056,340	832,264	74,382	103,787
1980	7,594,946	1,167,819	93,442	173,873
1981	8,906,901	917,842	80,865	143,080
1982	8,329,076	949,446	113,538	166,616
5-year average[a]	7,437,559	950,643	80,963	139,849
dominant species	red	red, chum	coho, red	chum, coho

district, which has catches typically 50 to 200 percent higher than the Nushagak district. In the Kuskokwim area, district 1 (Lower Kuskokwim, which extends from just below Eek to above Bethel) is the dominant district, with total salmon catches over the last 5 years averaging 500 percent greater than those in the Quinhagak district.

Since any fisherman holding a salmon limited entry permit for the area can fish in any of the districts found in the area, it is apparent that the fishermen of all four communities share a similar potential problem. That potential problem is having the fishing grounds which are traditional to them, and on which they are accustomed to fishing, overrun by fishermen and vessels from the dominant district. Such an influx could easily outnumber local fishermen and substantially reduce their earnings from the local fishery. The degree to which this has occurred or been a problem, however, differs from community to community. New Stuyahok has long competed in a fishing district in which fishermen from many villages as well as from outside of the bay are participants. The other three communities, however, have had relatively little involvement with outside (either Yup'ik or non-Yup'ik) fishermen in their districts until the last two or three years.

WAGING THE FISHERIES: GEAR TYPES AND REGULATIONS

,. In this section the circumstances surrounding the number, distribution, and status of limited entry permits will be discussed by community. In order to understand the discussion, it is important to note at the onset what gear types and vessels are found in each of the

areas, as well as what general regulations govern the use of the different fishing gear types.

In the Bristol Bay area, there are different limited entry permits for the operation of drift gillnet and set gillnet gear. Each of these gear types has distinct regulations governing the amount and types of net and locations in which nets can be deployed. Drift gillnet gear, for example, has to be made of certain materials and be constructed with a certain mesh size. Holders of drift gillnet gear are allowed to fish three shackles, each 50 fathoms in length. The gear may be used only in areas and times designated by Department of Fish and Came personnel under policy guidelines established by the Board of Fisheries.

Set gillnet fishermen in Bristol Bay are allowed only 50 fathoms of net, which can be divided into two shackles of 25 fathoms in length. They must have sites along the shoreline where their nets can be deployed. Such sites have quasi-property rights associated with them, in that individuals can register their set net sites with the state and the rights to use the site can be sold from one individual to another. Mesh width and net material regulations are the same as for drift gillnet fishermen. Set gillnet fishermen also are subject to time and area closures set by Department of Fish and Game personnel.

One final Bristol Bay regulation that is both crucial and controversial at the present time is the vessel length limitation. By regulation, no commercial salmon vessel employed in the harvesting of salmon may be more than 32 feet in length. This regulation limits the efficiency of drift gillnet vessels primarily through the constraint placed on the hold capacity by the size of the vessel. It is

a controversial regulation, because some would like to see the limit lifted in order to purchase larger vessels to diversify into other fisheries, such as purse seining for salmon and herring or for crabbing. Many contend that the length limitation is responsible for the quality problems which plague Bristol Bay red (sockeye) salmon on the fresh and frozen market. Detractors suggest that lack of vessel size and hold capacity make uneconomic investment in the cooling systems, which could better preserve the fish and make them more attractive on the market. The Board of Fisheries conducted a study in 1980 on the question of vessel length and found that over 90 percent of Bristol Bay resident fishermen perceive that lifting the vessel length would be to their detriment in that it would allow the already more technologically advanced fleet used by non-bay resident fishermen to further enhance its catching capability and to take fish away from local fishermen.

The Kuskokwim area has only one type of salmon permit, which is designated as gillnet. Either set or drift gillnet gear can be used with this permit, but drift gillnets are predominantly used due to their greater efficiency and mobility. In the Kuskokwim area only a single shackle 50 fathoms in length is allowed for commercial fishing. Time and area closures" are also established by Department of Fish and Game personnel. There is presently no problem associated with vessel length in the Kuskokwim area, because the limitations on the amount of gear and the comparatively much lower level of earnings have precluded intensification of fishing effort through purchase of larger vessels.

SALMON LIMITED ENTRY PERMITS: DISTRIBUTION, USE, AND Transfers

In the Bristol Bay area in 1982, a total of 1,820 drift gillnet permits were issued, of which 1,722 (94.5 percent) were permanent and 100 (5.5 percent) were interim-use. The designation of interim-use means that the person has been issued a permit to fish pending final adjudication of the individual's application for a permanent permit by the Commercial Fisheries Entry Commission. When that final determination has been made, the individual will either have his permit revoked if it is found that he does not qualify or he will be issued a permanent permit. Since 1976 the number of interim-use permits issued for the Bristol Bay drift gillnet fishery has fluctuated from 99, down to 65, back up to 110, and then back down to the 1982 level of 100. Permanent permits have risen steadily from 1,416 in 1975 to 1,722 in 1982, although only 5 new permanent permits have been issued since 1979. The difference in permanent permit levels between years is associated with annual permit activation.

In the Bristol Bay set gillnet fishery, a total of 947 permits were issued in 1982, of which 906 (95.7 percent) were permanent and 41 (4.3 percent) interim-use. The total number of set gillnet permits rose steadily from 716 in 1975 to 915 in 1981, but then dropped to 906 in 1982. Interim-use permits were at their highest levels in 1981 and 1982 (42 and 41 respectively) since 1975.

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[a]The discussion of permits in this chapter was based solely on Commercial Fisheries Entry Commission (CFEC) data. Therefore, there are some minor discrepancies with field-corrected permit data in Chapter 5.

In addition to the number of Bristol Bay permits issued increasing over the years, the percentage of them being fished has also risen and even more dramatically. In 1977, only 74 percent of drift gillnet permits issued were fished. By 1982 that figure has risen to 98 percent. In the set gillnet fishery only 57 percent of issued permits were fished in 1977, while in 1982 there were 91 percent fished. Both drift and set gillnet rates of use saw sharp increases from 1981 to 1982, with a 7 percent jump from 91 percent to 98 percent in the drift permits used and a 13 percent -increase in the set gillnet permits from 78 percent usage in 1981 to 91 percent in 1982.

Permits are differentially distributed between residents of Bristol Bay proper, residents of Alaska outside of Bristol Bay, and non-residents of Alaska. Examination first of distribution between Alaskan residents (Bristol Bay and other Alaskans) and non-Alaskan residents reveals that in 1982, 42.5 percent of drift gillnet permits were held by non-Alaskans and 57.5 percent by Alaskans. The numbers of Alaskans holding permits grew steadily from 1976 to 1980 but has declined since that time. Non-Alaskan holdings, on the other hand, continuously rose from 1976 to 1982.

In the set gillnet fishery, Alaskans held 735 (77.6 percent) of the 942 permits issued in 1982, while non-Alaskans held 212 (22.4 percent). Alaskan holdings grew steadily from 1976 to 1979 but have declined steadily since that time, although not as steeply as the previous rise. Non-Alaskan holdings have increased dramatically since 1976, increasing by over 52 percent since that time.

Bristol Bay residents are but one component of the heterogeneous Bristol Bay fishery. In 1975 Bristol Bay residents held 38.6 percent of the drift gillnet permits and 62.2 percent of the set gillnet permits. Since that time their percentage of holdings has been steadily dwindling. In 1979 they held 36.1 percent of drift permits and 57.1 percent of set permits. In 1981, the most recent year for which data are available, they held 34.5 percent of drift permits and 53.9 percent of set gillnet permits.

Interim-use permits are also differentially distributed with the large majority of them being held by residents of the bay. Of the 100 interim-use drift permits issued in 1982, 85 were held by residents of Alaska. Of the 41 set gillnet interim-use permits issued, 36 (87.8 percent) were held by Alaskan residents. Thus, Alaskan residents, particularly Bristol Bay residents, are in greater jeopardy of being eliminated from the fishery through revocation of interim-use permits than non-Alaskans given present trends.

In 1982, 810 permits were issued for the Kuskokwim area salmon fishery. No data are available on the changes in those numbers since the inception of limited entry for this fishery in 1976. Likewise there are no comparative data on the number of interim-use permits in the area nor on the rate at which issued permits are being fished. The Alaska Department of Fish and Game indicates, however, that 99 percent of Kuskokwim permit holders are residents of the management area. It would appear that controversy over permits is much less intense in the Kuskokwim area than in Bristol Bay, more than likely due

to the shorter historical depth of the fishery and, more importantly, the relative lack of value of Kuskokwim permits. In 1982 a Bristol Bay drift gillnet permit was valued by the Commercial Fisheries Entry Commission at $100,000, while a Kuskokwim permit was valued at $9,800.

Distribution of salmon limited entry permits by community are displayed in Tables 35 and 36. Table 35 shows important differences in the number and types of permits held in each community as well as the relative role of women as permit holders. In Togiak, over one-third of all the permits were set gillnet permits (46) and over 20 percent of the permit holders (29) were female. Males hold primarily drift permits and females hold set permits. The relationship between gear and gender Is statistically significant. In New Stuyahok there were 32 drift gillnet permits, operated by 31 men and 1 woman. There were no set net permits.

Goodnews Bay and Quinhagak are quite similar to each other in types of permits held, but somewhat different in male-female distribution of permits. They are both markedly different from Togiak and New Stuyahok in their patterns of permit holdings. Quinhagak and Goodnews Bay share the feature of residents holding Kuskokwim area and Bristol Bay area permits, with Kuskokwim area permits 'being predominant in both communities. In Quinhagak the number and relative frequency of Bristol Bay permits is lower that in Goodnews Bay; only 5 of 91 permits in Quinhagak are for Bristol Bay, while 10 of 45 permits in Goodnews Bay are for Bristol Bay. In both communities, Bristol Bay drift gillnet rather than set gillnet are the permits held. This pattern is found because prior to the emergence of commercial fisheries in Goodnews Bay

TABLE 35. DISTRIBUTION OF SALMON PERMITS BY AREA, BY COMMUNITY, AND SEX, 1982.

Community	Bristol Bay Permits				Totals				Kuskokwim Permits			
	Drift		Set									Grand
	Male	Female	Male	Female	Drift	Set	Male	Female	Male	Female	Total	Total
New Stuyahok	31	1	0	0	32	0	31	1	0	0	0	32
Togiak	78	8	25	21	86	46	103	29	1	0	1	133
Goodnews Bay	8	1	1	0	9	1	9	1	28	7	35	45
Quinhagak	5	0	0	0	5	0	5	0	81	5	86	91

TABLE 36. DISTRIBUTION OF SALMON PERMITS, PER HOUSEHOLD, BY COMMUNITY, 1982.

Community	population	Households	Total Permits	Permits/ Capita	Permits/ Hhld	Permits/ Fh[b]
New Stuyahok	304[a]	55a	32[c]	.10	.58	1.07
Togiak	507	108	133	.26	1.23	1.77
Goodnews Bay	173	51	45	.26	.88	1.55
Quinhagak	427	98	91	.21	.93	1.28

Community	Permits in Household 1	2	3	4	>4	Households w/Permits	Households we/Permits	% Households w/Permits
New Stuyahok	3	0	2	0	0	32	25	55
Togiak	41	19	5	4	4	73	43	68
Goodnews Bay	21	5	2	1	0	29	22	56
Quinhagak	55	13:	2	1	0	71	27	72

[a]Includes only Native population of the community.
[b]Fh = fishing household -- households with at least one resident permit holder.
[c]Includes two interim permits

and Quinhagak, men from those communities came to Bristol Bay to fish every summer. Finally, in Goodnews Bay females appear to hold permits at a rate similar to that of Togiak, about 20 percent, while in Quinhagak 6 percent of all permits are held by females, a pattern similar to that of New Stuyahok at 3 percent.

Table 36 reveals information about the distribution of permits among households and by population in the four communities. As is apparent, the communities of Goodnews Bay and New Stuyahok are relatively permit poor at the household level, since in both communities only slightly more than 50 percent of the households have resident permit holders. In Togiak, over two-thirds (68 percent) of the households include resident permit holders, and in Quinhagak nearly three-quarters (72 percent) of the households include permit holders.

Examination of the number of permits per capita in each community reveals a different pattern. Although Goodnews Bay has a relatively low percentage of households with permits, they share with Togiak the highest per capita ratio of permits at .26. This is indicative of both concentration of permits in households and relatively small household size. Togiak, with a .26 per capita ratio of permits, is intermediate in terms of concentration of permits and household size. Despite the broad distribution of permits in Quinhagak, the per capita holdings figure is below that of both Togiak and Goodnews Bay indicating a lack of concentration. New Stuyahok is clearly distinctive and disadvantaged with regard to its per capita permit holding figure. With a figure of .10 permits per person, New Stuyahok has less than

half the number of permits per person of any other community and also is characterized by large household size.

Patterns of permit concentration in households in the communities are revealed by the permits per household and the permits per fishing households statistics. Permit rich Togiak is shown to have both the highest number of permits per household and the highest number of permits per fishing household, indicating significantly greater earnings capabilities than other communities through commercial fishing at both the community and household levels. Goodnews Bay has the other highest figure for permits per fishing household and the second lowest in permits per household, indicating a skewed distribution of household opportunities for earnings from the commercial salmon fisheries. Quinhagak is second highest in permits per household but significantly below Goodnews Bay and Togiak in permits per fishing household, indicating more egalitarian relationships between households in general and between permit holding households. New Stuyahok's permit holding figures indicate a large gap between permit holding households and non-permit holding households. However, the permits in the community are not concentrated indicating relatively equal access to salmon fishing earning opportunities among permit holding households.

A question which naturally follows the preceding analysis of permit distribution is usage of the permits. Patterns of increasing activation of permits were noted earlier in the discussion on general area patterns of permit use. In Quinhagak there has been a continuing and gradual increase in the. numbers of permits fished each year growing from 72 to 85 (of 91 in the community) in 1982.

In Togiak a sharp increase was registered after 1975, when 77 permits were fished, until 1979 when 125 permits were fished, but the number of permits fished has fallen since then, down to 116 in 1982. The early increase was due primarily to the issuance of more set net permits to Togiak residents and the recent decline is due to revocation of interim-use permits and transfers of permits out of the community. Togiak continues to have a relatively high concentration of interim-use' permits; in 1983, for example, of the 78 drift gillnet permits in the community, 15 (19.2 percent) were interim-use. Six interim-use drift permits were lost through adjudication and revocation from 1982 to 1983.

In Goodnews Bay, a similar trend of increasing use can be detected, as use of Kuskokwim area permits grew from 23 of 34 in 1977 to 28 of 35 in 1982. The number of permits that are not used each year in Goodnews Bay appears to be higher percentage-wise than Quinhagak or Togiak but lower than New Stuyahok.

In New Stuyahok all permits were active in 1982, including temporary transfers and interim-permits. One permit was used by a son-in-law of a New Stuyahok permit holder, who has a non-local address; all others were used by New Stuyahok residents.

Another important topic concerning permits in the communities needs to be touched upon -- the pattern of permit transfers by permit holders in the communities. Two recent studies have indicated declines in the holdings of limited entry permits by rural Alaskan residents. Langdon (1980) reported declines in the holdings of Bristol Bay resident permits of 6.6 percent of initially issued drift gillnet permits and

6.8 percent of initially issued set gillnet permits from the establishment of the limited entry program in 1975 through late 1979. In a replication of that study, the Commercial Fisheries Entry Commission (1983a) reported that by the end of 1981, declines in Bristol Bay resident holdings of drift gillnet permits had reached 9.5 percent of initial issuances. The comparable figure for the set gillnet fishery was 14.7 percent.

In the Kuskokwim area, Langdon (1980) reported a decline of less than one percent of initially issued rural permits. By the end of 1981, the Commercial Fisheries Entry Commission (1983a) reported that rural holdings had declined 2.6 percent from levels of initial issuance. Clearly Kuskokwim residents were hanging onto their permits with greater intensity than were their Bristol Bay counterparts. Possible reasons for the difference between the two areas include the high value of Bristol Bay permits compared to Kuskokwim permits, the greater demand for Bristol Bay permits by people from outside Bristol Bay, and relatively low earnings of Bristol Bay residents from the fishery compared to non-Bristol Bay residents.

Of the four communities, Quinhagak residents have jealously guarded permits, as only 1 of 16 permanent permit transfers from 1976 to 1982 resulted in a permit leaving that community (1 of 92, a 1 percent loss). In Goodnews Bay, 19 permanent transfers have resulted in a net decline of 4 from the level of initial permit issuance (4 of 49, an 8 percent loss). In New Stuyahok, the result of 9 permanent permit transfers since 1975 has been the loss of 2 permits by the community (2 of 34, a 6 percent loss). Data for Togiak are unclear, but it would appear

that 6 to 8 permits have been transferred out of the community as a result of "permanent transfers (7 of 136, a 5 percent loss).

In addition to the decline of permits held in the communities due to transfers, permits can also leave through the migration of permit holders to other communities. This was identified only in the communities of New Stuyahok, from which four permit holders have moved in the past eight years, and Goodnews Bay, from which some unspecified number less than five have migrated in recent years. For Togiak and Quinhagak, no data on either the in- or out-migration of permit holders are available. A corollary of the pattern of permit decline is the fact that there is no evidence for any community of any Individual purchasing a permit from an outside source and thus increasing the number of permits in the community.

The vast majority of permit transfers within the communities are among kinsmen. Parent to child and sibling to sibling appear to be the most common types of transfers. According to Commercial Fisheries Entry Commission estimates, over 60 percent of transfers in the rural areas of western Alaska are "non-sales" (gifts or inheritance), while only about 25 percent in other fisheries can be so classified.

TECHNOLOGY: VESSELS AND GEAR

There are three basic commercial salmon fishing complexes operating in the communities, which form a technological continuum from simple to complex, even though they are all small-scale or small boat

complexes. It also happens that a geographic continuum overlays the complexity continuum and runs from southeast-complex to northwest-simple. New Stuyahok and Quinhagak exhibit the complex and simple ends of the spectrum, while Togiak and Goodnews Bay display" patterns of overlap in the central range, with Togiak tending toward New Stuyahok and Goodnews Bay tending toward Quinhagak.

The first vessel gear complex is the 32-foot Bristol Bay gillnetter equipped with hydraulic reel to wind in the net along with additional electronic gear such as radios (VHF, UHF), fathometer, radar, and Loran in some cases. There is substantial variability within this vessel class in terms of hold capacity, age, hull type, horsepower, electronics, and other extras such as winches and blocks for purse seine operations. Nevertheless, as a class, key characteristics which set this class of vessels apart from the other two classes in functional terms are hold capacity, horsepower, and hydraulic rollers. Taken together these features define a vessel with significantly greater catching power than either of the other two classes of vessels. In addition, longer length and depth allow these vessels to travel and fish in much rougher water than do the other two classes. Since most are equipped with berths, stoves, and fresh water, they have the capability to house a captain and crew for several days of fishing independent of any shoreside facilities. This allows for greater mobility and flexibility to fish in districts away from the home port of the vessel.

The vast majority of New Stuyahok villagers operate vessels in the 32-foot class, although they do not tend to be the largest, most elaborately equipped or most expensive vessels in this size range. Many

fishermen have purchased new 32-foot vessels through state loans, Commercial Fisheries and Agricultural Bank (CFAB) loans, and cannery Loans in the past four or five years. The 1980 Bristol Bay Native Association Fisherman's Income survey (Langdon 1981) reported average length of New Stuyahok salmon fishing vessels as 30.8 feet. Of the 13 vessels comprising the New Stuyahok sample, 9 were in the 30 to 32 foot range and 3 were in the 22 to 25 foot range. In 1982 only 2 skiffs continued to be used by New Stuyahok residents for commercial fishing, and fishermen with 32-foot wooden vessels were in the market for fiberglass vessels in order to upgrade their fishing capabilities in the highly competitive Nushagak district. The majority of vessels in use in 1982 were fiberglass.

New Stuyahok fishermen are equipped with the basic gear operated in the Nushagak district, although as mentioned above, their gear is not elite or above average, but it is competitive. This is the type of gear operated by over 90 percent of non-Bristol Bay residents throughout the Bristol Bay area and is clearly the predominant vessel type used by both Bristol Bay and non-Bristol Bay resident fishermen in the Nushagak district.

In 1979 the average market value of aluminum or fiberglass vessels averaging 31.5 feet in length was $64,161. Those vessels averaged three years of age and thus were built and purchased in 1976. With the tremendous surge of vessel upgrading which followed the phenomenal 1979 season, it is likely now that average values of vessels in the 32-foot range are approaching $120,000. Gross tonnage of aluminum and fiberglass 32-foot vessels was just under 10 tons and average

horsepower was 250. Approximately 50' percent of the fleet was equipped with diesel engines. The previous data are reported from Larson (1980).

The second fishing vessel gear complex is called the Togiak skiff in Bristol Bay. As its name suggests, it is the primary vessel complex used in commercial salmon fishery by Togiak residents. It Is also used by a number of Goodnews Bay fishermen and a lesser number of Quinhagak fishermen, in both cases by fishermen who fish primarily in the Togiak district of the Bristol Bay area. The Togiak skiff is a semi-V bottomed wooden vessel of between 24 to 26 feet in length. It is powered by a large outboard engine usually in the 125 to 185 horsepower range, but some have inboards. It has a small cabin, usually in the stern, as the vessels are bow-pickers (the net is pulled in over the bow rather than the stern when full). The small cabin usually has plywood berths for napping during fishing, but it is lacking in the amenities of the 32-foot vessel -- no electricity, no fresh water, no oil stove, no heater. Even more importantly, the Togiak skiff is not equipped with hydraulics; thus the nets are normally pulled by hand by the captain and his crew. Gross tonnage of these vessels is generally in the three to four ton range. Finally, Togiak skiffs have little or no electronic gear; most are equipped with a radio of some variety and a fathometer, but few have any more sophisticated electronic equipment.

The 25 Togiak respondents to the 1980 BBNA Fishermen's Income survey (Langdon 1981) reported an average vessel length of 26.9 feet. None reported owning a vessel over 30 feet in 1980. Information collected in May 1983 for this study from 44 Togiak drift gillnet permit holders revealed some change in that pattern. Although the median vessel

length was reported as 26 feet with a mean of 25.3 feet, 8 vessels were reported to be 30 feet or more in length.

Average horsepower reported by the 44 Togiak fishermen in 1983 was 129.2 compared to over 200 for Nushagak district vessels. Of the vessels, 43 were made of wood, but there were 6 fiberglass vessels as well. The average age of the vessels was 5.3 years with a median of 5.1. A little over 40 percent were less than 5 years old, slightly over 60 percent were over 5 years old, but only about 10 percent were 10 years or older.

A third vessel gear complex is used at Quinhagak. Most fishermen utilize aluminum or plywood skiffs, about 16 to 20 feet in length, with small outboard engines in the 35 to 75 hp range. These vessels have fewer amenities than even the Togiak skiffs; almost all are without cabins, sheltered sleeping areas, electronic gear, and hydraulic equipment. Fishers may use a small Coleman stove to heat water and to keep warm. Nets are set and pulled by hand. Aluminum skiffs have been replacing wooden skiffs over the past decade. The semi-V hull aluminum Lund is the preferred make, about 16 to 18 feet in length, with load capacities of about 1,500 to 2,000 pounds. In a census of boats taken a day before the commercial fishery opened, there were 66 semi-V hulled aluminum skiffs counted. Of these, 56 were Lunds, 6 were flat-bottomed aluminum riverboats, 7 were aluminum open herring skiffs, 24 were open flatbottomed wooden skiffs, and 6 were semi-V bottomed wooden Togiak skiffs. The flat-bottomed wooden skiffs vary in size. Some are narrow and long, about 3-1/2 to 4 1/2 feet wide and 18 to 21 feet long, resembling the skiffs used along the Kuskokwim River.

Others are larger, between 4 to 9 feet wide and 18 to 24 feet long. About 6 fishermen used wooden boats similar to those in Togiak, about 9 feet wide, 26 to 30 feet long, with cabins, steering consoles, and CB units. These larger crafts are powered by outboards ranging between 70 to 140 hp.

The smaller aluminum or wooden skiff is particularly suited to environmental and economic conditions of the fishery. The shallow draft boats perform well in the mud flats and shoals at the mouth of the Kanektok and Arolik rivers where fishing is conducted. The fishery remains open for 2 or 3 12-hour periods a week, from 6 p.m. to 6 a.m., so fishermen are not required to develop equipment enabling them to live and work on board the vessel for long stretches of time, as occurs in Bristol. Bay where the fishery remains open for extended periods. Since holding capacities of the float-in buyers are limited, a strategy of several quick catches and deliveries during an open period has developed. This strategy favors small, speedy vessels. A single fisher can operate the small skiffs and net alone, so most fishers work without partners which saves crew expenses.

At Quinhagak a person's boat typically does double duty as both subsistence and commercial fishing craft. The aluminum Lund skiff has been found to be a versatile craft for salmon fishing, freshwater fishing up the Kanektok River, and sea mammal hunting in open water and off the sea ice. Its lightweight hull makes transporting the vessel across the ice floes easier than wooden craft; the aluminum hull also resists damage by ocean ice. The aluminum boats are relatively inexpensive, about $3,000. The village corporation allows

fishers to purchase boats with a small down payment and lenient monthly installments, Almost all fishermen keep themselves free of indebtedness as much as possible, paying off equipment loans after the salmon seasons. It should be pointed out that many Togiak and Goodnews Bay fishers also own small aluminum skiffs which are used principally for subsistence.

In sum, the three vessel gear complexes described above are differentially distributed among the communities. New Stuyahok fishermen operate the 32-foot vessels; Togiak fishermen operate Togiak skiffs with a few 32-foot vessels and a few 16-20 foot aluminum skiffs; Goodnews Bay fishermen operate Togiak-type skiffs and large, open skiffs with a few 16 to 20 foot aluminum skiffs; and Quinhagak fishermen operate primarily 16 to 20 foot open aluminum skiffs with a few larger vessels, Togiak skiffs and 32-footers operated by Bristol Bay drift gillnet permit holders.

These vessels are adapted to local market and competitive environments reflecting predominant usages in their respective districts. The type of vessel utilized has implications for mobility of fishermen from one district to another and for harvesting power. The type of vessel used is also a key variable in whether or not a fisherman must establish long-term indebtedness to participate in the commercial fisheries. In the recent past, only fishermen in New Stuyahok have had to establish debt relationships to enter the fishery. There is now a tendency for Togiak fishermen also to go into debt through vessel loans to upgrade their competitive position in the fishery.

MARKETS, PRICES, AND RELATIONS WITH PROCESSORS

Market structures differ substantially from one district to another. The Nushagak district is one of the major centers of the Bristol" Bay fishery. In 1982 Nushagak district processors included 3 operating canneries, 28 floaters, and 15 air exporters of fresh fish. Dillingham is equipped with a major airport which allows for the rapid movement of fresh fish to market.

Togiak, as noted earlier, is some distance from the major runs in Bristol Bay, and as a result its fishery developed commercially much later than others. However, the present cannery has been a stable producer since its appearance nearly 25 years ago. Although its capacity is limited and fishermen often have had to be limited in previous years, its presence has been a major boon to the community. The addition of a plant for frozen fish in Togiak proper in the mid-1970s provided an additional local market for Togiak fishermen. Despite this, the competitive environment for fishermen is less well-developed in the Togiak district than in the Nushagak. In 1982, one cannery, seven frozen processors, and five fresh air export processors operated in the Togiak district.

The situation in the Goodnews Bay and Quinhagak districts is far different from that in the two Bristol Bay districts. No cannery is found in either district, nor in the entire area for that matter. The only major facility in the area is a large freezer plant in Bethel, which did not operate during the 1982 season. Three firms handled the majority of the fresh and frozen processing which occurred in the

Kuskokwim district. In Quinhagak, 4 buyers operated, while in the Goodnews Bay district, 11 processors are reported to have purchased fish at one time or another.

Although these figures indicate a healthy competitive environment with more than enough demand for fish which can be caught, this is not the case. Particularly in Quinhagak, recent experience is that processors may appear to make a commitment only to pull out during the season. When they do put in a continuous presence, their barge facilities are inadequate and fishermen must rush to the processor to insure that their catches are purchased. The lengthening of the village runway may allow for the air export of salmon, a possibility that was apparently previously precluded by the shortness of the runway. The 1983 season seems to have been more satisfactory as a result of air fresh purchase and export of coho.

In Goodnews Bay the situation is more positive. This is primarily a function of the close proximity of Goodnews Bay to Togiak. Processors operating in the Togiak district can send planes to Goodnews Bay quite easily to pick up additional fish should they not meet their quota in the Togiak district. This phenomena is apparently what accounts for the large number of processors in the Goodnews Bay district during 1982, a strike year in Bristol Bay, which resulted in many processors not meeting their quotas and attempting to obtain fish from alternative sources.

Prices offered to fishermen in the Bristol Bay and Kuskokwim area are presented in Table 37. As is apparent, with rare exception, prices offered to Kuskokwim fishermen are below those offered to Bristol Bay

TABLE 37. AVERAGE EX-VESSEL PRICE PER POUND FOR SALMON SPECIES BY AREA, 1975-1982.[a]

Year	King		Red		Coho		Pink		Chum	
	Bristol Bay[b]	Kuskokwim[c]	Bristol Bay[b]	Kuskokwim[c]	Bristol Bay[b]	Kuskokwim[c]	Bristol Bay[b]	Kuskokwim[c]	Bristol Bay[b]	Kuskokwim[c]
1975	$ .37	$ .54	$ .45		$,38	$ .31	$ .28	---	$ .30	$ .26
1976	$ .43	$ .64	$ .47	$ .43	$ .40	$ .40	$ .31	$ .25	$ .32	$ .27
1977	$ .55	$1.15	$ .59	$,45	$ .53	$ .65	$ .31	$ .25	$ .36	$ .45
1978	$,50	$ .50	$ .68	$ .49	$ .62	$ .40	$ .33	$ .12	$ .38	$ .32
1979	$ .55	$ .66	$1.05	$ .53	$1.05	$ .75	$ .33[d]	$ .11	$ .48	$ .37
1980	$ .45	$ .47	$ .57	$ .31	$ .57	$ .64	$ .25	$ .12	$ .34	$ .24
1981	$1.15	$ .87	$ .70	$ .61	$ .70	$ .63	---	$ .11	$ .38	$ .23

	Nushagak	Togiak		Nushagak	Togiak		Nushagak	Togiak		Nushagak	Togiak		Nushagak	Togiak	
1982	$1.25	$1.15	$ .82	$ .69	$.81	$ .41	$ .70	$.72	$ .53	$ .22	$.16	$ .05	$ .33	$.37	$ .22

[a]Sources include: Alaska Department of Fish and Game (1982a and b)
[b]WACMA prices.
[c]prices in the Quinhagak and Goodnews Bay districts are usually lower than these Kuskokwim area averages.
[d]Alaska Independent Fishermen's Marketing Association (AIFMA) price for pinks only.

fishermen, and often the discrepancy is substantial. For example, in 1982 coho prices to Kuskokwim fishermen were 33 percent below those offered to Bristol Bay fishermen and chum salmon prices 50 percent below. Even king salmon, for which Kuskokwim fishermen have historically received higher prices than Bristol Bay fishermen, fell below Bristol Bay prices in 1982 by almost 50 percent.

In general, these price differentials are usually attributed to distance from markets (transportation costs), smallness of quantity, (infrastructure overhead costs) and poor quality of Kuskokwim salmon relative to Bristol Bay salmon.

An important note about Table 37 is that because it glosses area-wide prices (Western Alaska Cooperative Marketing Association or WACMA prices are used for western Bristol Bay), substantial variability in prices from one district to another and from one processor to another are masked. This is revealed by 1982 prices in the Bristol Bay area which show substantial differences between Nushagak district and Togiak district prices, with the Togiak district generally benefiting from slightly higher prices in that year. In the Kuskokwim area, it appears that the pattern of distinct variability is also present. Quinhagak fishermen typically receive $.05 to $.10 per pound less for their fish than the area average. The proximity of Goodnews Bay fishermen to Bristol Bay apparently works to their advantage in that they received higher prices than the Kuskokwim average for their coho salmon in 1981 and 1982 and higher prices than the Kuskokwim average for their red salmon in 1981. However, they received lower than Kuskokwim area prices for kings and chums in both 1981 and 1982.

The total ex-vessel value of the commercial salmon fisheries for each district over the past eight years is presented in Table 38. One might expect that given the previous discussion of substantially lower prices for Kuskokwim fish than for Bristol Bay fish, that the value ratios between the districts 'would be lower than the fish ratios between districts identified in Table 38. Upon examination, this is not borne out. Value ratios between districts are approximately the same as fish ratios. For example, based on averages of the last 5 years, the fish ratio between the Goodnews Bay district and the Nushagak district was 1.1 percent while the value ratio of Goodnews Bay to Nushagak is 1.2 percent. The main reason for the equalization of value between districts in the face of substantially lower prices to Kuskokwim area fishermen is the significantly higher proportion of heavier, higher priced king salmon in the Kuskokwim districts compared to the Bristol Bay districts.

As a result of the different historical developments of fisheries in the different districts, fishermen tend to have different relationships with processors. New Stuyahok fishermen are "cannery'* fishermen in that the overwhelming majority fish for a single cannery with only a few fishermen pursuing the "independent" route in recent years. The primary reason for this relationship is that this cannery originally sold the boats to the men in the 1960s. They agreed to pay for the boats over a number of years by selling their fish to the cannery. Thus a pattern of indebtedness and patronage was established, which has continued to the present. The benefits to the fishermen have been a long-term guaranteed market for their fish, vessel, gear storage, and

TABLE 38. TOTAL EX-VESSEL VALUE OF SALMON CATCH BY DISTRICT, 1975-1982.

Year	Bristol Bay Area		Kuskokwim Area	
	Nushagak District	Togiak District	Goodnews Bay District	Quinhagak District
1975	$ 2,219,164	$ 909,930	$ 97,817	$140,804[a]
1976	$ 6,954,916	$1,801,667	$124,760	$326,246[a]
1977	$ 6,382,571	$2,415,670	$203,193	$651,072
1978	$21,156,803	$5,425,918	$155,397	$323,195
1979	$25,347,234	$6,079,889	$408,103	$539,988
1980	$19,965,492	$3,738,341	$317,520	$483,494
1981	$41,833,754	$4,372,103	$376,794	$739,643
1982	$35,437,589	$5,545,000	$491,729	$765,110
5-year average[b]	$28,748,174	$5,032,184	$349,909	$570,286

[a]Estimated.
[b]Average is for the 1978 to 1982 period.

maintenance, and help in carrying vessel loans and providing for families' needs in poor years. The benefits to the cannery operators have been a guaranteed supply of fish at a relatively low price. There have been problems in the relationship as well. Canneries require a clear picture of the supply available to them in order to plan in advance for the processing season. Long-term debt relations with a group of fishermen through vessel mortgages insures them of their fish supply. For New Stuyahok fishermen, competitiveness in the rapidly changing and technologically advancing Nushagak fishery requires a new vessel. The cannery has provided loans for many of the new vessels, while state loans have been used by a few.

Based on the facts that there is a cannery in the Togiak district, which requires a stable supply of fish, and that Togiak fishermen need vessels to catch the fish to sell to the cannery, one might suppose that a relationship similar to that of New Stuyahok fishermen holds between Togiak fishermen and the cannery. This is not the case. The primary reason for this is that the Togiak skiff (costing $8,000 to $12,000) does not cost nearly as much as the 32-foot vessel, and most Togiak fishermen have been able to finance vessel purchases through short-term, one or two-year loans. Of the 44 drift gillnet fishermen from whom information was obtained, two-thirds indicated that they had either purchased their vessel with cash or inherited it. Approximately 15 percent reported having a processor loan for their vessel purchase.

Togiak fishermen can thus be considered “independent” fishermen in that a debt relationship does not require delivery of their fish to a

single market. Because of the lack of large, stable alternative markets, however, nearly three-quarters of the Togiak fishermen deliver the majority of their catch to the local cannery. Despite this fact, over 80 percent sold fish to a second market and over 40 percent sold to a third market as well. The relationship between Togiak fishermen and the cannery appears to be stable, but with far fewer obligations on both sides. The relationship appears to be one between amicable equals as opposed to the patron-client relationship of the New Stuyahok fishermen.

In neither Togiak nor New Stuyahok do fishermen organize locally to seek out markets for fish. In Quinhagak and, to a lesser extent, Goodnews Bay, fishermen must undertake this task because of the uncertainty from year to year of the availability of buyers for local fish. Arrangements which are made are generally of short term, year-to-year duration and are quite informal. Processors agree to provide a market for fish at a given price along with perhaps a few amenities, such as fresh produce and gas, in exchange for the local fisherman's production. Although fishermen from these communities are "independent," it is due to the fact that there is no possibility for debt relations to be established as has been the case for New Stuyahok fishermen nor for long-term mutual benefit through independent exchange to emerge as has been the case in Togiak.

EARNINGS AND COSTS

Information on gross earnings is available for fishermen from all four communities, but detailed information on costs is only available for Bristol Bay area fishermen. Table 39 shows median earnings for fishermen from each community for the years 1976, 1979, and 1982. As is readily apparent, except for 1979, the ranking from high to low of median gross salmon earnings among the four communities is the same: Togiak, New Stuyahok, Goodnews Bay, and Quinhagak. What is even more remarkable about these figures is that the Togiak earnings include a sizable number of set gillnet fishermen whose gross earnings are typically 50 percent less than drift gillnet earnings among Togiak fishermen.

In 1979 the extraordinary red run to the Nushagak in conjunction with high prices and non-strike conditions allowed the New Stuyahok fishermen to outstrip the Togiak fishermen, whose runs are more stable. In 1982 Togiak fishermen had higher median earnings than New Stuyahok fishermen due to the strike, which kept New Stuyahok fishermen on the beach through the peak of the run, while the peak of the Togiak run did not hit until after the strike was settled.

Gross earnings rose dramatically in both the Bristol Bay and Kuskokwim fisheries between 1976 and 1979 due to a combination of rising demand for higher priced fresh and frozen fish, inflation, and increased runs of fish. Prices dropped sharply in 1980, however, and have fluctuated since that time, depending on supplies and market

TABLE 39. MEDIAN GROSS SALMON EARNINGS OF STUDY COMMUNITY FISHERMEN: 1976, 1979, and 1982.

Community	1976 N	1976 Median	1979 N	1979 Median	1982 N	1982 Median
New Stuyahok	18	$14,500	25	$34,000	32	$14,023
Togiak (drift and set permits combined)	81	$15,800	125	$24,000	116	$18,800
Goodnews Bay (Kuskokwim and Bristol Bay permits combined)	27	$ 5,966	30-	$21,091	32	$15,455
Quinhagak (Kuskokwim and Bristol Bay permits combined)	84	$ 3,700	86	S 8,462	89	$ 7,917

conditions. The peak prices of 1979 have not been approached since that time.

There has been dramatic growth in the local earnings from commercial salmon fishing in each of the study communities since 1975, as shown in Figures 19 through 22. The figures illustrate trends in mean gross earnings per fisherman, and total fishermen earnings from 1975-82. Overall, the trend is upward, with a few fluctuations mentioned above (especially note the 1982 decrease in New Stuyahok earnings due to the strike). Clearly, the recent development of the salmon fisheries in each community has meant a dramatic increase in monetary earnings within the past decade. The salmon fishery has become the central feature in the market sector of the local economy.

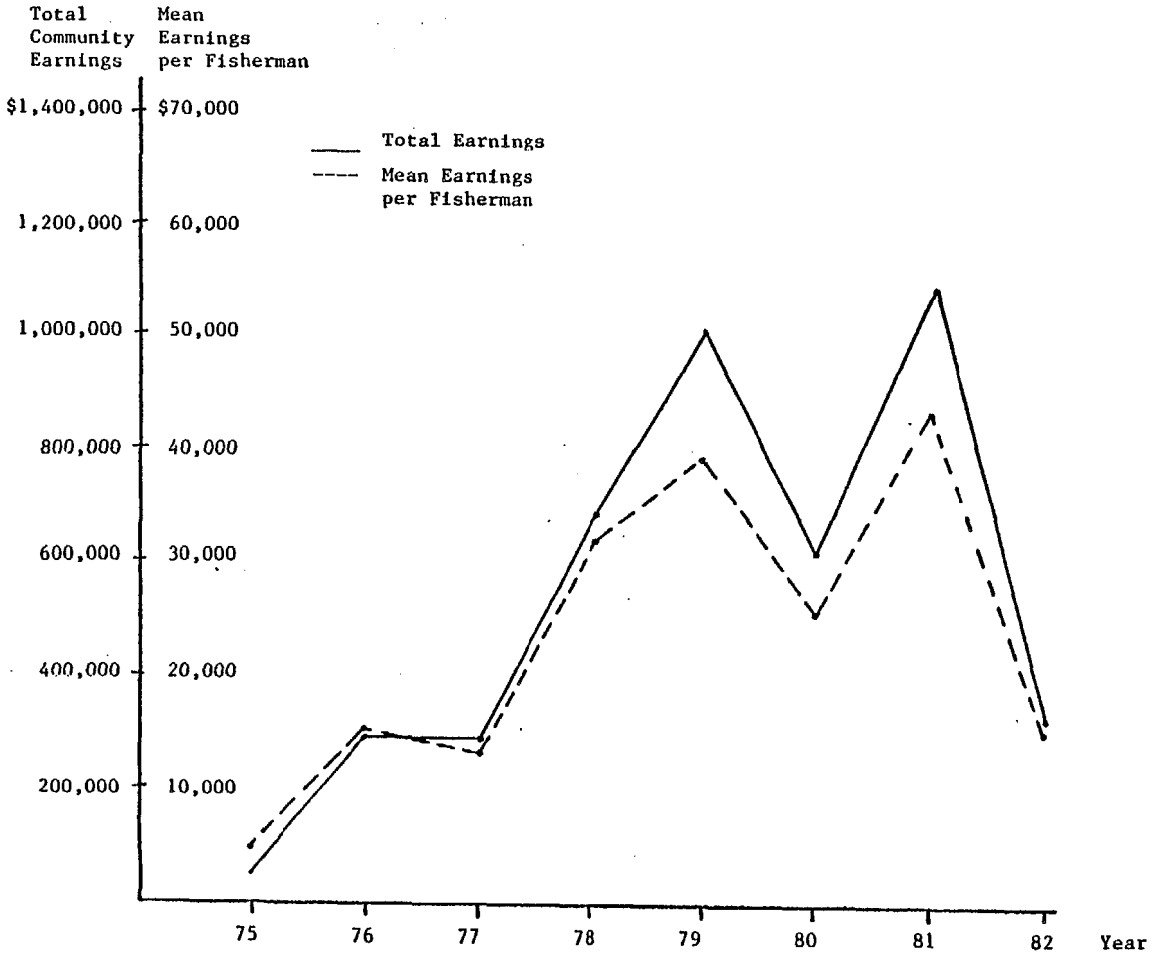


Figure 19. Gross monetary value of Bristol Bay salmon fishery to New Stuyahok fishermen, 1975-82.

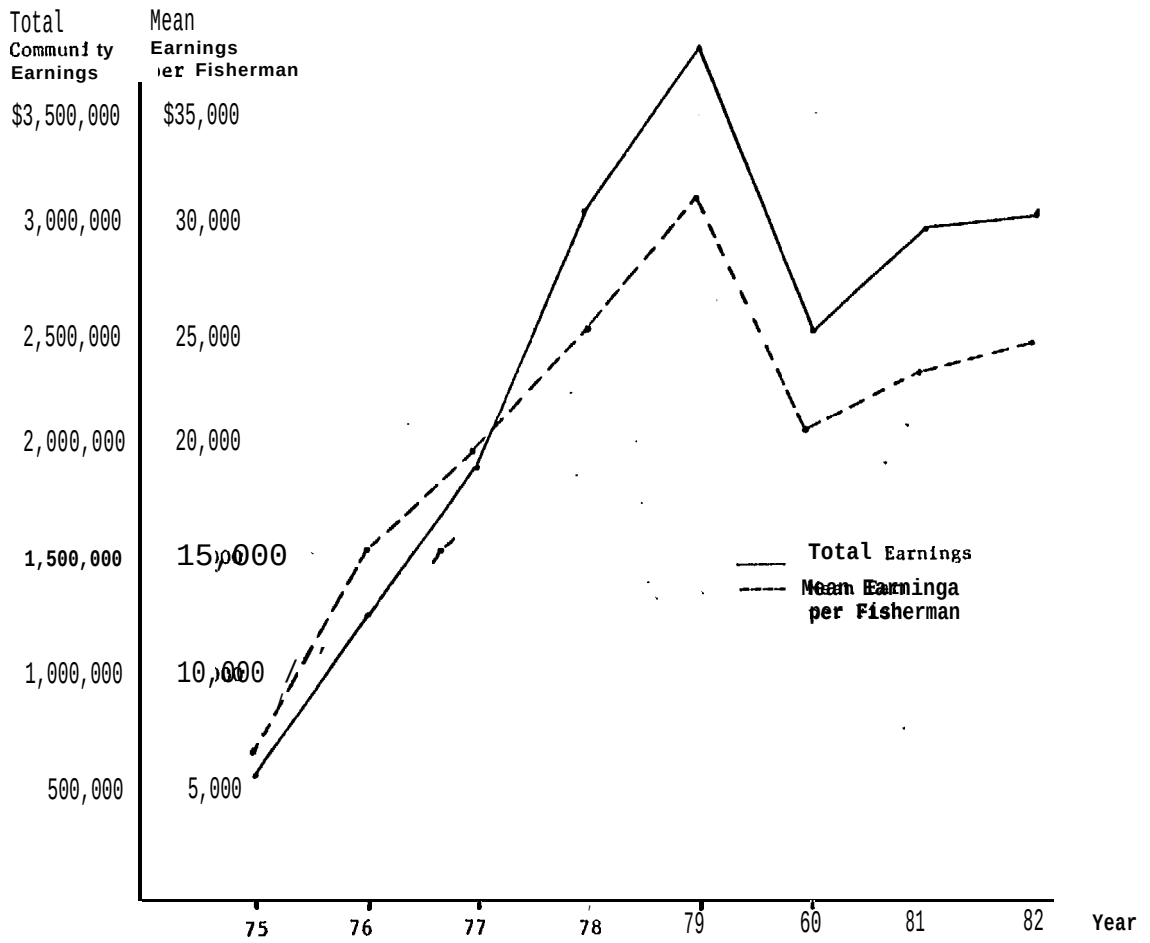


Figure 20. Gross monetary value of Togiak salmon fishery to Togiak fishermen, 1975-82.

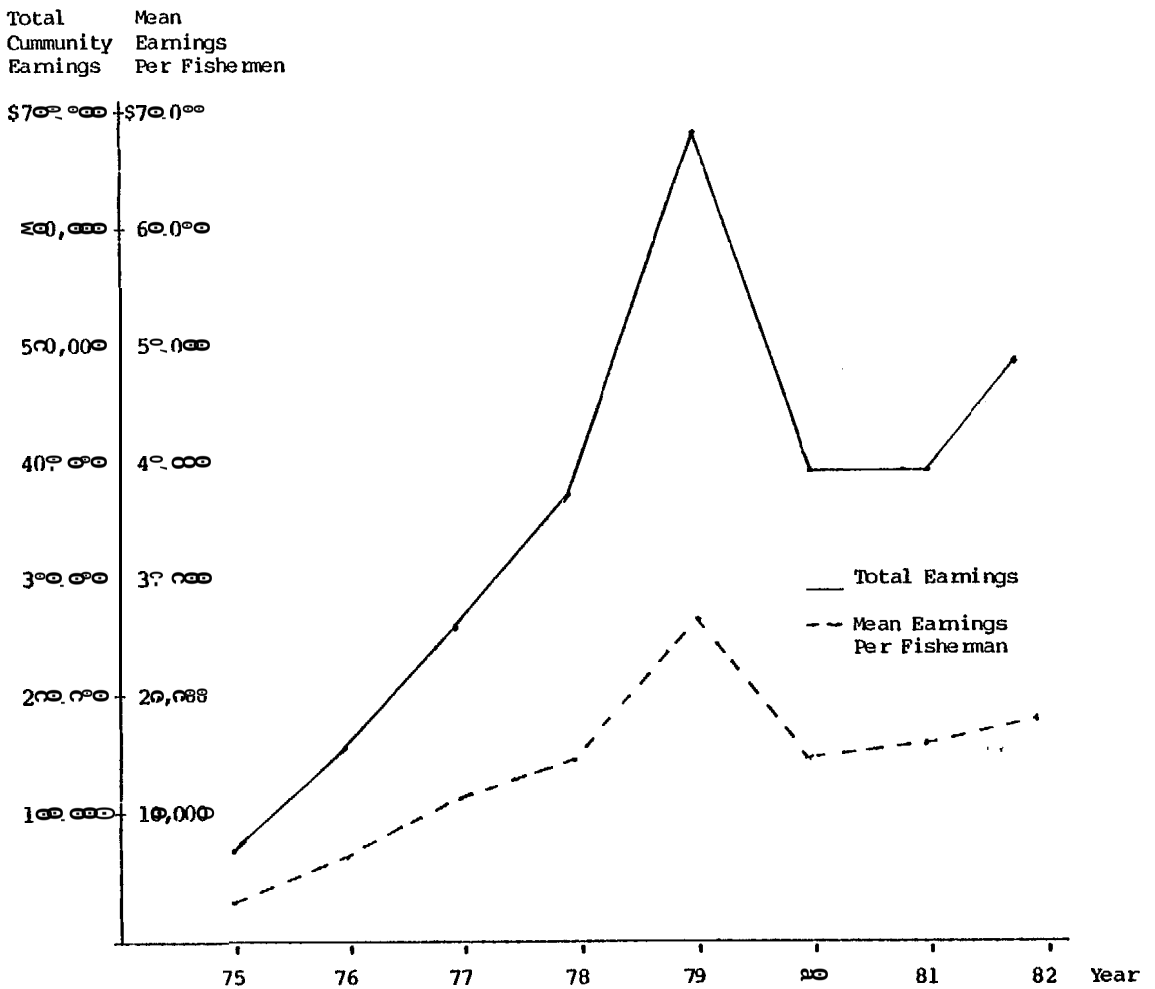


Figure 21. Gross monetary value of the Kuskokwim and Togiak salmon fisheries to Goodnews Bay fishermen, 1975-82

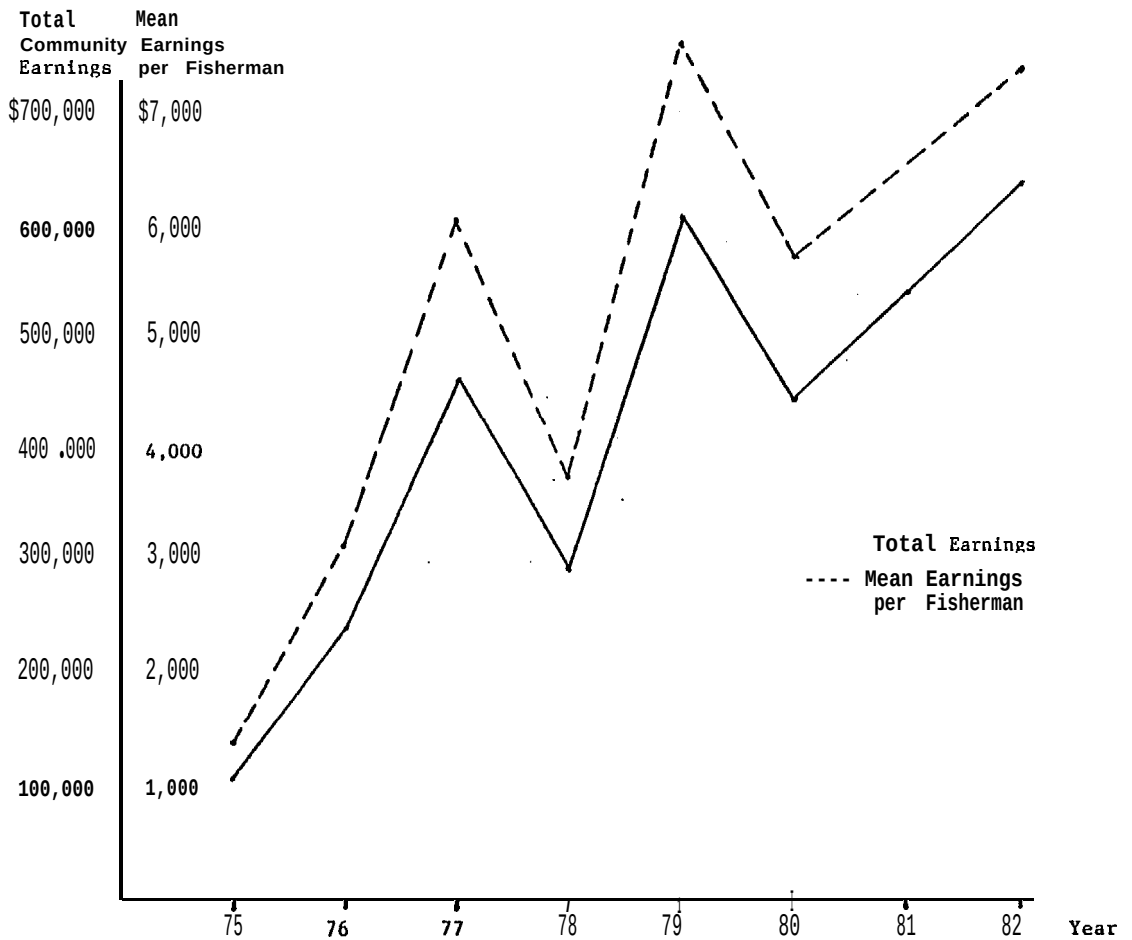


Figure 22. Gross monetary value of Kuskokwim salmon fishery to Quinhagak fishermen, 1975-82.

Gross salmon earnings for the 1981 and 1982 seasons and costs for the 1982 season collected from Togiak drift and set gillnet fishermen are presented in Tables 40 and 41. As can be seen from Table 41, the highest expense items averaged across respondents are crew share, motor purchase, nets and buoys, and fuel. Boat payment is only the fifth highest expense category, reflecting the fact that 32 out of 44 drift gillnet fishermen had no boat payment, and it was only the third highest for set gillnet fishermen. In 1980, Bristol Bay Native drift gillnet fishermen reported an average vessel payment in excess of $4,000. Togiak fishermen, therefore, display much less indebtedness as a result of their cheaper means of production than do Bristol Bay Native fishermen elsewhere in the area who must use the 32-foot vessel to compete.

In 1982, Togiak drift gillnet fishermen netted $11,920 from salmon fishing based on mean gross earnings of $27,945 and mean expenses of $16,025. Set gillnet fishermen netted $11,093 based on a mean gross of $18,300 and mean expenses of $7,207. The set gillnet mean figures are skewed by one exceptionally high case of gross earnings.

Crew shares are generally claimed to be 33 percent. The average crew share reported by drift and set gillnet permit holders was 30 percent of gross earnings. Crewmen reported their share as an average of 28 percent of the gross earnings.

The best predictors of gross salmon earnings for Togiak fishermen are fuel expense and days fished (indicators of effort), boat length, and horsepower. Hull type, age of vessel, age of captain, and relationship to crewmen are not statistically significant predictors of gross salmon earnings.

TABLE 40. GROSS SALMON EARNINGS REPORTED BY TOGIAK RESIDENT DRIFT AND SET GILLNET PERMIT HOLDERS, 1981 AND 1982.

Earnings	Drift				Set			
	1982	%	1981	%	1982	%	1981	%
$5,000 and under	4	12.1	2	8.3	4	40.0	0	0.0
$5,001 - $16,000	8	24.2	3	12.5	1	10.0	3	5(-).0
$16,001 - $25,000	5	15.2	11	4.5.8	4	4(-).0	2	33.3
$25,001 - $48,000	12	36.4	5	20.8	0	0.0	0	0.0
$48,001 and over	6	18.2	3	12.5	1	10.0	1	16.7
Total	35	100.0	24	100.0	10	10(-).0	6	100.0
Mean	$27,945		$28,458		$18,300		$23,499	
Median	$27,360		$23,500		$15,000		$15,000	
SD	$17,800		$21,742		$19,632		$22,485	

TABLE 41. FISHING EXPENSES REPORTED BY TOGIAK RESIDENT DRIFT AND SET GILLNET FISHERMEN FOR 1982.

	Drift			Set		
Category	Cases	Mean	Median	Cases	Mean	Median
Net and buoy	44 (4 said 0)	$ 1,545.0	$1,025.0	15 (6 said 0)	$ 591.0	$ 400.0
Fuel	43	$ 1,355.0	$ 997.0	16	$ 569.0	$ 350.0
Boat payment	42 (32 said 0)	$41,343.0	$ 31.0	12 (10 said 0)	$ 608.0	$ 50.0
Motor purchase	44 (17 said 0)	$42,002.0	$1,105.0	15 (7 said 0)	$1,380.0	$1,000.0
Boat repair	44 (25 said 0)	$ 295.0	$ 3.8	16 (14 said 0)	$ 137.5	$ 14.3
Radio expense	42 (26 said 0)	$ 175.0	$ 3.1	16	0.0	0.0
Other equipment	25 (20 said 0)	$ 232.0	$ 25.0	8	0.0	0.0
Insurance	43 (34 said 0)	$ 295.0	$ 1.0	15	0*0	0.0
Boat hauling	44 (37 said 0)	$ 60.0	$ 1.0	16	0.0	0.0
Boat shipping	42 (39 said 0)	$ 134.0	$ 2.0	16 (15 said 0)	$ 53.0	0.0
Other expenses	19 (14 said 0)	$ 1,126.0	$ 18.0	10 (8 said 0)	$ 350.0	0.0
Crew share	35 (1 said 0)	$ 7,503.0	$6,001.0	12 (3 said 0)	$3,519.0	$2,083.0
Mean Gross Earning		$27,945			$18,300	
Mean Expenses		$16,025			$ 7,207	
Mean Net Earning		$11,920			$11,093	

Expenses in Quinhagak and Goodnews Bay are likely to be similar to, but somewhat less than, those of Togiak fishermen. The reason for this is that the fishing season is shorter, they have cheaper vessels, they use less net, and they use smaller outboard engines which are lower in initial price and consume less fuel per hour. Crew shares appear to be the same between the communities. It should be noted that crew-shares are often not paid to children when they are the crewmen. All communities report a pattern of paying children with something they want, such as a snowmachine or three-wheeler.

In sum, the rate of return (net) among the four communities is probably highest among Togiak fishermen, second highest among Goodnews Bay fishermen, third highest among New Stuyahok fishermen, and fourth highest among Quinhagak fishermen, particularly those with Kuskokwim permits.

DISTRIBUTION OF EARNINGS

We turn now to examine the distribution of earnings within communities to determine the degrees of stratification that exist and the extent to which distributional patterns of salmon fishing earnings have changed over the past seven years. Figures 23, 24, 25, and 26 display the distribution of gross salmon earnings by permit for each community for 1976, 1979, and 1982.

For each community, it is clear that earnings distribution was most equal in 1976. It is also clear that in Goodnews Bay and Quinhagak the exceptional cases are the Bristol Bay permit holders. Patterns of

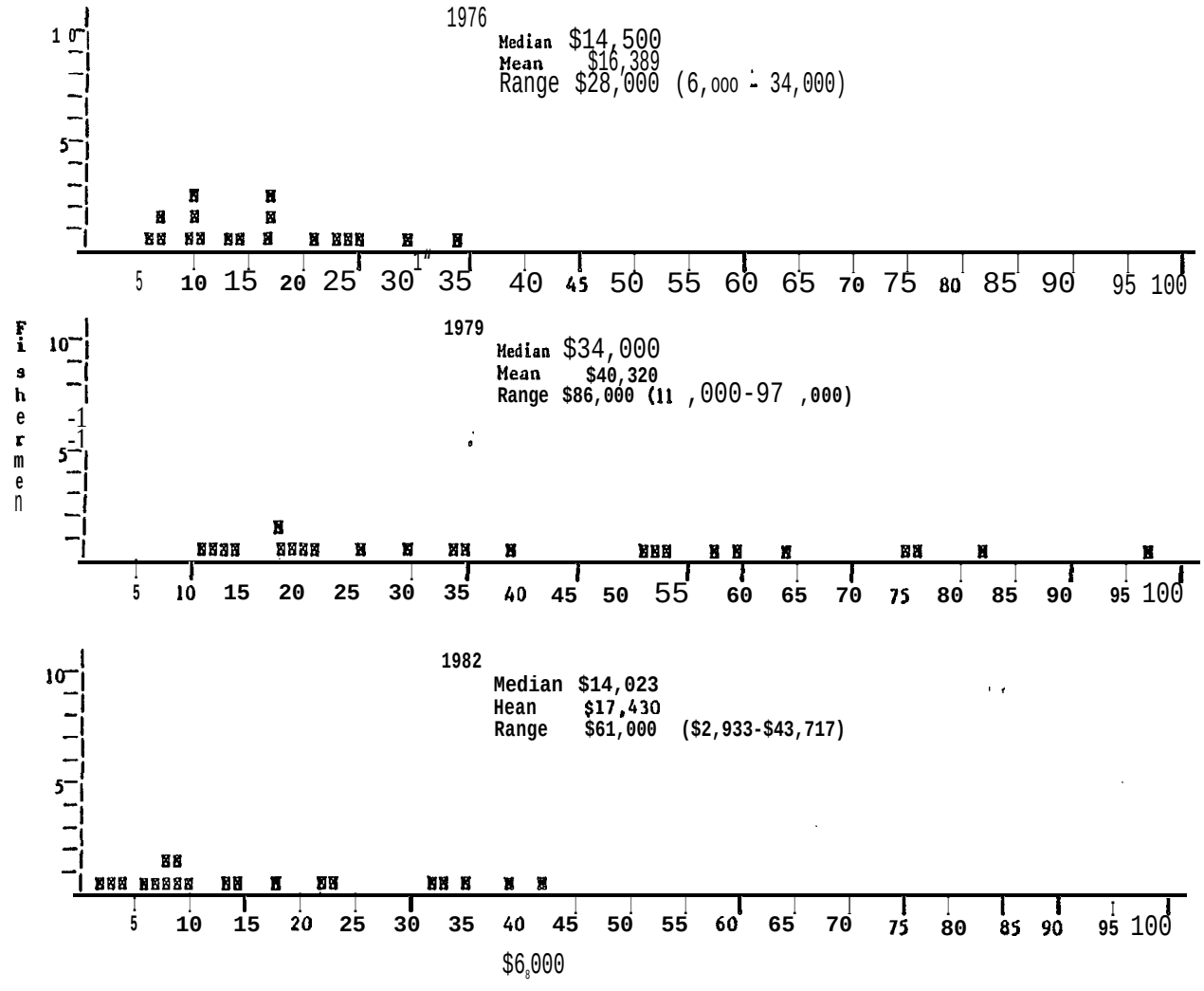


Figure 23. Salmon income by fisherman, New Stuyahok.

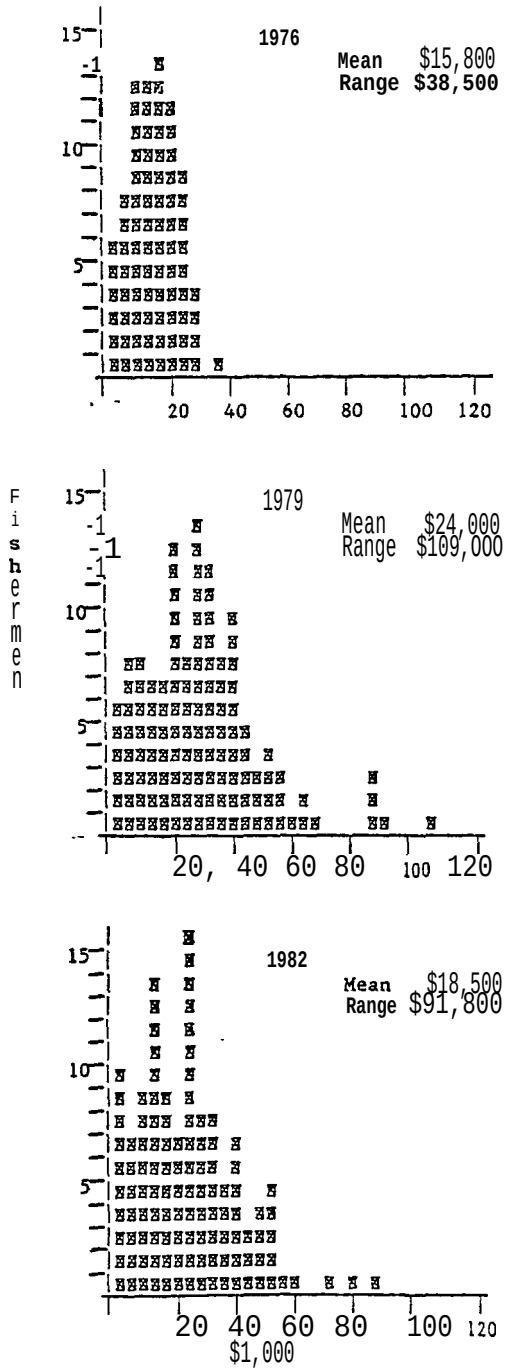


Figure 24. Salmon income by fisherman, Togiak.

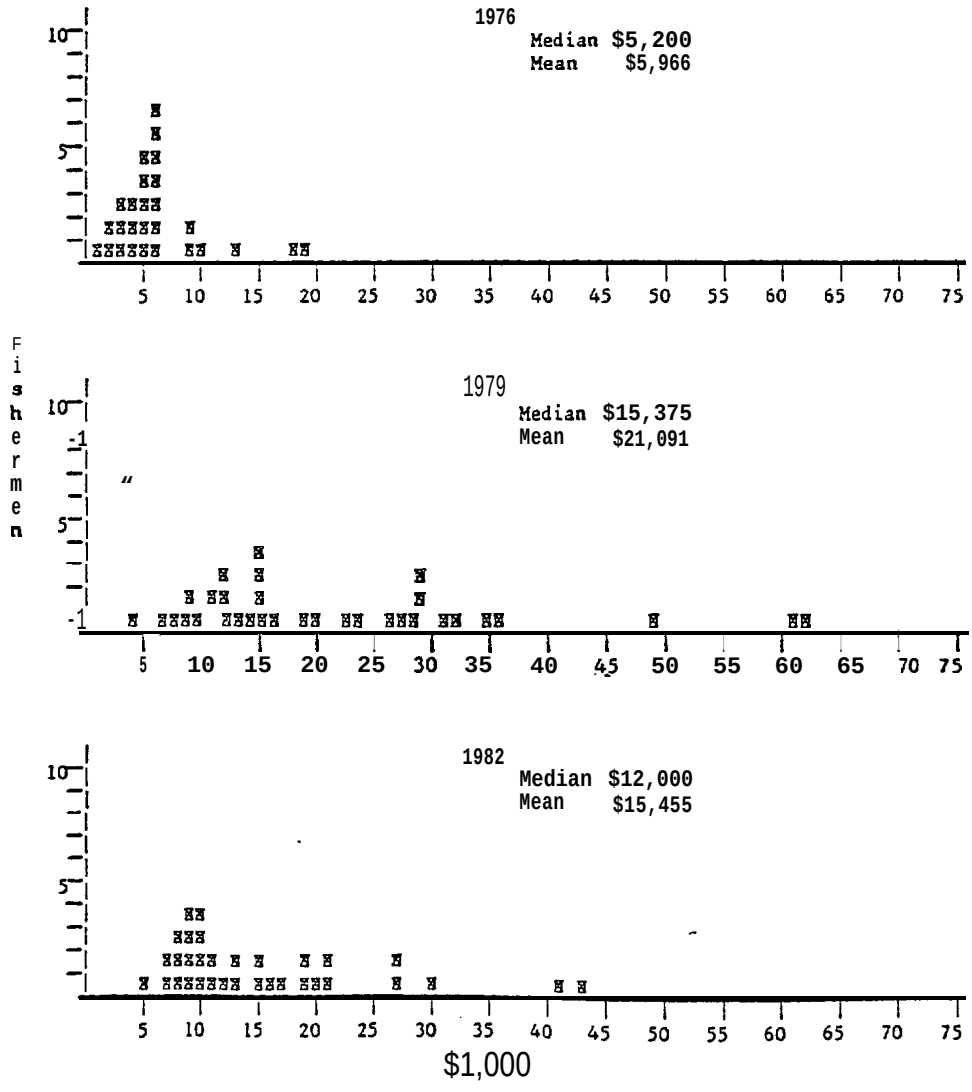


Figure 25. Salmon income by fisherman, Goodnews Bay.

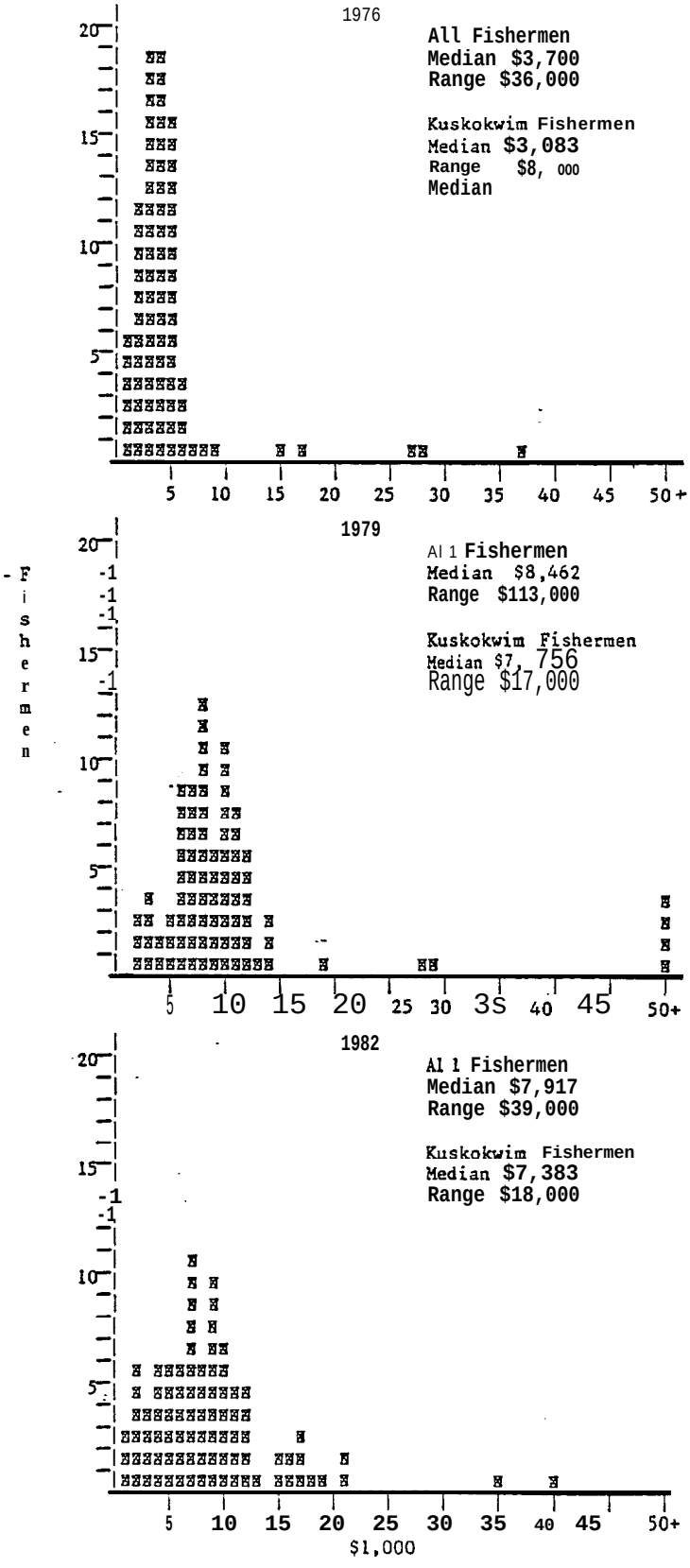


Fig. 26. Salmon income by fisherman, Quinhagak.

earnings distribution in Togiak and New Stuyahok appear similar in 1976, although there does appear to be greater skewing in New Stuyahok.

The great surge of fish and prices produced significant skewing away from equal earnings in all communities in 1979. The major contributing factor to unequal earnings in Goodnews Bay and Quinhagak were the Bristol Bay permit holders. However, even without them, it is clear that some expansion in the range of gross salmon earnings occurred, but it was greater among New Stuyahok fishermen than among Togiak fishermen.

In 1982, strike conditions characterized Bristol Bay efforts and the decline in price from 1979 in addition to the lowered catch due to the strike substantially contracted the range of earnings from the 1979 distribution. However, they did not fully return to their 1976 level. In the Kuskokwim area, two different outcomes appear to have occurred. In Goodnews Bay, the reduction in earnings and contraction of income distribution was similar to, but not-as severe as, that which occurred in Bristol Bay. This was primarily due to the very low price offered to Goodnews Bay fishermen for their reds in 1982. In Quinhagak, overall income inequality among fishermen contracted due to the dramatic decline in earnings suffered by Bristol Bay permit holders from their 1979 earnings. Among Kuskokwim permit holders, on the other hand, a slight increase in range and inequality of earnings is apparent.

One question is whether or not or to what extent the distribution of gross salmon earnings has become more unequal since the imposition of limited entry. This would be easiest to determine in a circumstance

in which prices and run sizes had been stable over a period of years. An additional complicating variable is the strike which occurred in Bristol Bay in 1982, which constricted the efforts of fishermen differentially. The evidence which is available is inconclusive. In Bristol Bay, the contraction of New Stuyahok gross earnings distribution in 1982 to virtually its 1976 form would appear to argue against increasing stratification as a result of limited entry. In Togiak, on the other hand, although inequality and range contracted in 1982 from the 1979 level, it did not return even close to its 1976 range.

In the Kuskokwim area the evidence is also ambiguous. In the clearest case, that of the Quinhagak Kuskokwim permit holders, the range and inequality of salmon fishing earnings increased from 1976 to 1982, but by an almost imperceptible amount when one accounts for the increasing size of fish runs and increases in price. In Goodnews Bay the picture appears to be similar.

It is a truism of fisheries-that as the run size and time available for fishing increase, so too will the range of earnings between the highest and lowest earners and the inequality of income distribution. This is usually attributable to differential motivation and ability and will occur in fisheries where all participants have virtually the same technology. The development of the Bristol Bay and Kuskokwim fisheries would appear to correspond with this general scenario over the period of time under review. Although there is some evidence "of increasing stratification following limited entry, the overwhelming factor at work in altering income distributions from one year to the next appears to be run size and price.

Before leaving this section on income distribution, it is important to point out that Bristol Bay residents as a class, and Togiak and New Stuyahok fishermen in particular, derive incomes from drift and set gillnetting substantially below that of non-Bristol Bay resident fishermen. In 1979 Bristol Bay resident fishermen had average gross earnings from drift gillnetting of $52,147 compared to $72,643 for other Alaskans and $81,002 for non-Alaskans (Larson 1980:17). Note that average gross earnings for both Togiak and New Stuyahok drift gillnet fishermen were well below even the Bristol Bay resident average for 1979. In 1980 Bristol Bay Native residents averaged $28,287 from drift gillnet fishing. In that year, the Commercial Fisheries Entry Commission reports that the average gross earnings for all drift gillnet fishermen in Bristol Bay was $41,200 (CFEC 1983b:31). This pattern is extremely important to the position of Bristol Bay Native fishermen in the Bristol Bay drift gillnet fishery and has serious implications for local residents' ability to expand their share of the fishery through catch levels and permit holdings.

It is uncertain if similar patterns of differential income between categories of fishermen is present in the Kuskokwim fishery. It is possible that Bethel-based fishermen may have somewhat higher earnings than Quinhagak and Goodnews Bay fishermen, but it does not seem likely that those differences are as great as those found in the Bristol Bay salmon fisheries.

THE SOCIAL ORGANIZATION OF ACCESS AND PRODUCTION

Local control and kinship are important principles used by residents of the four communities to organize access to and production from the fisheries. The State of Alaska has created the Kuskokwim area and the Bristol Bay area for purposes of allocation and management. Within the four communities there are strong local sentiments concerning territoriality in the fisheries. These beliefs are expressed for both the area and the district, but are much stonger at the district level. For example, in Bristol Bay, residents, including those of Togiak and New Stuyahok, are unified in their view that bay residents should share some preference for participation in the fisheries. Togiak residents display a similar but stronger territorial orientation toward the fishery of the Togiak district. This territoriality extends to other Bristol Bay residents as well as non-Bristol Bay residents. This attitude is grounded in both traditional 'ties to the resource, particularly on the part of residents who trace their roots to either Osviak or Old Togiak, and in contemporary patterns. Technology, knowledge, and good earnings have combined to make Togiak fishermen stay in their district. Of 60 fishermen contacted in the spring of 1983, 56 (93 percent) had fished only in the Togiak district in 1982.

New Stuyahok fishermen apparently do not feel the same degree of territoriality concerning the Nushagak district, since they have long experience with other fishermen coming into the Nushagak district. A 'few of them In recent years have begun traveling to the Naknek-Kvichak and Togiak districts in response to the increasing fishing pressure in

the Nushagak district. The strike in 1982 provided impetus for fishing for reds in the Togiak district. However, the majority remain strongly tied to the Nushagak district.

Similar feelings of territoriality over local commercial fisheries are also apparent in Quinhagak. They are less apparent in Goodnews Bay likely due to the fact that the small size of the Goodnews Bay run has required that fishermen must move to either the Quinhagak or Lower Kuskokwim district in some years.

Table 42 presents data concerning the ability of residents of each of the communities to control the earnings from the districts in which their communities are located and where they have traditionally harvested salmon for subsistence purposes. It is clear that New Stuyahok is a minor participant in the Nushagak fishery. Togiak residents have been the primary recipients of value from the Togiak district. The rates of over 100 percent realized by Quinhagak and Goodnews Bay fishermen reflect primarily the participation of some residents of those communities in the Bristol Bay fishery.

Of major interest in the table is that the share of the fishery local to each community has declined from 1979 to 1982. The decline goes back to 1976 for both Togiak and New Stuyahok. This is indicative of increasing access to these fisheries by non-local fishermen and the gradual immersion of local fishermen in broader areal patterns and dynamics of the fishery.

A second important characteristic of the social organization of production is the strong kinship basis on which fishing vessels are organized. In New Stuyahok, only two vessels hired non-kinsmen to

TABLE 42. RELATIONSHIP OF TOTAL DISTRICT SALMON EX-VESSEL VALUE TO TOTAL EX-VESSEL SALMON VALUE EARNED BY VILLAGE FISHERMEN: 1976, 1979, 1982.

Year	Total District Salmon Ex-Vessel Value	Total Village Fishermen Salmon Ex-Vessel Value	Fishermen Value / District Value (%)
		Nushagak District	
1976	$ 6,954,916	$ 286,267	4.0
1979	$25,347,234	$ 991,112	3.9
1982	$35,437,589	$ 575,413	1.6
		Togiak District	
1976	$ 1,801,667	$1,273,39.1	70.7
1979	$ 6,079,889	S3,910,183	64.3
1982	$ 5,545,000	$2,960,430	53.4
		Goodnews Bay	
1976	$ "124,760	$ 159,138	128.0
1979	$ 408,103	S 682,439	167.0
1982	$ 491,729	$ 490,786	99.8
		Quinhagak District	
1976	$ 326,246	$ 238,000	73.0
1979	$ 539,988	$ 605,067	112.0
1982	$ 765,110	$ 638,243	83.4

work on them in 1982. The partners' relationships to the captain in 1982 were the following: 11 sons, 6 brothers, 5 brothers-in-law, 2 grandsons, 2 nephews, 7 friends in the community not closely related, and 1 non-resident. In Togiak it is also true that crews are primarily composed of close kinsmen. Six permit holders out of 60 in Togiak reported not having kinsmen as crewmen. Similar patterns of employment of kinsmen, particularly members of the nuclear family, are also evident in Goodnews Bay and Quinhagak, although in Quinhagak, many commercial fishers operate without partners because of the smaller vessels and gear and shorter open periods.

THE HERRING FISHERIES

Commercial herring fishing along the Bering Sea coast was virtually non-existent prior to the passage of the Fisheries Conservation and Management Act (FCMA) in 1977. There had been small scale efforts for both sac roe and roe-on-kelp dating back to the late 1960s in the Togiak district. These efforts had resulted in harvests which only on two occasions exceeded 100 metric tons. Since 1977, however, commercial efforts have expanded greatly in the Togiak district. As Table 43 indicates, fishing effort on the herring stocks of Security Cove, a small embayment just north of Cape Newenham between Togiak and Goodnews Bay, were undertaken in 1978, and commercial harvests in Goodnews Bay began in 1979.

These very recent commercial fisheries have resulted from two major occurrences. The first of these was the passage of FCMA which,

TABLE 43. CATCH AND VALUE OF HERRING FISHERIES IN TOGIAK, SECURITY COVE, AND GOODNEWS BAY, BY GEAR AND YEAR, 1976-1982.

	Togiak District					
	Purse Seine Sac Roe			Gillnet Sac Roe		
Year	Fishermen	Catch (M.T)	Value ($1,000)	Fishermen	Catch- (MOT.)	Value ($1,000)
1976	0	0	0	0	0	0
1977	6	2,255	398	43	279	49
1978	25	6,468	2,424	40	562	211
1979	175	6,069	4,045	350	4,046	2,696
1980	140	14,930	2,692	363	2,844	513
1981	83	9,325	3,272	106	2,047	718
1982	135	13,494	4,261	200	6,062	1,914

	Roe-on-Kelp			Total Value of Togiak Herring Fisheries ($1,000)
	Fishermen	Catch (lb.)	Value ($1,000)	
1976	118	295,780	127	127
1977	266	275,774	116	563
1978	349	329,858	120	2,755
1979	228	414,727	249	6,990
1980	186	189,662	95	3,300
1981	277	378,207	250	4,240
1982	167	234,924	176	6,351

	Security Cove			Goodnews Bay		
	Gillnet Sac Roe			Gillnet Sac Roe		
Year	Fishermen	Catch (MOT)	Value <$1,000)	Fishermen	Catch (M. T.)	Value ($1,000)
1976	0	0	0	0	0	0
1977	0	0	0	0	0	0
1978	7a	259	na	1	0	0
1979	61	385	327	4	82	38.5
1980	175	632	151	165	406	97.0
1981	113	1,064	347	175	596	196.2
1982	107	737	284	84	441	166.6

[a]Purse seine fishermen. Purse seine gear prohibited north of Cape Newenham after 1978.

by extending the jurisdiction over fisheries out to 200 miles, effectively excluded the Japanese from harvesting herring for food fish and sac roe, a delicacy in the Japanese diet. The second major occurrence was the rebound of eastern Bering Sea herring stocks which had been decimated by high seas harvests of the Japanese and Russians in the late 1960s and early 1970s. The successful experimental fishery which took place in 1977 was based on the perception of a much more favorable environment in which to undertake the commercial exploitation of herring.

From their inception, the eastern Bering Sea herring fisheries have been subject to allocational disputes. Those disputes have been primarily between residents of the villages on the Bering Sea coast and commercial fishermen from elsewhere in Alaska and Washington. Local villagers accustomed to fishing with small-scale, relatively simple technology and gillnets have viewed the herring resource as vital to their cash poor economies. They created the Bering Sea Fishermen's Association in 1979, largely to fight for control of Bering Sea herring. A fisherman from Quinhagak is considered to be the founder of that organization. Large-scale fishermen from other areas have viewed the eastern Bering Sea herring fisheries as a new frontier for earnings, which can provide for diversification and additional profit to insure their fishing livelihood. The battle then has been between outside purse seine vessels and local gillnet vessels for control of the sac roe resource. This battle has been raged in conference rooms, before the Board of Fisheries, in court houses before judges, and in offices before the Governor of Alaska.

The truce that has emerged must be seen in light of the entire eastern Bering Sea herring fishery. Especially important to note is the relative quantities of herring available in different areas. The first principle of the truce presently in force is that purse seine gear will not be allowed in the herring fishery north of Cape Newenham. This was a major victory for village gillnet fishermen from communities in this area, since the larger purse seine vessels were capable of harvesting the resource quota in such short order that little time and resource would be available to the gillnet fishermen. Furthermore, this regulation put processors on notice that they would have to make arrangements with gillnetters in order to capture the resource.

This regulation was acceptable for fishermen north of Cape Newenham but did nothing to assist the local gillnet fishermen of Bristol Bay. It cannot be considered a major concession by the Board of Fisheries nor the purse seiners and processors, since 80 to 85 percent of the eastern Bering Sea herring stocks typically spawn in the Togiak district of Bristol Bay which is excluded from the regulation. Bristol Bay gillnet fishermen were basically left to fend for themselves.

After attempts in 1978, 1979, and 1980 to gain a quota or some concession from the Board of Fisheries to enhance the opportunities for herring gillnetting in the Togiak district, Bristol Bay fishermen used their herring marketing cooperative formed in 1979 to establish a market with the Japanese Longliners Association for purchase of their fish. When the Board of Fisheries rejected their 'joint venture proposal, the fishermen went to federal court and obtained an injunction which allowed

the Japanese to come in and purchase their fish. Through this arrangement, Bristol Bay resident gillnetters have been able to harvest and sell sac roe herring. Without it, their rate of harvest and earnings would drop sharply.

The fishermen of Togiak have played an unusual role in the development of the herring fishery. The herring fishery is composed of two major components. The sac roe component is a fishery which harvests herring just prior to spawning in order to extract the eggs (sac roe), a prized delicacy in the Japanese diet. Carcasses of the herring after the roe has been stripped are not suitable for uses other than fertilizer and are typically discarded as waste offshore after processing. Purse seines and set gillnets are the gear used to harvest the herring in the sac roe fishery. The other component is called the roe-on-kelp fishery, and this occurs after the herring have deposited their eggs on the substrate of western Bristol Bay beaches. Spawn that is deposited on the intertidal and nearshore kelp beds are harvested by and, usually with rakes. The roe-on-kelp is picked and placed in five-gallon plastic buckets for sale to buyers on the fishing grounds.

As Table 44 indicates, Togiak residents were accustomed to the small roe-on-kelp fishery, in which they had participated alongside their relatives and friends from Manokotak since the late 1960s. But most were initially opposed to the development of the sac roe fishery, primarily for conservation reasons. In testimony before the North Pacific Fisheries Management Council, an elder fisherman testified to his fears that major commercial exploitation of the resource would lead

TABLE 44. EX-VESSEL VALUE OF HERRING TO STUDY COMMUNITIES. a

	Togiak				
Year	Gillnet Sac Roe Value	Number of Fishermen	Roe-On-Kelp Value	Number of Fishermen	Total Value
1976	0	0	$ 26,196	17	$ 26,196
1979	$ 9,403	18	$ 35,400	27	$ 44,803
1982	$29,407	19	$101,838	53	$131,245

	Quinhagak		Goodnews Bay	
Year	Gillnet Sac Roe Value	Number of Fishermen	Gillnet Sac Roe Value	Number of Fishermen
1976	0	0	0	0
1979	$34,139	15	$ 500	1
1982	$42,088	16	$57,000	35

aNew Stuyahok fishermen do not appear in Commercial Fisheries Entry Commission earnings records, although four to five fishermen reported participating in the fishery in 1982. The average gross income for three of these participants who were permit holders was $4,584.

to its decimation and affect the abundance of king salmon returning to the Togiak River as well as the abundance of seals in the waters near the village. In addition, he asserted that they had traditionally used the resource. He stated that since the stocks spawn on beaches in areas traditionally used by Togiak fishermen, they should determine how the resource was used. His position was not supported by actions of either the Board of Fisheries or the North Pacific Management Council.

As a result of the conservation concern, the lack of familiarity with herring gillnet gear, and the lack of access to markets, Togiak fishermen have been slow to enter the fishery. They are also not comfortable with the huge fleet of processors, purse seiners and non-local gillnetters who now visit their bay every spring for the sac roe harvest. Table 44 provides an indication of this ambivalence and reluctance, although more and more Togiak fishermen appear to be entering the sac roe fishery every year. As can be seen from Table 44, Togiak fishermen have expanded and intensified their efforts in the roe-on-kelp fishery. Comparison of Tables 43 and 44 shows that Togiak efforts in 1982 resulted in garnering 58 percent of the total Togiak district roe-on-kelp value.

The overall contribution of the sac roe and roe-on-kelp fisheries to Togiak's economy is relatively minor. For example, in 1982 the two herring fisheries combined equaled only 4.4 percent of the community's earnings from the salmon fishery. It does, however, hold potential for young men without salmon permits to gain a living fishing and perhaps even earn enough to eventually purchase a salmon permit. It is important to note that income from the herring fishery comes into the

community in spring when cash levels are the lowest.

The conduct of the two herring fisheries is different. Those fishermen who have decided to enter the sac roe fishery have made a substantial investment in nets and are faced with a risky and unpredictable set of natural and market conditions with which to deal. Hauling and shaking tons of herring out of the gillnets is arduous work, since most Togiak fishermen have neither winches nor shakers to mechanically assist them. It is men's work and is rigorous. Average gross earnings per herring permit holder in 1982 was $1,548 with net earnings back to the permit holder of about $250 after crew shares and other expenses were taken care of.

The conduct of the roe-on-kelp effort is altogether different. The investment is minimal consisting of buckets and rakes and with well-established long-term markets, this enterprise is fraught with much less risk than the sac roe fishery. Although the work may not be perceived as easy, it can be done, by children ages ten and up. Many people participate in the fishery in family groups or groups of friends, and often the fishery appears more like a family outing than a commercial undertaking. It provides the first cash source after a long winter and also is a subsistence resource harvested for consumption and giving to others. The average gross earnings from roe-on-kelp for Togiak fishermen in 1982 was $1,921, producing a substantially better return than did sac roe fishing.

Before turning "to an examination of the place of the herring fish-

Commercial Fisheries Entry Commission records do not record any sac roe or roe-on-kelp earnings for New Stuyahok fishermen in any year. Several New Stuyahok fishermen report having crewed on sac roe vessels from Dillingham in the Togiak fishery. At least two also report taking their own boats over to the Togiak grounds. It is conceivable that they were not gear license holders and rather served as crewmen for other gear license holders. This might account for their non-appearance in state records. It is also possible that confidentiality protections may be the cause of their non-appearance, since the Commercial Fisheries Entry Commission will not report cases in a category unless there are more than three instances.

The major reason for the lack of New Stuyahok fishermen's involvement in the herring fisheries is their location. The upriver site of their village is far removed from the fishing grounds, and it requires a major effort just to get to the area. New Stuyahok residents are unfamiliar with the Togiak area, which is environmentally very different from the Nushagak. Additionally, ice conditions on the river and sometimes in Nushagak Bay can prevent vessels stored at the village from getting down the river or prevent vessels stored in Dillingham from getting out of the bay. It is likely that their participation will increase should favorable markets for gillnet fishermen continue to be available.

North of Cape Newenham in the Security Cove and Goodnews Bay areas, there is no roe-on-kelp fishery in keeping with the wishes of local residents who fear its potentially devastating impact on herring stocks. Furthermore, gillnetting is the only gear type allowed for

sac roe fishing. The close proximity of the Security Cove and Goodnews Bay grounds to the Togiak grounds, however, attracts a significant number of non-local gillnet boats to the area. This is due to the fact that the Security Cove and Goodnews Bay herring spawn after Togiak but before the beginning of salmon season. Part of the truce over the Bering Sea herring has included keeping these areas open. Goodnews Bay and Quinhagak fishermen would like to have Security Cove and Goodnews Bay designated as exclusive registration areas as is the Cape Romanzoff herring fishery further north, because then they would be able to realize more of the fisheries' value locally. This does not appear to be -likely to occur.

Fishermen from Quinhagak entered the herring fishery earlier than did Goodnews Bay fishermen as is indicated in Table 44. This is primarily a result of the fact that the Quinhagak village corporation purchased seven large open herring skiffs and sold them to Quinhagak fishermen. However, by 1982 Goodnews Bay fishermen were able to realize more value from the two fisheries than were Quinhagak fishermen.

From 1979 through 1982, fishermen from the two villages were able to advance their share of the total ex-vessel value from about 10 percent to about 20 percent. The relative gain, however, may be short-lived, as they have tended to concentrate their efforts in the Goodnews Bay area which has a smaller harvest available in most years. For example, in 1982 no fishermen from Quinhagak or Goodnews Bay participated in the Security Cove fishery. The outside fishermen who dominate the Security Cove fishery have no qualms about entering the Goodnews Bay fishery when the timing of the season openings permit, despite the

fact that local villagers have concentrated their efforts in Goodnews Bay in recent years. The reason for the concentration in Goodnews Bay appears to be partly technological and environmental and partly social. Security Cove is an uninhabited open bay which can get quite rough and dangerous for the small open vessels operated by local fishermen. On the other hand, Goodnews Bay is proximal to a village and is somewhat protected from Bering Sea weather. The social reason for avoidance of Security Cove is that it has large numbers of non-local fishermen with whom residents of Quinhagak and Goodnews Bay are unfamiliar. The village of Goodnews Bay essentially has the local fishery at their doorstep, and it is much more convenient for Quinhagak fishermen as well, especially if they have relatives or friends with whom they can stay.

Other factors which contribute to the difficulty of villagers getting established in this fishery are the uncertainty of markets and environmental/regulatory uncertainty. In recent years the fishery has opened as early as May 14th or as late as June 5th. It is a major dilemma for Quinhagak fishermen to decide when to go south to the herring grounds and to forego subsistence activities, not knowing when the fishery will open and therefore not knowing what kinds of provisions to make for the length of stay away from the village.

The contribution of the herring fisheries to the economies of Goodnews Bay and Quinhagak is greater than to the economy of Togiak. In 1982 the value of the herring fishery to Goodnews Bay fishermen was 11.6 percent of their salmon earnings. For Quinhagak fishermen in 1982, herring earnings represented an additional 6.5 percent of the gross salmon earnings of village fishermen.

CHAPTER 7

THE SUBSISTENCE SECTOR: GENERAL CHARACTERISTICS

INTRODUCTION

The purpose of this chapter is to describe the second major sphere of economic activity in the four study communities -- the non-commercial production and distribution of fish, game, plants, and other local resources. This sphere of economic activity is called the "subsistence sector'" to distinguish it from the '*commercial and wage sector" described in Chapter 5. "Commercial and wage" refer to the production and provision of commodities or services for market sale. "Subsistence" refers to the production and provision of fish, game, and other resources for local consumption, distribution, and traditional exchange.

As outlined in Chapter 2, a "mixed, subsistence-based socioeconomic system"* has been advanced as a taxonomically distinct type of economy in Alaska (Wolfe 1979, 1981; Wolfe and Ellanna 1983). Several elements may characterize this type of socioeconomic system. Characteristic features include the following: a community-wide seasonal round of subsistence activities; substantial outputs of fish and game products for local use; a domestic mode of production; non-commercial distribution and exchange networks; traditional systems of land use and occupancy; and systems of beliefs, ideologies, and motives concerning production and distribution. This discussion of the subsistence sector is ordered by describing each of these five components of the mixed,

subsistence-based socioeconomic system as they relate to the study communities.

SEASONAL ROUND OF SUBSISTENCE ACTIVITIES

The first characteristic of the subsistence sector in the four study communities is that there is a community-wide seasonal round of fishing, hunting, and gathering activities. The production of fish and game follows a regular yearly cycle based on the seasonal appearance of fish and game resources. Economic activities shift and change with the seasonal cycles. Social groupings, investment of capital, recruitment of labor, and geographic areas visited are all modified following the natural cyclic changes in the biotic resources dictated by the flow of the seasons.

Unlike the economic systems based on manufacturing, trade, finance, or services, which often try to insulate their functions from the vagaries of the environment and seek an economic stability within natural flux, a subsistence-based economy seeks to coordinate its economic activities with the yearly changes in environmental conditions. Each season offers its set of production opportunities: runs of particular fish species; sea mammal migrations up or down the coast; staging of waterfowl; accessibility of furbearers; landfalls of driftwood, and so forth. Through collective historic experience, a community develops a body of traditional, local knowledge about these regular, environmentally-triggered opportunities. Human activity is

altered to mesh with these perceived natural cycles to take advantage of emergent opportunities. The economy is not insulated from the seasonal ebb-and-flow; rather, the economic system is regulated by it. .

At an abstract level, the seasonal round is a regular pattern, more or less predictable from year to year. Precision is sought within the body of local knowledge concerning the arrival of fish, game, and plant resources. Without precision, major resources may be missed, especially if they have a relatively narrow "harvest window," the period of time when the resource appears and is accessible for harvest. Approximate time periods of appearance of migratory species tend to be well known. For instance, this year about mid-May the impending arrival of king salmon became a topic of conversation in Quinhagak. One fisherman said the earliest arrival date he remembered was May 10, not counting a king harpooned in March by seal hunters off the ice pack. Arrival dates are usually between May 15 to 18. The appearance of barn swallows on May 15 was noted with interest: in traditional lore the arrival of swallows means there are kings in the ocean off Quinhagak. The first king was netted two days later on May 17 by one of about four fishermen who customarily make the year's first catch. The news flowed quickly through the community. When apprised of the event, one fisherman immediately checked the calendar and mentally noted the date, one more data point for use in calculating the appearance of salmon. The arrival of other resources are known similarly, though perhaps not associated with as much excitement as are king salmon.

Although the seasonal round is a predictable pattern, variations appear in it from year to year. The relative abundance of particular

species tends to change each year due to ecological factors and related population levels. Some species like hare and ptarmigan seem subject to regular cyclical swings. Other species like red and king salmon fluctuate in run strength depending on a constellation of factors, such as escapement of parent stock, spawning success, and cohort survival in the rivers and high seas. Certain resource populations may expand or contract due to unpredictable factors, like distemper and rabies decimating the fox population, or the expansion of beaver into previously open tundra country. Other resources like waterfowl are subject to hunting pressures and habitat reduction in the lower continental United States. Consequently, each year sees changes in the relative size of resource population potentially available.

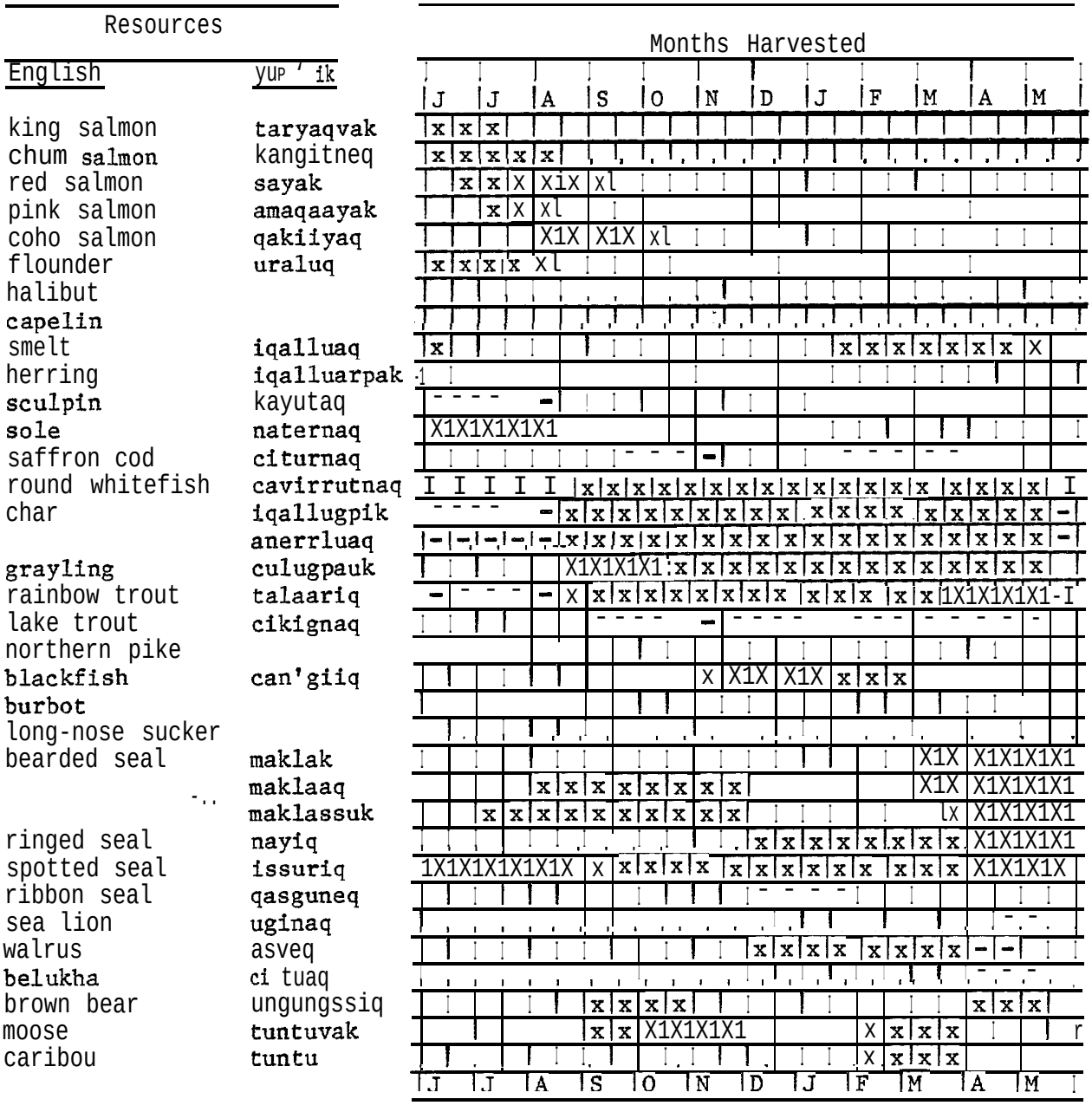
The accessibility of fish and game to capture is influenced by weather and travel conditions. Hunting success may be substantially reduced because poor weather curtails the amount of hunting attempts or hunting effectiveness. Poor ice conditions and strong winds can hamper hunting for seal on the pack ice. Thus, the vagaries of weather can significantly alter the seasonal round of activities from year to year. These annual variations should be kept in mind while reading the seasonal round descriptions that follow. That is, seasonal rounds constructed on the basis of field data gathered during this study may not be fully representative of other years.

THE SEASONAL ROUND AT QUINHAGAK

At Quinhagak, fishing, a major event in the seasonal round, does not begin In June, as is the case on the Yukon and Kuskokwim rivers (Wolfe 1981). Probably a better starting point for the seasonal round is somewhere in late February when productive seal and walrus hunting commences. By April fishing, hunting, and food processing are in full swing: hunters are taking seal and waterfowl; fishers are taking smelt, char, grayling, and round whitefish. There is no talk about salmon or herring fishing, although people are beginning preparation of the ocean-going salmon and herring boats. Rather, other fishing and hunting activities are keeping people busy. By the time salmon arrive, many families will already have a sizable portion of fresh and dried food put away. The seasonal round is depicted in Figure 27.

Late Winter

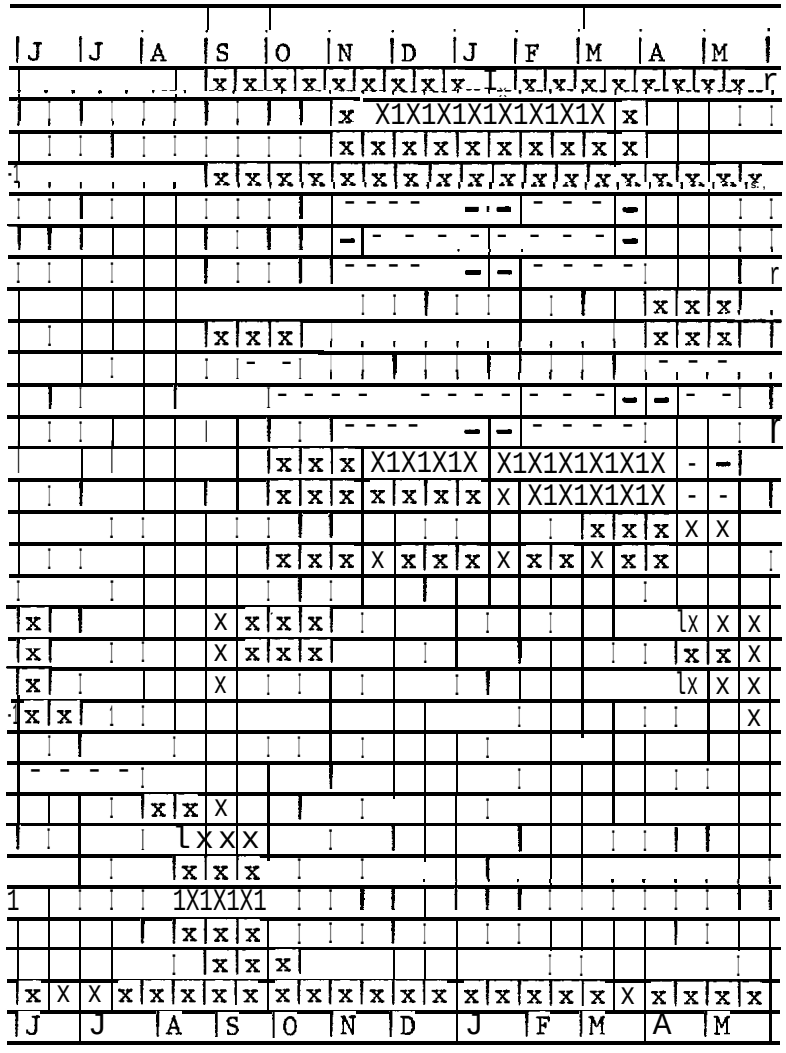
Seal hunting, an important activity in the seasonal round at Quinhagak, may commence as early as December and January if ice and weather conditions are favorable. However, the shore ice is generally not yet solid enough to allow hunting from October through December. Hunting usually commences by late January, with warming temperatures and increasing daylight. Hunters in pairs or small groups hunt sea mammals from the land-fast ice or from boats among the floating ice from late January through May. The bearded seal is the preferred species, followed by ringed, spotted, and an occasional ribbon seal. By April the



xxxx usual harvest period
---- intermittent harvest period

Fig. 27. Seasonal round of subsistence activities for selected species, Quinhagak, 1983.

Resources	
English	Yup'ik
beaver	paluqtaq
red fox	kaviaq
mink	imarmiutaq
land otter	cuignilnguq
weasel	teriaq, narullgiq
lynx	tertuli
wolverine	terikaniaq
marmot	vv'uiq
squirrel	qanganaq
muskrat	kanaqlak
porcupine	issaluq
wolf	kegluneq
snowshoe hare	ciriiq
tundra hare	qayuqeggliq
rock ptarmigan	elciayuli
willow ptarmigan	qangqiiq
spruce grouse	
duck	uqulkatak
geese	neqlleret
crane	
duck, gull eggs	
roe on kelp	
clam/mussels	
crab	
salmonberries	
blackberries	
blueberries	
cranberries	
basketgrass	
firewood	



Xxxx usual harvest period
---- intermittent harvest period

Fig. 27. -- Continued.

signs of a successful seal season are evident throughout the community -- strips of seal meat hanging on racks next to drying char, round whitefish, and strings of smelt. One to several seal skins may be tacked on plywood boards or sides of wood storage sheds, to be dried for use as boots, mittens, and other items. Oil is rendered in arctic entryways.

Walrus is taken concurrent with seal hunting from early February into April. They are hunted from aluminum boats in association with the sea ice. Only about ten men captain boats for walrus each year, as it is considered dangerous among the open floes, and many hunters are oriented more toward the land and rivers than to the sea. The period for taking walrus is short, a narrow harvest window when their northward migration brings them close along the south shore of Kuskokwim Bay. If good weather and ice conditions coincide with this brief appearance during their northern movement, then hunters may be lucky enough to take walrus. Walrus meat and skin are distributed widely within the community. The tusks belong to the hunter and may be carved into crafted items.

With the beginning of seal hunting along the coast, large schools of smelt appear in the lower reaches of the Kanektok River. Large quantities of smelt and a few Bering cisco are jigged from the river ice from late January through May. A few people also dip them when they reappear after break-up just before the king run. Smelt are braided together into long strings using grass gathered during fall. Hung on racks to dry, they shrivel into rows of tiny wraiths with gaping toothed mouths. Dried smelt are eaten dipped in seal oil or boiled in soups.

Spring

About April, when the river ice breaks above town, large quantities of arctic char (Dolly Varden), round whitefish, grayling, and rainbow trout are taken with nets on ice-free sections of the Kanektok River. The char begin migrating downriver to Kuskokwim Bay in spring. Some families fill large salmon racks with drying char; others dry several dozen on racks attached to their houses. On some years, a greater volume of char may be harvested in Quinhagak for subsistence use than any other species over the entire year.

As the sea ice opens near shore, hunters travel widely by skiff along the coast hunting seal. In the past belukha were regularly taken during April and May, driven with kayak into the shallows of Jacksmith Bay or hunted from skiffs. According to residents, over the past several decades they have been appearing only occasionally along southern Kuskokwim Bay. They are hunted when opportunities arise.

Toward the end of April, migratory waterfowl arrive along southern Kuskokwim Bay, congregating in preparation for the next stretch northward to the Yukon-Kuskokwim delta. Hunters begin to harvest them, sometimes in conjunction with seal hunting and other acclivities, especially at Jacksmith Bay and Carter Spit southwest of Quinhagak. As the birds move north, some hunters cross Kuskokwim Bay by boat to hunt around Kwigillingok and Kongiganak. Women gather gull eggs about middle May in the lakes and small islands on the tundra near the community. Today, waterfowl are stored in household freezers; in the past, birds were salted in buckets or air-dried like seal meat. The

down, feathers, and wings are saved as filling for clothes and whisk brooms; the heads, feet, gizzards, and hearts wind up in soups. During May between 15 to 30 men travel south to Goodnews Bay to fish for commercial herring. Enroute they hunt seal, waterfowl, and sea lion. At Goodnews Bay, some gather eggs along the rocky cliffs and herring roe to bring back to the community.

Between the end of April and the end of May, about eight families travel to spring squirrel camps located in the mountain valleys above the Kanektok, Arolik, and Jacksmith rivers. Parka squirrels and marmots were major trade items historically, traded from the Kuskokwim area north to the Yukon River for caribou and domestic reindeer skins from Siberia via Bering Strait and Norton Sound traders. Today, the fur parkas made of squirrel and trimmed in calf skin are valuable prestige items in the Kuskokwim region. Older women meticulously sew squirrel skin parkas for their children or grandchildren, functional show pieces worn on special -occasions. Squirrels are shot with .22 rifles or trapped with small (#0) spring traps. The squirrel meat is eaten fresh or dried. The furs are stretched and bundled in lots of 45 skins, selling locally for $150 per bundle untanned. Many Quinhagak households have bundles of squirrel skins hanging in their arctic entryways. Other spring camp activities include trapping for wolverine and marmot and hunting for ptarmigan. Families may return by snow-machine when there is still snow on the ground or be retrieved by a relative with a boat. The number of spring camps has diminished over the past 30 years primarily because of the school system. As late as the early 1950s parents took children out of school to move to squirrel

camps. After a tightening of school policy, parents ceased doing this. Currently, spring camps are established primarily by older couples accompanied by a select number of children or grandchildren.

Summer

Late May marks the arrival of salmon. From late May through July, king, chum, red, and pink salmon migrating from Kuskokwim Bay up the Kanektok River are harvested with gill nets near the RiverTs mouth. Part of the salmon is sold on commercial markets, providing the major source of monetary income to the community. Part of the salmon is cut, air dried, and smoked for subsistence use by Quinhagak families. The preferred species are king and coho salmon, followed by red, chum, and pink. Several fish species are caught incidentally with salmon. Small starry flounder frequently become entangled in the salmon drift nets, usually to the chagrin of fishermen who must take considerable time cleaning the net of the small, bony fish. Most are thrown back into the sea. A few are dried next to the salmon. Similarly, sea-running char, steelhead, and Pacific white-sided dolphin are periodi-tally caught in the "nets. All are eaten, and the fish are commonly hung and dried.

Later in the summer during August and September, coho, char, grayling, round whitefish, and rainbow trout are harvested in large quantities from the Kanektok River. Most families make day trips up the Kanektok River from Quinhagak to catch these fish. About seven to ten families move to camps along the lower portion of the Kanektok River

to harvest the coho and char runs. At least 11 contemporary camps exist within the lower 15 miles of the river, of which 6 were occupied in 1983. The principal method for catching coho and "trout'" is a type of sweep seine operated between the shore and a skiff, described in Chapter 8. Some fishers spear spawned red and coho salmon with leisters, while others use hook and line. 'King, coho, and char are staples for the community, taken in large quantities and dried, smoked, and frozen for use the rest of the year. The cool weather of early summer when kings run, and of late summer-early fall when the coho and char run, is said to be best for preserving fish.

Later summer and early fall are also times for picking berries. Some families establish berry camps for a few days in the area south of Eek, across Kuskokwim Bay, and up the Kuskokwim River as far as Tuntutuliak. Others go south to Platinum. The berries taken include the salmonberry, raspberry, blueberry, and cranberry.

Fall

From September through October, groups of about three to six hunters go by skiffs on hunting trips up the Kanektok and Eek rivers in search of moose, brown bear, squirrel, and beaver. Hunting trips last several days to several weeks. Hunters operate from traditional camps and tend to be mobile. Several brown bear are taken each year by Quinhagak hunters. The meat is considered best in fall after the bears feed on berries and also in spring following hibernation. However, spring bears are reputed to be especially unpredictable and

dangerous to hunt. Some older residents consider bear fat to be a favorite food. Bears are usually shot along tributaries of the Kanektok River, especially in sections within the mountains. Black bear are occasionally taken farther to the north in the Kuskokwim Mountains. Brown bear is considered to be a dangerous animal in its physical and spiritual aspects, requiring extreme caution and respect. Brown bear figure prominently in many traditional tales told at Quinhagak. There are several terms for brown bear: ungungssiq, meaning "animal"' is the preferred term and a careful circumlocution; carayak ("monster," '*ghost") brings a smile from many hunters. The skins of brown bear are dried for home use. Bear meat and fat circulate widely in the community.

Moose are not abundant in the Kanektok River drainage or mountains. They are more common along the Eek River, where several parties hunt. Nets are occasionally set for whitefish if Quinhagak men are hunting in the Eek drainage. Moos-e are fattest in September and October; unsuccessful hunters continue to hunt them into November. From early September through mid-October, the second hunting period for waterfowl occurs as they begin their migration south. Mostly ducks are taken as geese fly high passing through. A" "few fishermen travel up the coast to harvest cisco and cod in tidal sloughs. During fall a few hunters take parka squirrels in the mountains.

Early Winter

Following freeze-up during late October to November, travel conditions are usually poor until about January. There is frequently bare

tundra, which prohibits long trips from the community by snowmachine. By January the snow cover has usually increased to allow travel.

After the river's ice has firmed, the Kanektok River becomes a major travel route. Snowmachines pulling sledges travel from Quinhagak along a network of trails within the river drainage and into the mountains for fishing, trapping, cutting wood, and hunting caribou and moose. A major activity after freeze-up from winter through spring is jigging for char, rainbow trout, round whitefish, and grayling through the river ice. On clear days, the morning is noisy with the start of snowmachines, as families take day trips up the river to jig. Jigging locations extend from the mountains to the coast, though the most frequently utilized areas are along the Kanektok and Arolik rivers within about 5 to 10 miles of town. Freshwater fish taken by jigging in winter are usually not dried. There are several families who maintain blackfish traps from freeze-up through February. The blackfish are considered small and skinny in comparison with blackfish at Eek and on the Yukon-Kuskokwim delta, and few local streams have them.

During winter, trapping and hunting parties harvest furbearers and small game within the area's drainages -- beaver, red fox, mink, land otter, ptarmigan, and an occasional wolverine, lynx, and porcupine. Commercial trapping is a significant source of income for only a few men in the community, some of whom establish traplines and winter trapping camps. At winter camp, small mesh nets are set for char, rainbow trout, and grayling. Fox is the most numerous pelt taken for sale. During winter they are taken with traps and loop snares set near beaver houses beneath the ice. Beaver is principally taken by

Quinhagak residents as a source of red meat whenever encountered while residents are fishing, hunting, or gathering wood. They are shot from September through May and eaten fresh or partially dried. Their pelts are stretched and tanned for domestic use for caps and mittens. The beaver population has been rapidly expanding in the area in recent years. Their market value has been extremely low, only $16 to $24 for a large pelt (55" to 59") and $28 to $37 for a blanket (65" to 67"). Consequently, is is not generally considered profitable to trap them for income.

Land otter are taken in small numbers with spring traps, snares, and rifles. Basket traps are generally not used. A few people eat otter, especially if nothing else is around, but they are not considered good tasting. Red fox and an occasional white fox migrating from the north across the Kuskokwim Bay ice are trapped or taken with .22 rifle-s. Mink are not as common as on the Kuskokwim delta, taken in small numbers by snares, spring traps, 'and rifles. They are not eaten because of their bad taste. There are very few lynx, porcupine, or wolverine taken. Lynx and porcupine are considered good eating. Wolves are reentering the Quinhagak region after an absence since the early 1950s. Previously wolves were plentiful when reindeer were herded in the mountains. The fur is used locally for parka trim and other items.

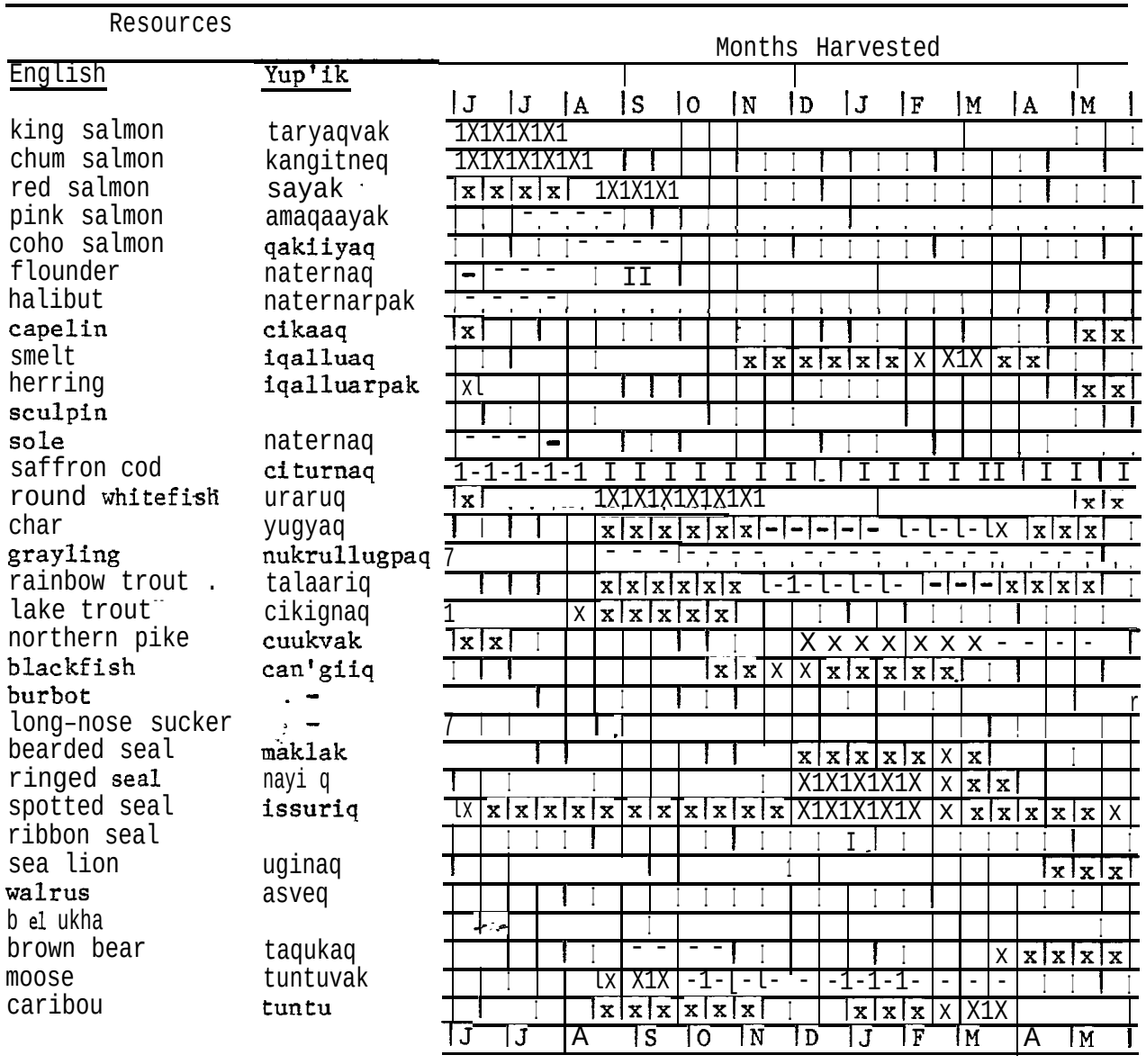
The rock ptarmigan inhabit the higher hills and mountains and are shot about March through May. The willow ptarmigan are found in the lower tundra areas and are taken October into May. Some trappers set loop snares for ptarmigan in brush surrounds. The snowy owl is good

to eat and occasionally is taken during winter. The snowshoe hare is shot and snared, usually by young boys; the tundra hare ("jack rabbit") is less commonly taken.

A second major inland hunting period occurs during February and March. At this time hunting parties of about six to eight hunters travel long distances by snowmachines in search of caribou herds and an occasional moose in the mountain valleys at the headwaiters of the Kiseralik, Kanektok, Arolik, and Togiak rivers. Winter caribou hunting trips last several days to weeks. The herds comprise a mixture of caribou and feral reindeer. A good trip might yield a hunter up to 15 caribou, which are brought back to the village and widely distributed among the hunter's extended family group and friends. About this time, hunting conditions are becoming better along the sea ice for sea mammals, and the seasonal cycle comes full circle.

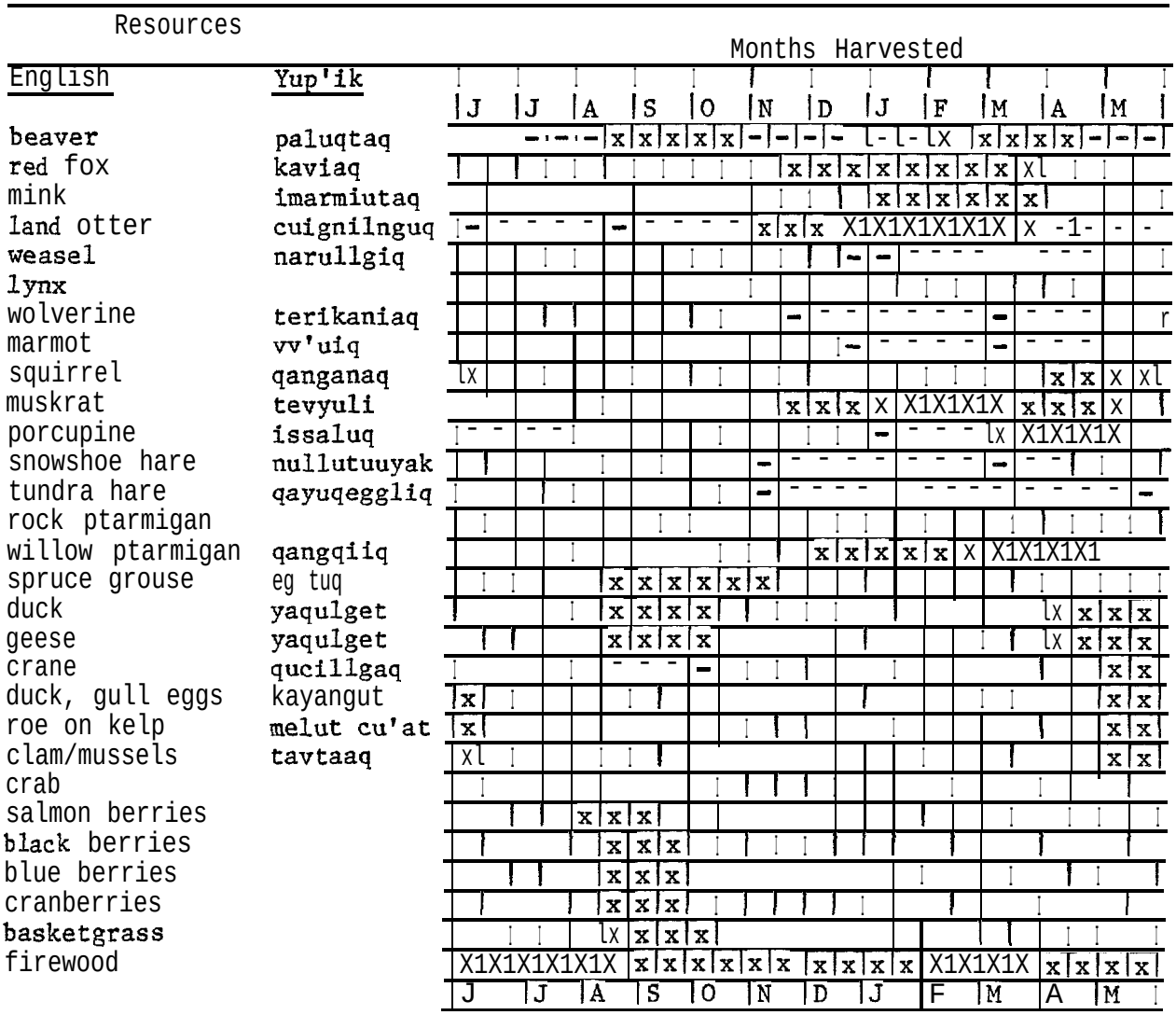
THE SEASONAL ROUND AT TOGIAK

The Togiak seasonal round is presented in Figure 28. Most hunting, fishing, and other subsistence activities at Togiak are done in the vicinity of the community. There are no long-term seasonal camps where people go for an entire season for fishing and hunting. There are several commercial salmon set net camps where members reside during summer and where subsistence fishing also occurs. However, almost everyone returns for the weekend to attend church on Sunday, to check on homes, and to visit. No one conducts subsistence activities on Sunday, a practice also observed at Quinhagak. Many residents travel



Xxxx usual harvest period
---- intermittent harvest period

Fig. 28. Seasonal round of subsistence activities for selected species, Togiak, 1983.



xxxx usual harvest period
---- intermittent harvest period

Fig. 28. -- Continued.

upriver to Lake Togiak in the fall for a few days to a week or so to harvest spawned reds, arctic char, and other resources. In the spring there are a few families that travel to Osviak and across the hay for a few days to a few weeks to hunt squirrel and other resources. For most households, kelping is the first family outing of the season after the winter. Also, in late summer and early fall many residents travel to Goodnews Bay, Quinhagak, and Yukon-Kus-kokwim delta communities to gather berries, exchange information and food, and to visit.

Summer

During the summer months of June through August most of the salmon Is harvested. Kings are taken mainly in June and the first part of July. Chum and red salmon are harvested" during June through July. Pink salmon, if taken, are usually caught during the latter part of July and into August. Spawned reds are harvested in Lake Togiak during the " month of August and into September. During the early portion of commercial salmon fishing, halibut, sole, flounder, and cod are taken in commercial nets. The halibut is a valued subsistence fish and is usually consumed immediately or given to relatives and friends. Flounders are perceived to be problem fish, as they are constantly getting caught in the nets, although a few are eaten. Sole and cod are usually caught accidently and are eaten or given away.

Red salmon is the basic food fish for Togiak residents. They are normally dried and eaten with seal oil. The first king salmon catches of the season are eaten fresh. The remainder are cut into strips and

soaked in brine and dried. Some are kept by freezing for winter consumption. Silver salmon are either eaten fresh or frozen. Reportedly, they are not a good drying fish because they are fat. Chum are a highly desired fish by older people. Because they are less fat, they are more appealing for drying than saltwater reds and coho.

Fall

During the latter part of August and through September, many parties travel upriver by boat to Lake Togiak to fish and hunt. Several fish are netted: spawned reds, char, whitefish, pike and an occasional trout and grayling. Hunting takes place for beaver, land otter, caribou, and brown bear. For those who hunt ducks and geese on their southerly migration, it is necessary to leave the Togiak area as the fall migration passes to the northeast of Togiak. Some travel to the Kuskokwim region during fall for geese. Other birds such as grouse and ptarmigan are taken during fall. By volume, spawned reds and char are the principal fall resources taken.

Winter and Early Spring

During the months of December through March people are engaged in trapping for commercial sale and subsistence use. The major animals trapped are beaver, land otter, mink, snowshoe hare, and red fox. Only fox is not used as food. Beaver is by far the most important furbearer and is a valued source of food. This past year, red fox

numbers were down, reportedly due to rabies and an exceptionally wet spring which reduced pups through distemper. Snowshoe hares are usually snared by youths and women. It is known as a starvation food: if eaten as a sole source of protein, locals claim they would die of malnutrition. Snowshoe and tundra hares are eaten for a change in diet.

Moose and caribou are hunted both in the winter and fall. Moose is not an abundant resource in the Togiak area. Moose are commonly hunted outside of the area in conjunction with caribou hunting in the vicinity of New Stuyahok. Caribou are hunted in the late fall but more generally during midwinter about January. Togiak residents hunt caribou primarily in New Stuyahok and on- the Alaska Peninsula. In the former case, snowmachines and air transportation are used. For traveling to the Alaska Peninsula, hunters charter planes. Caribou are also hunted in the Kiseralik drainage, the Kilbuck Mountains, and the Aniak drainage. Both moose and caribou are eaten fresh or frozen; a few families dry caribou meat during spring. Caribou meat is sometimes eaten with seal oil.

Fishing through the ice for smelt and" char is a common activity during winter. Smelt are eaten fresh and frozen for later consumption. Since most are caught during winter, no other form of processing is employed. Most of "the jigging parties are women, youths, and young couples. It is a regular activity for some, and for others it is primarily an occasional or weekend pursuit.

Seal, particularly bearded and ringed, are commonly hunted during winter. These seal migrate into the area with the formation of the sea ice. The ocean is often turbulent during winter, making sealing more

sporadic than constant. Both bearded and ringed seal leave the area during April on their northward migration.

Late Spring

By April subsistence activities pick up in numbers of people involved and frequency of activities. Spotted seal, sea lion, and walrus are harvested in Togiak Bay, dragged ashore for butchering, and shared with others in the area. If shot near Togiak, an announcement will be made informing the community of the kill and inviting others to come share in the harvest. Large animals like walrus and sea lion are broadly distributed. Hunting of sea mammals often coincides with the harvesting of herring spawn on kelp, herring, capelin, and the hunting of ducks and geese. Kelp is picked and either frozen or left in brine. It is normally eaten only on special occasions, such as birthdays, feasts, and other family celebrations.

A few men hunt brown bear upriver as they come out of hibernation. About eight to ten bear may be taken during spring. The major concentration of hunting is waterfowl, especially the eider duck and emperor goose, which are preferred species. Most residents hunt and fish up the Togiak River; about 12 pairs of hunting partners hunt in Togiak Bay and down the coastline. Duck soup is a common meal during spring. Most geese and ducks are frozen, although some ducks are dried on household racks. Women gather the eggs of gulls, murre, and puffins, as well as wild vegetables, clams, and other littoral resources.

Spring is also a period of camping to hunt squirrels and porcupines.

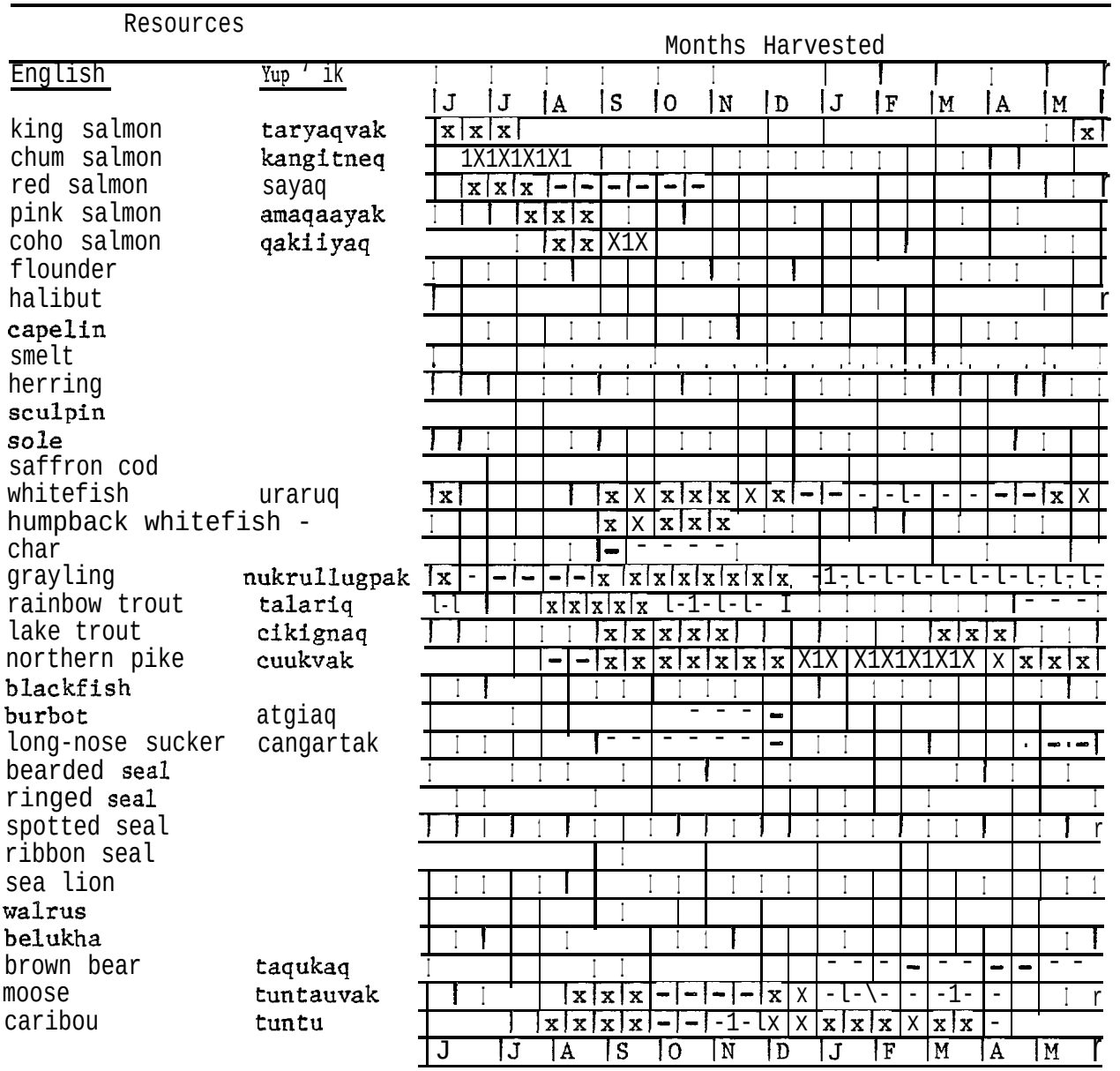
Squirrel pelts are used in crafts. The meat, considered a desirable food, is frozen, dried, or eaten fresh. Porcupine and beaver meat is commonly eaten at this time, shot while hunters are pursuing other animals. The appearance of abundant schools of capelin signal the arrival of king salmon, according to local lore, and the beginning of summer subsistence activities.

THE SEASONAL ROUND AT NEW STUYAHOK

Summer

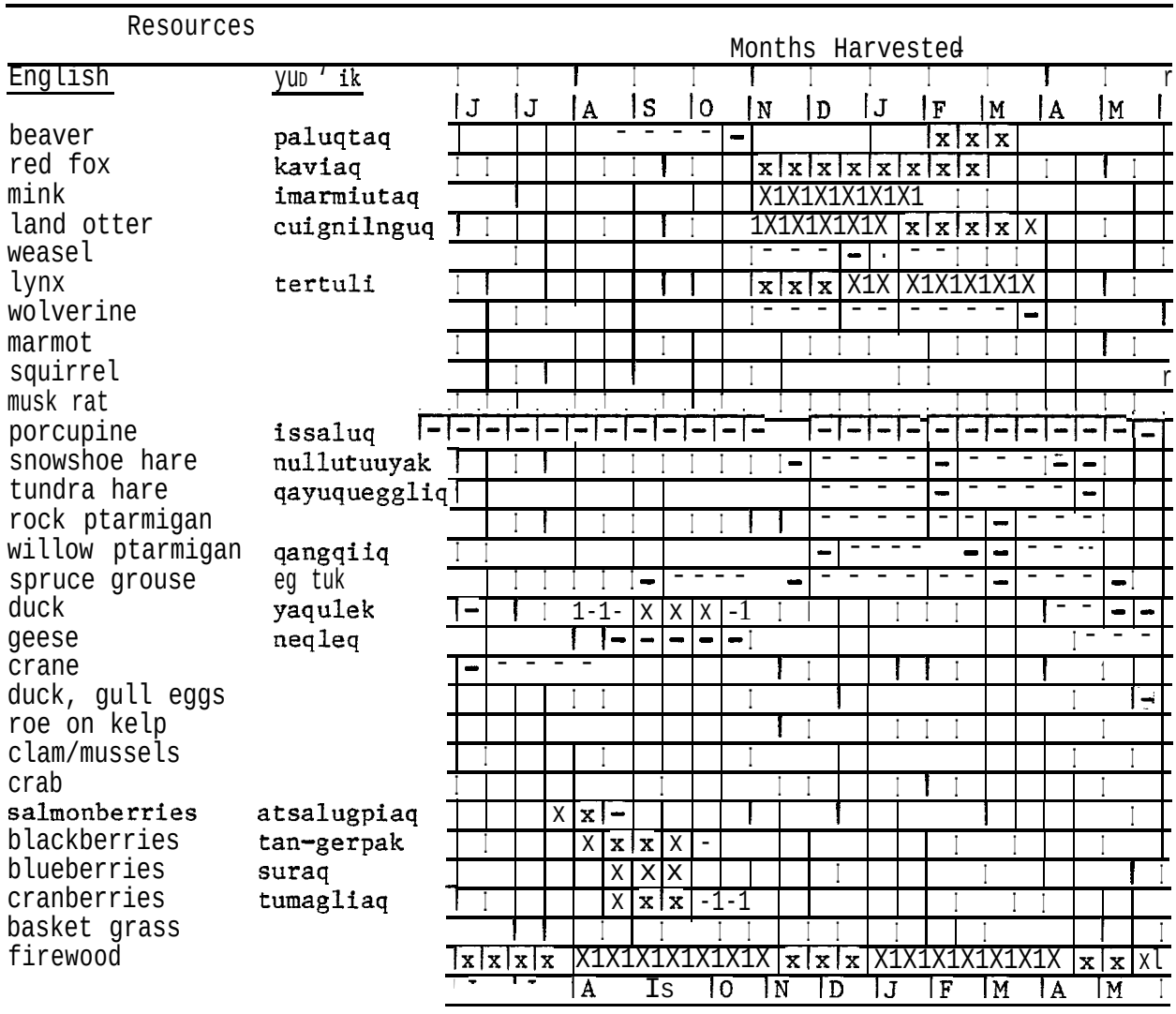
Figure 29 presents the seasonal round of subsistence activities at New Stuyahok. The New Stuyahok seasonal round represents an inland, riverine adaptation with a seasonal move to the coast for commercial and subsistence salmon fishing. During May or early June, before families move downriver to the community fishcamp at Lewis Point along the lower Nushagak River, some king salmon are harvested from New Stuyahok. These early kings are highly prized and are widely shared around the community to eat fresh. The heads, stomachs, and flesh are commonly boiled in soups. In June about half of the families move to Lewis Point to net salmon for subsistence use, while men are fishing commercially (Fig. 30). The remaining families catch subsistence salmon near the village. Kings are made into dried smoked scrips. About 10 to 20 fish per household are taken up to New Stuyahok by skiff and frozen. Heads and sometimes bellies are salted (called salunaq); heads and backbones also are commonly dried for dog food.

Red salmon is the basic food caught in summer and is a major food



xxxx usual harvest period
---- intermittent harvest period

Fig. 29. Seasonal round of subsistence activities for selected species, New Stuyahok, 1983.



Xxxx usual harvest period
---- intermittent harvest period

Fig. 29. -- Continued.

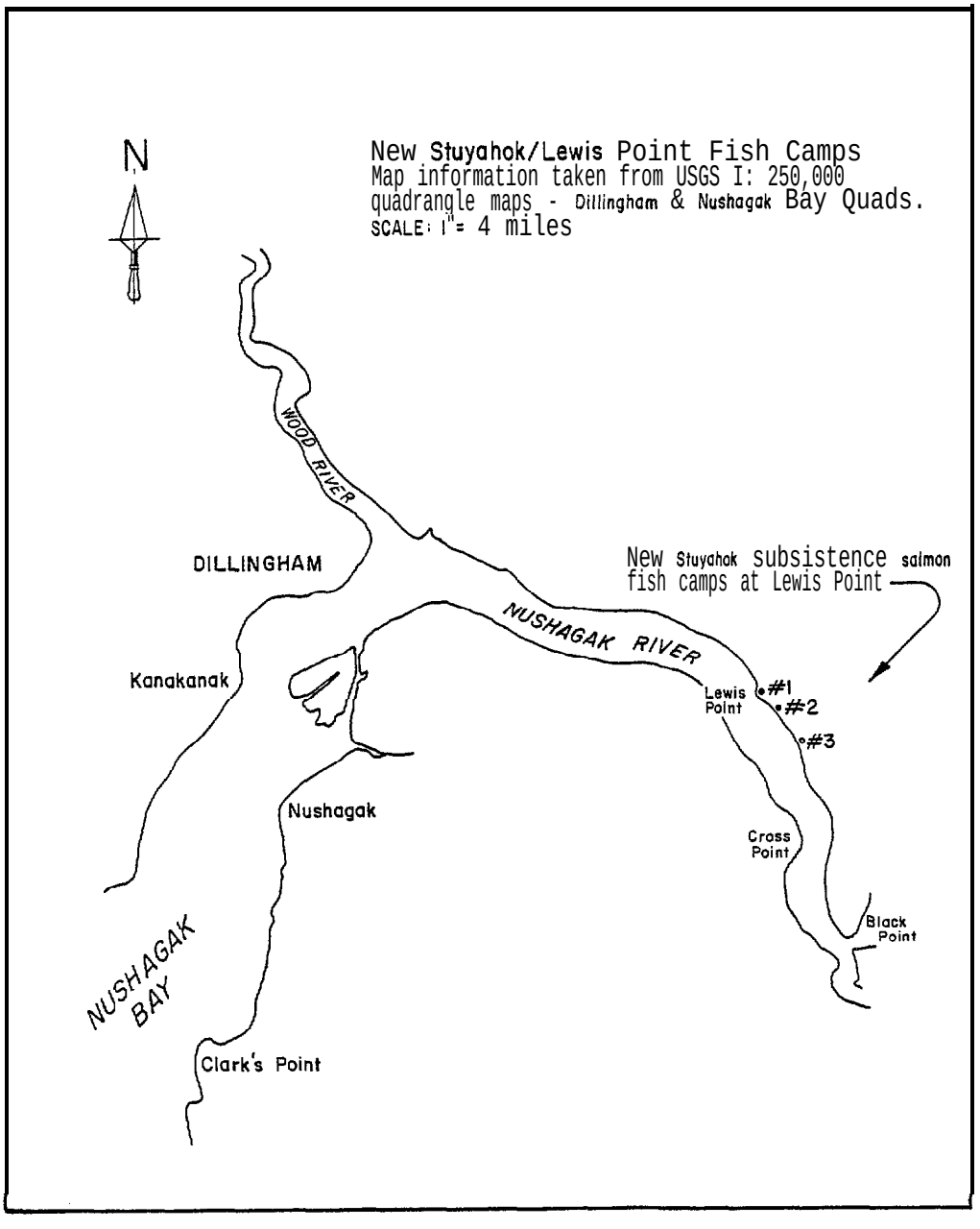


Fig. 30. New Stuyahok fish camps at Lewis Point, 1983.

source during winter. The fish are filleted, scored, hung to dry, and lightly smoked. A few are frozen for winter use. Backbones and heads are dried for dog food. Heads may be fermented into "'stinky heads,'* a cheese-like product.

Families return to New Stuyahok in early August. During August and early September, chum, coho, pink, and red salmon are harvested from the community with set nets. The chum are split and dried primarily for dog food. Unlike the other three communities, there are substantial numbers of working dog teams at New Stuyahok, (about ten in 1983), which accounts for a part of the harvest of small salmon. Coho are eaten fresh, frozen, smoked, or salted as fillets. Pinks are often caught with hook and line as well as netted and smoked, with a few frozen or eaten fresh.

Fall and Winter

Berry-picking is an important late summer and fall activity. People travel along Nushagak Bay and sometimes to the Kuskokwim River area to obtain highly prized salmonberries. Blackberries may be picked in greatest numbers and are available locally and up the Mulchatna River. Some women fly long distances to Platinum and Iliamna to" pick them. Wives accompany husbands on hunting trips upriver to obtain blueberries and blackberries. Cranberries and blueberries can be picked on the tundra near the community. Most berries are used in agutaq, a traditional dish served as dessert in most homes.

In September and October, spawned-out red salmon ("red fish") are

netted upriver along the main Nushagak or Mulchatna rivers for drying and freezing. The spawned reds are preferred by older residents. They are less oily and softer than reds taken at Point Lewis and are eaten boiled or as dry fish dipped in seal oil, if it is available. Red fish are also used for dog food.

In late September and October before freeze-up, whitefish nets about 10 to 20 fathoms long are placed as set nets at the mouths of sloughs near the community for taking runs of whitefish, pike, and a few long-nosed suckers. In addition, some lengthy trips are taken to the Tikchik Lakes to harvest humpback whitefish and lake trout, using pink salmon nets. Whitefish and pike taken in fall are primarily frozen for use during winter, eaten cooked or frozen with seal oil. Previously, whitefish and grayling were stored in barrels for fermentation. Long-nosed suckers caught incidentally in whitefish nets (often in large numbers) are used primarily for dog food. However, the heads and dried flesh are eaten by some, especially older residents. Before freeze-up, grayling and rainbow trout are commonly taken with hook and line, frequently while hunting by skiff along the Mulchatna River.

As the ice is moving in the river, burbot are taken with baited lines set near the community. The burbot are considered good eating, but reportedly are not sought as frequently as they once were. After freeze-up in late November through mid-December, and occasionally from January through May, grayling and pike are jigged with hook and line through the river ice near the community. Large numbers of grayling are caught just following freeze-up. Lake trout are also jigged

during late winter and spring from the Ostukuk River, Wood River, and Tikchik Lakes.

In contrast with the coastal communities, at New Stuyahok there is a relatively long and productive hunting season for caribou and moose. Caribou and moose are staples, reflective of New Stuyahok's inland orientation. In the past, moose was not a common food item, according to VanStone (1967). It has become so since the 1930s as moose expanded into the New Stuyahok hunting range. Moose currently is a prized source of red meat. It is hunted by skiff from late August through September, primarily up the Mulchatna River. During winter (December through April) it is hunted over a greater area with snowmachines. Several hunters work in coordination to flush moose from wooded areas. In addition to the meat, heart, and liver, occasionally the nose, stomach, kidneys, and feet are eaten. Fresh moose is especially desired during Slavi, the Russian Orthodox Christmas, as a preferred dish served to guests visiting from other regional communities.

Caribou are also hunted during August and September and during winter from December through April. Winter hunting groups may number as many as 10 to 12 snowmachines with about 15 men. Caribou is eaten nearly year-round. Like moose, most parts may he eaten.

The trapping and hunting of small mammals from November through March is done for both meat and furs. Porcupine is a periodic source of food and considered a desired break from dry fish and other staples. They are looked for in conjunction with other activities, such as gathering wood, trapping, and hunting. Snowshoe hare are snared by young boys and women but have not been an important source of meat for many

years. Tundra hares are occasionally shot while hunters are out doing other things, or by young men out specifically for hares and ptarmigan.

The most important furbearer since Russian trading days in terms of numbers taken and earnings from pelt sales is beaver. Unlike the coastal communities, most beavers are taken during a relatively narrow harvest period (February and March), which is the legal trapping season. Some are taken for camp meat in mid-August to late October while residents are moose or caribou hunting. However, hunters primarily restrict their harvests to the legal season. Historically, beaver is more important as a source of income to New Stuyahok residents than to the coastal communities. Trappers seek to harvest them when pelts are at their prime. The meat is eaten fresh or preserved by freezing and hanging. It is a desired variation to the diet. Half-dried beaver meat is eaten during summer at fish camps. Most people consider the meat eaten during late winter and spring sufficient for their needs and do not seek beaver the rest of the year for meat. This is probably connected to the greater availability of red meat sources in caribou and moose at New Stuyahok in comparison with the scarcity of red meat in coastal communities, where beaver is taken for meat throughout much of the year.

Land otter is the furbearer taken second in number after beaver. There is also a long history of trade for this fur. Red fox are taken in variable numbers, and rabies commonly decimate local populations. Lynx are only occasionally taken; their high price makes catching even one a big event; lynx meat is eaten. Mink furs are not a significant income source.

Spring

With the coming of spring, nets are again set for whitefish and pike near the community or a ways downriver as families move to Lewis Point. Spring fishing is more productive than jigging through the winter ice, as the nets intercept runs of whitefish and pike. The fish are split and dried for use during summer at fishcamp.

Hunting for caribou and moose continue during spring. Moose taken in late spring are dried to take to summer fishcamp. Caribou are usually eaten fresh. Occasionally they are dried during spring; however, moose is the preferred "dry meat."

Brown bear is the other large game mammal harvested during spring. A few are taken and eaten by New Stuyahok hunters each year. There are about five hunters in New Stuyahok who actively hunt brown bear. These hunters often take less experienced partners with them when they go after bear. Meat is preferred from bears taken after they have entered hibernation -- the odd bear out during winter and the early emerging bear in spring. Bear meat is widely shared throughout the community. As in other communities, bear is considered to be a dangerous animal and is treated with caution and respect.

Spruce grouse are taken in woods near the community from September into April. Hunters incidentally take ptarmigan on the tundra while caribou hunting or harvest them in the willows on river bottomlands in late winter and spring. Ptarmigan have not been abundant for many years. Grouse and ptarmigan are frozen, dried, or eaten fresh. Geese and a few ducks are caught primarily during spring following break-up

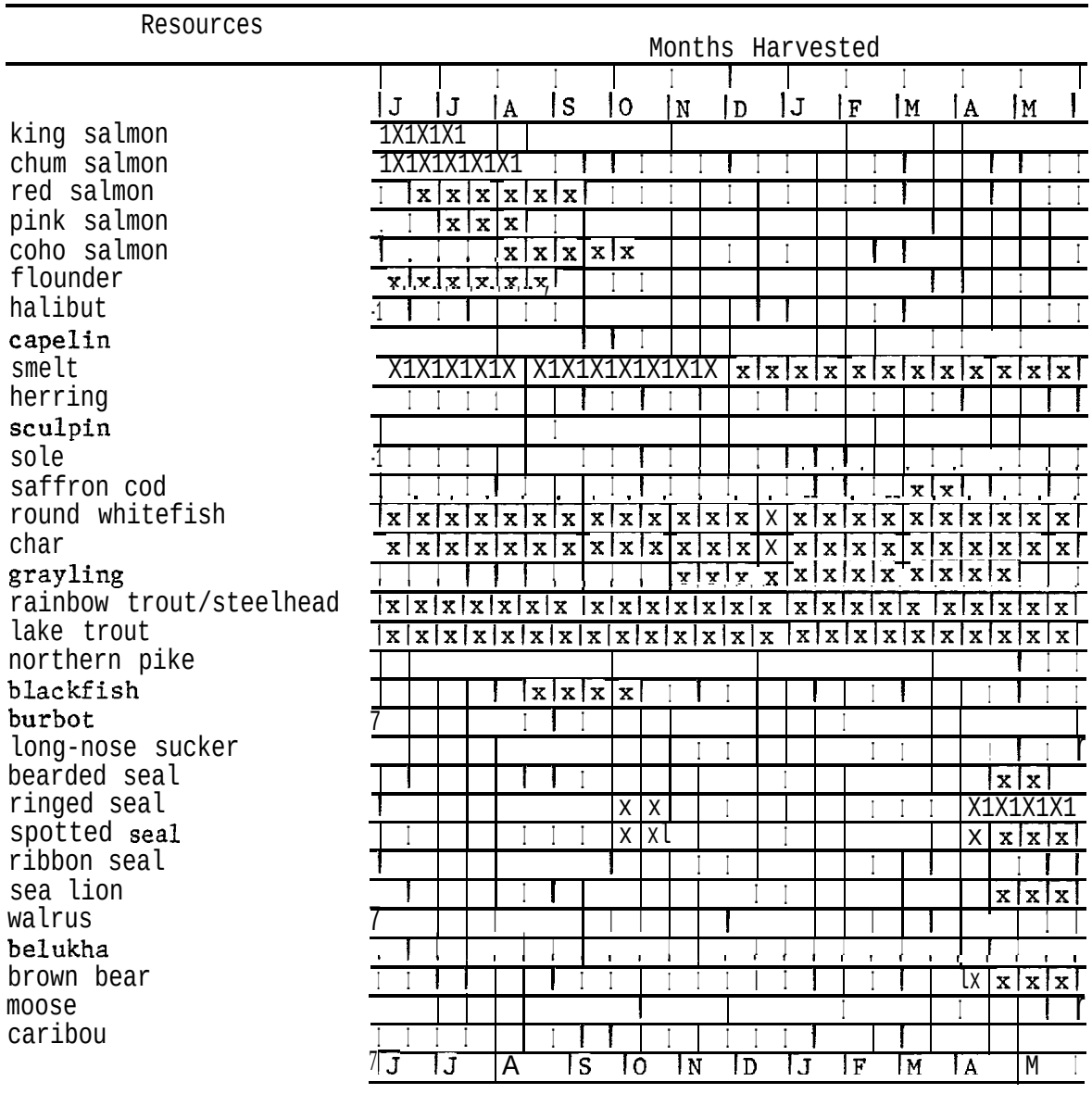
on sloughs near the community or downriver near Black and Lewis points. Ducks and a few geese are also taken during fall. Most are eaten fresh. The first runs of salmon come soon after the appearance of waterfowl. This signals the advent of summer and a repetition of the seasonal cycle.

THE SEASONAL ROUND AT GOODNEWS BAY

In overview, the residents of Goodnews Bay conduct subsistence activities along the coast of the Bering Sea, making periodic inland trips up the Goodnews River after salmon, freshwater fish, and other resources. The people remain based in the community throughout the spring, summer, and fall, making short trips to camp sites which serve as bases for subsistence activities. Most of the population spends the winter in the community, with males making occasional forays inland to hunt and trap land mammals and to the edge of the sea ice to hunt sea mammals. Figure 31 presents the Goodnews Bay seasonal round of subsistence activities.

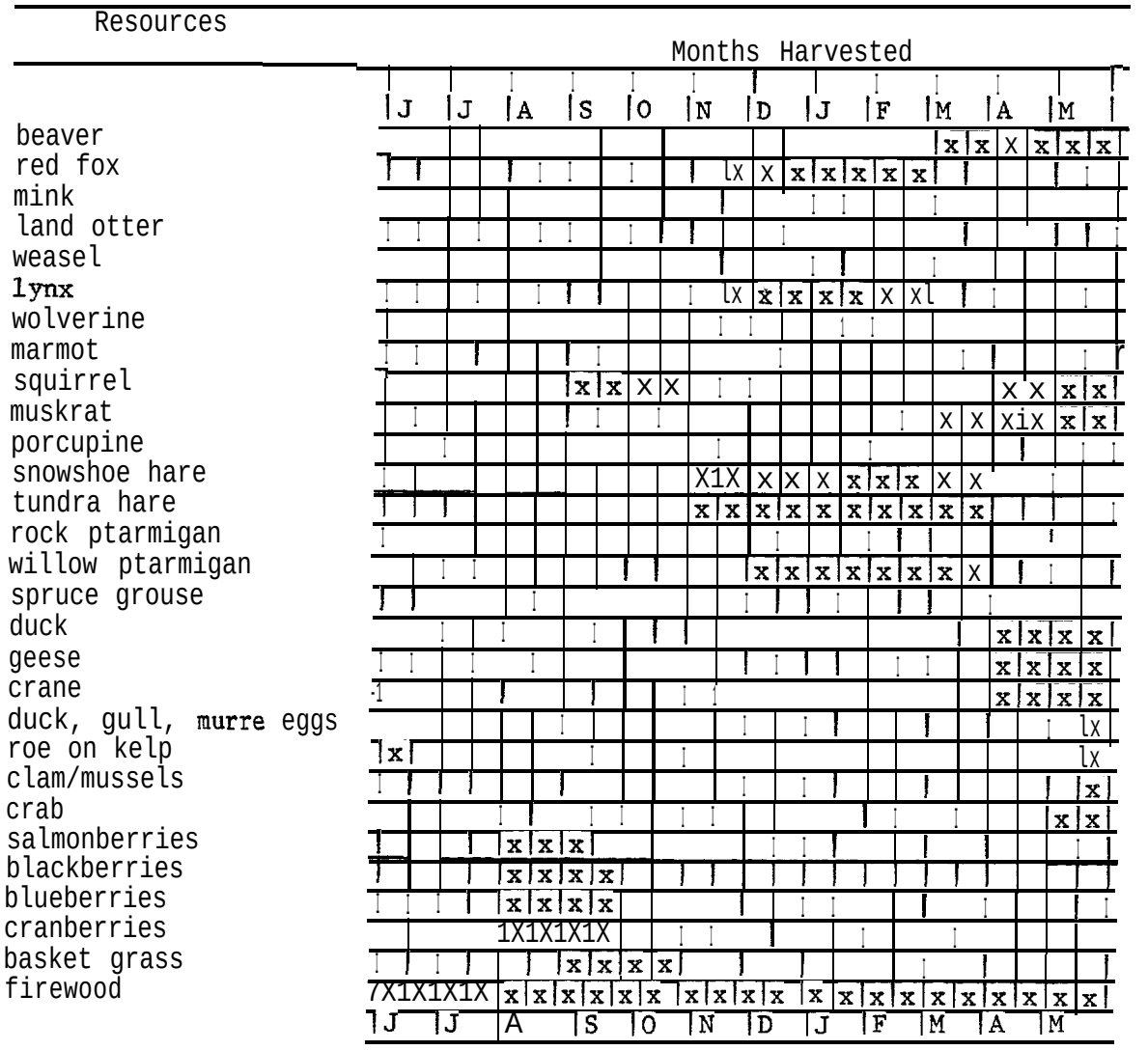
Spring

Spring in Goodnews Bay is a time of intense enterprise. In terms of seasonal round activities, spring begins with the break-up of the ice on the river and terminates with the arrival of king salmon, a period which generally corresponds with the calendar months of April to early or mid-June. During this time freshwater fish such as arctic char,



xxxx usual harvest period

Fig. 31. Seasonal round of subsistence activities for selected species, Goodnews Bay, 1983.



Xxxx usual harvest period

Fig. 31. -- Continued

round whitefish, grayling, and rainbow trout are taken with nets in open water on the river. Clams, crab, and herring roe on kelp are collected along the beach in the bay and along the Bering Sea coast.

Spring camps are established to the north and south of the bay by some families. A variety of species, including seal, brown bear, and squirrel, are hunted at spring camp. Migratory waterfowl also are taken at spring camp and near the community. In late spring, trips are made along the rugged coastal cliffs and to Egg Island in the Bering Sea to collect the eggs of sea birds. During such trips, seal, sea lion and walrus are taken when encountered. Seal are harvested in the bay and along the coastline from Jacksmith Bay southward, around Cape Newenham almost to Togiak Bay, especially at Chagvan Bay, Nanvak Bay, and Osviak Bay.

In conjunction with the array of spring harvest activities, adult males are engaged in the construction or repair of fishing boats. Only those individuals who own aluminum or glass boats are spared these tasks. Most of the wooden boats have a life expectancy of about ten years, requiring new bottoms every two years, and are painted each year. Other work preparatory to summer fishing includes replacing and repairing gill nets and working on outboard motors. If fishermen are to fish for herring, the work on boats and gear must be completed by the first week of May. Most fishermen spend minimally one and as much as three weeks involved in these chores. In households which have fishermen, it is often the sons or other male members without limited entry permits who are engaged in the majority of hunting activities, as the fishermen are occupied with gear preparation.

Summer

Summer commences with the arrival of king salmon and the opening of the commercial fishing season. Successive runs of king, chum, red, pink, and coho salmon are harvested for commercial sale and subsistence use. Most salmon retained for domestic use are frozen whole; only a few households preserved fish through drying and smoking in 1983.

Salmon are taken in the bay with drift gill nets, along the shore near the community with set gill nets, or a short distance (less than ten miles) up the Goodnews River with drift or seine nets. Silvers are the most common species taken upriver for subsistence uses. There are three fishcamps located along the bay currently used for salmon fishing. A number of contemporary camp sites are located up the Goodnews River but are currently not used for salmon fishing, probably because of the need of residents to remain in the village during the coastal commercial fishery. The community was the staging area for most salmon fishing activity in 1983.

While commercial and subsistence salmon fishing dominates the majority of the summer harvest efforts and requires staying in or near the community, trips are still made up the Goodnews River to gather firewood, hunt beaver, take birds, and harvest freshwater fish. These trips are usually made during closed fishing periods and are of short duration. In late summer, silver salmon are taken with nets up the Goodnews River and stored for winter use. Berries are gathered near the community and along the river drainage.

Fall

During the period of September through October, berries, basket grass, and firewood are collected. Day trips are made up the river to obtain freshwater fish, ground squirrel, and the remnants of summer resident waterfowl. Some hunters go upriver on longer trips in search of moose. Other hunters comb the sea for seal returning on their southward migrations. Commercial fishing boats and gear require time to store for the next season. The degree of attention given to the post-season case of equipment varies considerably between fishers.

Winter

The beginning of winter is marked by the freezing of lakes, rivers, and Goodnews Bay to a thickness which permits safe travel, Trips are made inland by hunters in pursuit of moose, hare, and ptarmigan. Moose are hunted up the drainage of the Goodnews River and as far awaY as the mountains and river valleys northeast of Bethel. Some men trap for fox, lynx, otter, and mink. Trips are taken to the edge of the shore ice to hunt seal. Fish, such as trout and cod, are taken through the ice both upriver and in front of the community. Firewood is collected throughout the winter on trips upriver by snowmachine. The majority of time during winter, however, is spent in the community with most trips being of less than a day's duration.

ECOLOGICAL COMPARISONS

As shown in the seasonal rounds, the economies of all four communities are highly influenced by their riverine orientations. The rivers provide a substantial portion of the communities' food supplies. Fish are probably the most reliable aspect of the economy from year to year. The mix of species differs somewhat: king salmon, red salmon, whitefish, and pike are major species utilized at New Stuyahok; king salmon, red salmon, coho salmon, whitefish, char, and smelt are major species at Togiak; while king salmon, coho salmon, char, smelt, and round whitefish are major species harvested at Quinhagak and Goodnews Bay. The taking of salmon in the ocean is an artifact of the commercial fishery. Historically, anadromous salmon were taken in the river for subsistence and still are during parts of the seasonal round.

Certain differences in the seasonal round are attributable to the inland and coastal locations of the communities. New Stuyahok is clearly an inland adaptation. There is an extended hunting season directed toward caribou and-moose. Caribou has long been a staple red meat and moose has become so since the 1930s. Their contributions to the total subsistence harvest are discussed in the next section. Trapping of furbearers has been and is still an important part of the seasonal round. The timing of beaver trapping, the primary target species, is designed to maximize commercial pelt value. Maritime activities are noticeably lacking in the New Stuyahok seasonal round. No marine mammals or marine fish are regularly taken, except for commercial

salmon in Nushagak Bay, an addition to the seasonal round since New Stuyahok's involvement in the commercial export fishery. Seal oil is used by many residents; others express a dislike for it. New Stuyahok receives its sea mammal products as gifts or trade items from coastal communities, principally from relatives or friends at Manokotak, Dillingham, Togiak, and Clark's Point. In recent years about five New Stuyahok hunters have shot seal while in Togiak working as partners in the local herring fishery or while fishing the late red and coho salmon commercial fishery in Togiak Bay. Whether involvement in coastal commercial fisheries will lead to a development of regular coastal hunting activities as part of the seasonal round remains to be seen.

Just as the New Stuyahok economy can be termed an inland adaptation, the economies of Quinhagak, Togiak, and Goodnews Bay are coastal adaptations. However, although located on the coast, their orientation is not maritime. The communities are oriented toward the rivers, tundra, and littoral strip, and not toward the sea itself. Marine fish resources are unexploited by and large. This seems especially the case at Togiak, where marine species such as flounder, halibut, cod, herring, and capelin are not extensively harvested for subsistence uses. Such bottom fish are frequently considered a nuisance when caught in large numbers while targeting for salmon. Herring and herring roe on kelp have developed as major local fisheries due to the impetus of the commercial market.

Similarly, only a few Togiak hunters are known as skilled ocean hunters and venture into the bay in open water in search of seal, walrus, and ocean birds. Seal are abundant but intensively taken in

spring only and at other times when encountered during other pursuits. Most hunters rarely leave Togiak Bay when looking for spring seal.

It appears that more Quinhagak and Goodnews Bay hunters are comfortable in open water in comparison with Togiak. Sea mammal hunting in spring and fall in open water is common. Quinhagak and Goodnews Bay hunters move along the coast hunting seal, and some Quinhagak hunters cross over Kuskokwim Bay to hunt along the north shore for seal and waterfowl. Even so, most hunting is within the relative confines of shore. Marine fish, such as smelt and cisco, are taken as they enter the rivers and not in open water.

Togiak, Quinhagak, and Goodnews Bay residents tend to look more toward the rivers and land as their territory for subsistence activities than toward the ocean. Inland hunting and fishing up the rivers are central features of the economy. In the past when spring, winter, and fall settlements were more common along the rivers and mountains, this inland orientation was probably even stronger. Consequently, perched between land and sea, the three communities tend toward the land.

New Stuyahok's economy appears to be more specialized than that of the coastal communities. New Stuyahok's range of exploitable resources is more restricted and lacks many of the coastal resources that the other three communities have, especially sea mammals and fish like smelt, char, saffron cod, and herring. Because of these resources, the economies of Togiak, Quinhagak, and Goodnews Bay seem more diversified. The harvest figures in the next section tend to support this view. New Stuyahok's location provides greater dependability and reliance on red meat species like moose and caribou. Togiak, Quinhagak,

and Goodnews Bay hunters must frequently travel long distances to procure these inland resources, and they are less predictable aspects of the seasonal round.

SUBSISTENCE OUTPUTS

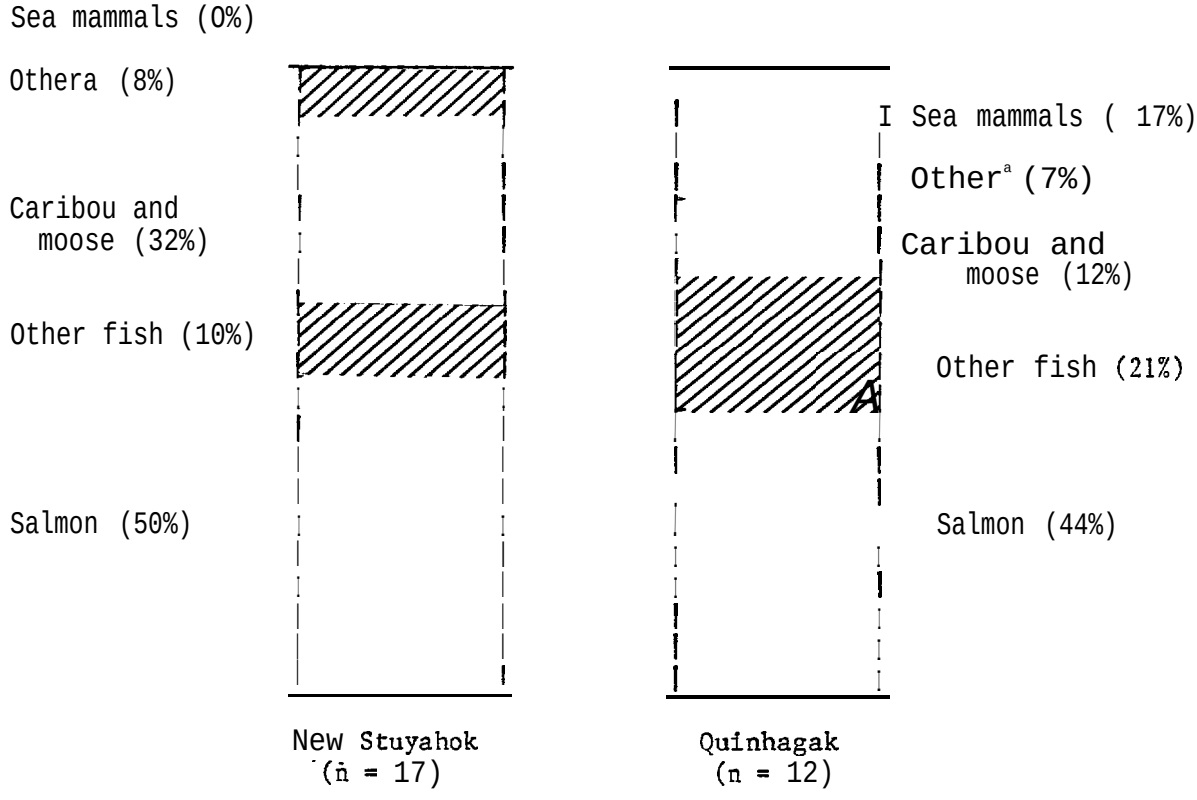
The community-wide seasonal round was the first feature of the subsistence sectors of the four communities. A second characteristic of the subsistence sector is the presence of substantial outputs of fish and game products for local use. Relatively large quantities of fish and game for subsistence use are produced each year by residents of the communities. The economies are "food extractive" in nature, like agricultural and pastoral economies. However, the food is extracted from the wild, natural environment and not from domesticated stock.

Table 45 and Figure 32 present estimated outputs of subsistence products in two of the study communities -- New Stuyahok, the inland community, and Quinhagak, one of the three coastal communities. These estimates were generated from a sample of households: 17 households with 95 members in New Stuyahok and 12 households with 58 members in Quinhagak. Each household was asked to estimate from retrospective recall the numbers or quantities of particular species harvested by members of their household during the past year. Each estimated catch was then converted to pounds dressed weight using standardized conversion factors. The outputs for all species were summed to produce a total subsistence output per household. This method generates a

TABLE 45. SUBSISTENCE PRODUCTIVITY, NEW STUYAHOK AND QUINHAGAK, SAMPLED HOUSEHOLDS, 1983.

Community		Pounds per Household	Pounds per Household Member
New Stuyahok[a]	Mean	5,088	896
	Range	969 - 10,518	194 - 2,104
Quinhagak[b]	Mean	3,656	756
	Range	159 - 9,018	57 - 2,412

[a]New Stuyahok sample: 17 households with 95 members.
[b]Quinhagak sample: 12 households with 58 members.



[a]small game, birds, and brown bear.

Fig. 32. Subsistence harvest by major resource categories, New Stuyahok and Quinhagak sampled households, 1983.

measure for estimating subsistence output -- pounds dressed weight of subsistence food produced per household during the study year. A second measure of output was produced by dividing a household's total output by the number of household members, yielding pounds dressed weight produced per household member. Each estimate is presented in Table 45.

Several features of subsistence production are illustrated with the output estimates. First, the volume of subsistence fish and game produced each year in the study communities is high. The sample of 17 New Stuyahok households produced an average of 5,008 pounds of subsistence fish and game in 1982, or 896 pounds per household member. The sample of 12 Quinhagak households produced an average of 3,656 pounds of subsistence fish and game in 1982, or 756 pounds per household member. These figures show that subsistence fishing and hunting produced on. average about two pounds of food per day for every household member (2.4 pounds per person per day in New Stuyahok; 2.1 pounds per person per day in Quinhagak). These quantities should be considered minimum estimates, as wild plants, berries, eggs, and other products difficult to quantify are not included in the estimates.

The substantial amount of fish and game produced per capita illustrates the communities high reliance on local resources. The bulk of the communities' yearly food supply is composed of wild meat, fish, and birds. This core of "'Native foods" is supplemented by a relatively narrow selection of imported cereals, vegetables, sugars, and fats sold at local stores (see Chapter 3).

A second feature illustrated in Table 45 is that the estimated

levels of subsistence output appear remarkably similar in the two communities. New Stuyahok's overall household harvest appears higher, but the number of household members is also larger, so that the average output per household member is closer to that of Quinhagak. One cannot assess whether New Stuyahok or Quinhagak residents produce more subsistence foods because of the unknown degree of error In the estimates due to selective retrospective recall, sampling method, and normal yearly fluctuations in production output. The estimates are suggestive, however, that the productivity of these subsistence sectors is relatively similar in terms of sheer volume.

Recent subsistence research in western Alaska using comparable methodologies reveal interesting similarities in production outputs across several communities. Table 46 presents estimates of subsistence productivity in nine communities. It shows that annual outputs per household member cluster around the 700 to 900 pound range, or about 2 to 2.5 pounds per person per day. It may be premature to advance this as a production constant in the subsistence-based economies in western and southwestern Alaska, but the similarities in productivity among the sampled communities invite further investigation.

A third characteristic of subsistence productivity in New Stuyahok and Quinhagak revealed in Table 45 is the extreme variations between households in subsistence output. The least productive household in New Stuyahok produced 194 pounds per member; the most productive produced 2,104 pounds. Similarly, the least productive household in Quinhagak produced 57 pounds per member while the most productive produced 2,412 pounds. This shows there are extreme differences in

TABLE 46. ESTIMATED SUBSISTENCE PRODUCTIVITY IN SEVEN WESTERN ALASKAN COMMUNITIES.

Community	Pounds of Fish and Game per Household Member	Year	Source
Alakanuk	733	1981	Wolfe 1981
Emmonak	612	1981	Wolfe 1981
Kotlik	720	1976	Wolfe 1979
	510	1981	Wolfe 1981
Mountain Village	822	1981	Wolfe 1981
New Stuyahok	896	1983	this study
Nondalton	803	1973	Behnke 1982
	1,038	1980	Behnke 1982
	738	1981	Behnke 1982
Quinhagak	756	1983	this study
Sheldon Point	1,397	1981	Wolfe 1981
Stebbins	1,006	1981	Wolfe 1981

productive capabilities between households.

Differential household productivity is characteristic of production under the domestic mode, as is discussed later in the chapter. When economic firms are essentially family units, one can expect predictable cycles in productivity depending upon natural demographic maturation of the family's labor force. Social organizational forms have developed in the communities to equalize the subsistence holdings of households and minimize the potential inequalities that might develop from differential productive capabilities. One of these is the cooperative alliance of households in economic endeavors, discussed in later chapters. Another is the development of distribution and exchange networks for subsistence products. Through these two social mechanisms, the wealth produced by highly productive households flow out to support less productive households. Egalitarianism in consumption is thereby maintained which conforms with the egalitarian organization of production.

Figure 32 illustrates another aspect of output beyond sheer volume -- the relative contribution of resource categories to the community's subsistence production. Salmon comprised the bulk of subsistence output in both communities: 50 percent of total subsistence output in New Stuyahok and 44 percent of total output in Quinhagak. In terms of relative contributions, salmon is the core resource in the economy. In New Stuyahok, the principal species harvested are kings and reds; in Quinhagak the major species are kings and cohos.

Beyond salmon, there are notable differences in the resource mix between New Stuyahok and Quinhagak, due primarily to their ecological

settings. In Quinhagak, 17 percent by weight of all subsistence products were derived from sea mammals in 1983 (seal, walrus, and sea lion). Conversely, caribou and moose comprised a larger portion of the community harvest in New Stuyahok (32 percent of total output) in comparison with Quinhagak (12 percent of total output). These figures should be interpreted as showing general tendencies in overall hunting emphases and not interpreted as fixed proportions. It is probable that the Quinhagak figures overestimate caribou and moose harvests for the community as a whole because the sample of households happened to include two of the community's relatively small core of active caribou hunters. Consequently, their harvests in 1983 probably inflate the contribution of moose and caribou. Nevertheless, the figures suggest the greater reliance on red meat from large game in New Stuyahok due to its inland economic adaptation in comparison with Quinhagak. Quinhagak appears to take proportionally more non-salmon fish species compared with New Stuyahok. This is primarily due to the abundant char and smelt available at Quinhagak which are not available at New Stuyahok.

Both the estimates of subsistence outputs and the seasonal round figures demonstrate that, although total outputs by volume may be similar between New Stuyahok and Quinhagak, the mix of species comprising that output varies substantially. The types of resource utilized is determined to a large extent by what is available in the catchment areas of the two communities. As the distribution of resources varies regionally, the principal resources forming the basis of the subsistence economies also vary. These regional differences in resource availability provide stimulus to the development of economic ties between communities in different ecological zones.

THE DOMESTIC MODE OF PRODUCTION

A third important characteristic of subsistence-based economic systems is that fishing and hunting are commonly activities of kinship groups. This feature has been termed a "domestic mode of production" (Sahlins 1976), a concept introduced in Chapter 2 and discussed in greater depth in Chapter 8. Of all the features previously described, the domestic mode is probably the central characteristic of subsistence-based systems.

In the subsistence-based economies of the study communities, the primary economic firms for subsistence fishing and hunting are relatively small collectivities of persons recruited and coordinated through principles of kinship (descent and marriage). Production capital is held and controlled within these kinship-based groups. Labor is principally a coordination of work roles allocated among family members, usually according to a person's sex, age, and recognized abilities, skill, and knowledge. Production goals are established primarily by what is needed to maintain the kinship group in its particular sociocultural setting. Production levels therefore are set by the consumptive needs of the family, which tend to be at levels below production capacity because families are relatively small consumption units. A cut-off principle tied to family need operates to limit production around this level.

The form and composition of kinship-based production groups are discussed in more detail in Chapter 8. However, to illustrate the general nature of these domestic units, Figure 33 depicts three examples

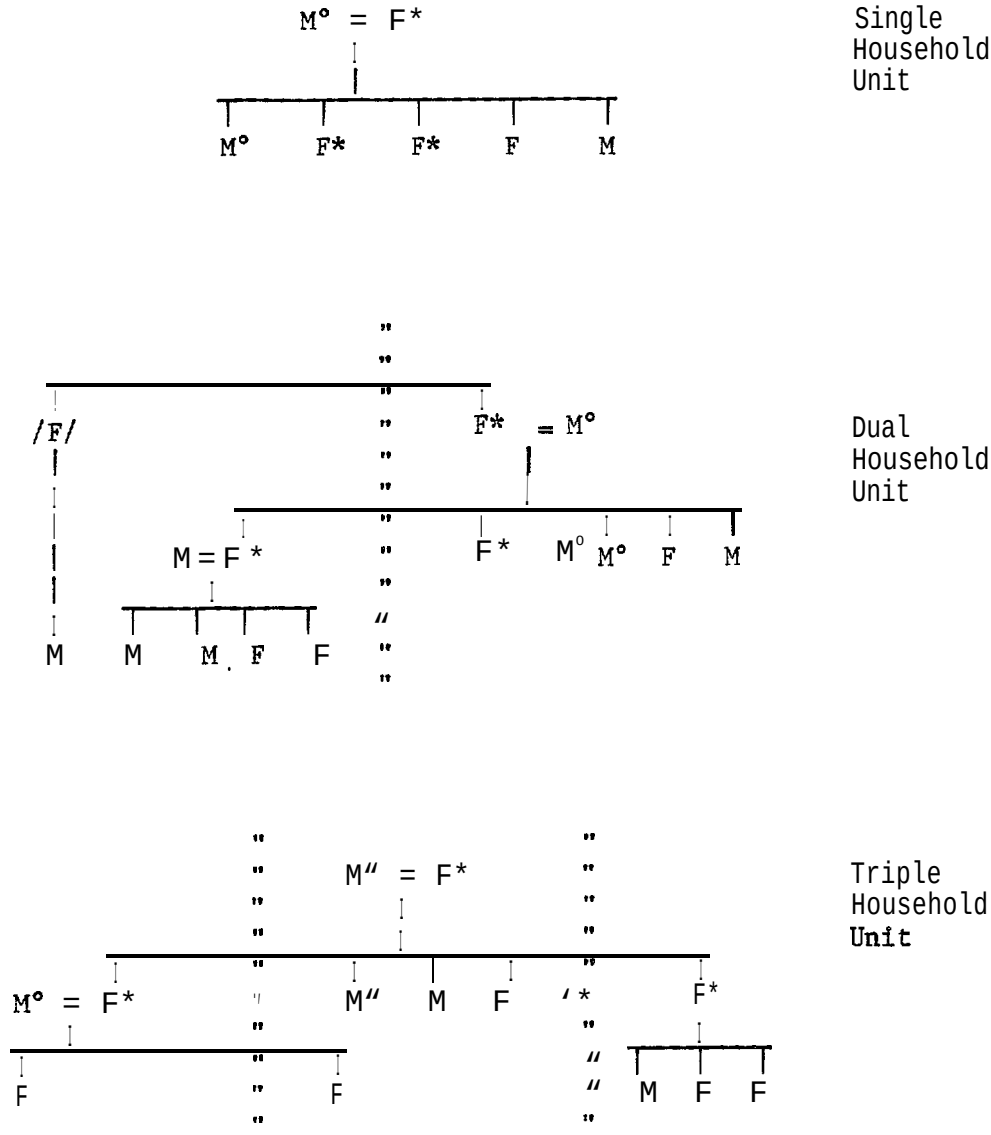


Fig. 33. Examples of domestic production units for harvesting and processing king salmon, Quinhagak, 1983.

of salmon fishing and processing groups operating at Quinhagak in the summer of 1983. The group at the top of the figure is composed of a single household of seven members. In this production unit, the father and one son harvested salmon while the mother and one daughter cut, dried, and smoked the salmon. The group in the middle of the figure is composed of two households which cooperated in producing salmon -- a parental household and a married daughter's household. In this dual household unit, the father and two sons harvested salmon, while the mother, married daughter, and one unmarried daughter processed salmon. The son-in-law did not fish because of a chronic disabling health condition. In the group at the bottom of the figure, three households pooled labor and capital in producing salmon -- a parental household and two households of daughters. In this triple household unit, the father, son, and son-in-law harvested while the mother and two daughters processed.

In the study communities, kinship units like those depicted in Figure 33 are structural equals; it is an egalitarian system. This is not to say that some family groups do not manifest differences, which they do. Some family networks are large, encompassing several households of related siblings, children, and children's children. Other family groups are small, perhaps including only one or two households, or even incomplete households without spouses or children. The sex and age composition of some family groups may encourage greater or more diverse productivity. Some family groups may have larger food caches, more equipment holdings, bigger houses, and carry more prestige and influence in the community. 'Nevertheless, these differences result

through the action of demography, personal effort, and circumstance. Differences among families are not structurally fixed as institutional differences which impart economic or political advantages.

In the traditional domestic mode, there is no class structure based on occupation, income, or ethnicity; no rules of exclusive land holdings for subsistence production; no conventions of inherited positions; and no acquired status positions that place a person in differential economic privilege in relation to production. In this regard, all family groups are structurally equivalent. All have the right to hold, and most families do in fact hold, production capital. All have equal access to the resource base of fish, game, and plants within the society's territory, Consequently, kinship-based production groups appear in principle as structurally equivalent entities.

The form that kinship-based firms take in the four study communities is discussed in Chapter 8. These data provide a first glimpse at how kinship influences the organization of production and distribution. As described in Chapter 8, it appears that the size and composition of production groups shift across seasons and resources exploited. Groups for producing salmon are different from groups taking and processing char, seal, or caribou. It appears that specialization of production occurs among certain segments of the community. Although potentially organized for a kind of "mechanical solidarity," where the actions of one family occur in parallel isolation from another, community segments instead integrate through a specialization of production roles and subsequent distribution of products. Further, production of certain resources commonly involves the alliance of persons from

different family networks. How and why these partnerships are formed, which cross-cut potentially independent family units, are other interesting issues raised in Chapter 8.

DISTRIBUTION AND EXCHANGE NETWORKS

A fourth characteristic of subsistence-based, socioeconomic systems is the presence of extensive, non-commercial distribution and exchange networks. Every economic system has mechanisms for moving goods from producers to consumers. In industrially-based economies, the market is the primary mechanism for distributing goods. A substantial portion of all employment is involved in the transportion and marketing of food and raw materials from places of production to places of consumption. In the traditional economies of the four study communities, local food and materials also flow from producer to consumer, but through extra-market channels. Distribution and exchange primarily occur through lines of kinship and affiliation.

Chapter 8 provides more detailed materials concerning the distribution and exchange of four particular resources -- salmon, freshwater fish, sea mammals, and caribou. As is shown in that discussion, the form and principles governing distribution and exchange vary depending upon the type of resource harvested and the composition of the work group involved in production. Leaving this detailed discussion for later, this section will outline the broad characteristics of distribution and exchange in the four communities.

The domestic mode of production by its nature requires the existence

of some transfer of goods among social segments. One characteristic of the domestic mode is marked differences in productivity among domestic units, some being highly productive and other less so, as illustrated in the previous discussion of subsistence outputs. Distribution and exchange mechanisms enable the support of less productive segments of the population.

The primary form of food transfer in the four communities appears to be distribution among close kinsmen belonging to large, extended family groups residing in different households. Most households are linked within a larger network of kinsmen residing in the community. The focus of a network of closely related households is commonly a set of parents, under which are united their children, children's spouses, and grandchildren. Food and raw materials produced by particular members of this group commonly are shared and distributed among all members of the extended family. Food produced within one household of the network commonly is consumed by parents, siblings, or children in other households. The sharing of food between households in a close family network is not usually perceived as a transfer, as the food resides in the group and is for the group's use. The rationale for sharing is socially-defined kinship obligations, such as proper forms of behavior of parents toward children, children toward parents, sibling toward sibling, and so forth. A parent provides food to children while they are dependent; later, children provide food to parents when they are elderly.

From a theoretical view, the food is distributed following the principle of "general reciprocity." That is, there is no record kept

of the amounts given or received by members of the group. No accounting system operates. All members of the group are free to take from the common holdings, so that sharing is *'general" to all members. This mode of exchange is marked by a continuing obligation to reciprocate, particularly in kind. As food transfers are reciprocated over time between givers and receivers, a sort of equivalency may be achieved over the long term. The production and sharing of-salmon among extended family units, described in Chapter 8, provides an example of general reciprocity.

A second type of sharing occurs representing a form of "general distribution" at the community level. This type occurs when a large quantity of fish or game is produced which is more than can be used within the extended family. A general call to the community will be made over the citizens band radio that the product is available for anyone to take. For instance, a walrus was taken near the Quinhagak city limits. After the hunter took what he wanted, he called over the CB informing the community that the walrus was available near the National Guard armory building. People went out and began to cut off pieces. The hunter checked back in several hours and found the walrus was completely gone. The same pattern of distribution is followed during the spring or fall harvests of whitefish or pike in New Stuyahok. Another example of this occurs with large catches of char during spring or fall at Quinhagak and Togiak, described in Chapter 8. This form of distribution transcends factors of kinship and contributions of labor and capital. It appears to be relatively restricted to resources subject to windfall surplus catches.

A third type of distribution occurs between partners who are not members of the same extended kinship group and who pool labor and capital in a fishing or hunting activity. In this instance, the resources produced are commonly divided between partners at the time of production, becoming the holdings of that partner's extended kinship group. The division frequently reflects an equivalency among hunters, with equal shares going to producers. With this type of distribution, the contribution of labor or capital accords a person a right to the proceeds of a subsistence activity. Examples of this form of division are freshwater trout fishing and seal hunting among unrelated partners, described in Chapter 8, certain commercial salmon fishing partnerships described in Chapter 6, and caribou hunting by New Stuyahok residents. The principle operating in these instances is "balanced reciprocity.'* That is, it is expected that the exchanges of labor, capital, and food are reciprocated and balanced in the long term. Informal mental calculations of the relative contributions of partners are made to assess the relative balance among cooperating hunters or fishers.

Many types of food transfers occur between persons who are not part of a close kinship group. These are gifts of food and resources between more distant kin and between friends in the community. In Yup'ik culture, the exchange of food is basic to the establishment of relationships. Food is used as a medium for cementing all forms of ties between persons -- both ties of kinship and alliance. Consequently, subsistence products are commonly sent over to another household as a token of these ties. Or, persons are invited over to eat a meal and visit. When asked about why food is being shared, the answer

is usually *'because he's my cousin,'* or "because we are buddies." Keeping a careful record of these types of exchanges would be difficult for a researcher because of their high frequencies.

Distribution and exchange between members of different communities frequently function to move subsistence resources from a highly productive area to a less productive area. Fish, game, and plant species commonly have restricted geographic ranges, so that people may have particular resources in abundance and little of another. Intercommunity exchanges enable the acquisition of non-local resources. In general, most food flows between communities along kinship lines, as examples of generalized reciprocity between close kin. Some persons also seem to maintain regular networks through which food is exchanged with friends in other communities. For instance, one Quinhagak resident reported the following items shared through intercommunity networks: from a mother in Hooper Bay, poke fish and herring eggs; from a cousin in Alakanuk, salmonberries and salmon smoked with green leaves; and from a sister in Eek, pike and burbot. Products he gives back include smelt, dried trout, king strips, and dried salmon. Another Quinhagak resident reported this set of items shared through an intercommunity network: from a sister in Atmautluak, whitefish and pike; from uncles and friends in Kipnuk, needlefish, geese, walrus, seal oil and blackfish ("the best in the world"); from an aunt in Tooksok Bay, herring eggs; and from friends in Bethel, vegetables. Products given back include trout, walrus, and seal oil. As there are many ties of kinship between Quinhagak, Eek, Goodnews Bay, and Togiak, visiting is common and considerable amounts of subsistence products are shared. Items commonly

received by Quinhagak residents from Togiak residents through relatives are herring roe on kelp, clams, goose eggs, caribou, and moose. Items received by Quinhagak from Eek include whitefish, pike, caribou, and moose. Quinhagak gives trout back to Eek. On the other hand, reportedly, Togiak has almost all the food products that Quinhagak has to offer.

Hunters seeking game outside their own community's hunting area may bring subsistence products to relatives of the community in whose use area they are hunting, to reaffirm friendships and assuage potential negative feelings about encroachment. For instance, several older New Stuyahok men originally came from the Togiak area. Based on kin ties, some hunters from Togiak (and Manokotak) regularly come to New Stuyahok to go hunting for moose and caribou. Commonly, the Togiak hunters bring seal meat, seal oil, and walrus as gifts to New Stuyahok relatives. In return, their relatives accompany them on caribou hunts in New Stuyahok's hunting territory. Some visitors are sponsored by friends they have made in the commercial salmon fishery. On one occasion, several caribou had already been taken by New Stuyahok hunters when a Togiak contingent arrived. The seals were simply exchanged for the caribou.

Direct barter, where one product is exchanged for another, occurs less frequently than the actual buying of non-local products in small-scale transactions using money. When an economic arrangement involving non-local subsistence products is made, usually currency is utilized. For example, this summer some Togiak residents chartered a flight to visit relatives in Nunapitchuk located in a tundra area renowned for

its abundance of salmonberries. The Togiak visitors had prearranged for their first cousins to pick several buckets of salmonberries for them. The buckets of berries were purchased, but reportedly, the money was not for the berries, but for the effort of gathering. Similarly some Quinhagak residents take the mail flight to Platinum and Goodnews Bay each fall, as these areas have more abundant blackberries than Quinhagak. In these cases, the women pick berries with relatives in the communities, bringing the berries back in plastic five-gallon containers.

A limited range of subsistence products are sold at the large stores in Bethel. The Native foods most commonly seen in the refrigerator units include smoked salmon strips, seal oil in mason jars, frozen whitefish and sheefish, unrendered seal blubber in plastic bags, and reindeer meat. By and large, the volume of these products is relatively small and prices are high. The persons who supply them to the regional center stores are relatively few in number. The availability of these products suggests that some regional center residents have become isolated from their home communities and have not maintained their ties of kinship and affiliation sufficiently to insure a reliable flow of subsistence resources. Thus, an impersonal market has developed, albeit small, to supply subsistence goods produced by faceless strangers and marketed by middlemen.

A final type of traditional sharing occurs in association with community celebrations and ceremonies. For New Stuyahok, church and kin ties are strong between Koliganek, Ekwok, Portage Creek, and Dillingham. During Russian Orthodox Christmas, "Slavi," there is much

intervillage travel and feasting among Nushagak River communities, Dillingham, Clarks Point, and Iliamna area communities. Similarly, within New Stuyahok feasts are held on birthdays and name days (the Russian Orthodox saint's day tied to an individual's name), and most of the community is invited to large dinners held in the individual's home. Song fests and youth rallies are sponsored by the Moravian Church in Togiak, Manokotak, and Kuskokwim River communities. The celebration of birthdays commonly occurs at Quinhagak also, especially for children and occasionally for adults. Parties are announced village-wide over the citizen's band radio, and everyone is invited. People come to visit the house during the day, socialize, and eat their fill. A wide variety of food is typically offered. At one birthday observed, there were three kinds of stew (seal, reindeer, and beef ribs, cooked with rice and potatoes), two kinds of akutaq (seal oil, Crisco, salmonberries, blueberries), loaf bread, spice cake, tea, coffee, and juice. On Thanksgiving in Quinhagak, people prepare akutaq and other foods and visit door to door sharing it.

The brief discussion above illustrates the complexities in describing the movement of food products among individuals and families in the four study communities. Food is given and received within a number of culturally defined contexts. Some of these exchanges clearly appeared to be part of local economic activities. Other exchange more properly occurred as examples of non-economic activities. Certain categories of sharing symbolize the form and quality of social relationships. Food transfers commonly express close relationships between kinsmen and friends. Other gifts symbolize cultural values, such as

respect for the elderly, hospitality toward travelers, and proscriptions against wastage. Yet other food exchanges are part of a set of ceremonial systems embued with cultural meanings. Thus, the flow of food is bothan economically and culturally important aspect of the community and regional social system.

SYSTEMS OF LAND USE AND OCCUPANCY

A final characteristic of the subsistence sector is the presence of traditional systems of land use and occupancy. The patterns of resource utilization in the study region are shaped by distinctive cultural rules concerning an individual's right to fish, hunt, trap, and collect within particular geographic areas. These cultural concepts pertain to a person's right of access to particular resource areas, the right to harvest and use the resources in that area, and the right to exercise control over the area and its products.

It is important to recognize that there exists two parallel bodies of rules pertaining to use rights -- the rules constituted by the legal and jural agencies representing the industrial-capital economy of the state, and those rules developed by the residents of the indigenous cultures predating the industrial-capital system. This second set of rules is the traditional system of land tenure and use rights. These non-codified customary laws define rights of access to community use areas, traplines, fishcamps, set net sites, and other areas. They represent a sociopolitical organization of fishing and hunting, whereby access to resources is defined and control exerted.

The complexities of customary law pertaining to land use cannot be dealt with in detail here, as it was not the central purpose of the study. Brief discussions of land use in the western Yup'ik region can be found in Wolfe (1981). However, the use areas of two of the study communities, Togiak and New Stuyahok, were mapped by Wright, and are presented in Figure 34 to illustrate some of the characteristics of geographic use areas.

As shown in Figure 34, the core use areas for New Stuyahok subsistence activities are the upper Nushagak River, between New Stuyahok and the Mulchatna River, and the Mulchatna River drainage. The use of the Mulchatna drainage reflects traditional ties to the region. New Stuyahok is primarily composed of persons from communities on the Mulchatna and Upper Nushagak rivers, so people trace their usufruct rights from ancestors who previously resided there. The use area for New Stuyahok hunters is primarily inland. It touches the coast at the head of Bristol Bay. The Lewis Point fishcamp, where many New Stuyahok residents fish for subsistence salmon, is on the river about 10 miles above Dillingham. By and large, New Stuyahok subsistence activities are directed upriver from the community. Residents of Ekwok, only 12 miles below New Stuyahok, tend to use the downriver area for fishing, hunting, and trapping, though extended hunting trips by Ekwokmiut are commonly taken upriver.

New Stuyahok residents cover extensive areas for taking moose, caribou, furbearers, waterfowl, fish, and berries. In summer and fall most activities are restricted to rivers and their immediate environs. During winter and spring snowmachines permit travel overland, so a more

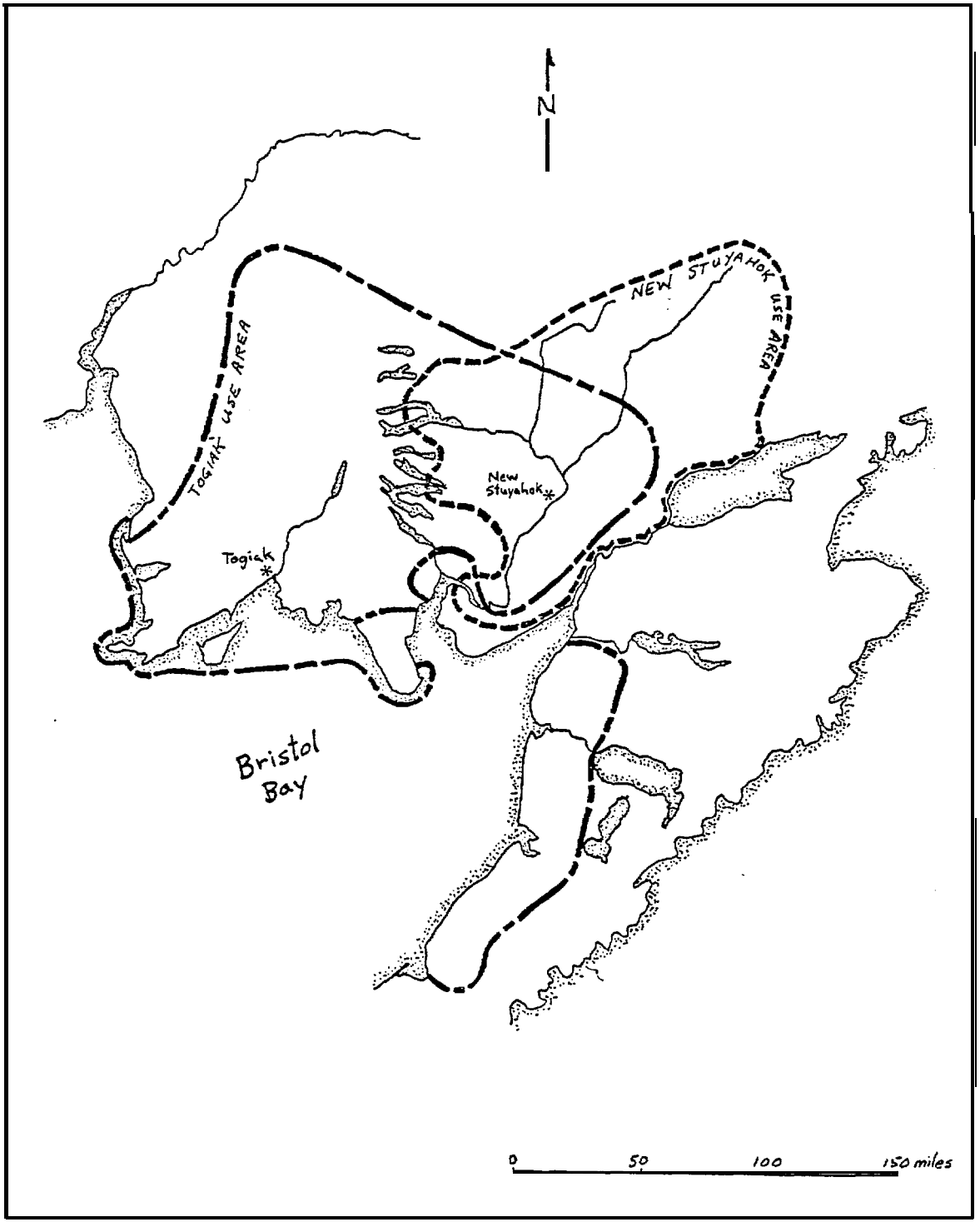


Fig. 34. Subsistence use areas, Togiak and New Stuyahok, since the adoption of snowmachines (circa 1965) (from Bristol Bay Cooperative Management Plan 1982).

extensive area is covered." Salmon fishing occurs either close to the community or at traditional fishcamp sites at Lewis Point. Freshwater fish are usually taken a short distance from the village, although longer trips are made in fall and spring. Large areas are searched by hunters and trappers, primarily in the upper Nushagak and Mulchatna river drainages. Most berries are picked near the community. Also, long trips are made to other communities in late summer and fall combining visiting relatives with picking particular berry varieties that are not locally abundant, such as salmonberries on Nushagak Bay and blackberries on Lake Iliamna and at Platinum.

The core areas used by residents of Togiak for subsistence activities are the coastal strip between Cape Pierce and Kulukak Bay and up the Togiak River to Togiak Lake. The coastline is used for sea mammal hunting and salmon fishing, while the river is used extensively for fishing late season salmon (silvers and *'red fish") and char. A few camp sites are used along Togiak Bay for setting nets for commercial and subsistence fish, but most salmon is taken by fishermen based in Togiak.

Togiak hunters cover a huge area for hunting and trapping during fall through spring. By far it was the largest area covered among the 30 Bristol Bay communities whose use areas have been mapped. Hunting moose and caribou draws Togiak hunters long distances: hunters travel by snowmachine to New Stuyahok to hunt the Upper Nushagak and Mulchatna river drainages with New Stuyahok relatives and friends. Paying seat fare from Togiak to Dillingham, hunters charter from Dillingham to the Alaska Peninsula to hunt caribou between Naknek and Port Heiden.

Hunters also travel up to the Aleknagik River to hunt on the Wood River system with relatives from Aleknagik and travel up to the headwaters of the Togiak drainage where access is gained to the isolated headwaiters of the Goodnews, Kanektok, Kwethluk, and Kiseralik drainages.

For sea mammals and waterfowl, Togiak hunters at times encircle Cape Newenham to hunt as far as Carter Bay. The southern edge of Carter Bay seems to be the northern boundary of land travel along the coast for Togiak hunters. Above this is the area used by Quinhagak hunters. Platinum is an area used for berry picking by some Togiak households.

The mapping of subsistence use areas of Bristol Bay communities indicate there is considerable overlap in use areas of communities, especially for big game species like moose and caribou. For instance, there is nearly a complete overlap of New Stuyahok big game areas with those of Ekwok, Koliganek, and Portage Creek. For caribou hunting, it is common for residents of Togiak, Clark's Point, Manokotak, Dillingham, Platinum, and Goodnews Bay to head to New Stuyahok, using it as a base of operation. Most generally, entrance to this region is along lines of kinship or, more occasionally, friends established through the commercial fishery or high school sports. The entrance of non-local hunters into areas near New Stuyahok so far has not become an issue, because caribou is abundant. If caribou levels were to drop in those areas, reportedly relatives from other communities would begin hunting in other areas. For fish species, there is considerably less overlap among community-based use areas. Most areas used for subsistence fishing are close to a person's own community.

Resource use area maps reveal a complex patterning of resource

harvest efforts in subsistence-based economies. For certain resources, "use areas" seem to have developed associated with particular communities. For other resources there appears to have developed a wider use pattern, built along kinship networks. Within the use areas associated with a community, specific sites might be associated with particular individuals or families, especially set net and trapping sites. However, for other species, there appears-to be no individually identified use sites. Areas distant from any community frequently are used by hunters from a variety of places.

Although it is not possible to detail the customary law that regulates land use for subsistence activities, it is important to mention that in these communities there are is no landless class. The use area customarily recognized as being the catchment region for the residents of a particular community is open to all persons who can demonstrate kinship ties or residency. That is, the system of land use rights provides universal access to subsistence areas. Membership within the society automatically insures the usufruct, the right to draw upon the natural resource holdings of the social group. Unlike industrial-capital systems built on private property concepts, these subsistence-based systems provide universal access to land and its resources to its members.

To summarize, this chapter has described the general characteristics of the subsistence sector of the four study communities. Several elements were found to characterize the subsistence sector. First, there is a community-wide seasonal round of fishing and hunting activities. Economic activities of the community follow a yearly

cycle based on the seasonal appearance of fish and game resources. A relatively wide range of species is harvested within this regular seasonal cycle. Second, production outputs of fish and game for subsistence use are substantial. The economic base of the community is food extractive in nature, contrasting with the economic bases of other Alaskan communities, such as trade, government, finance, manufacturing, and defense. The high outputs reflect the high dependencies of these communities on fish and game. Third, there is a domestic mode of production, in which fishing and hunting occurs within kinship units or partnerships between members of kinship units. The major economic firms are domestic family groups, which hold all the production capital, labor, and rights to resources required to support production in the subsistence system. Production is primarily directed toward satisfying the needs of domestic groups and not toward trade or accumulated profit. Fourth, there are extensive non-commercial distribution and exchange networks for fish and game products. Even though a household may not participate directly in the harvesting and processing of a resource, they usually have access to resources taken by someone else. And fifth, there is a sociopolitical system of customary law defining rights to use and occupy land. Overall, in the traditional land use system, the usufruct is granted to all members of the local social group, providing universal access to catchment areas. More detailed discussions of aspects of the subsistence sector within these mixed, subsistence-based economies are provided in Chapters 8 and 11.

CHAPTER 8

SUBSISTENCE PRODUCTION AND DISTRIBUTION

INTRODUCTION

This chapter describes and analyzes the social organization of production and distribution in the four study communities of western and, southwestern Alaska. It does so by examining in some depth several types of economic activity in each community. Each type of economic activity is treated as a piece of the larger system. More accurately, each is treated as a sphere of activity which manifests the general organizational principles which bind the entire system together. By examining the form and function of several particular spheres of economic activity, the general structural principles can be elucidated and understood.

Accordingly, this chapter works at two levels. At a particularistic level, four types of subsistence activities are described for each community -- salmon fishing, seal hunting, freshwater fishing, and caribou hunting. The activities were selected to demonstrate a breadth of economic endeavor in each community. They also were selected to illustrate economic pursuits central to each community's livelihood. The discussion of each subsistence enterprise covers major organizational aspects, including scheduling, social composition of work groups for harvesting and processing, property relations of technologies utilized and resources exploited, and the disposition of the catch and

processed products. These materials provide a basis for economic comparisons between communities. As will be shown, there are detailed variations in the form and conduct of these economic pursuits between communities due to differences in ecology, sociopolitical context, and historic circumstance. However, transcending these local variations are impressive similarities in economic organization across communities.

The materials are also treated at a general structural level. The observable conduct of salmon fishing, seal hunting, and other subsistence activities are organized by a set of general principles or implicit cultural rules. This organizational form may be abstracted from the particular, in much the same manner that the underlying form of a religious ritual might be abstracted from several particular enactments, or the underlying principles of western law might be abstracted from a series of court cases. The particular ethnographic instances of production and distribution will be analyzed for the underlying system of organizational principles. At this general, structural level, the chapter constructs and analyzes the social organization of economic behavior within the study communities (see Figure 3).

At the general organizational level the economic systems of the four Yup'ik communities are shown to be extraordinarily different in comparison with the economic systems of urban Alaska and Canada. It will be shown that the system is essentially egalitarian and classless, with equal rights of access to the socially-held "store'* of subsistence resources guaranteed and protected. It is, at heart, a kinship-based system, where major economic firms and distribution channels are formed through primary relations of lineal kin or close affinal marriage

links. At the same time, there are rules which ensure flexibility in the creation of economic units beyond the family, principles of easy partnership and alliance cross-cutting kinship groups, so the system is not bound by demographic restrictions of kin. It is a system which conceives an autonomy of action in subsistence pursuits by familial groups, where capital and labor are held and controlled autonomously by relatively small-scale kin groups. And finally, it is a system which is geared to produce for finite objectives --- the maintenance and continuance of the local sociocultural system.

SALMON PRODUCTION AND DISTRIBUTION

The organization of labor and capital for the production of subsistence salmon attains a central importance in the economy of the four study communities, because by volume salmon is the largest single resource produced annually. In comparison with other production units, there appears to be a greater complexity to groups responsible for the harvest and processing of salmon in terms of capital utilization, numbers of households linked through production, and the division of labor. There are probably only a handful of households in each community that are not directly involved in some respect with salmon production or distribution, so it is a sphere of activity that mobilizes large segments of the population. Nevertheless, salmon production is but one economic activity among many in the seasonal round. The structure of its organization cannot be said to be typical or archetypal of other economic processes, although some of the principles are.

Timing and Location

Salmon production groups are constituted during summer and dissolved in fall. As discussed in Chapter 7, king salmon arrive in each of the study communities about mid-May to early June, followed by successive runs of other salmon species. Salmon production is bifurcated into an early summer effort and late summer, early fall effort. The early effort Is oriented toward the coast and the later toward inland rivers.

In Togiak, king and red salmon are targeted during the early period along the coast, while spawned-out red salmon are harvested during September from Lake Togiak. As previously discussed, at New Stuyahok, about half of the households move close to the coast at Lewis Point to harvest king and red salmon from June to mid-July. A move back to New Stuyahok is made to harvest smaller quantities of chum, pink, and coho from late July through September. Some families remaining the entire summer at New Stuyahok dry large numbers of chum in July for dog food. In fall, spawned-out red salmon are taken upstream on the Mulchatna and Nushagak rivers. At Quinhagak and Goodnews Bay the early targeted species are king and chum, primarily taken along the coast; there are only moderate red runs. During late August and September coho is the targeted species, taken along the Kanektok and Goodnews rivers.

The coastal-inland shift is a pattern developed in response to commercial salmon fishing requirements. The commercial fishery is an ocean fishery, because bright, firm, sea-running salmon are more

commercially marketable. Also, commercial fishing in the local rivers has been disallowed by state regulation due to a greater potential for overharvesting the runs. The location of the commercial fishery has pulled subsistence salmon production toward the coast early in the season. The shift back upriver after the termination of the commercial salmon season represents a return to its more traditional geographic location.

Technology and Property Relations

In all study communities, the technology used to produce subsistence salmon is widely available in the community and wielded autonomously by owners, who are typically members of a kinship-based group. The major capital items include boats, motors, and nets (for harvesting); cutting tables, drying racks, smokehouses, buckets, and knives (for processing); and a large freezer or a weatherized shed or cache (for storage). In Goodnews Bay, salmon are most commonly frozen whole and less frequently dried and smoked, so drying racks and smokehouses are less common capital items.

These capital items are held individually or in common by members of a kinship-based social group, who function as a salmon production unit (discussed below). Racks and smokehouses are built by males, usually at the request of a wife or mother. They are usually viewed as belonging to a kinship group, the use of which is open to close family members. Questions as to whom the rack and smokehouse belong commonly elicit a family surname, such as "the Andrews'" or names of

members of the family group who have use rights to the facilities. In Quinhagak a female's name was commonly given when the question was asked by a female researcher, while a male's name was given when the question was asked by a male researcher, possibly reflecting response patterns influenced by the sexual division that commonly underlies daily social life. At Togiak, a senior woman's name was more frequently given for the smokehouse and cache, suggesting the control of these capital items and their contents by the female head of the family. In the study area, the kinship group holding racks and smokehouses is usually organized around a group of related females.

Because they are held in common by a group commonly larger than the household, there are fewer racks and smokehouses than household units in a community. For instance, there were 39 salmon racks and 38 smokehouses distributed among 98 households in Quinhagak in 1983. The relatively smaller number of racks and smokehouses gives the mistaken impression that a substantial segment of the community is not involved in salmon fishing. In fact, most households are linked together in a manner which enables access to at least one set of racks and smokehouses, or enables access to the finished product from a set of racks and smokehouses. If located physically close to a living area, as occurs in Togiak, the rack and smokehouse are typically built next to the senior parental household. In Quinhagak most racks and smokehouses were clustered in six areas along nearby sloughs, separate from the houses.

Subsistence salmon fishing in all communities is done with gill nets. In Togiak, Goodnews Bay, and New Stuyahok, some families use set

gill nets about 10 to 25 fathoms long, usually cut down from commercial gear. One end of the net is tied ashore and the offshore end is anchored. Set nets are placed on mud flats which are tidally influenced, so nets may be checked at low tide without a boat. At Quinhagak, set nets are only occasionally used at the beginning and end of the salmon season. At Quinhagak, Goodnews Bay, and Togiak most salmon is harvested with drift gill nets 50 fathoms or less, drifted from the side of a boat in the open bay. The craft used (described in Chapter 6) ranges in size from 16-foot skiffs with 15 horsepower outboards to about 30-foot skiffs with 115 horsepower engines. During the late season runs of red and coho after the commercial fishing season, nets may be used as sweep seines upriver, a method described in the subsequent section on freshwater fishing.

Boats, motors, and nets are owned by individuals, usually the person who purchased them or received them as gifts or payment for labor. Although individually owned, boats, motors, and nets typically are used by the members of a group of closely related kin who cooperate together in subsistence activities. That is, equipment is often treated as the common property of a kin group. Brothers commonly "borrow" another sibling's boat or sons commonly "borrow" a father's net, frequently without asking permission. This principle of mutual use rights to equipment was illustrated when the researcher at Togiak was advised to moor a rented boat far away from the owner's residence; otherwise the boat would periodically disappear because relatives had borrowed it. Relatives might still recognize the boat as open to family use despite the rental agreement. "Pooling" is the term Sahlins

(1972) gives to the common sharing by domestic groups of individually-owned equipment. Goods which are indispensable for the domestic group's livelihood are placed at the disposition of its members.

Most of the technology used to produce salmon and the other subsistence products discussed in this chapter are relatively small-scale. They can be wielded effectively by members of a family. The knowledge, skill, and labor required by the technology is not beyond the capacity of the members of most domestic units, dependent> of course, upon age and sex. Further, the technology is not so costly as to be beyond the means of most domestic units. Kinship-based groups have the capacity to own them outright, without entering into long-term debt, credit relations or organized financial arrangements like capital-holding corporations.

As discussed in Chapter 6, there are differences in the costs of equipment between the study communities: the fishing gear used by New Stuyahok and Togiak fishermen is more expensive than Goodnews Bay and Quinhagak gear. These variations have resulted from the different historical development of the commercial fisheries of the Nushagak, Togiak, and Kuskokwim areas. Increasing capitalization has occurred in the Bristol Bay commercial fisheries because of competitive pressure from outside fishermen. Without commercial pressures, the gear required for subsistence salmon fishing might be less complex and expensive at Togiak and New Stuyahok. By and large, the cost of subsistence technology is usually not a barrier to participation in salmon fishing in the four study communities, unless equipment acquisition is inhibited by factors of health, age, indigency, or personal choice. Even when

these factors intervene, pooling among kinsmen provides a potential mechanism for gaining access to the small-scale technology.

Rights to salmon fishing areas are influenced by principles of customary law. Most fishing occurs off the coast or in the rivers. Along the coast and in the rivers there appear to be no drift or seining areas which are exclusively held by particular community members. A local fisherman may use a drift or seine net in any unoccupied area. Use is allocated on a first-come basis. Persons already occupying an area are deferred to by later arrivals, a principle termed "deference to first users" by Wolfe (1982).

While drift and seine areas appear to be open for use to any member of the community, salmon fishing areas of Togiak, Quinhagak, and Goodnews Bay tend to be viewed as traditional territories of each community. The presence of outsiders, particularly strangers, in the traditional fishing territory is frequently viewed as a problem by community members. In 1982 untoward increases of outside commercial fishing boats off the coast and of outside sport fishers for salmon along the Kanektok River were discussed as problems at meetings of Quinhagak's fishermen's association, city council, and traditional council. Protection of traditional fishing territories against outsiders also has been an issue at Togiak and Goodnews Bay. In contrast, while New Stuyahok fishers are strongly tied to the Nushagak commercial fishing district, they are not defensive toward outsiders using the area; New Stuyahok fishers are relative newcomers to the area themselves. New Stuyahok residents are territorial about their fishing areas on the Nushagak and Mulchatna rivers.

The customary laws regulating access to set net areas and salmon fish camps operate somewhat differently from drifting and seining areas. Set net and fish camp areas along the rivers tend to be recognized as traditional use areas of particular kinship groups or clusters of kinship groups in each community. Camp sites are frequently named after people on the Kanektok River. Even sites not used for several years on the Kanektok and Goodnews rivers retain their identification with the heads of particular kinship lines. Members of other families may use these areas by asking permission of the recognized user group. It was stated in Quinhagak that additional families usually were welcome to share a camp with another family because they provided company. Allotment selections in each community often correspond with salmon fish camp locations. The Lewis Point fish camp area is shared by nearly half the households in New Stuyahok who own individual cabins, racks, and smokehouses at the site. The Dillingham Village Corporation, Choggiung Ltd., claimed this area on the lower Nushagak River under provisions of ANCSA. Recognizing the customary use rights of the New Stuyahok fishers, Choggiung is transferring ownership under 14c of ANCSA to "associations'* of New Stuyahok residents who use the Lewis Point site.

Social Composition of Work Groups

The group responsible for harvesting and processing salmon differs in several respects from the groups involved in taking and processing seal, freshwater fish, and caribou, each of which is discussed below. In

the first place, in the production of subsistence salmon it is rare for labor and capital to be recruited through the principles of alliance. As will be shown, almost all subsistence salmon groups are exclusively formed through lineal and close affinal kinship principles. Second, there appears to be a greater complexity to the subsistence salmon units in terms of the capital utilized, number of households linked through production, and the division of labor. There probably is greater stability in these groups over time, although there still is substantial flexibility in how salmon groups are constituted, as with most production units. Specific aspects of the division of labor will be shown to be flexibly adapted to state regulations governing commercial salmon fishing in the community's particular area. Third, in subsistence salmon production, female solidarity is demonstrated -- a matrifocal tendency -- which does not appear in the other three examples of subsistence production.

The salmon production unit is the largest and most complex of the economic groups organized to fish and hunt during the year. A "salmon production unit'* is defined as a social group contributing labor and capital for the harvesting and processing of salmon. In Quinhagak, production units were systematically identified and counted. Information from Quinhagak provides a basis for comparison with production units sampled within the other three communities.

In Quinhagak, salmon production units were identified during the height of the king season, when the river banks were centers of active unloading, cutting, and hanging of fish and fishracks were filling with bright red strips and fillets. Persons were approached as they

worked on fish, soliciting information following a common line of questions: "What people and families are working together this year to catch, cut, and dry salmon? Whose rack and smokehouse are being used? Who is catching the salmon this year? Who is cutting and smoking the salmon this year?'* In addition, the persons observed performing work tasks at that moment were noted, and their roles in the production of salmon inquired about. The assumption was that those individuals identified through these series of questions were likely to be members of a group which was pooling labor and capital for the production of king salmon.

Precise membership within a salmon production unit as defined was not always clear, in part because there was a degree of fluidity in the contribution of labor and capital in certain groups. Sometimes a group utilized a rack or a smokehouse belonging to a person who was not named as part of the group of persons working together. Similarly, persons were occasionally observed providing assistance in the cutting, hauling, or smoking of fish, who were also not named as part of the working group. Their labor was being contributed as a person outside the group rather than as a regular group member. In part, group membership was ambiguous, because it was not clear what constituted "working together" -- that is, what constituted a significant contribution of labor or capital. Even the youngest child or oldest adult could be seen as contributing members in certain respects. For instance, young children who would be primarily at play around a fishrack might be called upon to fetch a bucket of water from the river, after which they resumed playing. Older adults might provide information concerning the way fish should be cut or the amount of smoke in a smokehouse. Each of

these could be considered important contributions to the production process.

Certain aspects of a production unit may be described with relatively little ambiguity, including the presence and locations of a rack and smokehouse; the persons who harvested the salmon; the persons who cut or smoked the salmon; the number of households providing persons performing these work roles; and the relations between workers harvesting, cutting, and smoking the salmon. In addition, the sizes of the households contributing members was clear, even though whether to count them as part of a "producing group" or as part of a "consuming" group is not. The following description of salmon production units draws from these relatively clear aspects of structural organization.

In 1983 there were at least 49 production units for harvesting and processing king salmon in Quinhagak formed from members of the 98 households. This is a minimal count, as there were a few households for whom information was not available. All but four production units operated from the community, using racks and smokehouses along the banks of the Kanektok River or its side sloughs a few minutes walk from residential areas. There were six areas where racks and smokehouses were located. Four of the production units operated from fish camps up the Kanektok River. There are currently about a dozen fish camp locations along the Kanektok River, most of which are utilized primarily during the late runs of coho and char.

The production units for subsistence salmon were kinship-based units, representing close family members from one to three households. Most groups were composed of members from a single household (29 cases

or 59 percent). Labor was contributed by two households in 22 percent of the production units (dual household units) and by three households in 18 percent of the cases (triple household units). There were no units drawing labor from more than three households (Table 47).

TABLE 47. SIZE OF SUBSISTENCE KING SALMON PRODUCTION UNITS, QUINHAGAK, 1983.

Households Composing Production Unit	Average Household Members Per Unit	Average Cutters Per Unit	Average Fishers Per Unit	Average Cutters Per Household Member	Average Fishers Per Household Member
1	5.0	1.2	1.3	.24	.26
2	9.3	2.3	1.9	.25	.20
3	15.2	3.2	2.4	.21	.16

The division of labor in the production unit was relatively complex. In general, there was a separation of harvesting and processing work roles: the persons who caught the salmon were usually different from the persons who cut, dried, and smoked the salmon. The composition of single, dual, and triple household production units are shown in Table 47. The average number of fishers per unit ranged from 1.3 to 2.4, and the average number of cutters per unit ranged from 1.2 to 3.2, depending upon the number of households contributing members. In terms of an "economy of scale," multiple household production units seemed to gain in harvest efficiency, requiring fewer fishers per

group member than single household units (Table 47). This is because a single net can efficiently catch large numbers of salmon, potentially more than can be handled by processors, so additional fishers need not be added when fishing for a larger group. There appeared to be no clear efficiencies gained in terms of the absolute number of persons cutting in multiple household units; about the same number of cutters per group member worked in a single household unit as in a multiple household unit. However, the amount of time involved in cutting might in fact be shorter in large cutting groups than in small. Most cutters preferred to work in groups rather than singly, if only for the companionship of additional workers.

Recruitment of labor followed kinship principles. There were few instances of portions of regular work groups organized outside the kinship network. To elicit the kinship principles involved, relationships of workers in processing and harvesting roles were traced, reckoned from the eldest worker in the production task. That is, if there was a parent working with a group of children or in-laws, the parent was treated as the focal reference point and all other workers in the group described in terms of their kinship relations to this focal person. A father working with two sons then would be described as two instances of a father:son and father:son relationship. Table 48 presents the types and frequencies of kinship relationships between workers in salmon production units, using this method of counting kinship linkages. Again, these should be considered minimal counts of working pairs, especially as more short-term working pairs may have been missed by the methodology. The figures should be treated as a sample of

TABLE 48. KIN RELATIONSHIPS AMONG WORKERS IN KING SALMON PRODUCTION UNITS, QUINHAGAK, 1983.

Work Role	Relationships	Frequency		Description
Processors				
	Mo: Da	24	(40.7%)	mother and daughter cutting together
	Mo :	16	(27.1%)	mother cutting alone
	: Da	7	(11.9%)	daughter cutting alone
	Mo : SoWi	6	(10.2%)	mother and son's wife cutting together
	Mo: DaDa	1	(1.7%)	mother and daughter's daughter
	Mo:SiDa	1	(1.7%)	mother and sister's daughter
	Hu : Wi	1	(1.7%)	husband and wife cutting together
	Fa:	1	(1.7%)	father cutting alone
	Mo: DaFr	1	(1.7%)	mother and daughter's friend
	GF : BF	1	(1.7%)	girlfriend and boyfriend
	Total	59	(100.0%)	
Harvesters				
	Fa:	20	(35.7%)	father fishing alone
	Fa: So	15	(26.7%)	father and son fishing together
	: so	4	(7.1%)	son fishing alone
	Fa: DaSo	4	(7.1%)	father and daughter's son
	: DaHu	4	(7.1%)	daughter's husband fishing alone
	Fa: DaHu	3	(5.3%)	father and daughter's husband
	Fa:Da	1	(1.8%)	father and daughter
	MoBr:SiSo	1	(1.8%)	mother's brother and sister's son
	: Da So	1	(1.8%)	daughter's son fishing alone
	Hu :Wi	1	(1.8%)	husband and wife fishing together
	:SiSo	1	(1.8%)	sister's son fishing alone
	GF : BF	1	(1.8%)	girlfriend and boyfriend
	Total	56	(100.0%)	

relationships indicating trends in social organization.

As shown in Table 48, the persons cutting, drying, and smoking salmon were primarily mothers, daughters, or mother:daughter groups. Of 59 relationships defining single fish cutters or working pairs cutting fish in a production unit, there were 24 mother:daughter pairs cutting together, 16 mothers cutting alone, 7 daughters cutting alone, and 1 mother:sister's daughter pair (which is terminologically a mother:daughter relationship in the Yup'ik kinship system). Thus, the mother, daughter, and mother:daughter relationship defined cutters 81 percent of the time. The only other frequent relationship was mother: son's wife; this affinal relationship occurred 7 times (12 percent).

Table 48 shows that the persons who harvested salmon were primarily fathers, sons, and father:son groups. Of the 56 relationships defining harvesters, 20 were fathers fishing alone, 15 were father:son pairs, and 4 were sons fishing alone. Thus, the father, son, and father:son relationships defined fishers 70 percent of the time. Sons-in-law fished for a production unit singly or with a father-in-law 7 times (13 percent).

The central core of most king salmon production units appears to be the group of women involved in processing salmon, typically the mother and her unmarried or married daughters. This group appears to be a more stable unit than the group of men involved in harvesting, as daughters frequently continue to cut with their mothers even after they become established in their own households. After they are married, sons work less frequently for their parental households in comparison with married daughters, and more often begin fishing for their

own household unit or for their wife's family group. This tendency is seen in the relationships tying multiple household units. Of the dual and triple household units, the kinship tie linking households was through a married daughter 53 percent of the time, and through a married son 23 percent of the time. Households were aligned through a different sexed sibling 10 percent of the time.

Thus, the salmon production units at Quinhagak are formed following a set of general principles. First, most production units are composed of lineal kin (fathers, sons, mothers, daughters, grandchildren) or close affinal relationships (wives, husbands, daughters-in-law or sons-in-law). Salmon production units are almost exclusively kinship units. Most represent single households or multiple households linked through a married daughter or married son, with married daughter ties predominating. Work roles are allocated along a division of labor by sex, with males harvesting and females processing salmon.

The production units in the other case communities were similar in structure to those at Quinhagak. In New Stuyahok, a sample of 12 production units were observed in detail. As with those at Quinhagak, the number of households in a unit ranged in number from one to three for one, which drew workers from five households. Similar to Quinhagak units, all 12 groups contained persons closely related by kinship ties. Lineal and close affinal ties again predominated. Matrifocal tendencies were displayed to about the same degree: of 15 cooperating households, links were through a married daughter 53 percent of the time, through a married son 33 percent of the time, and through a mother's brother and mother's sister each 7 percent of the time.

In Togiak and Goodnews Bay, the form of salmon production units also were similar. Most salmon production units were composed of lineally-related kinsmen or children's spouses. Matrifocal linkages in these units were marked in Goodnews Bay.

Along with similarities in the structure of salmon production units, there were some notable differences in the division of labor among communities. In Quinhagak there appeared to be what is considered the most typical division of labor among Yup'ik work groups: the men were responsible for catching and the women were responsible for processing salmon. In Togiak and Goodnews Bay, however, both men and women commonly participated in the harvest of salmon. If only a subsistence net was-used, the harvesting group might consist of a father and son, a mother and daughter, husband and wife, grandfather and grandson, father-in-law and son-in-law, mother-in-law and daughter-in-law, grandmother and grandchild, and the like. Older retired couples often did much of the salmon fishing for the households of their married offspring. Children and grandchildren who were too young to fish commercially or work in summer employment at a cannery commonly assisted as helpers on subsistence salmon nets. Like Quinhagak, at Togiak the processing group was generally composed of females with one female in charge, especially the mother or mother-in-law. However, there were cases of husbands helping their wives if no one else was available. The size of the processing group varied from one person to three or four, and perhaps even larger. There is one case in which in a single day, 3 different daughters and a daughter-in-law helped a mother split about 50 red and chum salmon harvested earlier that day by her hushand

and grandson. At Goodnews Bay, there did not seem to be as strong a division of labor by sex in the processing of salmon, with both men and women processing fish, although women tended to be more active in processing and men in harvesting. Children may be part of the harvesting group and not of the processing group; conversely, older women were found primarily in the processing group.

A third pattern of labor allocation occurred among New Stuyahok residents at Lewis Point. Women and teenage children typically set and picked subsistence nets and processed salmon. Most men were away commercial fishing. Instead of a separation of roles, both catching and processing salmon were usually done by the same persons. Periodically, men helped set and pick nets when they were not busy commercial fishing. Upon returning to New Stuyahok, work roles reverted to the Quinhagak pattern. Nets were set and tended by males (fathers, sons, siblings, cousins), and fish were cut by females (groups of mothers, daughters, daughters-in-law, and granddaughters), although men and boys commonly assisted in the hanging and smoking,

Commercial fishing locations and schedules and the set gillnet may account in part for the differences in sexual allocation of work roles between the communities. Commercial fishing areas in the Nushagak district are physically separate from Lewis Point, which is about 15 miles upriver from the mouth of of the Nushagak River. Most New Stuyahok men are gone commercial fishing for days at a stretch (two to ten days), leaving the women as the primary work force for producing subsistence salmon. In the other communities, the commercial and subsistence fishing locations are the same or close by, so most commercial

fishermen are not absent from the community.

In addition, at Togiak and Lewis Point commercial fishing and subsistence fishing are opened concurrently. By regulation, a registered commercial fisher cannot operate both commercial gear and subsistence gear simultaneously. This places restrictions on the roles of fishers. Males who operate commercial nets cannot legally help set or pick a family's subsistence net. If a subsistence net is placed, then it is generally picked by an unregistered fisher, in many cases a woman. Under these conditions, the role of harvester is transferred to women, a flexible response of the sexual division of labor to commercial fishing requirements. The other alternative to having women catch subsistence fish is for a registered fisher to retain salmon for subsistence use from the commercial net, which many households commonly do at times during the season. In contrast to Togiak and Lewis Point, subsistence fishing and commercial fishing occur during non-overlapping weekly periods at Quinhagak and Goodnews Bay, so a scheduling conflict for registered commercial fishermen is avoided. Under this regulatory structure, men do the harvesting almost exclusively at Quinhagak, but not so at Goodnews Bay.

A second factor which may be associated with female harvesting roles is the use of set nets at Togiak, Lewis Point, and Goodnews Bay. Women primarily use set nets and not drift nets for taking salmon. The set nets are relatively short (10 to 25 fathoms), light, and easy to handle, and are placed along the beach and picked at low tide, frequently without the use of a boat. Consequently, use of the set net does not entail many technological barriers to use. At Togiak,

where women commonly hold commercial fishing permits, they most usually operate set gill nets. In contrast, at Quinhagak where the males primarily harvest salmon, the drift gill net is the method usually used for taking subsistence salmon. However, set nets and round hauling are used upriver for taking subsistence salmon, generally late in the season. It has not been common practice for women to drift, although there are a few women who do so with commercial permits. Thus, the set net technology at Togiak, Goodnews Bay, and Point Lewis may facilitate women fishing. It is interesting to note, however, that when New Stuyahok families return home from Point Lewis, the men once again operate the set nets, while the women return to the processor role. Skiffs are used to reach the set nets, which are set a short distance from the community. The operation of skiffs tends to be a male's job in all study communities.

Disposition of the Catch

The general rule for the disposition of salmon is that those who contributed labor or capital in production have some right to the product. There are several mechanisms whereby this claim on the product is satisfied. Whether the salmon is disposed of before or after it is caught and processed turns on the nature of the social relations between those contributing labor.

The most common means of allocating salmon among laborers is through the "family cache." Dried and smoked salmon is the most labor-intensive food item commonly produced in the community, requiring

weeks of careful work and attention. As shown above, by and large only close lineal and affinal kin relations contribute labor to this rigorous production process. As discussed, laborers consequently usually belong to from one to three households related by descent, referred to as "families" by residents. A family unit commonly has a central storage location for bulk processed subsistence foods. In single households, the finished salmon product frequently is stored in the house's freezer or storage shed. When more than one closely related household is involved, the salmon commonly is stored in the freezer or cache of one household, usually that of the parental household. This socially central place becomes the storage location of the food supply of the network of closely related households. The processed salmon of the cache is considered common property of the members of the related households who contributed labor in production. Dried fish may be drawn from the cache as needed throughout the year. It appears that fish may be taken from the central cache by this group without asking permission, indicating the food is treated as common property. Also, as the parental household frequently is a focal location for meals, much of the salmon may be consumed at the parent's home over the year.

The network of households comprising a consumption unit is not necessarily restricted to the group of households comprising the production unit. Commonly, households whose members did not participate in production draw from the cache. This is especially true of households of sons or daughters, who may not have helped produce salmon because they were engaged in other activities, or households of single

elders, who were too old to actively participate in salmon production. These non-producing households are supported by the producing households. Thus, the number of households consuming the salmon is commonly larger than the number of households producing it.

Dried fish given outside the close family network described above is more closely monitored. In Togiak, the female in charge of processing salmon (usually the senior female in the family network), is also in charge of the cache. Processed fish shared outside the family group is controlled largely by the senior female. Thus, the person who processes the fish controls its disposition outside the family unit. In New Stuyahok, an elder female head of a kinship group also is frequently the person controlling the cache. In one New Stuyahok family, the elder was a male. The elder took responsibility for apportioning dried fish among kin who did not provide labor in production.

The disposition of whole and fresh frozen salmon operates differently from-dried salmon. In the study communities, the first kings of the season are widely shared among relatives and friends, so that '*everyone gets a taste.'* It is said that generous sharing of the first catch ensures a successful season. The early king are eaten fresh, while later catches are dried. Less frequently, members of households who are not closely related and do not share the same cache will fish together for subsistence salmon during the season. In Quinhagak it was observed that households new to the community and lacking gear were taken once or twice by another person with gear. In these instances, the catch of whole fish was generally split evenly between the two or more persons who did not share the same cache prior

to its being processed. In Togiak, a fisher frequently will take one or two whole fish to some special friend after a fishing period, but this is highly variable. Also, a fisher's spouse may take a few fish to someone in need or a friend prior to processing them. Salmon are quite plentiful, and even the poorest and least able receive whole fresh salmon.

At Lewis Point a somewhat different pattern prevails concerning whole, unprocessed salmon. When fish are abundant, nets are set communally to avoid catching too many. Each salmon production unit puts out nets daily until sufficient quantities are taken for the current processing capacity. Then nets are only set when more fish can be handled. Commonly a few nets will be set to supply whole fresh fish for all the family groups at Lewis Point. The whole fish are distributed to both related and unrelated households for processing.

SEAL PRODUCTION AND DISTRIBUTION

The organization of labor and capital in the hunting and processing of seal contrasts with salmon production in several respects. Harvest groups are smaller and not exclusively constituted through kinship. Seal hunting groups comprise flexible and variable types of partnership arrangements, formed through informal, short-term alliances. Seal hunting is a more specialized activity, and fewer persons are directly mobilized in the community in comparison with salmon fishing. Similar to salmon production, harvesting and processing roles conform to a division of labor by sex. The following description of seal

hunting in Togiak, Quinhagak, and Goodnews Bay illustrates these additional organizational forms within the Yup'ik economic system.

Timing and Location

Seal hunting is a major economic activity in the seasonal round at Quinhagak, Togiak, and Goodnews Bay. New Stuyahok" residents rarely hunt seal because of their inland location, but, as previously discussed, they obtain seal meat and oil through distribution networks from coastal communities. As discussed in the seasonal round section, the timing of seal hunting varies among the study communities with the migration of seal northward in spring and southward during fall. In Togiak, hunting for bearded seal and ringed seal is seasonal, occurring when the ice is in the rivers and bay, from about December into April. Spotted seal are more or less hunted throughout the year and are the most common source of seal oil, meat, and skins. They are quite plentiful in the Togiak vicinity year-round. Spring is the major hunting period, and and more seal are taken March through May than during any other period. At Quinhagak and Goodnews Bay seal hunting occurs during two primary periods, late winter through spring, which is the most intensive and productive hunting period, and during fall from about late August through October. Individual seals may be taken at other times of the year, but these two periods are the times of greatest effort. Four species are harvested -- the bearded, ringed, spotted, and, more rarely, ribbon -- with the bearded being the preferred species. As with Togiak, the spotted seal are most numerous and taken in greatest numbers.

In the three study communities, seal hunting is conducted on the ocean, either from the edge of the land-fast sea ice or from boats in open water. In Togiak, seal hunting is primarily done either off the ice inside Togiak Bay or around islands just outside the bay in open water. Seal appear to be plentiful outside the bay and are not difficult to find. As hunting occurs mainly in the months of March through May, open water hunting is probably the most common method most years. Quinhagak hunters hunt seal in the winter along the coast of Kuskokwim Bay, traveling straight out from Quinhagak about one-half to three miles to find open water and moving along the edge of the shore ice looking for hunting locations. Hunters range farther with boats during late spring and early fall, from the mouth of the Kuskokwim River to Goodnews Bay and up to 40 miles offshore. During fall, some hunters take seal hauled out on sand bars several miles off the coast in Kuskokwim Bay, approaching them on foot and clubbing them.

Goodnews Bay hunters look for seal in the bay and along the coast north and south of the community, especially Nanvak Bay, Osviak Bay, Matoogak River, and Chagvan Bay. Hunting trips within Goodnews Bay are usually less than a day's length, while those outside the bay are generally more than a day, lasting at times over a week if conducted from a spring seal camp. Most seal camps are located to the south in the vicinity of Chagvan Bay, although some camps are located to the north as far as Jacksmith Bay.

Hunting from the sea ice seems to be more commonly practiced in Quinhagak and Goodnews Bay than in Togiak arid may occur as early as December and January depending on ice conditions. However, generally

the ice is not solid enough to allow hunting until January, and hunting commences with the warming temperatures and increasing daylight.

The methods for taking seal are similar in the three communities. During winter, hunters in pairs or in small groups take snowmachines to the edge of the land-fast ice. Seal are spotted swimming among the floes in leads off the edge of the ice, and are shot with rifles. A small dinghy is paddled to retrieve the floating seal. Another hunting method is to drag aluminum boats with snowmachines to the edge of the ice. The boat is taken between the floes looking for seal and walrus. Open water hunting becomes more common as the season progresses through March. At Goodnews Bay, most seal hunting is done with aluminum skiffs on open water.

In Togiak, seal hunting is frequently done in conjunction with other activities such as kelping, waterfowl hunting, egg gathering and clamming during late spring, summer, and fall. Similarly, in Quinhagak seal are taken in conjunction with waterfowl hunting by April and with herring fishing by May along the coast, bays, and sand spits southwest from Quinhagak. In Quinhagak during fall, several boats may hunt together, fanning out when a swimming seal is spotted, trying to anticipate where it will next surface. The seal are wounded with small caliber rifles or shotguns and then affixed with a harpoon and line for retrieval. Open water hunting with small caliber rifles requires considerable skill. The actual pursuit of the seal may take over an hour before the hunter is in a position to make the kill. Multiple shots are placed near the head of the seal to force it to dive quickly before it gets adequate oxygen. The boat quickly races in the direction of

the next anticipated surfacing location. This is continued until the seal is nearly out of oxygen and cannot dive for any length of time, allowing the hunter better shots until it is wounded and can be retrieved.

In all three communities, most seal hunting trips last a single day. During late spring in Togiak, occasional overnight camping trips to the far islands are made depending upon the weather. Goodnews Bay hunters at times establish spring seal camps; however, during 1983 the community was the staging area for most seal hunting. Some young males are restricted to weekend seal hunting because of school.

Technology and Property Relations

In Quinhagak and Goodnews Bay, the light and versatile aluminum boat is used for open water seal hunting. The 16- to 18-foot Lund with a 35 to 70 horsepower outboard is the preferred make, the same craft commonly used for ocean salmon fishing, river fishing, and other subsistence pursuits. There has been a replacement of wooden craft by the aluminum-hulled boat for sealing. The aluminum hull is not damaged when running through sea ice as are plywood hulls, which suffer splintering and abrasion. They are relatively lightweight and can be dragged over ice if the hunting party must move between leads. Wooden boats are considerably heavier and less easily transported. In Togiak, both aluminum and wooden skiffs are used, measuring from 16 to 30 feet in length. Aluminum hulls are also preferred when hunting from the ice. The larger Togiak salmon skiffs are used for travel to the islands 25

to 30 miles out from Togiak Bay when seal hunting in ice-free water. Rifles are usually .222 to .243 caliber, but range in caliber from .22 to .338 magnum for walrus.

For hunting off the ice pack, snowmachines are used for transporting homemade plywood sledges. A small plastic dinghy for retrieving seal or an aluminum boat is tied to the sledge or dragged behind the snowmachine. The following is an example of the equipment taken on one hunting trip by four men in February at Quinhagak: snowmachines (2) , sledges (2), rifles (5), harpoon, binoculars, dinghy, packs (2), pack frames (2), tool kit, coiled rope, ax, shovel, knives (4), oar, and a 6-foot, l-inch by 4-inch board. Each member of the party contributed equipment. On this trip, a shelter was constructed at the edge of the sea ice, made of ice blocks chopped from crusted snow, the two overturned sledges and dinghy, and packed snow.

Equipment used for processing seal include knives (an uluraq or a straight carving knife), wood cutting board for manipulating the skin as the fat is carefully cut off, cardboard floor coverings, and a variety of buckets, boxes, and containers for holding parts. Meat is dried on small drying racks attached to storage sheds, caches, or house. Fresh and dried meat are stored in freezers. Plastic and glass bottles are used for storing seal oil. In the past, pokes were prepared from the seal skin for storage of "poke foods," but this is no longer done. Skins are stretched and dried nailed to free-standing sheets of plywood propped next to the house, or nailed to the sides of wooden sheds.

In all three communities, pieces of equipment used in seal hunting

and processing are recognized as belonging to individual persons. However, although belonging to individuals, the equipment can be called upon for use by other members of a close kinship group, the extended family described in the previous section on salmon. Boats and motors are especially treated as family equipment, and are used by siblings, children, and other relatives recognized as being close, frequently without permission from the owners.

Unlike subsistence salmon fishing, in which most harvesting equipment was held within a single kinship group, in seal hunting there occurs the "pooling"' of equipment among distantly related or unrelated "partners." On hunting trips, hunting partners commonly pool equipment to create a complete set of gear. The expense of gas and oil are frequently shared among partners; each person also commonly brings food to share on trips. Items such as ammunition, rifles, and harpoons are part of each hunter's own gear or kit. Wear and tear on the boat and engine are the owner's costs -- that is, they are not calculated by the hunters as shared expenses.

In terms of property relations to water and land, there seems to be open and equal access to seal hunting areas by all members of the community. There appear to be "community use areas"' for seal hunting. That is, there are areas where seal hunting is normally conducted by residents of a particular community like Quinhagak or Togiak, and less commonly by members from neighboring communities, such as Eek or Goodnews Bay. The community use area is open to all hunters who can establish linkages with Quinhagak residents, such as through kinship, partnership, or other friendship relations. Community use areas for

seal seem to overlap with other villages at the peripheries. Quinhagak hunters commonly range from the Eek River south to Carter Bay. Goodnews Bay hunters usually range from Jacksmith Bay to Security Cove, periodically hunting the south side of Cape Newenham. Togiak hunters usually range from Cape Pierce to Kulukak Bay and occasionally around Cape Newenham as far north as Jacksmith Bay.

These are not in any sense defended territories, as is illustrated by the following case. While with a Quinhagak hunting party, one of the researchers observed seal hunters from Eek hunting from a boat near Warehouse Creek, an area along the coast between Quinhagak and Eek commonly used by Quinhagak residents and so within Quinhagak's "community use area.'" Although they passed one another on the ice's edge, the Eek and Quinhagak hunting parties kept their distance from each other. The Eek party went no further south toward Quinhagak, and the Quinhagak party went no further north toward Eek. There was discussion among the Quinhagak group as to who might be part of the Eek party, but no negative comments were made about their presence, When queried about the group's hunting location, the explanation given was that the Eek hunters had no other place to hunt at that time of year, which brought them relatively close to Quinhagak. Also, it was explained that Eek and Quinhagak residents were closely related. Thus, the need for subsistence food and the historic kinship links between villages were offered as sufficient justifications for two parties from separate communities to be seal hunting in the same area.

Social Composition of Work Groups

Seal hunters generally hunt in pairs. Hunting parties are usually comprised of two to four persons in one or two boats or snowmachines. No systematic count was made to examine the relative frequencies of types of relations linking persons hunting together in the study communities. However, case examples of hunting groups suggest that hunting parties are flexibly formed and varied, following a few relatively unconstraining set of principles.

Hunters are usually males. Fathers commonly take pre-adolescent and adolescent sons on hunting trips once or twice during a season to give them experiences for developing skills. Probably as commonly, uncles will take pre-adolescent and adolescent nephews. Thus, the first seal killed by a boy usually occurs as part of his father's or uncle's hunting group. However, while common, father-son and uncle-nephew parties represent a relatively small proportion of all hunting groups. As youths enter their 20s, they begin to hunt less often with their fathers and uncles and more commonly with parties composed of age-mates, an age pattern which continues throughout a man's life. When a man has sons or nephews of his own who are old enough, they will start participating on certain hunts with him.

Most seal hunting groups are comprised of flexible and variable types of partnership arrangements, formed through informal, short-term alliances. Hunting pairs are not exclusively constituted through kinship. In fact, most sealing partners are not close kin, but are selected on the basis of skill, knowledge, and other personal

characteristics. Kinship may not be a central principle affecting recruitment of partners.

This "partnership" arrangement established through principles of alliance across kinship groups represents an organizational form in the economy in addition to principles of kinship utilized for recruiting salmon production units. The "partnerships" are not like the formalized, long-term associations that typify marine mammal hunting and trade relations in Alaskan and Canadian arctic Inupiat cultures. Instead, the southwest Yup'ik "partnership" arrangements appear to be alliances which are flexibly formed for a variety of short-term ventures, including seal hunting, caribou hunting, and freshwater salmon fishing, as described later in this chapter.

In Quinhagak, most family groupings have male members who hunt seal, so there are numerous potential seal hunters with whom to form partnerships. However, there is a smaller number of men who are known as very active and successful sea mammal hunters. An active hunter will make multiple hunting trips throughout the year, and his partners may change from one trip to the next, frequently rotating through a set of less active hunters. There are also men who do not hunt seal at all. Similarly, in Togiak there is a smaller set of active seal hunters, perhaps 24 men, who actively hunt sea mammals and waterfowl in the open waters outside the bay. Other men more commonly hunt closer to the community and less frequently. Those who hunt in open water are considered to be particularly skilled in this sphere of activity.

Cases of seal hunting groups reveal the flexibility in forming

short-term partnerships. In Quinhagak this spring, one active hunter (married, in his 30s, no male children) was observed to hunt at least once with a married "first cousin" (FaBrSo), three times with an unrelated, unmarried age-mate, and twice with another unrelated, married age-mate. Another active hunter (married with adolescent male children) was observed to hunt successively with an unmarried brother, an unrelated married age-mate, and his 12- and 16-year-old sons, who each got their first seals. One less active hunter in his 50s reported hunting with his nephew (DaSo). Another married hunter in his 40s hunted with his "brother-in-law" (WiBr) and a distant "uncle." Local respondents assert that there are no "rules" specifying preferences for particular relationships in establishing seal hunting partnerships. Instead, partners are picked on the basis of personal characteristics, knowledge, skill, equipment, and so forth. A statistical analysis of hunting partners might reveal certain tendencies in partner selection. Case examples suggest that unrelated males of different ages are probably uncommon partners, while common partnerships are made between unrelated age-mates, siblings, brothers-in-law, cousins, father-son pairs, and uncle-nephew pairs, discussed above.

The processing of seal is commonly undertaken by a single woman, usually the wife or the mother of the hunter. If several seals are taken, a woman may be joined by her daughters or sisters in cutting them. Hunters were observed to cut seals to aid their wives or mothers, especially if they were unavailable through illness, pregnancy or absence, or if their wives did not know how. Women process the skins. The senior woman of the house is in charge and will instruct the younger

women in the craft. In Togiak, it is a few older women who are knowledgeable about working skins and who make much of the skin clothing worn by their 'families. Women learn the craft in their mid-20s to early-30s or at least after marriage, as they are expected to assist their mother or mother-in-law in the preparation of skins, hats, boots, and the like. Yet they make very little of the crafts used by family members on their own if the parents are alive and well.

Disposition of the Catch

The seal initially belongs to the person who shoots it. Although other hunters may provide important support, such as positioning the snowmachine or boat and retrieving the carcass, they do not automatically share in the catch. A hunter commonly chooses to divide his seal with a partner who is from a different family if the partner is unsuccessful. For instance, in one Quinhagak case, two partners hunted three consecutive days during the early part of the season (February), one hunter taking on successive days a ringed and a spotted seal and the other hunter taking none. The unsuccessful hunter received some pieces of meat and fat the first day, only small portions because he planned to go back the next day. On the second day he received more of the meat and fat, and on the third day the seal was split half-and-half. Thus, as the hunter's luck worsened, he received greater portions of his partner's kills. Each of these hunters went out successfully several more times as the season progressed. In the three communities it also was observed that

partners commonly split the take down the middle if they are not from the same household, and that generally it is the whole harvest that is split rather than individual animals. For instance, in one case where three seals were taken by a party, one partner claimed the two small ones and the other partner claimed the one large seal, establishing a type of equivalency in the division. In cases like this, there appeared to be an equality among partners guiding the division, the take being treated as common property of the hunting group to be equally partitioned among participants.

After the initial division of the seal among hunters, the seal usually is turned over to a wife, mother, or other person who is going to cut and process the seal for the family. The hunter may have nothing more to do with the seal once it is in the hands of the processor. The seal frequently undergoes redistribution as a fresh, processed, or prepared product, largely determined by the woman processor or senior female in charge of processing. The hunter can request that certain pieces of the seal go to particular persons. However, by and large the control over the disposition of the catch shifts over from the harvester to the processor.

The meat and oil of the season's first seals tend to be distributed widely among and between families. Later seals are processed and used by the family of the hunter, as described above. Each extended family group generally has ties to one or several hunters who serve as immediate sources of meat and oil.

FRESHWATER FISH PRODUCTION AND DISTRIBUTION

The organization of labor and capital for the production of freshwater, non-salmon fish species draws upon the principles of kinship and alliance previously described as underlying the formation of economic units for salmon fishing and seal hunting. As will be shown, the economic units for harvesting freshwater fish can assume several divergent forms -- kinship groups with a sexual division of labor as with salmon production units; short-term alliances cross-cutting kinship groups as with seal partnerships; and a new organizational form, the mixed-sexed harvest group in which both men and women harvest the resource together. The form of the economic unit varies in part with the capture method utilized -- the sweep seine, set net, or hook and line. Also, in addition to the methods of distributing salmon and seal products, a new distributional form is encountered with the disposition of freshwater fish -- a type of "general distribution," where a surplus is distributed community-wide without regard to contribution of labor or kinship relations. Thus, freshwater fishing can be conducted under multiple organizational forms.

Timing and Location

As previously dicussed, non-salmon freshwater fish are major food resources in the four study communities. Fishers at Quinhagak, Togiak, and Goodnews Bay harvest char in large quantities. As mentioned in Chapter 7, on certain years more char is probably harvested in these

communities than any other single species after salmon. All communities harvest round whitefish in substantial numbers. New Stuyahok residents also take humpback whitefish and pike; char and lake trout are not abundant in their area. These species are taken in the Togiak drainage as well, but not in the Quinhagak and Goodnews Bay drainages. All communities also harvest rainbow trout and grayling. Table 49 lists the species available and taken by the study communities.

TABLE 49. FRESHWATER, NON-SALMON FISH HARVESTED BY THE STUDY COMMUNITIES.

Fish Species	Quinhagak	Goodnews Bay	Togiak	New Stuyahok
Blackfish	x	x	x	--
Char (Dolly Varden)	x	x	x	occasional
Round whitefish	x	x	x	x
Grayling	x	x	x	x
Rainbow trout	x	x	x	x
Lake trout	occasional	x	x	x
Pike	--	occasional	x	x
Humpback whitefish	--	--	--	x
Long-nosed sucker	--	--	--	x

The bulk of freshwater fish are netted in late fall just before freeze-up and in early spring just following break-up. After freeze-up, they are also taken by jigging lines through holes in the river ice throughout the winter and early spring. In Quinhagak, Goodnews Bay, and Togiak, the most common locations for taking freshwater fish are upriver from the communities along the Kanektok, Goodnews, and Togiak rivers, respectively. Togiak fishers travel upriver as far as Lake

Togiak to harvest freshwater fish, while Quinhagak and Goodnews Bay fishers most commonly harvest fish within about 15 to 20 miles of the community. New Stuyahok residents take "freshwater fish in nearby sloughs and along the main river. Long trips are taken during fall to net fish in the Tikchik Lakes and during winter to jig at Ostukuk and Wood River lakes and the Muchatna River. These trips last about one to two weeks.

Technology and Property Relations

The technologies utilized for harvesting freshwater fish at Quinhagak, Togiak, and Goodnews Bay include the sweep seine and hook and line. A gill net used as a sweep seine is the method used for taking large quantities of fish in open water along the river. Nylon nets about 15 to 20 fathoms in length with 2 inch to 4 inch stretch mesh are used. Typically, one end of the net is held at the bank of the river or on a sand bar by a person, while the other end is taken out into the river by a skiff. The net may be walked parallel to the shore for a short distance. The net is then circled around by the boat, sweeping a portion of the river, and brought back to shore. Two or more persons pull the net out of the water onto the shore or into the boat. This technique is sometimes referred to as "round hauling." Both aluminum and wooden boats about 16 to 23 feet are used for netting trout; Togiak skiffs and herring boats are usually not taken upriver for fishing because of shallow water. The sweep seine is an efficient method: a pair of fishermen can harvest some 200 to 300 fish in a couple

of hours including travel time from the community,

For hooking during winter, snowmachines pulling sledges are used for transportation to fishing areas along the Kanektok and Togiak rivers. Holes about 1-1/2 feet in diameter at the top and 8 inches in diameter at the bottom are chopped through about 8 to 12 inches of river ice with ice picks. Nylon filament is used as jigging line, attached to a short stick with notches on either end for winding the line. Lures are commonly unbaited treble hooks with flashers, feathers, or red plastic cheese. The lure is animated a few inches above the river bottom with short, up-and-down jigging motions. Fish are pulled straight up through the ice hole.

During summer, some people hook in the same manner as during winter, but from the side of a boat moored to the bank or midstream. At camp, milt and small pieces of fish entrails are sometimes mixed with water and dumped into the river to attract the fish. Some people use lures with rod and reel gear, used as a spinning rod. Hooking and spinning rods during summer are preferred methods when small quantities of fresh fish are desired for immediate eating, especially when camping on a hunting excursion. Efficient nets would take more fish than desired at that particular time. Some people who do not own nets or reliable boats rely on rod and reel and summer jigging devices for procuring the bulk of their subsistence fish "for their households, while other residents use rod and reel for recreation.

Jigging also occurs at New Stuyahok, but the set gill net is used instead of the sweep seine for taking large quantities of freshwater fish. Nylon gill nets about .10 to 20 fathoms in length are set

perpendicular from the shore in sloughs near the community for round whitefish and other species. Nets are also set at the head of sloughs and outlets of lakes. Nets placed near the community are set for one to two weeks and checked at least once a day. "Humpy" nets with 4-1/2 inch stretch mesh are placed in lakes and rivers for humpback whitefish on trips in fall to the Tikchik Lakes and checked daily.

The technology used for processing char is similar to that used for salmon. The fish are cut and air-dried on drying racks, either the large covered racks used for salmon or the smaller racks described for drying seal meat. Many families half-dry the char and store them unsmoked in freezers. Others smoke the half-dried salmon in smokehouses. At Quinhagak, small char about 10 inches long were observed braided into strings and hung to dry like smelt, but this is not a typical method. Freshwater fish caught by jigging are often consumed immediately or frozen. At New Stuyahok, whitefish and pike caught in fall and winter are frozen or eaten fresh. In spring they are dried on small racks attached under the eaves of houses.

Property relations regarding technology resemble salmon and seal hunting patterns. Harvesting gear is owned by individuals; racks and smokehouses by families. Pooling of harvest equipment for a prearranged split of the catch occurs when fishing partners are not of the same family. When a single family is involved in the harvesting, the technology is generally owned solely by members within the kinship unit. At New Stuyahok, the set nets are used in common by members of an extended family network of households or by the hunting group traveling together to the Tikchik Lakes.

At Quinhagak, Goodnews Bay, and Togiak, there appear to be no issues of ownership for community members in regards to locations for jigging or operating sweep seines. Prime fishing locations appear to be common knowledge and open for use by anyone who can demonstrate linkages to the community. By contrast, set net locations near New Stuyahok appear to be recognized as traditional use areas of particular kinship groups. The areas are reused annually by the members of the same kinship group. Jigging sites and more distant net locations appear to be open to all members of the community. As is discussed in subsequent chapters, freshwater fishing along the Togiak and Kanektok rivers by "outsiders" (persons not linked to the communities) is becoming a major territorial issue. Traditional '*community use areas" for freshwater fishing are perceived as being violated in some regards by outsiders.

Social Composition of Workgroups

In Quinhagak, Goodnews Bay, and Togiak, seining in spring and fall close to the community is usually conducted by a pair of fishers or groups with as many as five persons. Groups are primarily composed of males. They may be from the same extended family group or from different families who are fishing as friends or partners. When fishing is conducted in association with longer, multi-purpose fall hunting and fishing trips, as occur in all four communities, fishing groups are typically larger and commonly represent several different families. Fishing groups observed at Togiak included three crews all from one

family, one crew of two unrelated neighbors, one crew of three unrelated friends, two crews of unrelated partners who commonly hunted seal and waterfowl together, and two crews composed of "cousins." In New Stuyahok, men from seven households and three extended family groups made a fall fishing trip to Tikchik Lakes and netted approximately six large sacks of whitefish, pike, and lake trout. Accompanying them was a relative from Koliganek. As these cases suggest, seining freshwater fish and netting fish on long fall hunting trips are conducted by crews which are not strictly kinsmen.

Catching whitefish with set nets near New Stuyahok in spring and fall is usually conducted by two to three closely related males of an extended family group. The persons checking the nets may be rotated over the one or two weeks the net is set, drawing on the pool of males within the extended kinship group. Adolescent and young adult males commonly are responsible for picking whitefish nets. One observed group catching whitefish in spring and fall drew males from four households, including an elder man, two sons of a daughter (one married), and a daughter's daughter's husband (a grandson by marriage). In this production unit, the persons processing the whitefish included an elder woman of the focal parental household, two married daughters, and a daughter-in-law. Another observed production unit at New Stuyahok setting nets in spring and fall for whitefish was composed of a single household; two unmarried sons checked the nets with some help from the father and the mother split and hung the fish. A third set net production unit drew workers from four households, including a woman's two unmarried sons, a daughter's husband, a married brother, and a sister's husband.

It is interesting to note that the production units for taking whitefish with set nets at New Stuyahok resemble the production units for harvesting subsistence salmon in the four study communities. They are primarily work groups of close kinsmen pooling labor and capital for a share of the take. Production units for seining freshwater fish or netting freshwater fish on long trips are more variable in composition, frequently drawing members from multiple, unrelated family groups.

Harvesting freshwater fish by jigging involves yet a third type of production group -- mixed sex groups or groups of females. If conducted within walking distance of the community, jigging groups may be composed of two or more women or men and women together. Jigging locations reached by snowmachine are commonly fished by mixed sex groups, with men driving snowmachines and women riding in sledges. All ages are found jigging, from youths to the elderly. Relations among jigging partners vary considerably, including different types of kin, friends, and couples. There are few technological barriers to jigging, as it requires only an implement for chopping a hole (ice picks, axes, knives, and bars), line, hook, and hand-made spruce pole. The labor expended is light. Jigging is an activity which is easy, enjoyable, and productive, which may be successfully conducted by most persons.

Processing of freshwater fish is usually the job of groups of women in all four study communities. Most processing is done by close kin, in groups from one to about four. In larger work groups, the eldest female is usually in charge giving directions to younger workers such as daughters and daughters-in-law.

Disposition of the Catch

Who receives the catch of freshwater fish depends upon the composition of the social group harvesting the catch -- whether they represent one or several family groups with separate caches. Like salmon fishing, if the harvesters are drawn from one closely related network of households who share a cache, the proceeds are treated as common holdings of family members. If harvesters represent different families or more distantly related households with different caches, the catch from a fishing excursion typically is divided equally among participants at the end of the outing. Further processing is the responsibility of the women of each respective family unit. In this respects, distribution follows rules which resemble those for seal hunting among partners. Once the catch is processed, the scope of sharing narrows and is typically confined to the households which share a cache.

One type of distribution occurs with freshwater fish and not normally with salmon and seal -- a form of general, community-wide distribution. When large catches of freshwater fish by seining are taken, surplus fish beyond the needs of the extended family of the harvester are distributed throughout the community without regard for kinship ties or contribution of labor or capital. It appears that certain fishers go upriver in spring and fall with the intent of taking surplus fish for this type of general distribution. For instance, after freeze-up in 1982, one Quinhagak fisher and an unrelated partner took snow-machines and sledges to an upriver fish camp where a boat was located. Using the boat on an open portion of the river, they quickly seined

two boat loads of char, round whitefish, and grayling. The catch was brought back to the community in several sledge loads. Each partner took portions of what was wanted for their families and also for other households with which they wanted to share. Then a call was made over the citizens band radio announcing that "trout" were available for anyone who wanted them. People came over and the load of fish disappeared quickly. Instances of this form of generalized distribution for freshwater fish were observed in all four study communities.

As suggested in Chapter 7, general distribution of resources on a community-wide basis may occur in instances in which large or "windfall" quantities are taken by a few persons, including freshwater fish, walrus, and brown hear, The quantities procured at one time are more than can be used by a single family or network of related households. The generalized distribution is a mechanism for insuring that none of the catch is wasted. Waste of subsistence foods is something which is avoided whenever posssible. An ethic in the communities is to take only as much as can be used. Unused carcasses of animals and fish are said to emit a smell which is offensive, driving away other fish and game and jeopardizing future hunting success.

Caribou Production and Distribution

The final subsistence activity examined in this chapter is caribou hunting at New Stuyahok. New Stuyahok residents do not customarily hunt sea mammals as do members of the three coastal communities. Instead, inland moose and caribou hunting provides a major source of

red meat and fat (see Chapter 5). Consequently, caribou hunting is described here for comparison with sea mammal hunting presented earlier for Togiak, Goodnews Bay, and Quinhagak. As will be shown, caribou hunting is similar in many respects to sea mammal hunting. It is a group activity conducted by males recruited by principals of both kinship and partnership alliances. Winter hunting groups are composed primarily of males within the same age range, while fall hunts are commonly conducted by groups drawing members across generations. Distribution patterns follow conventions resembling those used for dividing seal among unrelated partners within the coastal communities.

Timing and Location

Caribou hunting occurs from August through the end of March. Fall hunting involves the use of boats and during winter snowmachines are used. During fall, caribou are taken in conjunction with long, multi-purpose hunting trips by skiff. Most effort is expended toward taking moose on the trips which occur during the moose season (September 5-15 in 1983). Fall hunting trips by skiff generally last about three to four days and hunters take from one to three trips before and during moose hunting season. Most hunting specifically for caribou takes place in the winter and early spring (December through March). Of 18 hunters interviewed, the mean number of trips taken specifically for caribou was 2.9. Winter and spring trips by snowmachine usually were one day in length in 1983; however, the caribou were relatively close to the community. On years when caribou are farther away, winter

and spring trips commonly last from one to three days. Most caribou hunting is done across the Nushagak River to the east of New Stuyahok on the rolling tundra-covered uplands. Hunters also travel up the Mulchatna River by boat and by snowmachine, hunting off the river on the tundra-covered hills. This past year, most hunting was done within a 40-mile radius of New Stuyahok. Overnight camping often is done at cabins on allotments up the Mulchatna River.

Technology and Property Relations

Access to hunting areas is by small skiffs with outboards in fall and by snowmachines hauling sledges in winter and spring. High-powered rifles (.243 to 7 mm. magnums) are used to shoot the caribou. Most of the meat is eaten fresh or preserved frozen in freezers or in caches during winter. Some caribou meat is dried during spring for use during summer fishing season at fish camp. Small racks in the community, different from those used for drying salmon, are used for drying caribou. As with seal hunting, equipment is individually owned by hunters. However, the use of the equipment is coordinated during hunts, especially during winter and spring when snowmachines are used cooperatively to position caribou for quick shots.

As described in Chapter 7, there are caribou hunting areas recognized as traditional use areas of the residents of New Stuyahok. Residents of other communities frequently hunt in these areas also. However, before hunting near New Stuyahok, links to New Stuyahok residents are commonly established through kinship or friendship. Residents of

coastal communities frequently offer seal meat and oil as gifts when arriving to hunt caribou near New Stuyahok.

Social Composition of Work Groups

Fall, skiff-borne hunting parties are most likely composed of close relatives, such as fathers, sons, brothers, uncles, and nephews. Hunters number from two to five and commonly cross generations. When caribou hunting occurs during multi-purpose fall trips for moose, "red fish," and berries, women and children may accompany the hunting party, staying at camp or in the boat while the hunts occur.

In contrast, winter and spring hunting parties are often larger and include members from a number of households and different extended family groups. Groups range in size from 1 to a 12 or more members. Of 27 recorded hunts, the mean group size was 3.9 (standard deviation 2.5). Hunters are more likely to be young men in the same age range. Chasing caribou by snowmachine is a relatively demanding and dangerous activity, which requires stamina and quick reflexes. Its speed and somewhat reckless quality make winter and spring caribou hunting an activity for young men. The 27 recorded hunts showed that, most typically, hunting groups contained married brothers hunting together with one or more unrelated age-mates. Fathers and sons only occasionally hunted together during winter and spring. The few cross-generational hunting pairs were more likely to be maternal uncle:nephew pairs (mother's brother:sister's son or sister's daughter's husband). Hunting groups commonly formed on a somewhat impromptu basis; if two groups

encountered one another hunting caribou in the same vicinity, they commonly would combine to increase the efficiency of coordinated group effort. The initial processing of caribou is done by the hunters. Meat is brought back to the community in quarters and other large manageable pieces. These pieces are commonly stored as is or cut into smaller pieces for the freezer or for drying by the women.

Disposition of the Catch

All participants of a hunting party generally share equally in the harvest, regardless of who spotted or shot which caribou. This rule is modified when visitors come to New Stuyahok to hunt with local residents. In these cases the visitor usually takes most of the meat home, such as to Manokotak, Togiak, or Dillingham. As stated earlier, the visitors are usually kinsmen and occasionally associates made while commercial salmon fishing or attending school.

When members of a hunting party bring their shares of meat home, the meat is stored in either the cache of an extended kin network or the individual home freezers of the hunter and other selected households. If the meat goes into a cache, it usually is available for members of the extended family network to take as they need. In one large extended family group, a male elder took responsibility for distributing portions of the caribou to households within and outside the kinship network. Pieces were commonly apportioned to needy households and to households headed by elders who no longer were capable of hunting for themselves. One respondent identified eight extended

family networks in New Stuyahok whose members commonly hunted caribou together and which served as a common distribution network for caribou meat. These 8 extended families are composed of from 3 to 9 households, with a mean of 5.0 households. The extended family networks are depicted in Figure 35. As shown in the figure, most networks are composed of a focal parental household and the households of married sons and daughters.

SUMMARY

This chapter has presented materials illustrating the social organization of production and distribution of subsistence products in the four study communities. The social organization comprises those social rules and relations directing the material processes of production and exchange. This includes rules organizing the social groups performing essential activities of production and exchange of goods and services, as well as rules defining access to and control of the forces of production -- labor, technology, and land. According to the school of historical materialism discussed in Chapter 2, the social organization of production and distribution are key determinant variables driving economic processes.

According to Sahlins (1972), hunting and gathering economies typically are organized under a social organization he terms a "domestic mode of production." As outlined in Chapter 2, characteristics of the domestic mode include include relations of production defined by kinship principles; surplus value in production collectively appropriated within kinship-based domestic units; and production overwhelmingly

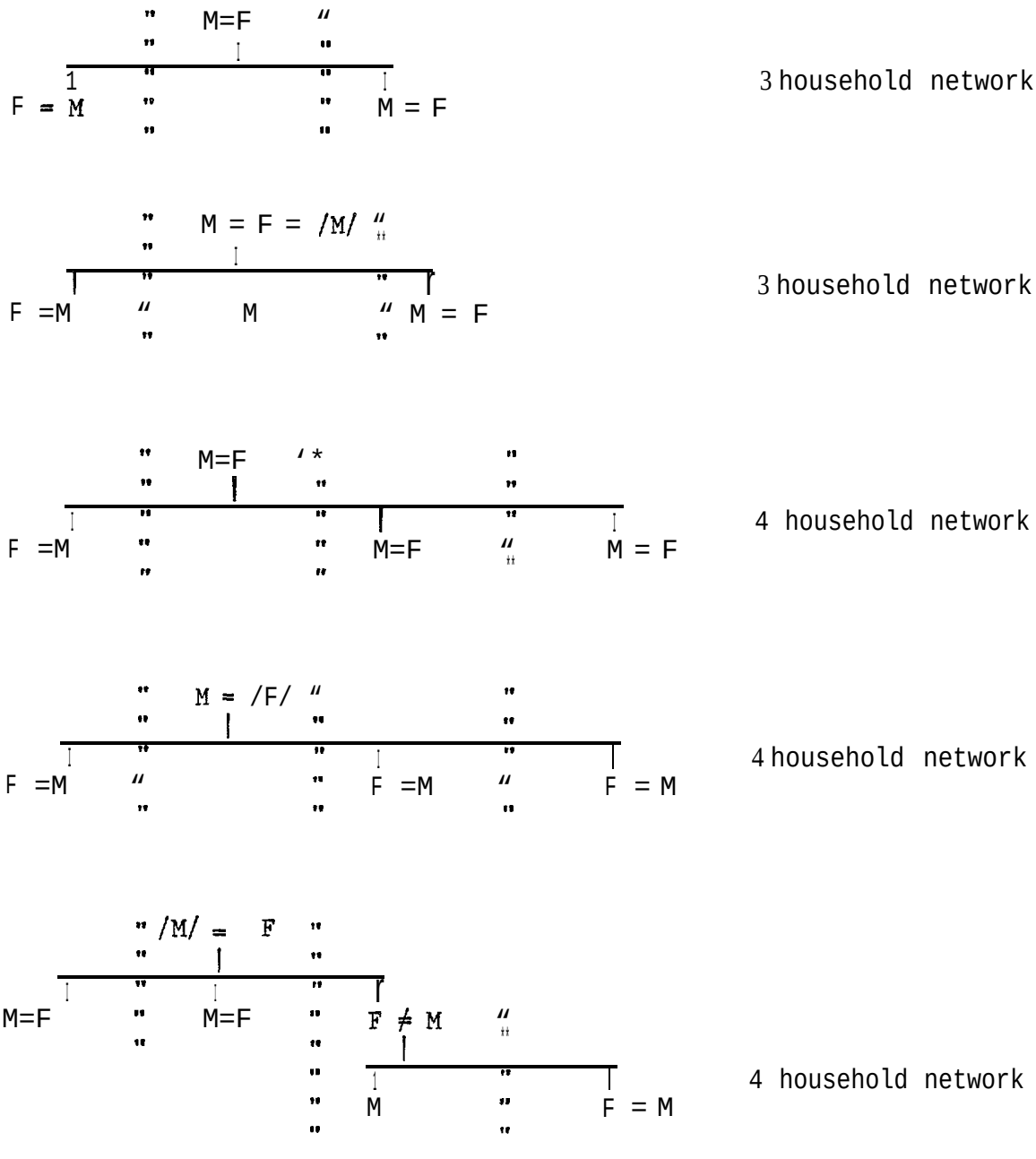
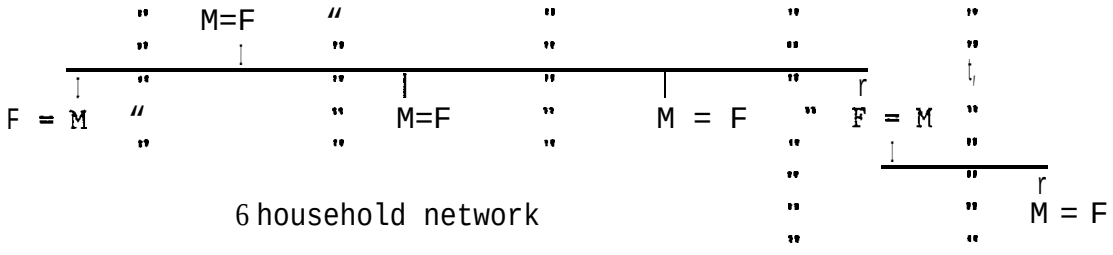
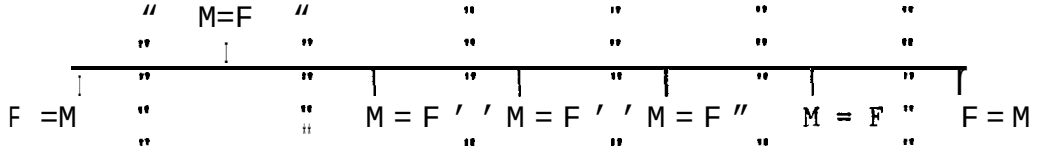


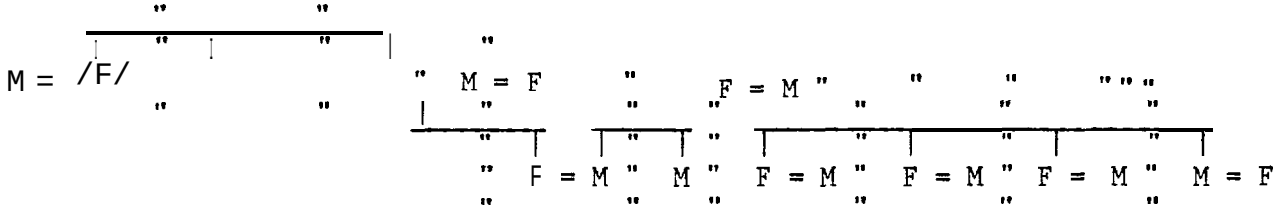
Fig. 35. Extended family networks at New Stuyahok cooperating in the hunting and sharing of caribou.



6 household network



7 household network



.9 household network

M male = marriage relationship
F female | descent relationship
" household boundary / / deceased

Fig. 35. -- Continued

directed toward use rather than exchange. The materials of this chapter enable the examination of the extent to which subsistence fishing and hunting in the study communities correspond to Sahlin's taxonomic category.

The case materials suggest that subsistence fishing and hunting activities conform closely with the domestic mode of social organization. All four examples of fishing and hunting examined in detail -- subsistence salmon fishing, seal hunting, freshwater fishing, and caribou hunting -- were found to be conducted by either kinship-based groups or parties formed through alliances between members of kinship groups, It is interesting to find that no single type of domestic group was responsible for all four examples of subsistence production. It was not the case that the same group carried out multiple economic functions, such as taking salmon, seal, char, and caribou. Instead, the production of each resource was accomplished through the formation of different types of economic groups. The size and composition of these groups appeared to be flexibly adapted to the requirements of the production effort.

Accordingly, the economic fabric gives the appearance not of a set of firms with fixed identities, as might be listed in a rural Dunn and Bradstreet, but as a shifting progression of social groups constituted to perform particular economic tasks and disbanded after the task's completion. Economic firms recruit, engage in coordinated action, and dissolve within relatively short time frames, commonly for a matter of days or weeks only. New configurations of workers and equipment arise and disappear seasonally, adjusted to the cyclic arrival and departures

of fish and game species. The production units of summer are commonly different from the production units of fall, winter, and spring.

The flexibility of production units should not be interpreted as implying an instability to the economic organization of the communities. Underlying and guiding the flexible formation of production groups are a set of stable structural principles. Principles of kinship appear to be used to create many of the production groups formed for the harvesting and processing of subsistence products, supporting Sahlin's taxonomy. This especially proved true of production groups formed during summer for catching and preserving salmon. As presented above, salmon production groups were found to be kinship groups. Persons contributing labor and capital in producing salmon were almost without exception members of families linked through close lineal or affinal relationships. Salmon fishing, cutting, drying, and smoking were tasks most appropriately conducted with close kin, such as parents, siblings, children, and their spouses.

Why this is so may have to do with the importance of salmon in a family's yearly food supply and the complexity of processing. In the first case, a greater volume of salmon is produced than any other single resource during the year, as illustrated by harvest estimates for New Stuyahok and Quinhagak in Chapter 7. It is produced not just for immediate consumption but for storage to last the entire year. Preservation techniques are relatively complex and labor-intensive compared with most other resources, involving multiple processing steps over several weeks. Without proper care, large batches of salmon may be spoiled by rain, flies, dust, mold, birds, and bears.

Because of the importance and complexity of these tasks, it makes sense to formulate work groups which are both experienced and reliable, preferably one which can be relied upon from year to year. Close kinsmen may represent the best work group under these conditions. One's family offers a relatively constant pool of workers, subject to comparatively small changes from year to year in composition, age, and skills. Long term and intimate contact throughout the family's life span allows for the socialization of proper work roles among members. Close relatives are trustworthy, tied by bonds of mutual social obligations. A production unit composed primarily of close kinsmen might be best adapted to the complex tasks of salmon processing which requires a reliable work force from year to year.

As illustrated above, most types of subsistence activities are conducted at one time or another with relatives. Although not always the preferred relationship, close kin relations can usually be relied upon for assistance in economic activities.

A second major finding of this chapter is that for other types of subsistence activities, production groups are formed which may cross-cut kinship lines. Seal hunting, freshwater fishing, and caribou hunting groups were frequently recruited through principles of short-term alliance. Hunting partners and parties commonly were not composed of close kinsmen, although some kin groups were operative. In fact, it appeared that for seal hunting and caribou hunting with snowmachines, groups of unrelated males within the same age-grade may be the most common hunting group.

One reason why this might be so is that, in comparison with salmon

fishing, the success of any particular hunt for seal and caribou is less predictable. It is not unusual for a seal or caribou hunting party to return empty-handed. It is most unusual for salmon fishing to be unsuccessful. Recruitment of hunters from two or more kinship networks increases the probability that more than one family line will benefit from the single periodic successful hunt. As kills are usually divided among unrelated hunters, the proceeds of a hunt are disposed among several families in the community. Thus, short-term alliances between hunters from different family lines reduce the risk of a family not procuring relatively unpredictable resources.

A second reason relates to the distribution of hunting skills among the community's population. Seal and caribou hunting require greater levels of catchment skill in comparison with subsistence fishing. Such skills are more likely to be restricted to a smaller segment of the population. This appeared to be the case for seal hunting: reportedly there was a core of expert sea mammal hunters in each community noted for their hunting skills. Similarly, the physically demanding tasks of caribou hunting in winter and spring were selected for young men at the peak of physical conditioning. Family groups in the community increase the probability of procuring seal and caribou when mechanisms exist for making alliances with the proficient hunters. The skills of the proficient hunter can be tapped to work for an unrelated kinship group.

Partnerships and alliances between unrelated workers frequently function as alliances between kinship groups. The extended family networks of each hunter share in the proceeds of the cooperative economic

enterprise. As such, alliance between kinship groups is a varient organization within the domestic mode of production.

The other two characteristics of Sahlin's domestic mode also are supported by the case materials. The proceeds of fishing and hunting are collectively appropriated by the kinship-based production unit. Appropriation occurs through the webs of kinship obligations, which function as networks of distribution and exchange of subsistence resources. In all communities, producers rarely hunted and fished for a single person or household. Instead, subsistence products flowed out from the producer to large numbers of persons. Distribution did not usually involve markets or prices, although at times subsistence products were purchased in small-scale transactions. Most subsistence production was directed for consumption directly by the kinship group and not for exchange.

Subsistence production and distribution occurs within a particular infrastructure of technology and property relations. Subsistence technology is 'small-scale and affordable, so that most relatively small families with limited resources are able to reach and wield production capital. Each of the four examples of subsistence production illustrated that this is so. The equipment for conveyance, capture, and processing are not so expensive or complex to preclude their use by most domestic groups. Capital acquisition is usually no barrier to production, as commonly is the case in industrial-capital economies where technology is at a level of cost and complexity to require firms organized beyond the family.

Second, and perhaps central, there is an infrastructure of property

relations which provide equal and open access to land and natural resources to all members of the society. Areas productive in salmon, char, seal, and caribou are open for use by community members. Systems of customary law grant usufruct rights to the traditional territory of the social group. There is no landless class or landed class. As will be discussed in subsequent chapters, the infrastructure of property relations undergirding the industrial-capital economies of urban Alaska are attempting to penetrate the system of customary law pertaining to land and resource use. The consequences for the future viability of subsistence production and distribution may turn on the extent of this penetration. As of now, subsistence production and distribution are organized as parts of a structurally egalitarian system: each domestic unit has equivalent rights to the labor, land, and capital necessary for producing the livelihood of its members.

CHAPTER 9

INTEGRATING CASH AND SUBSISTENCE: ANALYSIS

INTRODUCTION

A central concern of this study is to make a determination of what happens to subsistence hunting and fishing in western and southwestern Alaskan rural communities when cash is injected into the economy. It has long been 'recognized that in contemporary rural communities, cash is necessary to purchase the technical means for subsistence production. Yet, it is not clear to what extent cash infusions into these rural economies and their ensuing technological dependence modify or change the nature and degree of subsistence participation.

One general and highly influential hypothesis points that increased monetary income is associated with a decrease in subsistence fishing and hunting. The outcome is that the traditional economy enters into a transition from a "subsistence economy" to a "market economy.'* In this view, rising rates of monetary employment in a community or region lead to higher levels of income which, in turn, lead to greater reliance upon the market economy for foods as well as materials. Consequently, fishing and hunting for local consumption decreases and traditional subsistence fishing and hunting activities decrease and/or change to recreational activities. For a description and critique of this model see Usher (1981).

The communities of this study provide excellent test cases for this model of social and cultural change. Each community contains households with both high and low incomes. In terms of total community incomes, there is a marked differential among the communities as well. This chapter examines material on household and community income to show that there is no simple relationship between level of income and subsistence activities. In fact, it now appears that in many families high incomes may enhance rather than limit subsistence activities.

A second position, and perhaps more realistic, found in the recent literature (see e.g. Wolfe 1979; Wolfe and Ellanna 1983; and Usher 1982), sees the sources of income as more critical than the amount of income. To what extent the types or sources of monetary income are compatible with the traditional schedule of fishing and hunting is a guiding question. The assertion is that certain types of monetary activities can be strategically integrated into subsistence hunting and fishing so as to enhance participation in subsistence-related activities. In these circumstances, income is invested into technology used for hunting and fishing. Consumption will be largely based on subsistence resources and purchased foods will be of secondary importance. On the other hand, sources of monetary income which are incompatible with the subsistence schedule will decrease the level of subsistence participation at the individual, community, or regional levels.

The purpose of this chapter is to address these and related empirical questions at the macroeconomic level -- that is, at the level of the household. This is done by initially focusing the discussion on the household cases presented in Appendix A.

As previously discussed in Chapter 1, households were selected from different categories of simple commodity production and wage employment for each study community. The description is particularistic, examining the cases from each community grouped by sources of income. Those cases under the category "wage employment" are examined first, followed b-y-those categorized as "simple commodity productions" and so forth. Each group of cases is discussed in terms of the compatibility and incompatibility between cash-earning and subsistence activities. Secondly, the strategies illustrated by the cases to integrate cash and subsistence is discussed. This examination of the cases indicates two features of extreme importance at the community level: (1) if the major sources of income in the community are locally controlled", then compatibility between cash income and subsistence is enhanced; and (2) "the strategies illustrated by individual decision-makers at the household level imply a division of labor and a social organization that is not co-extensive with household membership. Thus, the strategies manifested in one household may be different from and complementary to the strategies of one or more other households. This suggests that a focus on the household as the primary referent for the analysis of income, labor, subsistence participation, production, consumption, and distribution is questionable. The remainder of the chapter is devoted to the development of a model of domestic organization of the communities and a discussion of the hypotheses stated at the beginning of the chapter.

WAGE EMPLOYMENT AND SUBSISTENCE ACTIVITIES

A common view of the relationship between wage employment and subsistence is that the former is generally incompatible with the latter. The cause of this incompatibility is assumed to rest with factors such as work schedules, location of work, and knowledge and skills associated with work. Subsistence seasonal rounds may conflict with work schedules. Frequently in rural communities, relocation is necessary for wage employment, removing the individual from fishing and hunting areas. Additionally, the types of skills and knowledge involved in wage labor are frequently of a different order than those of subsistence hunting and fishing. Thus, the relationship between the two are often perceived as incompatible.

In this chapter, it is demonstrated that wage employment need not be incompatible with a schedule of fishing and hunting but rather can be made to be complementary. Each of the communities have developed numerous strategies to integrate the two forms of economic activity into a single economic system. By retaining control over employment locally, community residents are able to adjust work scheduling and structure to complement the organization and scheduling of work associated with subsistence pursuits.

Nearly all of the wage employment for each of the communities is local. That is, employment is within the community, and relocation to other areas for wage employment is infrequent for most residents of the study communities. There are a few cases of residents from Quinhagak and New Stuyahok working seasonally in non-local canneries, but

by and large most residents work locally regardless of the seasonality of employment. As noted previously, this pattern has come about since the development of local fisheries. Thus, local subsistence resources are potentially accessible to wage earners.

Wage employment by community and sources of employment by community are presented in Tables 50 and 51-respectively. A high degree of variability exists in the number of full-time and part-time jobs available among the communities. If five or more hours, five days weekly are used as criteria for full-time employment, Quinhagak has 44 full-time positions, compared to Goodnews Bay with 22, Togiak with 40, and New Stuyahok with 16, as indicated in Table 50. Excluding temporary employment, seasonal employment, and specific project employment only, Quinhagak has 57 full- and part-time positions, compared to Goodnews Bay with 38, Togiak with 63, and New Stuyahok with 34. Thus , the largest number of wage employment jobs are found in Quinhagak and Togiak followed by Goodnews Bay and New Stuyahok respectively. However, the number of jobs per capita is highest in Goodnews Bay with .19, compared to Quinhagak with .13, Togiak with .12, and New Stuyahok with .10. Although Togiak has the third lowest number of jobs per capita., it has a very large number of seasonal jobs associated with commercial fishing (i.e. cannery work and work for other processors who operate locally). Togiak has more seasonal employment opportunities than do the other communities.

Table 51 indicates that most of the local wage jobs in each of the communities are positions with the city, school system, village corporation, and state and federal governments. Aside from seasonal

TABLE 50. WAGE EMPLOYMENT BY COMMUNITY.

Community	Full-time	Part-time[a]	Total	Per Capita
Quinhagak	44	13	57	.13
Goodnews Bay	22	16	38	.19
Togiak	40	23	63	.12
New Stuyahok	16	18	34	.10

[a]Less than 25 hours weekly.

TABLE 51. SOURCE OF EMPLOYMENT BY COMMUNITY.

	City		Village Corp.		School		St./Fed.		Other	
Community	Ft	Pt	Ft	Pt	Ft	Pt	Ft	Pt	Ft	Pt
Quinhagak	13	4	7	0	19	1	5	4	0	4
Goodnews Bay	4	7	5	2	13	0	1	3	0	4
Togiak	14	6	8	0	10	3	8	5	0	9
New Stuyahok	2	7	2	4	8	2	4	4	0	1

employment, there are very few positions funded by private, outside interests. In Togiak, for instance, apart from seasonal business activities associated with the local fishery, no private business infrastructure has been developed other than that of local family-owned retail stores and village corporation ventures. The private family stores are exactly that, locally developed entrepreneurial activities organized on the basis of kinship or domestic group 'membership. In summary, wage positions are staffed by local residents and controlled by local organizations which, in turn, are administered by local residents. As shown below, the local control over wage positions has implications for the potential compatibility of subsistence and wage activities.

The major exception to this pattern is the local school system, which employs a large number of persons, pays the highest overall wages, and provides steady and relatively secure employment. Teaching positions are principally held by non-local staff, although a few originally non-local teachers have married into the community. The remaining jobs, which are mostly full-time including the aides and other personnel, are mainly staffed by local residents, most of whom are women. However, local residents' perceive the teaching positions as a local resource, and many of the younger people are persuaded to attend college by their parents so that they can become eligible for local teaching positions. Currently, there are seven or eight Togiak women working. on a college degree. It is clear, then, that local staffing and local control of employment resources are a community objective.

Although seasonal cannery employment in Bristol Bay provided income in the past to many Kuskokwim and Bristol Bay villagers, canneries no

longer employ large numbers of residents from the study communities nor from other regional villages. Most residents, as noted previously, participate in the fishery as captain or crew. Who , then, works at the Bristol Bay canneries? In 1983, Togiak Fish, the oldest cannery in Togiak Bay and owned and operated by Merubini of Japan, predominately employed individuals from areas other than Togiak. The highest percentage of their personnel originated from urban areas of Alaska or urban areas of the contiguous United States. Only nine women from Togiak were employed by the cannery by the start of the sockeye salmon run in the bay. On the other hand, during June 1983 the Kachemak Seafood cannery, located in Togiak, employed 30 to 40 residents of Togiak, mostly male and female youths. Previous patterns are not known, as the owner was killed in an airplane crash in 1982. The village corporation entered into a joint venture with Bonanza Seafoods of Anchorage for the 1983 season and leased the Kachemak facility from the estate. The village corporation is considering opening its own buying and processing facility for the 1984 season. An interesting point between the two canneries is that Togiak paid a higher wage than Bonanza Seafoods and provided board and room with access to the cannery store. Yet, the only persons to work for Togiak Fish were the women who had worked there seasonally for many years. The others preferred to stay in Togiak and work for the local cannery operation.

Goodnews Bay appears to reflect a similar pattern of preference for local over non-local wage work. Few seek employment at the Platinum mine, which is located about 11 miles from Goodnews Bay near the community of Platinum. It is non-locally owned and operated with most of

the labor recruited from urban Alaska and other United States cities. The common reason given by Goodnews Bay residents for not working in the mine is that there is a requirement to live at the mine for summer work season. The evidence suggests that the least desirable employment is non-local, owned by outsiders, and staffed by non-local personnel. Both Togiak Fish and the Platinum mine share these characteristics. A locally dominated work force and local control of the organization of work appear to increase the desirability of an employment opportunity to the local resident.

The degree of flexibility in work schedule is an important feature of local wage employment. Local jobs have the least flexible hours and require year-round occupancy tend to be held by adult women. Positions such as city administrator, postal clerk, health aide, and accounting clerk are full-time, year-round -jobs which are held by women in each of the communities. The school positions, which are less flexible when school is in session, are held in the majority by women. On the other hand, the positions held by men tend to be more flexible in terms of scheduled hours. Also, these positions are often not year-round employment. In Togiak, most positions associated with the city and corporation are vacated during the summer as is the school staff. This means that there is only a maintenance crew working throughout the summer months. This also appears to be the case for New Stuyahok, where most of the residents leave during the months of June and July for fish camp and commercial fishing. Quinhagak, on the other hand, retains more than just a maintenance crew during summer months. Reportedly there is some

concern for not leaving positions vacated during commercial fishing or other seasonal activities.

There appears to be a great variability between communities in the scheduling of jobs over the seasons. In Togiak and New Stuyahok there are a large number of part-time jobs. In addition most jobs are scheduled for only nine or ten months. Even state-funded jobs such as the Village Public Security Officer (VPSO) in Togiak are not typically year-round. Both VPSOs in Togiak take the summer off, as do three village policemen, in order to commercial fish. They are replaced temporarily by a local resident who has married into the community, does not commercially fish, and has previous experience in security employment. The Togiak pattern illustrates an important feature of many technical jobs in the villages -- that is, there is always someone available to fill a vacancy, at least temporarily. For instance, maintenance men, mechanics, administrators, secretaries, police officers, school staff, health aides, and utilities employees all have alternates or substitutes in their absence. This flexibility is an important feature of the local organization of work in these communities not found in non-local employment.

Although a similar backup system is found in Goodnews Bay and Quinhagak, they have a different schedule of work. There the employment schedule is geared for 12 months rather than for the 9- to 10-month pattern of Togiak and New Stuyahok. One factor promoting a 12-month work pattern in Quinhagak is that many of those who hold jobs do not hold fishing permits and so do not request absences during the fishing season. Figure 36 indicates that there is a significant relationship

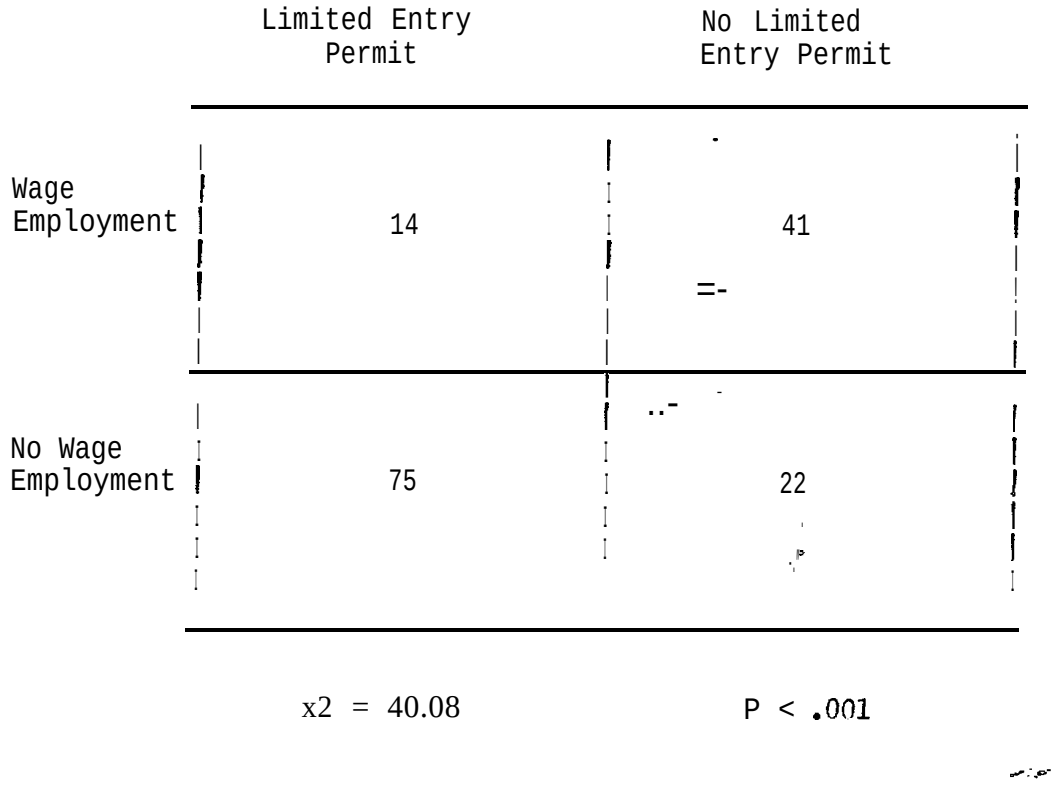


Fig. 36. Relationship of wage employment and commercial fishing (Limited Entry Permit) among household heads and household members with jobs, Quinhagak, 1983.

between holding a wage job and not owning a commercial permit. This pattern does not appear to hold in the other three communities. Another factor promoting a 12-month work year in Quinhagak and Goodnews Bay is the commercial fishing schedule of 12-hour periods twice a week from 6 p.m. to 6 a.m. This schedule allows a person with a commercial permit to fish at night and hold a daytime job concurrently. In Togiak and New Stuyahok, commercial fishing is open 24 hours a day, so many fishermen request summer leaves of absences from wage employment in order to fish.

In summary, scheduling, which is often the most incompatible feature of wage employment in relation to subsistence activities, tends to be worked out in the communities by developing scheduling flexibility in wage positions through recognition of the importance of other activities. This flexibility is achieved in part by providing backup assistance, especially for critical jobs. Such alternate and substitute positions are structured into a system of employment. The alternate positions are often named and have designated personnel. Less critical occupations do not have backup assistance nor are they filled throughout the year. Because the communities as a whole recognize the importance of other activities, including, but not limited to, subsistence harvesting, commercial fishing, visiting, and attending rituals, a flexibility is built into employment conditions not found in comparable jobs in the private or governmental sector outside of the study communities. Given these features of employment in the study communities, the following will isolate the strategies used to ensure participation in subsistence as producer and/or consumer.

HOUSEHOLD STRATEGIES IN CASES OF WAGE EMPLOYMENT

The five case households engaged solely in wage employment for generating cash reveal substantial differences among themselves in the level of participation in subsistence-related activities (see Appendix A and Table 52). The case from Goodnews Bay (Case 2) is an interesting one. The household consists of a female head who lives alone with a young child and has neither the time nor the technology to pursue subsistence resources at any productive level. As her job is relatively inflexible, the allocation of her time becomes a critical factor. Given the composition of the household, a mother and young child, they are not in a position to divide domestic, wage, and subsistence tasks so that the household can participate in all three sectors. In addition, she does not have the necessary technology, such as a boat, motor, and fishing gear, to harvest subsistence resources. It is doubtful that she and her son could adequately survive on her salary alone given the normal expenses of households in rural Alaska. In this case, the head relies principally on a married brother and his household for subsistence foods. A linkage with at least one other household is a common pattern for the cases in all the study communities. This feature will be discussed later in the chapter.

The case from Quinhagak (Case 1, Table 52) reflects a low participation in subsistence production but high levels of consumption. The main issue in this case is one of allocation of time,. The job held by the young household head is relatively demanding in terms of" skills

TABLE 52. COMPARISON OF CASE HOUSEHOLDS' COMPOSITION, TECHNOLOGY, STRUCTURES, AND SUBSISTENCE HARVEST BY SOURCES OF INCOME.

Source of Income	Community	Composition[a]	Number of Adults[d]	Technology[h]	Structures[c]	Fishing Permits BB	Fishing Permits KB	Total Subsistence Harvest (Lbs.)	Total Lbs./Hhld. Member
Wage									
Case 1	Quinhagak	NF-5	2	3	0			1,219	208
Case 2	Goodnews Bay	PF-2	1	0	0			0	0
Case 3	Togiak	NF-7	4	4+	1			7,760	1,110
Case 4	New Stuyahok	EF-7	6	2	0			2,714	350
Simple Commodity Production (High)									
Case 5	Quinhagak	NF-7	4	6-t-	3	1	1	7,247	1,035
Case 6	Goodnews Bay	NF-6	5	4+	1	1	3	NA	
Case 7	Togiak	EF-8	7	7+	5	4	-	6,522	893
Case 8	New Stuyahok	NF-10	5	5-1-	6+	1		10,086	917
Simple Commodity Production (Low)									
Case 9	Quinhagak	NF-3	2	3	0		1	6,237	3,079
Case 10	Goodnews Bay	PF-2	2	2	3+		1	NA	
Case 11	Togiak	EF-8	7	4+	5	1		6,221	731
Case 12	New Stuyahok	EF-4	3	4+	7-i-	1		4,093	1,169

TABLE 52. -- CONTINUED

Source of Income	Community	Composition[a]	Number of Adults[d]	Technology[b]	Structures[c]	Fishing Permits BB	Fishing Permits KB	Total Subsistence Harvest (Lbs.)	Total Lbs./Hhld. Member
Mixed Wage and Simple Commodity Production									
Case 13	Quinhagak	NF-6	5	5+	5+	-	2	9,018	1,503
Case 14	Goodnews Bay	EF-6	5	5+	4	1	3	NA	
Case 15	Togiak	EF-13	12	4+	6	2	-	5,626	458
Case 16	New Stuyahok	NF-6	4	2	5	1	-	5,740	957
Limited Earned Income									
Case 17	Quinhagak	PF-4	3	1	0			504	126
Case 18	Goodnews Bay	S- 1	1	0	1			0	0
Case 19	Togiak	C- 2	2	1	6+	-	-	2,204	1,102
Case 20	New Stuyahok	NF-6	2	2	0		-	1,812	453

[a]NF=nuclear family; EF=extended family; PF=one-parent family; S=alone; and C=couple; in addition, the numbers following indicate household size, thus NF-6=a nuclear family of 6 members.

[b]The numbers indicate the number of types of technology and the + sign notes that there are duplications of the type. Thus, a person with one aluminum boat, one snowmachine and two three-wheelers would receive a rating of "3+."

[c]The same pattern is followed as in technology: one cache, two drying racks, and three sheds would be rated as "3+."

[d]Adults are those persons over the age of 16.

and time requirements. The job has one of the most inflexible schedules of all positions in the community. Although he had lived outside of Quinhagak for quite a few years, the head has returned to his home to live and hopefully acquire a commercial fishing permit. His family is young, so that only he and his wife are producers at the household level. His capital equipment includes a boat and motor, snowmachine, and an all-terrain vehicle. This indicates that he has sufficient equipment to fully engage in subsistence production. In order to harvest subsistence resources, he has had to stay close to the village in case of a crises related to his job. By remaining close to the community, he cannot devote large amounts of time to subsistence pursuits. This means that the resources he harvests are limited mainly to fish close to the community, which do not require substantial travel or harvest effort. Further, the head's principal time for conducting subsistence activities is on Saturday, since the Moravians at Quinhagak do not normally hunt or fish on Sunday. Yet, he and his family consume a large variety of subsistence resources over the year, which the head receives from numerous households in the community. Most of the households providing such foods are close kinsmen, such as parents, siblings, and in-laws. This case household consumes a much broader variety of subsistence resources than the head harvests.

The principal strategies employed in this household where employment conditions are rather inflexible is to hunt and fish only short distances from the community. Such activities are limited to weekends and after working hours. Thus, large blocks of time are not taken and hence participation in subsistence production is limited. However,

members of this household live primarily on subsistence foods because they are interwoven into a distribution network of kinsmen. In return, this household provides assistance or reciprocates in some other way. This suggests that working relatively inflexible work schedules is possible for this household in part due to the presence of a support system such as a distribution network. In fact, inflexible work schedules are generally rare in each of the communities. Such positions are the exception rather than the rule.

Togiak and New Stuyahok cases (Cases 3 and 4 respectively, Table 52) represent households which derive monetary incomes mainly from wage employment and which also produce high levels of subsistence resources. The salmon catch for Case 4 was unavailable, because this household was one among a number of households which subsistence fished together and stored the harvest in a common cache at another house. If the catch were included, the total subsistence production of Case 4 would be greater by a few thousand pounds. Both households produce a wide variety of subsistence resources at high volume. The Togiak household depicted in Case 3 is composed of a couple with their children, the oldest of whom just completed high school. The wife and two daughters work seasonally at the local cannery for a little more than a month. The husband has a wage-paying job which requires specialized skills. Although the hours are flexible, he remains constantly on call in case of emergencies. The job is for 12 months, since 'demand on the equipment is constant through the year. Thus, he is in a similar situation to that of Case 1 (Quinhagak); yet, subsistence production in Case 3 is very high. The household head earned a good salary from

the position. In addition, he worked during summer of 1983 at a local construction job. The previous year he fished commercially during the summer. Thus, the cash income for Case 3 is above the median earnings for Togiak households.

As can be seen in Table 52 and Appendix A, Case 3 has a considerable amount of production technology but no processing and storage facilities except for a freezer. In fact, they process and store most of their subsistence foods using the wife's parents' facilities (drying racks, smokehouses, caches). In turn, the husband provides the elderly parents-in-law with a broad variety of subsistence resources and other forms of assistance. Most of his hunting during the winter takes place on weekends or on absences from normal work days of a morning, an afternoon, or a day's duration. He is able to schedule most of his work in such a way that small blocks of time are possible. In the spring and fall he takes off large blocks of time, from a few days to a week or more, to travel long distances to hunt and fish. While gone on such treks, he has a member of his family, usually his wife, monitor the equipment on his job and make the appropriate adjustments while he is gone. In fact, while he commercial fished last season, his wife monitored the equipment during the week and he made necessary repairs on the weekends during the fishing shut-down.

The strategies utilized by the Togiak case are typical of those who hold full-time wage employment occupations and pursue other activities. Generally, the household head hunts and fishes close to the community, which normally limits the variety of game that can be harvested. However, the head also makes periodic trips, extending from a

single day to a week or more, for hunting game such as caribou, moose, geese, and ducks, which can require extensive travel and time. This type of subsistence hunting is possible for full-time wage earners because family members are trained to perform minimum maintenance tasks in his absence, and the employer (in this case, the city), recognizes such activities as a legitimate excuse for short absences periodically. Finally, this household shares resources, technology, and labor with a large extended family composed of other households. The head's ability to participate in hunting and fishing irregularly is, to a large extent, due to the fact that others in the extended family also hunt and fish. He has confirmed that in periods when he is unable to leave the village due to equipment failure, his household would not go without subsistence foods, since there are other hunters and fishers in the extended family who would supply game and fish for all. The extended family, of which Case 3 is a part, has a common cache at the wife's parental household to which they all contribute and from which they draw their food needs.

The wage-earning case household from New Stuyahok (Case 4) displays a similar pattern to the Togiak and Quinhagak cases. The major difference in this household is that there is a considerable increase in the ratio of producers to consumers. There are six adults and only one child, while the mean number of adults in the other case households in the wage category is slightly over two adults. This ratio does have some effect on a household's ability to diversify and participate in a number of economic arenas. Case 4 illustrates this nicely. The mother and daughters work seasonally in the cannery earning over $6,000

for the season. One son commercially fishes in Togiak as a crew member earning a few thousand dollars each season and another is employed. In addition, the head is able to harvest certain subsistence resources, especially seal, while fishing. The eldest son has a full-time job and also helps related households harvest and process salmon during the summer. In short, the household in Case 4 has a relatively good income, generally above the median earnings for New Stuyahok fishermen in 1982, which is due to the large number of adults working at different jobs, seasonal and permanent.

This household has sufficient production technology but relies on other households for processing and storage facilities as well as for some subsistence resources. The case household harvests a large variety and volume of fish and game comparable to the Togiak case. It should be noted again that the total production of Case 4 would be larger by a few thousand pounds if the salmon catch were calculated in the total. Most of the hunting is conducted by the two sons, with the commercial fisherman spending more time in subsistence activities than the employed brother. Yet, the latter did harvest a substantial number of moose and caribou along with other resources. He was able to do this by hunting and fishing close to the village and periodically staying out for short periods. Caribou and moose range closer to the New Stuyahok compared to the other three communities where long distance travel is required. As with Case 3, the employed brother was able to fully participate in hunting and fishing because the city accepted this as a legitimate activity and allowed a flexible work schedule. Apparently no one complained when he was absent hunting for a few days.

Several strategies are illustrated by these four case households (Cases 1 to 4) for integrating wage employment into a schedule of subsistence fishing and hunting. One major strategy at the community level was to structure work in such a way that the time requirements of wage jobs and subsistence pursuits are compatible. City and village corporations in particular are commonly amenable to manipulations of work schedules, personnel, and responsibilities to fit subsistence activities as well as other traditional situations.

As discussed in Chapter 7, a second community strategy, particularly in Quinhagak and Togiak, is to develop monetary opportunities for local residents by pursuing external funding sources to develop the community infrastructure of services, which in turn provides permanent and temporary jobs. As previously discussed, the majority of jobs in the two communities are with the city and village corporations, which have attempted to develop and control the economic and service infrastructure.

One household or individual strategy was to accept short-term or seasonal wage employment, such as temporary construction projects or cannery work. Working only during a short season leaves large blocks of time to hunt and fish throughout the year. On the other hand, the permanent year-round jobs forced the scheduling of subsistence activities on weekends and other part-time arrangements. If a person was unable to conduct subsistence because of wage employment, illness, or some other limiting factor, a third strategy was to provide the support necessary for another person to harvest subsistence resources. The support could include equipment, fuel, and other provisions for the

individual and that person's household. The Togiak household (Case 3) is a nice illustration of this strategy. The household head of Case 3 often supported one or more hunters in other households of the extended family with fuel and other equipment. These relatives hunted large game and seals which were shared and consumed by all of the households in the extended family. This occurred particularly on occasions where work demands became critical and the head was unable to participate during an important hunting season.

At the level of the household, a number of social and demographic factors become important referents for strategies of these cases. All of the wage-working households developed strategies that took other households into consideration. This is an important feature, for it indicates that neither the household nor the individual can be viewed as making decisions as if they were isolated from other households or individuals. The organization of work, property relations, and consumption entails relationships that expand beyond the household. This point is nicely illustrated by each of the case wage-employment households. They were each dependent upon at least one or more other households for various types of subsistence technology, labor, and assistance. Additionally, each of the case households were dependent on one or more households for some production and processing of subsistence foods. Therefore, their decision-making was, in part, based on a set of relationships that was not isomorphic with household membership.

Another factor which influenced decision-making in the wage-employment households is the demographic composition of households. The factors of sex, age, number of adults, and the ratio of producers to

consumers are important considerations for developing strategy. In the Goodnews Bay case (Case 2), an unmarried female with child is not capable of both working full-time and conducting subsistence activities at an adequate level simultaneously. Working, nurturing, and household maintenance are time demanding activities. Moreover, it has long been established that the mother/child household is not functional unless it is part of a larger network which provides assistance or unless there are agencies or institutions available to take on the role of surrogate parents (Winch 1978). In the Goodnews Bay case household, the mother/child household was aligned with at least one other household for receiving subsistence products as well as for other forms of assistance such as child care and transportation.

A final point is that the cases show that wage employment as an activity does not automatically mean the end to or a severe reduction of subsistence activities by household members. There is no singular simple relationship between wage employment and participation in subsistence activities in the four cases.

HOUSEHOLD STRATEGIES IN CASES OF SIMPLE COMMODITY PRODUCTION (HIGH INCOME)

As described in Chapter 7, simple commodity production is the small-scale production of goods for sale on non-local markets. Principally, this includes commercial salmon and herring fishing, trapping furbearers, and cottage crafts. The latter two types generate small amounts of cash compared to other monetary sources. Commercial fishing

is the single largest source of income contributing over 50 percent of total income for each community. Simple commodity production entails different social relations of production and distribution than does wage employment. In the study communities, the fisherman is self-employed and owns the means of production. Further, the fisherman controls production capital, labor, and, to some extent, the production effort in terms of hours worked within the legal framework of the fishery. Commercial fishing in these communities is highly seasonal and varies in length from a few weeks in New Stuyahok to a few months in Quinhagak and Goodnews Bay. Thus, the work structure of simple commodity production may have a different effect on participation in subsistence than does wage employment.

One general hypothesis is that the higher the proportion of cash income from simple commodity production from the sale of fish, furs, and handicrafts, the greater the total output and the broader the range of subsistence resources harvested within a household. The assumption associated with this hypothesis is that being self-employed in a renewable resource industry is more compatible with fishing and hunting activities for subsistence producers. That is, commercial fishermen use the same equipment as subsistence producers, their work is highly seasonal, both can be done simultaneously, opportunistic hunting and fishing is possible, and both activities require a similar background and set of skills. Further, commercial fishing and trapping provide the opportunity to create a surplus supply of subsistence resources which can be shared, thereby supporting more traditional values of distribution and property relations.

An additional question arises at a more general theoretical level. Since the constraints imposed by the state on the number of participants in the Bristol Bay and Kuskokwim Bay fisheries, are the most successful fishermen gaining an economic advantage over fellow villagers which is leading to a new system of production relations? That is, are the owners of the means of production becoming separated from a class of laborers who do not own commercial permits? The question that follows then is whether it is the case that simple commodity production, as a type of economic activity, is a transitional stage between the traditional domestic mode and the capitalist mode of production.

The following discussion compares the case household representing the most successful fishermen with fishermen who earn lower incomes. It examines whether differential income levels from simple commodity production affect the extent of subsistence participation. Are high income earners more or less involved in subsistence production and consumption? Are they equally involved in sharing and exchange relationships with other households? The case households can be used to examine these issues.

The case households of high income fishermen (Cases 5 to 8, Appendix A, and Table 52) fall within the top ten percent of household incomes in their respective communities. In examining these case households, Table 52 shows that they are uniformly high producers of subsistence resources, have a considerable investment in subsistence technology, have more than one commercial fishing permit (except Case 8), and average 5.25 adults per household. As is discussed below, the case

households in the mixed wage and simple commodity production category is the other group which displays this cluster of characteristics.

Case 5, Quinhagak (see Appendix A and Table 52), illustrates two characteristics of relatively wealthy commercial fishing case households : high output in subsistence production and extensive distribution to other households of subsistence production. During the study year, this case household harvested over l,OOO-pounds per household member of dressed fish and game. Portions of this harvest were distributed to at least 15 other households during the study year, including the household head's elderly parents. Thus , not only was the volume of fish and game harvested in Case 5 very large, but it was distributed broadly in the community.

Production at this level was possible for several reasons. The household head has large blocks of time free for such pursuits because commercial fishing is a seasonal occupation. There are four adults in the household who are involved in subsistence production, including one son who commercially fishes. Finally, this case household displays a considerable investment in subsistence equipment and. facilities for processing and storing game and fish. Therefore, this case household is in a very good position for participation in subsistence-related activities and for developing high volume harvests and distributions of food products,

The Goodnews Bay case household (Case 6, Table 52) is similar to that of Quinhagak with some minor variations. For instance, this household has four commercial fishing permits. But more interesting is the fact that this household is the core of a larger extended family.

A number of daughters have married and are living in separate households and still coordinate their subsistence activities with the case household. This points to a third factor commonly related to high subsistence productivity: each of the case households are mature families in which some members are married and dwelling in other households, yet remain a part of the production and consumption unit. As shown in Case 6, households of the extended family have purchased some of their own subsistence equipment, but also maintain access to other member households' equipment should the need arise.

The Togiak case (Case 7, Table 52) is similar in pattern to the other cases. It has multiple commercial fishing permits, a large inventory of subsistence equipment and structures, and a large number of adults. However, this case illustrates that the number of adults in a household may be large, but subsistence output comparatively low. In the Togiak case, the eldest five children are daughters, one of whom is married. There is only one son who has just turned 18 years old. Subsistence harvests of marine and land mammals may be higher if the household had more adult sons. Most of the subsistence hunting is done by the male head. Nevertheless, he is able to produce a substantial harvest due to the large blocks of free time available to him.

Finally, the New Stuyahok case household (Case 8) is particularly interesting in that it is a relatively self-contained production and consumption unit. It is not attached in any formal sense to a well-defined network of exchange within an extended family. This household is at the end of its reproduction cycle and nearing the point where members will marry and leave the household. The household head and his

sons do most of the hunting, while the wife and non-commercial fishing members harvest subsistence salmon at their camp at Lewis Point. This pattern illustrates the division of labor developed among members "of a large, mature household. Even though this household is not part of a larger, multi-household domestic' group, it still shares its subsistence harvest with other households. The sharing pattern, however, appears to be based upon such fundamentals as friendship and need and secondarily on kinship. The exchanges are personal and not based upon membership in a familial group. This point is important and contrastive with Cases 5 and 6 in which sharing was, in part, based upon co-membership in an extended family.

The cases (5 to 8) of high income commercial fishing households display five important features: (1) each case household showed a high productivity in fishing and hunting for subsistence purposes; (2) each of the case households has made an extensive investment in subsistence technology, equipment, and structures; (3) each household had multiple permits, with a mean of 1.75 permits per household; (4) each household was engaged in a distribution network in which subsistence resources. were given to other less productive households based upon co-membership in an extended family unit; and (5) each of the case households displayed a large number of adults, 5.25 per household, indicating that they were beyond the reproductive phase of family development. In returning to some of the questions posed at onset, in these case households the traditional patterns of sharing and investment in subsistence are continuing in association with high monetary incomes.

With the exception of New Stuyahok, the high income case households have two or more commercial fishing permits within the household. This means that there is more than a single fisherman contributing to the total household income, although the income is typically controlled by the person who earns it. It was pointed out in the Togiak case (see Appendix A) that a person controlled the money he or she earned unless the household required it or a household member had an emergency. In each of the case households, individual incomes ranged above and below the mean for fishermen in their respective communities; collectively they generate a very high income for the household as a unit.

Is a class structure forming on the basis of access to commercial fishing? Can a defacto class emerge based on a household's control of multiple permits? One important point in this regard is that although holding multiple commercial permits gives a household a comparative advantage in capacity to generate income in the short-term, wealth in the household decreases from the dispersion of permit owners at marriage or household partition. As the founding couple transfer their permits to offspring, grandchildren, or someone else, the household structure and its wealth changes, perhaps, to resemble that of Togiak case household 19 discussed below under limited earned income (see Table 52, Appendix A). Thus, there would have to be in place social mechanisms, which would support the development of a full class structure, which are not in evidence currently since family wealth and title is dispersed generationally. Exogamous marriages, which take owners of permits out of the community, also work against wealth accumulation. In the case of New Stuyahok, approximately two permits have left the community as

a result of out-migration after marriage (see Chapter 6). Therefore, the social mechanisms which may encourage the development of class structure based on the hoarding of commercial permits are currently absent. They include restricted rules of inheritance, strict rules of mate selection, fairly well-defined rules of post-marital residence, and internal limitations on access to technology and resources based on specific kinship criteria.

Among the cases of high income simple commodity producers, subsistence resources are not only distributed among kinsmen, but also to non-kinsmen. For instance Case 8 (New Stuyahok) and Case 5 (Quinhagak) produce not only for kinsmen, but also simply for those households that are in need. This suggests an important value which contrasts with an acquisitive value. In structural terms, givers are superior to receivers, and hence there is more prestige in giving than receiving. To establish equality is to reciprocate. In the study communities we find that the wealthier households (Cases 3, 5, 6, 7, 8, and others) are involved in extensive networks involving prestations. Minimally, this indicates support for community values related to sharing with others, but it may also indicate a path to prestige. It also hinders the development of a class structure that has intergenerational continuity. The indication is that theoretically, at least, each household has is nadir and zenith in terms of prestige and wealth, which is in part a function of the developmental cycle of domestic groups. Differential opportunities develop depending on the structure and composition of the domestic unit. This point will be elaborated subsequently in the chapter.

HOUSEHOLD STRATEGIES OF SIMPLE COMMODITY PRODUCTION (LOW INCOME)

Whereas the case households in the high income group reflected families which had completed the expansion phase of their development, the low income cases of simple commodity producers (Cases 9 to 12, Table 52, Appendix A) seem to be at either the end of the dispersion phase or in the position of just establishing a family. The dispersion phase occurs when children are no longer co-resident because of marriage or because they have left home on a permanent basis for other reasons. This means that these case households (Cases 9 to 12) have either lost productive members and are now at a low level of production and consumption, or that they are newly established families beginning to expand through reproduction. In the latter cases, they too are at a low level of production and consumption because of limited needs and a degree of continuing dependence on the natal household. The only case household that does not fit this pattern is the Togiak case (Case 15). However, the father in this household recently retired from commercial fishing and transferred his permit to his 18-year-old son. Further, two of the resident daughters and their children are only summer residents in the household, since one is in college and the other is married. This indicates that the Togiak case household was in the dispersion phase of the family cycle during the study period and thus fits the general description.

In terms of subsistence production, there is a high degree of variability among the case households due more to household composition

than to income variables. The New Stuyahok household (Case 12) is composed of an elderly couple who are no longer active in hunting as in the past primarily because of age. As a consequence, the husband and wife no longer produce a wide variety of subsistence resources. However, they consume a very broad range of subsistence resources, which they receive from their married children who live in neighboring households. Thus, their own subsistence production is more limited than in the past, but their participation in subsistence resource use remains at a high level. "In this case, the measurement of subsistence production would be more accurate if the input of the five or so households which share the common cache were included, since the couple of the case household control the flow of goods to and from the cache.

At the other extreme is the young Quinhagak household (Case 9), which is just beginning to grow in size beyond the couple which established it. As an active hunter and fisherman, the male head produces a high volume of subsistence resources, which he shares with numerous households within and outside the community if harvests are excessive for the needs of his own family. One other household, a widowed in-law, is dependent upon him for support. In comparison to the cases in the high income category, this case produces more subsistence products by volume if measured by household composition. However, this is not always the best index, because at least one other household is dependent upon the case household. Although the head of this household did not smoke or dry fish because his wife did not have the time, reportedly due to child care, he was able to get some smoked fish from his wife's aunt where he often ate and provided support.

The situation of the Goodnews Bay case (Case 10) reflects a pattern of subsistence and income activities similar to that of the Quinhagak case. However, the Goodnews Bay household has a larger labor supply on which to draw. Additionally, there is a clear division of labor by sex. The female head and her daughter, who resides outside of the household, harvest and process subsistence salmon, while the son fishes commercially. During the rest of the year the son hunts and fishes with married siblings and other relatives with whom this household shares subsistence resources. This household has dispersed its former members among other households; yet it has remained active in subsistence production, primarily because it has a young adult male as a member who can hunt and fish.

The Togiak case (Case 11) also represents a stage of dispersion in which family members are leaving. The male head is more or less retired from commercial fishing, but he and his son engage in subsistence fishing and hunting. They are very productive, taking a broad range of resources. There is a division of labor which is not atypical; the head fishes for consumption during the summer accompanied hy his stepmother from a dependent household, who processes the fish. His wife and daughters work in the cannery to earn wages, while his son commercially fishes for the family. During the remainder of the year, both the son and the father are engaged in subsistence activities separately and together, harvesting large quantities of resources, which are often given away or split between households. Finally, there is a substantial investment in subsistence technology in the form of snowmachines, boats, and motors.

These cases suggest that one important difference between high and low income households in regard to subsistence participation may be related to household composition and structure. That is, the input and output of subsistence resources between high and low income fishermen is, in part, a function of household composition, in that some low income fishermen produce at lower rates because they have fewer dependents and also because more subsistence resources are being contributed from offspring who reside outside the household, especially in Cases 10 and 12. Even more critically, often the household may not be the proper unit of measurement to determine level of participation or production. Thus, in some cases the household is co-extensive with production and consumption, but in many cases it is not. Moreover, property relations, access to technology and capital, and strategies for maximizing utility are not restricted to household membership, but rather are extended to a wider network of kinsmen which is referred to as the "domestic group." It is this unit which should be taken into account in examining the subsistence input and output of resources.

HOUSEHOLD STRATEGIES IN CASES OF MIXED EMPLOYMENT AND SIMPLE COMMODITY PRODUCTION

In the study communities, many households were found to have multiple sources of income. In some cases, one member may have more than one source concurrently or sequentially, or there may be a division in the household in which some members hold wage jobs and others fish, or various combinations of the above. It might be expected that persons

who were active in wage employment and commercial fishing might perform subsistence hunting and fishing differently than those who were only involved in wage employment or only conducting commercial fishing. It might be expected that participation in subsistence activities may decrease the more a household member becomes involved in earning a monetary income. The case studies (Cases 13 to 16, Table 52, Appendix A) were intended to provide such a comparison and address such questions.

The case households represent families which are beyond the phase of expansion by birth, except for the New Stuyahok case (Case 16), and most of these households has either married children and/or grandchildren. Thus, these households primarily have a labor force composed of adults of both sexes to conduct a full range of subsistence activities. Each of the households has more than one fishing permit, except for the New Stuyahok case. Consequently, each household earns a very good income as a unit. Further, each household has at least one part-time wage job held by a member. Thus, each of the case households has adequate sources of income which rival, if not excel, those of households with a single major source. In fact, the houses, related structures, and technology are parallel to those held by high income fishermen (see Table 52).

Each of the households is extremely active in subsistence activities. The lowest producer per household member is the Togiak case (Case 15). Although the total subsistence output is high in quality, it is not high relative to household size. Discussion of this case will be instructive in terms of strategy and patterns. The household head and the second oldest son hold Bristol Bay drift permits. The

former also has a full-time job with the school district, which means that he is free during the summer months. In the spring, rather than commercially kelping or fishing for sac roe as his one son does, the head hunts birds and sea mammals. He is renowned for his successful bird hunting. After the red run in July, the head quits commercial fishing to harvest subsistence resources, this time upriver around Togiak Lake. During the winter months he takes occasional time off, leaving a son as his job replacement, and traps, caribou hunts near New Stuyahok, and pursues other game. Aside from these larger blocks of time, he also goes out occasionally on weekends. Most of the ice fishing is done by women in the household. In conjunction with the head's resource harvest activities, he has one son and a son-in-law who hunt and fish, providing a broad variety of subsistence resources.

By dividing his time during the summer break, the head is able to take advantage of both commercial fishing and subsistence pursuits. During the school year he can call upon family members to fill in while he pursues subsistence resources. Finally, other family members contribute to the household income by commercially fishing and participating in subsistence activities. As a large family unit, they are able to successfully integrate multiple sources of income into a schedule for hunting and fishing. The relatively low amount of resources harvested per household member is not unrelated to the fact that married offspring in the village also contribute to the common cache.

The cases from Quinhagak (Case 13) and Goodnews Bay (Case 14) reflect similar patterns, except there are fewer adults in the households. Each of the households is well equipped for subsistence production,

which is very high and rivals that of the high income fishermen. It is important to note that these two households as well as the other two cases are tied to other households for purposes of production and distribution. Each is part of a larger domestic group which is composed of a number of households.

The New Stuyahok case (Case 16) is important in that it adds one additional factor which is often not considered in discussions of strategies. This household head is not only engaged in commercial fishing and subsistence pursuits, but he also has a skilled position in the community. In fact, it is a noticed inconvenience if he is absent for more than half a day at a time, although he does leave for salmon fishing. Therefore, much of his subsistence activity is confined to areas close to the community. He does not harvest a broad range of resources, but he does consume a broad range of subsistence resources. These resources are obtained from his parents' cache, to which he contributes and shares, and from people who realize that he is unable to hunt and fish as he had in the past due to demands of his job. Thus, the villagers are aware of the "sacrifices" he makes for their benefit and they reciprocate with gifts of subsistence foods. This is a clear example of the community supporting a member who sacrifices for the benefit of the group. However, he relies on a common cache of a larger domestic group of which his household is a member.

HOUSEHOLD STRATEGIES OF CASES OF LIMITED EARNED INCOME

These final set of cases (Cases 17 to 20, Table 52, Appendix A) represent households which have little or no earned monetary income. They also have little if any involvement in the market sector. Most of these householde' primary source of income was some type of transfer payment. Does this limited access to cash affect patterns of subsistence activities of household members? The cases in this category nicely illustrate a number of outcomes for households which lose members; in which members become ill, handicapped, or aged; and or those which have, for other reasons, a rough time earning a living.

Three of the case households are composed of elderly people and the fourth is a young family. In the case of Quinhagak (Case 17), family members are recent residents in the community. In addition, some of the members are handicapped. The only technology they have is a snowmachine. The primary source of income is transfer payments, although one son in his 50s has attempted to crew on a commercial fishing boat. Subsistence participation is narrowly limited largely to fish. However, this household receives subsistence foods from a number of households. This also appears to be a regular pattern in Togiak and other communities where those in need will receive foods from those who have a surplus or can harvest more when needed.

On the other hand, the household in Goodnews Bay (Case 18) is composed of an elderly widow who receives transfer payments, However, she has three married offspring in the community who support her. She processes her own food. This is an example of offspring supporting an

aged parent. Assistance to the elderly appears to be a long-standing institution in these communities.

The Togiak case (Case 19) represents a situation in which all of the children have married and reside in another dwelling or community. The old couple remain as heads of a large domestic group composed, in this case, of five other households, There have been no marriages of the grandchildren to date, while the youngest son recently had his first child. As noted below, this fact had a bearing on the timing of his separation from the larger domestic group. Finally, the couple receives a form of transfer payments.

In contrast to the other households, the couple participates limitedly in subsistence. In fact, the wife does nearly all the traditional processing of fish and game for all the households in the larger extended family group, while the husband harvests most of the salmon in the summer with one or more of his grandsons. The common cache is kept at the grandparents house and they control the distribution of its contents. The fact that the parents harvest and prepare much of the traditional foods for the larger family frees their sons and sons-in-law as well as their wives to pursue commercial activities during the summer. This strategy is employed by other domestic groups in Togiak and provides opportunity for participation in short-term employment opportunities for some members and commercial fishing opportunities for others.

Finally the New Stuyahok case (Case 20) represents a situation in which the young family is not doing well in terms of earned income, but are relatively successful in subsistence harvest activities. The

household does not have adequate technology to meet its subsistence needs. The members use the equipment of close relatives in addition to spending large blocks of time repairing their own. This household represents a clear case of a young family which is dependent upon other kinsmen for food and equipment. The members have limited monetary resources, derived mainly from transfer payments. However, they are tied to one of the most productive households in New Stuyahok. Perhaps this is similar to Chayanov's observation that a percentage of households in all communities under the domestic mode of production fail and must be supported by those who produce the community surplus (see Sahlins 1972).

From the foregoing discussion, there does not appear to be any direct, simple relationship between level of income and participation in subsistence activities. Table52 shows that both high and low income fishermen are very active in subsistence production. Further, there is evidence that persons with very low incomes are not only active producers but often consume a broader variety of subsistence products than they have harvested. The Togiak case (Case 19) under the "'Limited Earned Income" category on Table 52 is one in which an elderly couple with very little income actively pursues subsistence resources within their capability. In this case, participation is restricted by physical limitations and not by low income. The point is that income is important for households and often provides the way to acquire the technological means for subsistence production. Yet, it is not the independent variable underlying level of participation in subsistence activities. Data from this study indicate that it

is impossible to predict the nature and level of involvement in subsistence from income information alone. Other factors must be taken into consideration.

If the key variable is not income, then, it has been hypothesized that the source of income must be the independent variable. Again, from simply examining the source of income, it is not possible to predict the nature and level of subsistence participation. Yet there is good evidence from the preceding discussion and data from Table 52 that simple commodity producers do, on the whole, actively pursue subsistence resources, while those involved primarily in earning a wage income or with limited incomes from transfer payments and other sources demonstrate greater variability in levels of resource harvest. In the wage income cases, there are numerous factors which influence the actor's decisions and level of participation in subsistence. Such factors include work schedules, flexibility of work schedules, available technology, and other considerations.

It is noteworthy that those engaged in simple commodity production, high and low incomes, and mixed wage/simple commodity production have a full complement of subsistence technology (a rating of three would include boat, snowmachine, and an all-terrain vehicle) plus duplications, and most of them have adequate subsistence structures necessary for processing fish and game. Yet, there are exceptions, such as the young couple in Quinhagak who fishes commercially, has an adequate technology, but uses the subsistence structures of another household. A similar condition exists in the high income fishing household of Goodnews Bay, where processing and storage facilities are shared with

other households. It would appear that high income is, in large part, invested in subsistence technology, but the building of subsistence processing and storage facilities is strictly a social action. That is, it is a function of social conditions which occur in and between households. Wealth does not bear directly on the timing and type of facility constructed. For example, the Case 19 household in Togiak (Table 52) consists of an elderly couple who has very little income. Yet they have numerous subsistence structures which are used by other interlined households. The latter include two households with fishing permits, whose earnings are substantially above the median income for Togiak in 1982. Further, these households, along with one other, are very high producers of subsistence products. This means that processing and storage facilities for subsistence products, as well as structures such as the steambath, are not adequate indicators of a specific household's participation in subsistence or other traditional activities.

Finally, levels of income coupled with type of occupation do not appear to be accurate indicators of a household's participation in subsistence activities. Although the case households which have the highest earnings are also extremely active in subsistence activities, there are households with relatively small incomes which are extremely active. This is important for a test of the hypothesis outlined at the beginning of the chapter. High income households, whether from simple commodity production, wage employment, or a mixture of the two, are on the whole very active producers of subsistence resources. All of the cases support this observation. Further, those households which commercially fish, regardless of level of earnings, are more

involved than some of those which do not commercially fish. Yet this only indicates the households which are likely to be engaged in subsistence activities. It does not indicate the households which will actually hunt and fish for subsistence resources.

Household structure, which refers primarily to the pattern of household size and composition, is not an adequate indicator of the level or nature of subsistence participation for any given household. A case in point is the Togiak household (Case 15), which has a mixed income of wage employment and commercial fishing. There are 13 members in this extended family, but only 1 is a grandchild, The youngest child is 19 and the oldest is about 35 years of age. The oldest five children are males. Thus the household has a large labor supply and a large body of hunters. Yet, only the household head and two other sons consistently hunt and fish for the family. This means that a several members are not engaged in subsistence or other income generating activities. Neither size of a household nor its composition is an accurate indicator of level of participation in subsistence or commercial enterprises. Yet, if a household is under-supplied with producers of the appropriate age and sex, it will not be in a position to engage in many varied activities. For instance, the Goodnews Bay case household (Case 2, Table 52), which has only wage income, consists of a mother and a child. The head of this household simply does not have the time to do more than work and care for her child in addition to other household tasks. One would not expect a household with such composition to be active in subsistence in addition to earning a wage

income, rearing a child, and performing household tasks. Most such households are dependent upon one or more other households for various types of support.

HOUSEHOLD STRUCTURE AND DOMESTIC ORGANIZATION

One of the more common patterns among the case households regardless of income source or level of income was that each was involved with one or more households in a network which indicated cooperation, sharing, and mutual support. The pattern did not appear to be random or ad hoc at the household level, and it was clearly institutionalized at the level of social system. Each of the households developed their strategies and made their individual decisions with other households in mind. This has been clearly demonstrated in the above discussion. This means, then, that households do not develop strategies nor make decisions as if they were isolated from all other households. Rather, in these complex arrangements, the actions of one household may be influenced both by the interests and actions of other households within this complex and by conditions as a whole. This is an important point in that the household, or the "independent nuclear family," and the price-market institution have been the major focus of macroeconomic research in both industrial and pre-industrial American society (see Easterlin 1978a, 1978b; Levine 1977; Schultz 1974). This focus and the associated methodology of extensive surveys of randomly selected households tend to minimize the degree of significant interaction among households. The study communities clearly demonstrate that the

proper focus for an economic study is not simply the household, since most households develop strategies and make economic decisions which bear a complementary relationship to one or more other households. The cooperative patterns among households in the study communities are not comparable to those of urban Alaska and require a different technique for research.

This raises a final point concerning the structure of the household. There is a second feature to household structure which is often neglected by most research. That is, households go through developmental changes in size and composition through time. This is due to the fact that all households will experience complex but regular sequences of changes in membership. These changes are in part necessitated by birth, death, and marriage, as well as by long-term and seasonal changes in resources and their associated activities. However, they are shaped by a variety of sociocultural f-actors, including membership rules, allocation of resources, and strategies concerned with economic management. These factors include the choice of productive activities, the allocation of tasks, the choice between consumption and investment, the allocation of resources, and others. This means that patterns of household development are connected with regular shifts in the ratio between consumers and producers, which affect both their productive capacity and their consumptive needs. Changes in patterned sequences of membership are termed developmental cycles, and it is thought that different sociocultural systems tend to be characterized by different developmental cycles (see Fortes 1958, 1978; Laslett 1972).

It is important to note that mere residence is not the only or even major index of membership in a household domestic group. Thus, persons who reside in one house may share membership with other households, creating a large domestic group. Households are usually defined by co-residence by the U.S. Bureau of the Census. However, such a narrow definition assumes a particular mode of domestic organization for rural communities, which is not indicated by data on production and consumption as well as by property relations and the like. In the study communities, membership appears to focus on a common cache, which is filled with subsistence products processed by females. Thus, a domestic unit can be coterminous with a single co-residential unit (i.e. a household or nuclear family) or it may include more than one co-residential unit. The following case taken from Togiak will best illustrate the pattern. The domestic group, in this case, is composed of six residence groups (commonly classified as "households" by the U.S. Bureau of the Census). It is diagramed in Figure 37.

Each of the married couples resides in an independent dwelling, often eats independently, works independently, but participates in subsistence activities together. The women in particular process subsistence resources together, which are harvested by the men both individually and collectively. The oldest couple, who live alone together, have all the drying racks, smokehouses, caches, and even the sweatbath and other structures and subsistence technology. Thus, whoever harvests subsistence resources will bring them to the elderly parents' house for processing. Occasionally, the hunter or fisherman upon returning will give away portions of the harvest to a friend or

Key: M male
F female
= marriage
| descent
siblingship
/ deceased

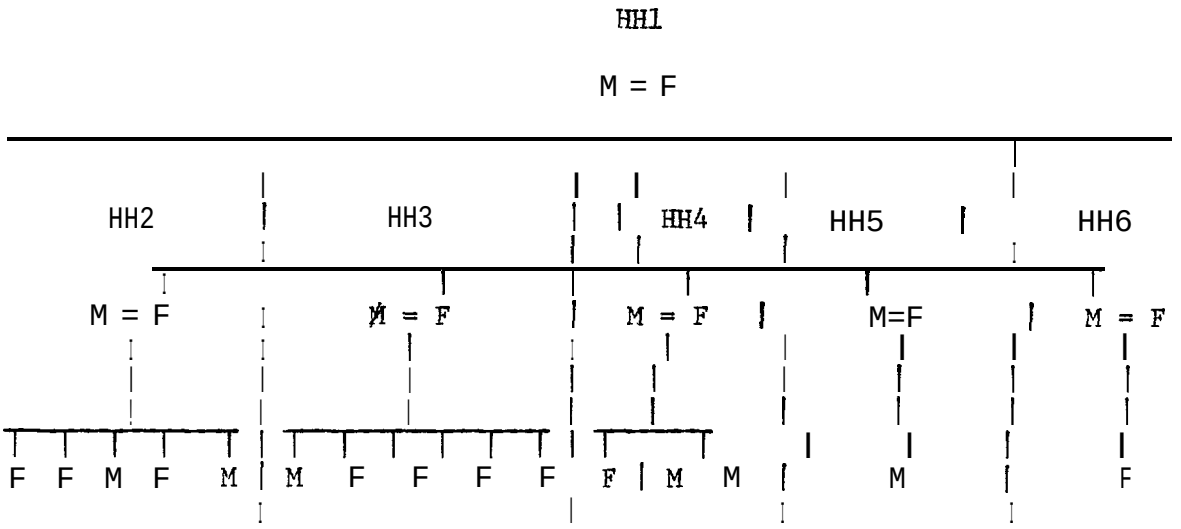


Fig. 37. Composition of a domestic group, Togiak.

relative, but not after it has been processed. After the subsistence product has been prepared, it enters into a different set of property relations. In effect, it becomes the joint property of the group, but is under the final authority of the elderly female who was in charge of the processing. The variation in this pattern is not clear, but it appears to be a relatively general pattern that holds for most cases.

Each household in the group is free to draw on this cache of foods and each household contributes to it within group members' expectations. A young wife with child is not expected to contribute even to the processing portion of subsistence activities; yet she consumes freely. In this example, two of the households do not participate at all in

production, but they do provide fuel and other forms of support for those who do. Additionally, the women and children in one case provide labor during processing. Importantly, not all households are expected to contribute evenly given perceived differential abilities and objectives. In the above example, two households are engaged in full-time wage employment y-ear-round; one commercial fishes and one engages in seasonal work, while the elderly couple is largely-retired. The commercial fisherman and one of the full-time wage employment households are the major source of subsistence resources other than salmon. The elderly parents provide most of the salmon from their set nets during the summer season.

Members also share in the technology, equipment, and tools which other 'members may have purchased. This includes boats, motors, fishing gear, hunting gear, and the like. If one boat has fuel and the other does not, a member would not hesitate to take another member's boat or gas or both. Property, although individually purchased, is often treated as if it were communal. It appears to be a well-accepted pattern which stands in stark contrast to the concept of private property characteristic of western political economies.

Finally, there are two married children (a daughter and a son) of the elderly couple not represented in the group, as they have married out of the community. The son may move back next year. He was just married and there. seems to be a pattern for a newlywed male to spend some time in the community from which the wife originated. From all indications, he and his bride would be incorporated into the group.

The case clearly indicates the difficulty of isolating the appropriate unit for purposes of measuring the impact of wage employment, subsistence participation, and the like. In time this unit will be broken up into much smaller units, each attempting to develop into the form in which they are now found. It appears that an extended family or domestic group, which has" a number of families composing its membership, will endure only as long as the founding couple lives. They rarely last longer than three generations. In fact, four generational domestic groups are not common in any of the communities. Most families began to break-off full participation in a larger domestic unit when their children begin to marry and have their own children. Whatever the individual pattern is, it is clear that at some point the larger domestic groups begins to dissolve or fragment, creating a number of domestic groups that are isomorphic with the residential unit or the census household. Yet, the pattern is to evolve into a large domestic . . unit composed of a number of households. Therefore, the number of nuclear households in a community does not necessarily indicate the structure or orientation of domestic life. In this regard, an economist observed that similar structural forms (e.g. the nuclear family) may be arrived at in a society by different routes, which may correspond to different economic circumstances and goals.

> It is true that the industrial proletarian grandmother may have lived in an "extended family" as did the peasant grandmother, but this apparent uniformity by no means indicates an identity of household structures. The "extended family" of the proletariat primarily functioned as a private institution to redistribute the poverty of the nuclear family by way of the kinship system. The extended family of the peasant on the other hand, served as an instrument for the conservation of property and the caring for the older members of the family. (Medick 1976:295)

In short, the domestic organization of the study communities resembles superficially the urban-industrial state only if one ignores the nature of household interaction. By focusing on residential units as the primary economic units, assessment of income, employment, and subsistence is often compromised. Thus, the relative ratio of household types within a community is not an accurate indicator of the system which shapes them.

INTERPERSONAL RELATIONS AND EXCHANGE

A second pattern of sharing which contrasts to the domestic group pattern is that which occurs between friends, neighbors, and kinsmen on an interpersonal basis. This pattern of giving subsistence foods and other gifts contrasts with the sharing obligations among domestic group members. Firstly, the item given is presented as a gift or as a prestation. It is physically presented to the recipient. Prior to this, the receiver had no basis for claim on the item. Thus, it contrasts to the domestic group pattern, in which all resources are basically held in common and membership in the group provides entitlement.

A second feature is that prestations are between persons and not based upon group membership. The gift to a friend or even kinsmen is based upon a dyadic relationship which has the individual as the primary referent. In contrast, individuals In a domestic group share, but the basis of the sharing is by reference to the group of which they are members. Thus, gifts of food which were given to the Quinhagak family (Case 17) were provided on the basis of friendship, neighborliness,

or even kinship. But it was done at the individual and personal level and not because they were co-members in a domestic group. In fact, sharing among domestic group members and prestations are often confused in the literature (see Wolfe 1981 for an example of one of the few attempts to dissect the pattern of sharing). They are not the same, being based on different referents and principles.

A final example of this pattern is taken from the diagramed domestic group (Figure 37). The eldest daughter's husband (who is a case household under the wage employment category) is an excellent hunter who harvests large amounts of game. Most of it is taken to the wife's parents for processing and storage. The other households have open access to such foods. Occasionally, before taking subsistence resources to be processed, his wife will put some up in their freezer for '*personal'" consumption. The other households will do the same from their own harvests. Prior to processing, the hunter or his wife will take pieces of game or fish and give them to friends, neighbors, and to one particular family which is in need of fish (a case nearly identical to that of Quinhagak's Case 17 and Goodnews Bayfs Case 18 female-headed households). These gifts of food are structured on dyadic relationships of friendship with the hunter's wife. Such a relationship could end abruptly when one fails to fulfill the expectation of the other. On the other hand, sharing among domestic group members is not subject to such vagaries. Personality and friendship are of secondary importance, whereas group properties are the primary factor which shapes the patterns.

To summarize, domestic group organization is not co-extensive with the household, but may include more than the household unit. Domestic groups go through developmental changes in size and composition through time. Given such changes, the particular structure of a domestic group is a manifestation of a phase in the developmental cycle which is characteristic of the society. Merely to note-the frequency of types of households or domestic arrangements is not a very accurate indicator of the underlying system.

The characteristic feature of domestic group membership in the study communities is common access to shared resources. This is often symbolized in a physical food cache, but because it is relational, it is not limited to that. Based on membership, the individual has access to the groups' resources for use with few restrictions. Non-members must make requests via the appropriate channels. The head of the group appear to be the original founding couple, who are its authority figures. The breaking up of the group generally occurs at the death of one or both of the founding elders. Thus, each household, at dispersion, becomes an independent domestic group. Thus "extended families" grow and disappear and will always form only a small percentage of the domestic units. Should the couple in the Togiak example die abruptly (see Figure 37), in a short period of time there would be five nuclear family households added to and increasing the frequency of nuclear family types in the community. Yet, the system shaping and providing direction would be oriented towards the extended family.

"Finally, the domestic group is not only an economic group, but it is also a social group. It is a socializing agent for the young.

Grandparents, as pointed out in the case households, are often the teacher of traditional skills and values to grandchildren. Members also eat together, visit, and interact frequently with the others. In short, they are "family," which contrasts with dyadic, personal networks of friends, partners, and the like. Exchange at this level involves other issues which are more individual in nature. Patterns of sharing and property relations should not be confused with dyadic, personal relations of exchange. They reflect two different orders of social relations.

CHAPTER 10

THE CULTURAL INTEGRATION OF CASH AND SUBSISTENCE: INTERNAL MECHANISMS OF CONTINUITY AND CHANGE

INTRODUCTION

The analysis of case households (Chapter 9) was designed to explore how households strategically integrated cash-generating and subsistence activities. In this context, it was found that households typically allied into production and consumption networks -- an organizational strategy creating domestic groups larger than a single household operating as economic units. Within and between members of a domestic unit there was a cooperative pooling of resources and labor for the mutual benefit of the entire unit. Production capital purchased (and nominally owned) by one member was shared in production by other members of the group. High producing households were allied with low producing households, such that subsistence products produced in large quantities by members of one household flowed out to support members of other households. The domestic group represented a pool of labor for productive tasks, which could be drawn upon for subsistence production, commercial fish production, and wage employment. The domestic unit seemed to undergo a natural developmental cycle through reproduction, dispersal (budding), and segmentation phases.

Domestic units commonly combined commercial fishing, wage employment, and subsistence fishing and hunting activities. Cash-generating

and subsistence activities were made compatible by flexibly structuring work schedules. Simple commodity production provided the greatest flexibility, but even wage employment schedules were adjusted to fit seasonal subsistence and commercial fishing time demands. Complementary work roles were created between domestic group members, such as between women and men (women holding the wage positions while men fished and hunted). Non-local employment which separated workers from subsistence opportunities was avoided, especially when local employment options were available.

This chapter examines the integration of cash and subsistence at a different level, that of the community and region. It explores what implications this blend of subsistence and cash at the domestic level has for the larger community and regional structures. In particular, the chapter examines the continuity and change within socioeconomic systems based on the theory of culture change advanced in Chapter 2. According to this theory, one might predict that the incorporation of commercial fishing and wage employment is creating Inherent contradictions in the organization of production at the community level. These emergent contradictions between the subsistence sector and commercial-wage sector may be pushing the system away from an egalitarian domestic mode toward a stratified industrial-capital mode and, concurrently, away from subsistence production and distribution.

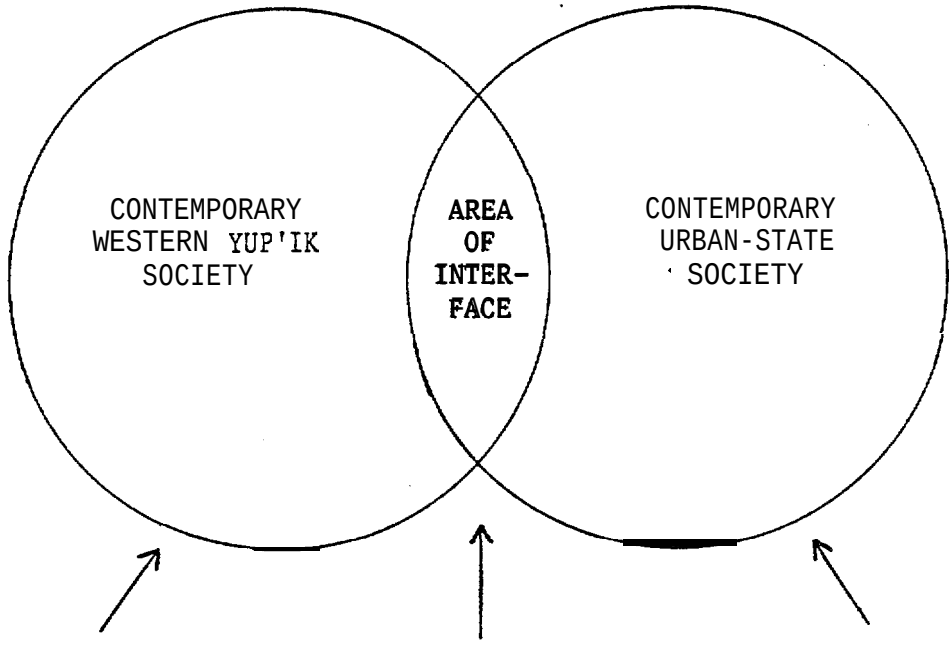
It is useful to analyze the sources of economic change as emerging from two places: mechanisms internal to the local socioeconomic system, and external forces interacting with the local system. In the first instance, change comes about through internal, self-generating

processes. In the latter case, change is catalyzed by external factors. This chapter focuses on internal mechanisms of continuity and change, while in Chapter 11, external forces are examined.

MODE OF PRODUCTION: CLASSIFYING THE STUDY COMMUNITIES

Some of the transformations which have occurred in the sociocultural systems of the four study communities become apparent when attempting to categorize their modes of production. The organization of production has some characteristics of the "domestic mode," the '*petty commodity mode,'" and the "industrial-capital mode." Schematically, the contemporary Yup'ik economy appears as a unique mix of economic spheres -- subsistence food extraction, commercial food extraction, and government-financed service provision -- a "mixed economy" (Figure 38).

This combination of economic spheres has developed through a complex historical interplay between local and outside sociocultural systems. The local Yup'ik society is an intact, functioning social system which interfaces with the society of the urban-state in certain economic arenas, as depicted in Figure 38. It is in the area of interface that new economic organizational forms are emerging. The central interface is the export-import market of particular products. Over the last 20 years or so, local communities have developed the capacity to produce commercial salmon and to a lesser extent, herring roe for sale on export markets. Previous to this, furs were the primary commercial export product. These economic enterprises are labeled "simple



MAJOR MODE. OF PRODUCTION	Domestic Mode of Production	Simple Commodity Mode of Production; Marginal Wage Forms	Industrial-Capital Mode of Production
MAJOR PRODUCTION SPHERES	Subsistence Fishing, Hunting, Trapping, Gathering	Commercial Fishing and Trapping; State-Federal-Local Wage Employment; Transfer Payments	Wage Employment in Primary, Secondary, Tertiary Sectors
MAJOR EXCHANGE CHANNELS	Local Traditional Distribution and Exchange Networks	Export-Import Markets for Fish and Furs; Imported Technologies	International Markets for Goods and Commodities
MAJOR LAND AND TECHNOLOGY PROPERTY RELATIONS	Traditional 'Systems of Land Use and Occupancy: Open Access ; Small-Scale Technology Held by Domestic Groups	State-Federal-Local Regulated Fishing Areas; ANCSA-based Land Classifications and Private Property System	Western System of Property: Exclusive Access; Large-scale Technology Held by Corporate Structures

Fig. 38. The interface of contemporary Yup'ik society in western and southwestern Alaska with the exterior urban-state society as it relates to the political economy.

commodity production" in the figure. Whether this market-oriented form of production indicates that the economic organization of the local economy has been transformed into a "petty commodity mode" is discussed further below.

A second major area of production depicted in Figure 38 is fishing, hunting, trapping, and gathering for local use -- the subsistence sphere. The products of this economic enterprise rarely enter the outside economic system, and are confined to distribution and exchange within local networks. Although recognized as a legitimate use of resources, the use is not considered "income" by the outside urban-state society. It is a form of income-in-kind which is unreported, untaxed, and unrecognized as household earnings (such as for calculating income tax or welfare eligibility). The organization of this economic sphere, as discussed in Chapters 7 and 8, follows the domestic mode.

The third area of income generation is through local wage employment, predominately service provision through the state-federal-local government sectors. This economic sector also is depicted in the area of interface between the local and outside social systems, as the funding for local wage employment primarily derives from outside sources. It is labeled a "marginal wage form" in the figure. Again, whether this area of economic activity represents the initial stages of transformation toward an industrial-capital mode in which wages define the primary work relations is a question examined below.

The mixed economy has developed with the progressive linkage of the local community with the outside world economy. Economic centers of the outside urban-state have linked with western and southwestern

Alaska to extract resources, primarily fish resources during this century. From this frame of reference, these areas of Alaska are marginal in terms of being drawn into an expanding world economic network. Concurrently, the study communities have sought to increase their participation in these market networks. From the frame of reference of the local population, they are taking advantage of income-generating opportunities arising from the development of local extractive industries.

What is the consequence of this linkage? Is increasing participation in market and wage activities creating internal, self-generating transformations in the organization of the traditional economy? Are shifts occurring in the core sets of social relations organizing the economic system toward a "petty commodity" or "industrial capital" mode which may be less compatible with subsistence production and distribution?

CASH, SUBSISTENCE, AND EXCHANGE

One finding of this study is that increased levels of cash have not led to a demise of the traditional systems of subsistence production, distribution, and exchange in the study communities. Nowhere do the data from this study suggest that increasing cash wealth in itself is associated with diminished subsistence fishing and hunting activities or diminished subsistence distribution and exchange. In fact, there is some indication that the opposite seems to hold -- that is, that higher levels of cash income are often associated with higher

levels of subsistence production and exchange.

Each of the four study communities was shown to be intensively involved in subsistence production, even though their community income levels differed bya factor of two. Togiak, which was by far the wealthiest community the year of the study with an average earned household income of $36,361 (excluding transfer payments and dividends), exhibited a high use of subsistence products. Its seasonal round of activities and use of resources were almost indistinguishable from that of Quinhagak, one of the poorest communities with an average earned income of $15,938 per household in 1982. outputs of subsistence products from a sample of households from New Stuyahok (896 pounds per capita) seemed remarkably close to that of a household sample from Quinhagak (756 pounds per capita). New Stuyahok is the richest commercial fishing community, while Quinhagak is the poorest, yet the volume of subsistence outputs were similar. As previously discussed, the year of the study, New Stuyahok earnings were abnormally low due to the 1982 commercial fishing strike in the Bristol Bay district.

At the household level, it was shown that case households earning high incomes from simple commodity production or mixed wage-simple commodity production were also high producers and users of subsistence fish and game. This was explained by the fact that the same labor and capital resources used by the household to be successful in the commercial-wage sector were being used to be successful in the subsistence sector. Those households with high performance in the commercial-wage sector often had good personnel, stocks of equipment, and multiple commercial permits, factors of production which also were useful in

subsistence pursuits. For instance, highly productive case households usually had a relatively large work force of adults and adolescents, who contributed to both cash and subsistence outputs. Less productive case households had smaller workforces to draw upon (see Chapter 9).

Similarly, there were differences in the degree of capitalization between high producers and low producers. Table 53 shows the average number of equipment types and pieces of equipment held by case households. It suggests that among the case households, higher holdings of capital equipment were associated with greater levels of commercial-wage involvement. That is, the highest capital holdings occurred within the case households with the high income fishermen, followed by case households with members who combined commercial fishing and wage employment. The smallest capital holdings occurred within households which did not engage in commercial fishing or wage employment. Low income commercial fishing households and wage employed case households were intermediate. Thus we find in association large work forces, large capital equipment holdings, high cash productivity, and high subsistence productivity in the case households; the least productive case households had small work forces and small capital holdings.

Similarly, there were no data to support the idea that greater participation by a community in the commercial-wage sector is associated with a lower participation in traditional distribution and exchange networks. At the community level, similar rules for the disbursement , of subsistence resources were found in all four communities (Chapter 7 and 8). The high income community of Togiak showed patterns of distribution and exchange similar to the low income community of Quinhagak.

TABLE 53. EQUIPMENT HOLDINGS OF CASE HOUSEHOLDS, FOUR STUDY COMMUNITIES, BY OCCUPATIONAL CATEGORY, 1982.

	Average Types of Equipment per Household	Average Pieces of Equipment per Household
High Income, Simple Commodity Production	5.5	15.8
Mixed Wage Employment-Simple Commodity Production	4.0	10.3
Low Income, Simple Commodity Production	3.3	6.3
Wage Employment	2.3	5.0
Limited Earned Income	1.0	1.5

Extensive and stable kin-based distribution networks existed in each community and among household cases regardless of levels of cash income. Interestingly, each case household in the study, from the poorest to the richest, was found to be involved in a network of sharing that included other households (Chapter 9). Most sharing occurred on the basis of membership in a larger domestic group comprised of a number of households. That is, sharing occurred between members of multi-household, extended family groups. Additional forms of sharing occurred along networks of friends and more distant kin who were not co-members of a single domestic group.

Accordingly, amounts of cash wealth or community-wage participation at the community or household level in isolation imply little about the extent of subsistence production or exchange. There appears to be an additive or integrative relation between commercial-wage and subsistence pursuits. At the household and community levels, commercial and wage activities are added to, or integrated with, traditional subsistence production and distribution activities.

This additive quality is revealed in the household strategies. Highly productive case households commonly engaged concurrently in subsistence pursuits, commercial fishing, and wage employment. Each economic sector was treated as a potentially compatible source of income or income-in-kind. Household members commonly participated in each sector, combining activities in variegated serial schedules or as a composite of mutually complementary economic roles among household members. The data do not indicate a replacement of subsistence pursuits with commercial-wage pursuits; they indicate an overlay of

commercial-wage activities on top of existing subsistence patterns.

This understanding of current subsistence and commercial-wage relationships is a crucial one. At this point in time, the expanding linkage of the local and outside economies is creating a more differentiated system of production and exchange at the community-regional level (Fig. 38). That is, there are developing commercial spheres of production for salmon, herring roe, and furs which exist alongside the subsistence production of fish and game. Related to these developments is a wage sector, primarily in government and educational services. Likewise, a market exchange system is expanding, wherein commercially extracted food products are exported to outside markets in exchange for the importation of most non-food items. The market exchange system exists alongside a local distribution and exchange system for subsistence products, primarily in foodstuffs produced locally.

The system is becoming differentiated, and by-and-large the same people engage in all economic spheres. The different income sources (subsistence, commercial, wage) are drawn upon by all social segments. Thus, whereas there has been a trend toward differentiation in the local economy in terms of types of production opportunities, there has not occurred a concomitant differentiation in economic roles between social groups in the population. The emergent differentiation between subsistence, commercial, and wage forms has not been paralleled as yet by a structural differentiation in economic class based on earnings, occupational roles, or property ownership within the communities.

Will this structural differentiation eventually happen? Is this an expected trend in the economic system, and by what route might it

occur? Historical materialist theory predicts that particular internal forces will push toward the transformation of relatively egalitarian and open relations in production toward stratification into unequal production relations. With this transformation, segments of the population will be driven out of certain economic sectors. For segments of the population, traditional patterns of resource use can be expected to diminish with this social organizational transformation.

EMERGENT STRATIFICATION IN THE COMMERCIAL FISHERIES

In the study communities there appears to be a growing differentiation among individuals in terms of annual monetary incomes due to the expansion of the commercial fisheries, as illustrated by Figures 24, 25, and 26 in Chapter 6. This is seen most clearly by comparing the range of 1976 earnings with 1982 earnings: income ranges for commercial fishermen increased in Togiak ($38,500 to $91,800), Goodnews Bay ($5,966 to $15,455), and Quinhagak ($8,000 to $18,000 for Kuskokwim District fishermen). Thus, whereas $38,500 separated the lowest from the highest Togiak fisherman in 1976, $91,800 separated the lowest from the highest in 1982. New Stuyahok is the one anomaly, as the atypical 1982 earnings were diminished by a strike, as shown in Figure 23. With the expansion of the commercial fisheries in each community, the median income in the community has increased, but also the disparity between the low and high fishermen has increased. The economic benefits of an expanding commercial fishery are not being realized equally by all fishermen. Commercial fisheries development is creating greater

income inequalities among fishermen.

Is this emerging income differentiation among fishermen a precursor to an emergent stratified social system, signally a shift toward an industrial-capital mode? This may happen only if income differences are translatable into "structural'* and "functional" stratification in the social system which confer economic advantage to one group and not another in the community.

According to Sahlins (1958), named status differentiations in a social organization are signs of "structural stratification,"' and differential prestige, privilege, and power in areas of social action are signs of "functional stratification." Economic stratification occurs where named status positions are associated with differential privilege and control of production, distribution, and consumption. An egalitarian economic organization is one in which the attribution of prestige, privilege, and control over economic factors is based on age, sex, and personal characteristics only (which are universal principles of status allocation among social groups). In an egalitarian society, every individual has an equal chance to succeed at whatever status may open contingent on his age, sex, and personal characteristics. A stratified society develops when the attribution of prestige, privilege, and control over economic factors are fixed by social mechanisms such as inheritance, election, appointment, or membership in particular groups, classes, or castes.

As noted in Chapter 2, Kahn (1978) identified mechanisms through which income differences from commercial fishing (as are currently developing in the study communities) may be translated into a stratified

social order. In his view, commercialization of a local resource (like salmon) leads to an increasingly aggressive competition among progressively fragmented, independent producers, an organization he termed "petty commodity production." Technological elaboration and market control by more efficient producers eventually squeezes out the inefficient producers, who enter a non-producing class of laborers.

There are indicators that technological elaboration and increasing competition is occurring in the commercial fisheries, as predicted by this theory of change. As shown in Chapter 6, there has developed a technological continuum from simple to complex commercial salmon fishing gear among the four study communities, with Quinhagak at the simple and least costly end, New Stuyahok at the complex end, with Togiak and Goodnews Bay intermediate. New Stuyahok fishermen utilize a 32-foot class fleet; Togiak and Goodnews Bay primarily operate an intermediate size craft (24 to 26-foot class); Quinhagak uses a smaller 18 to 21-foot aluminum or wooden skiff.

It is important to note the forces which have pushed for an elaboration of commercial gear in certain communities: it is not competition among resident fishermen, but the direct competition for salmon resources by non-resident fishermen. New Stuyahok residents fish in the part of Bristol Bay where competition from '*outside" boats has been the greatest; Quinhagak residents fish in a district where competition with outside boats has been minimal; and Togiak-Goodnews Bay residents have experienced intermediate levels of competition. The level of competition has been directly related to the wealth potential of the fishery -- in the historically poorer fisheries of Togiak,

Goodnews Bay, and Quinhagak (smaller fish runs with more limited market structure due to geographic isolation), there has been less entry by " outside fishers and less development of equipment. The acquisition of larger and more expensive fishing technology by New Stuyahok fishermen is in response to the need to compete with that part of the fleet which is financed from Seattle, San Francisco, and other outside ports. Thus, competition by outside fishing boats in the salmon fisheries has stimulated technological elaboration in the local salmon fleet, a trend which gives advantage to fishers with larger sources of cash. If this trend were to continue, local fishermen might indeed be squeezed out of the fishery, as predicted by Kahn (1978).

Recognizing the futility of technological competition with outside fishers supported by urban-state credit institutions, local fishermen have responded politically to restrict unbridled competition by outside boats, working through the State Board of Fisheries. Gear restrictions have been instituted in the salmon fishery to protect local fishermen with more limited fiscal resources, such as limiting boat length at 32 feet. Also, ceilings on the number of boats operating in the fishery have been created by the limited entry permit system.

What has resulted from this political attempt to control competition is a system of property relations for salmon, which is at a different level of socioeconomic organization than the domestic mode of production. The local salmon fishery has been converted from an egalitarian, open-access system to a stratified, restricted-access system. The system creates named status positions conferring differential privileges to resources among fishermen -- "permit holders" versus

*'non-permit holders;" "area registrants" versus '*non-area registrants." Second, there is applied a class structure with differential authority over regulation of production and enforcement. The Alaska Board of Fisheries formulates the rules of production, the Alaska Department of Fish and Game manages production processes, and the Alaska Department of Public Safety enforces regulations. The major principles underlying resources and property relations have changed from an egalitarian structure to a stratified structure. Open-access has changed to restricted-access. Local regulation among equivalent family units has changed to outside regulation by unequal, governmental agencies over local producers. These changes are noted in Figure 38.

The transformation to another level of sociocultural complexity has occurred in regards to commercial salmon fisheries. To date, this stratified organization has been primarily limited to this one area of production within the local economy. However, a similar evolution is occurring for the local herring resource at Togiak, Security Cove, and Goodnews Bay. Before the allowance of commercial sale of herring roe, the local subsistence herring fishery was regulated by internal, customary law. It was essentially unmonitored and unregulated by the urban-state. The fishery operated under open-access, egalitarian, and traditional domestic relations.

Currently, local fishermen find themselves in direct competition with an outside commercial fleet which has entered the area with its opening for commercial exploitation. Local participation has been relatively small, in large part because local gill netters cannot complete with the more heavily capitalized outside seine netters.

There has been a modest tooling up of herring equipment by Quinhagak fishermen, financed through the village profit corporation to increase local competitiveness. However to date this has been only marginally successful -- repayments on equipment loans have been uneven due to sporadic seasonal earnings.

The creation of the commercial herring fishery has lead to the application of a system of regulation, management, and enforcement for this resource by the state. Internal stratification has not been created as yet -- that is, there is no limited entry permit system and the fishery is open to all fishers, local and non-local. To politically control the level of competition by outside boats, local fishermen favor gear restrictions or restricted registration areas instead of limited entry permits. These preferred methods would preserve the open, egalitarian access to the herring resource for local fishermen compatible with the traditional domestic mode.

So far, stratification in relations of production is emerging in only parts of the community-regional economy. The stratified system pertains primarily to commercial salmon and is developing for commercial herring. The structural and functional signs of stratified production relations have not yet appeared for other resources taken for subsistence uses. Further, the source of the stratification appears to be due to increasing economic competition for local resources from outside producers and not from competition for resources among local fishers. Whether this evolutionary trend can be isolated to a few resources is an important question. Left alone without the pressure of outside competition, the local commercial fishery may not have evolved into a stratified, closed-access system.

INTERNAL INHIBITORS OF STRATIFICATION

There are mechanisms internal to the traditional sociocultural system, which work toward inhibiting the translation of income differentiation into a stratified social structure. These factors include the operation of economic leveling mechanisms, which spread personal wealth (in money, capital holdings, and labor potential) across larger social segments. In the traditional system, wealth is incorporated in such a way to preserve and enhance the egalitarian structure of production relations, while providing social prestige to the wealthy. These mechanisms are discussed below.

EXTENDED VERSUS ATOMIZEI) ECONOMIC UNITS

A characteristic feature of the domestic mode is that production and consumption of the society is primarily performed by domestic units larger than the individual or nuclear household. As noted in Chapter 2, theories of change posit a nucleation and fragmentation of the kinship-based social order as a system evolves from the domestic mode to an industrial-capital mode. Kinship groups for production and distribution atomize into a collectivity of functionally independent, nuclear households geared primarily for consumption. The family no longer is the production unit, nor does it control the means of production. Commitment of individuals is constricted to members of the immediate household, to which earnings accrue.

Evidence from all four communities, regardless of their differences

in income earnings, is that a change from extended kinship structures to nuclear households has not occurred. In the subsistence sector, many types of production were found to be conducted by members of extended kinship groups (Chapter 8). The analysis of subsistence salmon fishing revealed that in certain cases production groups drew members from a single household, in other cases from two or more households, probably associated in part with the developmental maturation of the family. As a parental household matured, married sons and daughters budded off, contributing labor and capital to the larger family for a time, and then becoming established as heads of their own growing unit. Another common type of production unit was formed through short-term partnership alliances between members of unrelated or distantly-related households. This commonly occurred for the production of caribou, freshwater fish, and seal. The proceeds were equally divided between the allied partners, and then distributed among the members of the extended domestic unit.

There was little indication that households heavily involved in cash-related activities reduced their involvement in subsistence production and distribution within kinship networks larger than their own household. Nor was there evidence that the study communities with higher average annual incomes (Togiak and New Stuyahok) showed more nucleation of households than communities with less income. The primary households which seemed to become consumption units only, and not production units, were households composed of elderly persons or persons residing alone and not physically active, such as sole unmarried young adults. Such households occasionally contributed labor toward

production, but more commonly received subsistence products from the households of close relatives such as married children or parents. The evidence did not suggest that increased cash-participation or income differentiation was associated with a change in the domestic group's function as economic units.

Given this social organization, it is interesting to note what happens to differential income earnings. Differential wealth is spread across social segments through four primary economic leveling mechanisms.

ECONOMIC LEVELERS

The first of the economic levelers are property rules. There is an absence of a pervasive principle of exclusive personal ownership and use of chattel, such as boats, motors, nets, gasoline, snowmachines, and other capital holdings. Cash earnings are usually treated as the personal holdings of the individual who earned them. This might encourage personal hoarding and accumulation. However, once cash is converted into equipment for use, others in the person's domestic group have access to the equipment when the need arises. A boat purchased by a member of one household will be borrowed and used by close relatives in another household.

This principle acts as a way to spread wealth in differential cash earnings across a group larger than the individual. In the case households in Appendix A, high income earners were found to invest in more duplicate and different types of equipment compared with low income

earners (Table 53). The store of equipment is drawn upon by members of other, lower income households who are closely related. As certain types of equipment typically have short life expectancies (especially snowmachines, outboard motors, and commercial nets), the wealth of a highly successful commercial fisherman or wage earner is soon dissipated in worn-out equipment. Individuals successful in the commercial-wage sector can usually be identified in the community as those with the biggest junk piles outside their houses.

A second economic leveler is the impelling ethical principle of giving and sharing. There is a strong cultural value placed on sharing with kinsmen; the giver is rewarded with prestige. Accumulation is its antithesis and creates enmity. The one who hoards is not looked upon favorably in the kin group. It would be difficult to live in these small communities tightly knit by kinship obligations and consistently breach this ethic of generosity and mutual aid. Within each community is manifested a strong preference for giving, especially among kinsmen and close friends. The enactment of this principle translates wealth into prestige by spreading it through the community in the forms of subsistence resources, equipment, support for unproductive households, and other gifts.

A third factor that mitigates against differential accumulation of capital is bilateral inheritance. Accumulations of capital holdings and other forms of wealth are broken up at each successive generation by the rule of partible inheritance. Capital is dissipated among different persons generationally. There are no internal mechanisms to keep wealth within more restricted and stable intergenerational groups

or economic classes.

This factor affects the disposition of commercial fishing permits. In each community, certain households were found to hold a disproportionate number of commercial fishing permits (Chapter 6). Typically, these households had astutely applied for multiple permits for spouses and children at the beginning of the limited entry permit system. Households with relatively higher earned incomes commonly were those with several commercial fishers. Buying and accumulating limited entry permits would be one route for the crystallization of social classes within the community. However, permits are heritable property and may be transformed and willed to other individuals. Bilateral inheritance rules will tend to break up the multiple permit holdings within a single household as parents transfer and will permits to sons and daughters, and as siblings mature and establish their own households. The wealth potential accruing from multiple permit holdings is dissipated with each new generation.

A final economic leveler is ecological. Fish and game resources which are the basis of the commercial and subsistence sectors tend to be highly mobile, variable in their geographic locations and numbers. Also, under the traditional property rights system, land and water have been open and held in usufruct by community members (see Chapter 7). The mobility of resources and the traditional property system pose barriers for segments of the population to gain an advantage over the resource through acquisition of land holdings. Within such a system, the primary way to secure control over resources is through capitalization of catchment techniques. As shown in the case households,

currently there are no forms of capital used by local fishers and hunters 'which are not affordable and accessible to most local social segments. Therefore, the primary routes to creating structural differences in access to resources are not monetary but political, such as through restructuring land use policies. Such political changes would derive through sources external to the local system, as is discussed in the next chapter.

The factors outlined and taken together work effectively as mechanisms for limiting differential control over resources. Left on its own, there appear to be few internal forces through which increasing monetary differences in the commercial fishery can transform the egalitarian organization of the domestic mode into a stratified industrial-capital mode. Increased levels of cash and cash opportunities through simple commodity production do not seem to create internally-generated transformations in the relations of production. 'The forces for transforming the economy into a stratified order derive from externally-generated political processes.

EMERGENT STRATIFICATION IN WAGE EMPLOYMENT

A second potential source for a structural stratification into occupational classes is the development of a wage sector separate from the domestic unit. Economic firms, such as corporations and governmental agencies, typically are divorced from family groups in the industrial-capital mode. Economic firms are usually constituted through impersonal principles of contract and function through complex divisions

of labor bifurcated into management and labor classes. The majority of people belong to the labor class, receiving compensation as wages. Differential control over resources are typically allocated along class lines.

The study communities were found to have developing, but still marginal, wage sectors. In 1982 the percentage of community households with members holding some form of wage employment, either alone or in conjunction with commercial fishing, was 46 percent (Quinhagak), 80 percent (Goodnews Bay), 51 percent (New Stuyahok), and 58 percent (Togiak) (Table 3). A relatively small number of households depended solely on income from wage employment (from 12 percent in Togiak to 18 percent in New Stuyahok). More commonly, wage employment and commercial fishing occurred together in a household. Of the study communities' aggregated household earned income in 1982, excluding transfer payments and dividends, the percentage contributed by wage employment was approximately 22 percent (Togiak), 36 percent (New Stuyahok), 47 percent (Quinhagak), and 48 percent (Goodnews Bay) (Tables 27 through 30).

The primary employer in each community was the school district, with the municipal government being the second largest employer (except in Togiak and New Stuyahok, where the school district and city employed comparable numbers). The school district offered by far the best and most consistent wages (see Chapter 5). City positions reflected the development of a service infrastructure within the communities. Village profit corporations also provided some employment, predominately associated with a general store and bulk fuel storage and provision.

Are there signs of an emerging structural and functional stratification in the organization of local work relations within the developing wage sector related to resource extraction? In the school-related jobs there are such signs, as a local class structure based on occupation and ethnicity has developed through the school system. As stated in Chapter 5, most full-time teaching positions were held by non-local whites. These teachers represented a distinct social-class in the communities: they usually lived in a separate cluster of quarters, socialized off-hours among themselves, and left the community during summer. Most did not consider themselves to be a permanent part of the community, and planned to leave after a short-term assignment.

The separateness of the teacher-class has not been structurally recognized in the subsistence sector, however. Teachers have felt free to fish and hunt in the community's catchment area, if they so choose. In fact, fishing and hunting during off-hours was a reason commonly given by teachers for the attraction of a rural position, and many had equipment for doing so. Thus, the separateness of this social class within the wage sector has not been extended to the subsistence sector by any formal action by the community, as by IRA council or city council resolution. The local community has sought to keep the subsistence system open to non-local teachers.

As mentioned in Chapter 5, teaching positions are viewed as a potential future source of employment for local residents. Young students express a desire to obtain teacher training. If local residents acquire these jobs, this "ethnic-occupational class may disappear in the future.

Aside from the teacher's positions, the custodial, cook, teacher's

assistant, and teacher's aide positions are disproportionately held by local women. Women held 14 of 20 positions in Quinhagak and 8 of 11 positions in Togiak. Thus, the school system is providing a source of employment to women. Such a trend holds the potential for allowing some women to separate themselves from traditional subsistence roles of processing and preparing fish and game. With a relatively large and secure income, women employed in the school district may be able to exist independently from traditional male-female dyads which were hased in part on complementary roles in subsistence production.

Although in certain cases this may he happening, the most common occurrence is for the woman's wage position to be a complementary role within the domestic unit's spectrum of economic activities. The money is used in support of other family members who participate more actively in subsistence pursuits. Rather than isolating the woman from a domestic network, wage employment is drawn into the mutually supportive mix of domestic activities. Women holding school positions commonly perform double duties -- wage employment by day and subsistence processing roles during nights, weekends, and summer breaks.

Similarly, the seeds of occupational class differentiation exist in other wage positions of the city and corporation. If persons holding wage employment choose to use the income to achieve independence from a domestic network by purchasing imported foods rather than by participating in its local procurement, then the developing wage sector may lead to the emergence of a non-subsistence wage class. However, the case households do not indicate this trend. Those persons holding wage positions also commonly participated in subsistence activities

and commercial fishing activities. City and village corporation employment allowed flexibility in daily hours, substitution, and seasonal absences to accommodate this household strategy. The data support that, given an opportunity, most of the wage-employed choose to combine wage employment with traditional subsistence activities.

To the extent that wage jobs tie a person to an inflexible schedule, there may develop two occupational classes, those who are free to hunt and fish and those who are less free. What may develop more strongly in the future is a differentiation of occupational roles, in which the money earned by a worker tied to an inflexible job is used to provide equipment support to a non-wage worker who fishes and hunts, the proceeds being shared among the two parties. If this form of occupational differentiation receives structural recognition, then a new occupational organization may arise.

The restrictions of the commercial salmon limited entry permit system may encourage such an occupational class formation. In Quinhagak the sentiment was expressed by some that first preference in hiring for local wage positions should be given to people without limited entry permits. This was viewed as a matter of fairness -- that is, the commercial fishers already had a source of monetary earnings, so additional income opportunities should be first offered to persons without permits. If this pattern became, widespread, stratification in the commercial fishing sector could result in pressuring the formation of parallel stratification in the wage sector. Currently, there was not that type of preferential hiring in Quinhagak, although persons with wage employment tended not to have commercial permits. This was

because women holding wage employment generally did not have commercial fishing permits, and some commercial fishers lost their summer wage positions due to job absences. In other study communities> permit holders were as likely to hold wage jobs as non-permit holders.

Beyond government-generated wage employment, there has not been a development of a local private business sector beyond a few small stores operated from homes and the village corporation stores. However, rising incomes from the commercial fisheries and the maturation of the village profit corporations might lead to the emergence of a private, entrepreneurial group. There is evidence of this in Togiak, the largest and wealthiest community during the year of the study. Togiak had the largest number of mom-and-pop stores, businesses operated from a person's home which usually functioned as specialized outlets for a product line like snowmachine parts or candy and soft drinks. Extra profits from a successful fishing year were at times invested in these home-front operations by enterprising residents. Togiak's village corporation had plans to develop permanent commercial fish storage and processing facilities run by the corporation and hiring local workers. One Togiak entrepreneur was building rental homes, using commercial fishing earnings. Another resident serviced boat motors and snowmachines out of a home-front garage. Thus , the most movement in the private and corporate business sector (albeit small) appeared in the community with a productive commercial fishery.

Up until now, the village profit corporations have primarily functioned as marketing and small loan institutions. The corporations? general stores, while profit enterprises, were started as much as

community services to reduce the costs of imported goods. Similarly, the corporations commonly subsidized fishermen and hunters by selling equipment to residents on flexible credit terms. Loans were without interest or with modest rates. Although set up to function as profit-making entities under an industrial-capital model, the village profit corporations have generally not operated in that manner as yet in the study communities.

It is instructive to see that the internal organization of private enterprises in the wage sector tend to follow the domestic mode model. The labor force tends to be drawn from kinsmen within the extended domestic group. The few small stores either have no paid employees or are family enterprises, hiring among relatives. In the commercial fishery, paid crew members were recruited through principles of kinship, and secondarily on attributes such as skill, dexterity, or investment capital. Crew members at Togiak were kinsmen, with few exceptions (Chapter 6). Further, crew shares in all four communities were substantially lower than prevailing rates in the Bristol Bay fishery. Outside boats in the Bristol Bay fishery drew crew from a labor pool in which shares were set by a supply-demand market; local residents paid more liberal shares influenced by kinship obligations. While a systematic analysis of village corporation and municipal employment was not performed, there are suggestions that hiring practices in these enterprises are also commonly influenced by kinship affiliation.

What this suggests is that the impersonal corporate structure of the urban-state economy has not taken hold in the study communities. Instead, the predominant mode of production is that of the traditional

domestic mode: extended family networks contributing capital and labor for relatively finite production goals. Investment in the business sector has been grafted upon this traditional organizational structure. The goal of business is to assist the more effective functioning of the domestic family economic unit.

CULTURAL INTEGRATION VERSUS TRANSFORMATION

There are at least two culture change models which may characterize the rate and process of change in the study communities -- a "gradual, cumulative changer' model and a "discontinuous transformation'" model. In the first model, innovative features (such as new commercial fisheries and wage opportunities) are functionally integrated into the previous organization and change is gradual and cumulative. There is a structured continuity in the organization and functioning of the socioeconomic sys tern. In the discontinuous transformation model, innovations create radical internal transformations in the organization of social relations of production and distribution. There results a shift to a different economic and sociopolitical type, and the reorganization is relatively discontinuous.

This chapter has argued that increasing levels of cash and cash activities in the study communities up to now have followed the gradual, cumulative change model and not the discontinuous transformation model. Cash and cash activities have been functionally integrated into the pre-existing, traditional socioeconomic organization. To a large extent this is because the core innovative feature of the commercial-wage

sector is the commercial salmon fishery, a form of simple commodity production with an organization which is extremely compatible with the domestic mode of production. The wealth generated through the fishery is used to support the traditional fishing and hunting system. The centrality of the commercial fishery as the primary link with the outside urban-state economy necessarily colors the reactions of the traditional subsistence system to the infusion of cash.

The culture change process resulting from the commercial fishery can be termed "integrative" in the sense that commercial activities have been incorporated into previous cultural patterns in a supportive manner. To a large extent, relations of production and distribution in both the local subsistence and export commercial sectors remain in a relatively egalitarian, open-access, domestic mode. Members of the community continue to enjoy access to labor, capital, and resources for subsistence production In such a context, the cash generated from the commercial-wage sector has been used to maintain subsistence fishing, hunting, and distribution.

Signs of incipient dislocations in this evolving, integrative system were noted. There were indicators of shifts away from an egalitarian structure to a stratified, non-egalitarian organization of economic relations in production. Such a stratified, non-egalitarian organization may be less compatible with traditional subsistence patterns. These shifts might characterize an emergent "'industrial-capital" mode in which cash generation might occur in association with a diminished subsistence sector. However, there are countervailing forces in the local system working to negate these effects of incipient

stratification.

A central question is whether the factors pushing the system toward a stratified, non-egalitarian organization are internal or external to the community and region. There appear to be few internal mechanisms identified in this chapter which would transform egalitarian relations into non-egalitarian relations regarding land, labor, and capital. In fact, economic levelers within the system tend to mitigate against stratification. However, certain external factors were identified which might push toward such a transformation, particularly the limited-entry permit structure imposed on the commercial salmon fishery and the western system of property ownership for land and resources. The ways these externally-generated political forces may penetrate the local system to move it toward a stratified, industrial-capital mode are discussed more fully in Chapter 11.

CHAPTER 11

CASH AND SUBSISTENCE IN SOCIOPOLITICAL CONTEXT: EXTERNAL FORCES OF CONTINUITY AND CHANGE

INTRODUCTION

Complement ing the previous chapter's focus on internal mechanisms of continuity and change, this chapter examines the factors external to the community and region which hold the potential for transforming the local economy away from subsistence fishing and hunting towards some other economic pattern. As Feit (1983) stated, hunting societies of the north are becoming less isolated and must increasingly relate to and respond to nation-state political and bureaucratic structures and to international economic structures. Minerals and hydroelectric development in Canada and Alaska have been major forces behind the penetration of traditional hunting and fishing socioeconomic systems by the sociopolitical actions of the outside urban-state. Opening up traditional subsistence territories to energy exploration and extraction has been an intermediate goal in the progressive development of the minerals industry in the north. The effects of the incorporation of cash into traditional subsistence systems can only be understood in relationship to the changes accompanying this push to industrialize the north.

This chapter argues that increasing cash and job opportunities in rural areas in and of themselves are not the transforming agents of fishing and hunting systems; they are only secondary accoutrements of

the industrialization process. Instead, it is the structural reorganization of land and resource rights and management policies which accompanies the minerals industry that presents the most potential for disruptive changes in subsistence-based economies of western and southwestern Alaska.

The central transformation which has the potential for radical alteration in traditional fishing and hunting practices is not the transformation of rural communities or rural residents from a cash-poor to a cash-endowed status. The more central transformation is from an open access resource system into a restricted access resource system. The major push of energy development in the north has led to the design and application of programs and policies pertaining to land, labor, and capital, which have the potential for imposing external barriers and disincentives for subsistence fishing and hunting. How these programs and policies operate to support or impede subsistence fishing and hunting activities is now a major issue.

In the area of the four study communities, the political and bureaucratic policies of the urban-state are playing primary roles in executing this transformation. A variety of state and federal programs are underway which directly or Indirectly function to convert traditional systems of land, labor, and capital relations into those of the industrial-capital mode, where land, labor, and capital are transformed into commodities reachable through market mechanisms.

Traditional land use and tenure systems, which provided open access to resources for all members of the hunting society, are under pressure of replacement by a complex land classification system infused with

special conditions of use and controlled from urban centers. Along with the introduced system of lands classification and property rights comes an application of a system of fish and game management. The system seeks to regulate the take of fish and wildlife by controlling access to hunting areas, types of technology utilized, seasons of hunting, and quantities taken.

In addition to these systems affecting land and resources, the relations of households to production capital are under pressure from the social welfare system. As will be discussed below, policies regarding eligibility for needs-based entitlements are creating economic disincentives to subsistence fishing and hunting. These mechanisms hold the potential for reorganizing the social relations of production in such a way as to create formidable barriers and disincentives to subsistence production and distribution.

On the other hand, systems of law, use rights, and policies related to land, resources, labor, and capital may be designed and applied in ways that uphold and encourage traditional economic systems. Programs and policies may be constructed which act as incentives to subsistence production and distribution. There are examples of external programs which function in this way in western Alaska, which are discussed below. A central question is which type of external forces will prevail -- those which restrict and discourage traditional subsistence economies, or those which support and encourage traditional socio-economic systems, local autonomy, and self-determination.

Three external forces of change influencing traditional subsistence systems in the four Study communities are discussed below:

(1) introduced systems of property rights to land and resources, which affect traditional open access systems; (2) resource management policies, which affect competition for fish and game and traditional methods and timing of harvests; and (3) social welfare policies, which affect ownership of production capital for subsistence. Each of these illustrates how external sociopolitical forces may affect the relations of production in the traditional subsistence system.

OPEN VERSUS RESTRICTED ACCESS RESOURCE SYSTEMS

The subsistence-based economies of Togiak, Quinhagak, Goodnews Bay, and New Stuyahok require access to a wide area of land and water in the yearly procurement of resources which support the society and economy. As discussed in Chapters 7 and 8, fishing and hunting activities cover a large catchment area, including coastal waters for sea mammals, salmon, and sea birds; river drainages for freshwater fish species, land mammals, and wood; and inland uplands for large and small game hunting. The economic systems of each community have adapted their complex seasonal pattern of activities to take advantage of the appearance of wildlife species in particular geographic areas. Over time, there has developed traditional areas of land and water recognized as the use areas, or territories, of communities and kinship groups. A system of customary law regarding land and resource use also has developed to regulate and guide access and use of these traditional areas.

Traditional systems of land use and occupancy still operate in the study area to guide the conduct of fishers and hunters. Up until

recently, there has been little attempt on the part of state or federal governments to document these systems of subsistence land use or to clarify their legal standing as systems of property or use rights. This is unlike the Canadian effort to document trapping areas and use them as a basis of resource management. . Little is known of the workings of traditional land use systems in Alaska beyond some of the general characteristics described in Chapters 7 and 8 of this report.

At least two aspects of the customary law concerning resource use are central to the operation of subsistence-based economies: open usufruct rights granted to members of the local group and the ability to regulate at the local level of kinship groups competition for resources by persons outside the local group. In the first case, as has been discussed in previous chapters, customary law recognizes certain geographic regions to be the traditional use areas of particular communities and families for fishing, hunting, trapping, and other subsistence activities. These areas appear to vary by species. Community use areas are usually open to access for subsistence harvesting to members of the local social group under the constraints of a few principles of kinship, residency, and proprietary use. In the traditional system, no titled estates exist which would exclude access to group members. For most resources, open access to hunting and fishing areas appears to be the rule.

In the second case, competition for local resources by persons outside the social group is regulated within the traditional system of 'kinship. Persons from other local communities do not regularly hunt or fish within the recognized use areas of a neighboring group without

first establishing links with the community through kinship or other mechanisms of alliance. As illustrated in earlier chapters, Togiak hunters gained access to caribou hunting areas near New Stuyahok by activating ties of kinship reinforced with gifts of seal oil and other items. Access by non-residents is thereby regulated by these mechanisms at the local level. Local control of traditional use areas is designed to guard against the over-exploitation of limited resources by the unrestricted access of outsiders. Thus, the traditional system of land use and occupancy functions in at least two ways -- it guarantees access to subsistence resources needed by local group members for their livelihood, and it provides a local mechanism for regulating competition for resources by non-local users.

The two functions performed by the traditional system in regulating resource use are currently under pressure from several outside quarters. In recent years there has been a move to introduce systems of property rights and resource management structures developed and controlled by governmental agencies representing the industrial-capital mode of the urban-state. The systems may negatively affect the subsistence economy to the extent that they undermine the traditional principle providing access to subsistence use areas and resources and to the extent that they decrease local participation in the control of competition by outsiders.

State and federal efforts to classify the lands of the study area into property categories of the industrial-capital mode of production is one major source of pressure against traditional land use systems. An assumption of the industrial-capital mode is that land

can be parcel led into estates exclusively owned and controlled by individuals, corporations, and representative government agencies. One function of the outside property system is to convert land and resources into commodities, which potentially can be reached through market channels for development, such as settlement entry and -minerals extraction. The property system of the industrial-capital mode allows for the acquisition of differential and exclusive rights to resources by individuals through lease, sale, and other ownership arrangements. In the study area a variety of land classes are emerging, including national fish and wildlife refuges, national wilderness areas, state game sanctuaries, unclassified public lands, Native corporation lands, private allotments, state lands, state and federal waters, and other private holdings.

Along with the classification system comes a complex jurisdictional web of laws and regulations regarding resources on the land, and in rivers and the sea. Directly pertaining to fish and game resources are wildlife management structures designed and applied by state and federal agencies. Indirectly related to fish and game are other state and federal structures designed to plan and regulate the use of newly classified lands for a variety of purposes -- minerals development, non-consumptive recreation, forestry, commercial fishing, hunting, settlement entry, and preservation, among others.

How traditional rights of access for fishing, hunting, and gathering and traditional rights to control outside access relate to the new land classifications and regulatory systems are evolving issues. Depending upon the type of land classification and types of alternative

uses, traditional subsistence rights of access and local control are differentially recognized and weighted in significance. What clearly emerges is that the egalitarian, locally controlled system is under pressure to change into a hierarchical, non-egalitarian system, which is controlled largely by persons outside of the local area. Under the imposed system, extended kinship groups and local communities no longer have direct linkages to their resources. Interposed between the domestic production unit and the resource is a socially-defined class of managers and policy makers, usually from an urban area, composed of biologists, resource managers, public officials, corporate board members, and other bureaucratic positions. Federal and state land classification and management programs bring about the conversion of locally autonomous, egalitarian property and resource management systems into a non-locally controlled, stratified property and resource management system. The property forms of the industrial-capital mode are being superimposed on the property forms of the domestic mode of production.

The residents of the study communities by and large are extremely uneasy about the push of the urban-state to classify and manage traditional use areas where they hunt, fish, trap, and gather. 'CO their minds, it is extremely unclear how traditional law and management systems fit into the outside system and what will happen to traditional subsistence practices once the external systems of property and resource management are in place. Local residents recognize that the external system alienates them from lands and resources traditionally important to them, in that the new system represents a loss of autonomy and control over the factors of production. Many residents expect the

system will function in a way to usurp traditional principles of open access to fishing and hunting areas and usurp local ability to control the activities of outsiders within traditional use areas. Accordingly, the introduction of property and resource management systems is viewed with suspicion, skepticism, and concern.

As discussed in Chapter 3, boundaries and jurisdictions exist primarily on paper and not on the landscape and minimally affect daily fishing and hunting activities. This is in large part because of the geographic isolation of the region from the activities of the urban-state. However, there have been some points of contact between the local system of land and resource management and the exogenous system at which the potential differences between the two have produced real effects. A few of these are recounted here to illustrate the interaction of the traditional and introduced systems.

The first pertains to the classification in the 1970s of Round Island into a State Game Sanctuary for walrus. Round Island lies about 35 miles southeast of Togiak and is part of the Walrus Island group. It is a traditional hunting area of residents of Togiak descended from the coastal communities of Old Togiak, Osviak, and Kalukluk Bay. The people of these latter communities were renowned sea mammal hunters, focusing their harvests on seal and walrus for local consumption and traditional trade with riverine and inland communities. As discussed in Chapter 3, the core population of Togiak is composed of the descendants of these sea mammal hunters. Round Island continues to be considered an important part of Togiak's traditional hunting territory.

The classification of Round Island as a sanctuary has restricted access to the island: no one can land without permission from the sanctuary 's managers. Togiak people do not mind the fact that the Island is restricted from visits by outsiders to protect the walrus. They do resent restrictions to locals who have traditionally been dependent on the Island for resources. The right of the government to restrict entry to local hunters and the discharge of firearms was legally challenged by Togiak, which led to the return of the management jurisdiction for walrus to the federal government from the state. Round Island has become a focus for Togiak's concern about the loss of local control over traditional subsistence areas implicit in the outside system of property and resource management. There have been confrontations between local residents and state officials over the exercise of their perceived right to use the island, and local public discussion continues concerning group civil disobedience to change the current situation.

A second example involves the commercial herring fisheries at Togiak Bay, Security Cove, and Goodnews Bay previously discussed in Chapters 6 and 10. The herring issue involves unrestricted access to outsiders and not the converse as in the Round Island case. Togiak Bay, Security Cove, and Goodnews Bay fall within the traditional use areas of the study communities. Under customary law, access to the areas by outsiders should be subject to some control by the local community. However, under the resource system of the urban-state, herring is recognized as a common property resource, owned and controlled by the State of Alaska for optimal public benefit. In the

application of these principles, the State Board of Fisheries has kept the bays open to non-local commercial fishermen. Local fishermen, who primarily operate small skiffs and drift nets, cannot compete with the outside fleet, which operates large boats and seine gear. Most of the value of the fishery has gone to non-local fishermen.

The study communities have responded by forming local fishermen's associations to lobby within the non-traditional system to influence regulations managing the fishery. Unsuccessful attempts have been made to restrict seine harvests to particular percentages of the total catch and to create a restricted area registration system which would favor local fishermen. Thus, local fishermen have been attempting to create regulations under the common property system which would serve the same function of the traditional system – to maintain local control of access to the resources of a traditional use area. 'I'his effort has been part of an organized program by several Bering Sea communities which has been partially successful. Restricted registration areas have been successfully obtained by the local herring fishermen for the Cape Romanzof and Norton Sound fisheries north of the study area.

A third case involves the increased recreational use of the Kanektok River. As discussed in Chapter 3, the Kanektok River falls within the traditional use areas of Quinhagak and Kwethluk. Salmon, char, and other resources important to Quinhagak live and spawn in the river. The past few years has seen a rapid increase in the number of recreational users floating the river from Kagati Lake to its middle reaches, and in the number of sport fishers in the lower portions of the river. Several fishing guides from the Dillingham and Anchorage

area are operating along the middle and upper river. Many sport fishers are beginning to fly into Quinhagak on mail and charter flights to fish for salmon and trout along the banks near Quinhagak's airstrip. The outsiders are fishing in traditional use areas, competing for resources with important subsistence uses.

Under the traditional system, outsiders into the area would be regulated through kinship mechanisms. However, the new fishermen are primarily non-Natives from outside who do not know about the old system. Residents of Quinhagak expressed considerable concern about the increased number of strangers along the lower portion of the river. The city and traditional councils were exploring how traditional control over excessive access by outsiders could be reexerted through the external property system. One mechanism would be to regulate access along the banks of the Kanektok that lie on lands conveyed to the village corporation under ANCSA, approximately the lower 15 miles of the river. The village corporation began issuing day use permits to sport fishers in 1982. Another mechanism discussed was developing a joint management plan with the Togiak National Wildlife Refuge to assist in setting guidelines on the number of commercial permits used by the refuge to control the level of recreational use along the upper middle and upper portions of the river flowing through the refuge. One mandate concerning refuge lands is management to preserve subsistence uses consistent with the sound management of wildlife and habitat. Finally, the traditional and city councils of Quinhagak strongly opposed the inclusion of the Kanektok River in the federal wild and scenic

river system in 1983, because the new designation would publicize the river and increase the number of recreational" users.

A fourth example pertains to the state management of fish and game on state and federal land. Regulations on bag limits, seasons, methods of harvest, and open-closed areas are developed by the State Boards of Fisheries and Game. The rules affect the degree of competition among local and non-local hunters and fishers and the conduct of subsistence harvest activities. Increasingly, the study communities have seen it to their advantage to attempt to influence the development of fish and game regulations. Through the regional non-profit association, Nunam Kitlutsisti, in Bethel, and through local fishermen's associations, the communities have heen lobbying for changes in resource regulations. Also, the communities are beginning to use the fish and game advisory committee and regional council systems, which act as advisory bodies to the Boards of Fisheries and Game. These are as yet channels with untapped potential. Under both state and federal law, regulations which concern subsistence uses from a regional council, which are supported by adequate information presented to the Boards, are consistent with accepted conservation principles, and are not detrimental to subsistence uses, must be approved by the Boards. These are mechanisms through which local participation in resource management may be reestablished.

One strategy for dealing with the outside fish and game management system has been the careful control of information about traditional fishing and hunting practices. Until mechanisms for local participation in fish and game management have heen assured, many residents believe

that the less outsiders know about the details of traditional fishing and hunting practices, the less the local community will lose control over access to the resource base. Consequently, information about certain aspects of subsistence fishing and hunting, particularly harvest levels and specific harvest locations, are kept as proprietary knowledge within the local group.

A final illustration of impinging resource management systems, discussed already in Chapters 6 and 10, can be briefly reiterated -- the limited entry permit system for commercial salmon fishing. The commercial limited entry permit system is intended to prevent the unrestrained growth in participants in the commercial salmon fishery. It freezes the number of fishermen at a fixed level. The limited entry system has resulted in creating fisheries at Togiak, Goodnews Bay, and Quinhagak which are primarily fished by local residents. This has occurred largely because of the relative small size of the fish runs and the isolation of the fisheries from buyers -- outside fishermen with permits choose to fish elsewhere in the Bristol Bay or Kuskokwim areas where ready access to buyers is available. Thus, the permit system coupled with environmental factors have temporarily preserved the fisheries for local fishermen. However, intrusion by non-local fishermen is a continuing issue and can be expected to rise in concern as developing marketing infrastructures lessen the communities' isolation. This situation of isolation was not the case in the Nushagak District, where New Stuyahok fishers compete with an outside fleet.

On the other hand, while discouraging outside entrants, the limited entry system also restricts new local entrants into the fishery. The

fact that many youths will be denied access to the resources in their traditional fishing area flies in the face of traditional egalitarian land use principles. The system has the potential for creating a two class system -- those with rights of access to the resource base and those without. How the permits are used- in the community is important for whether such a class system develops, as discussed in the previous chapter. As of now, many community members jealously guard the permits they have, recognizing that if the permits are sold to outsiders, the community will be disenfranchised further from its traditional resource base.

The systems of property relations and resource management illustrated above hold great potential for affecting the traditional subsistence economy. In a positive sense, if the two functions of the traditional system (open access to local residents and local participation in control over outside access) can be built into the new system, then the new property and management systems may help support the subsistence-based economy. If the new systems means a loss of control over the resource base, leading to increased competition by outsiders for resources (including wildlife and minerals) and regulations restricting fishing and hunting, the systems may negatively impact the subsistence economy. As previously stated, restrictions on access may serve as barriers and disincentives to fishing and hunting. All the implications of the external property and management systems are as yet unknown. However, it seems clear that the future success of traditional subsistence-based economies hinges largely on the success of local interests in this sociopolitical arena.

ALIENATION FROM PRODUCTION CAPITAL: WELFARE POLICIES AND SUBSISTENCE

The social welfare system is another outside factor pressuring change in subsistence systems away from the domestic mode toward the industrial-capital mode of production. In Alaska a set of policies is developing regarding eligibility to needs-based entitlements which serves as disincentives for fishing and hunting. 'They create conditions under which it is necessary for a subsistence producer to divest himself of the subsistence equipment and fishing permits in order to qualify for particular entitlement programs.

As discussed in Chapter 2, political administrative policies at the state and federal levels can create economic conditions which act as disincentives or incentives to fishing and hunting activities. Feit (1983) described how Canadian policy in the 1930s and 1980s was designed to shore up fur-trapping economies. In the 1930s transfer payments were provided in lump sums to compensate for the contraction of Hudson Bay Company credit for grubstakes; and in the 1980s a minimum guaranteed income was provided for those who elected to hunt and trap at dispersed camps. By contrast, Canadian policy in the 1960s acted as disincentives to hunt and trap by replacing lump sum subsidies with monthly welfare payments in smaller amounts. Welfare mechanisms like this tended to push workers from a self-employed hunting status in the bush to an industrially-employed or welfare-dependent status in large villages.

In Alaska, a shift in administrative welfare policy is having the same effect on subsistence fishing and hunting. Originating at the

federal level, new social welfare policies were designed to decrease the number of persons using federal and state transfers nationwide. However, as applied in the subsistence-based economies of western and southwestern Alaska, the policies tend to have the opposite effect, creating greater dependencies as persons are pushed away from subsistence and commercial fishing and hunting.

The new policies affect "needs-based entitlements" (Marti Nerenstone, Alaska Legal Services, personal communication 1983, the source of a substantial portion of the following material). Needs-based entitlements are so called because to qualify a person must demonstrate **need,'* usually defined in terms of a person's level of monetary income and the imputed value of certain property holdings, termed "resources.*' There are five major needs-based entitlement programs in western and southwestern Alaska:

1. Supplemental Security Income (SS1), a monthly monetary payment supplement (up to $304) paid to persons with mental or physical disability or over 65 years to raise their income above poverty level ($546 per month as of July 1983);
2. Adult Public Assistance (APA), a monthly supplement to SS1, paid as Aid to the Disabled (AD), Aid to the Blind (ABL), and , Old Age Assistance (OA) if income is still below poverty levels;
3. Medicaid, a health care benefit paid for the poor, which comes automatically to persons who qualify for SSI and AFDC, and which also can be applied for separately;
4. Aid to Families with Dependent Children (AFDC), monthly monetary grant to help support dependent children within poor families;

5. Food stamps, which are coupons received monthly, redeemable for particular food and other necessary items to help support families with low incomes.

Each of these five major needs-based programs differ in terms of the maximum allowable income and resource limitations. As shown in Chapter 5, except perhaps for Togiak, entitlement programs made significant contributions to the incomes of many households in each study community.

New administrative policy has changed the rules of eligibility for these programs by changing how the incomes and resources held by a person are calculated. There has been a recent push to count fishing permits and certain items of subsistence equipment as resources which raise the wealth of a person above the minimum qualifying standards. A commercial limited entry fishing permit, which enables a person to harvest salmon for sale, is being figured as a "resource" because it is "readily sellable" and has a determinable market value. Similarly, certain types of equipment used for fishing and hunting for subsistence use and commercial sale, such as snowmachines, boats, motors, and nets, are coming to be regarded as "resources" which may disqualify a person from social welfare benefits.

Prior to about 1979, SS1 and AFDC were relatively unaffected by fishing permits. Both SS1 and AFDC allowed a recipient to have income producing property up to $6,000 with a 6 percent annual profit. Consequently, Kuskokwim fishing permits used in Quinhagak and Goodnews Bay were valued below $6,000 and were ignored in calculating eligibility. After 1979, however, Kuskokwim Area permits began selling for above $6,000. About that time people began being disqualified from disability

supplements through SS1 if it was discovered that they owned a commercial permit. Also, a disabled person lost SS1 payments if a spouse owned a commercial permit, because a spouse's income-producing property was assumed to be mutually owned or reachable. If a person attempted to transfer the permit to another relative in the family and the transfer was at less than market value, it was taken as evidence that the permit was transferred to retain the entitlement, which disqualified the applicant for 24 months unless the claimant could prove otherwise. If the permit were sold, the income produced disqualified the person until it was spent and the household impoverished again. Appeals processes commonly took up to two years.

AFDC worked similarly. If a person owned a commercial permit, dependent children became ineligible for grants. Persons could respond by transferring the permit to one of the older children; this disqualified the child holding the permit (currently, a child's resources are not deemed to a parent), but redeemed the eligibility of other dependent children. Medicaid operated the same way, and the policy of counting permits was extended to APA during fall of 1982.

Typically, households in the study area were notified hy letter, stating that the entitlement benefits were to be lost, or that past payments be repaid, unless something were done with the permit. The letters typically specified several routes by which the person could divest himself of the fishing permit. The welfare program offered the resident a choice between retention of particular fishing rights, or retention of health, disability, or dependent child entitlements.

In the summer of 1983, it emerged that certain types of fishing and hunting equipment were to be counted as resources in the same manner as commercial fishing permits. Previously, the needs-based programs allowed a person to own "property necessary for self-support," such as a house or car. In western Alaska, boats, boat motors, and snowmachines were exempted as resources, for they were classified as property needed for basic transportation and subsistence activities in a rural community. Recently, SSI has been disqualifying applicants for being "over-resource'* for possessing more than one boat motor or snow-machine. The reasoning is that only one is necessary even though spare motors are needed when one breaks down. Non-usable snowmachines sitting in the junk pile as spare parts are counted as well, because they allegedly have a resale value. The interpretation of "over-resource'* is expected to be extended to other equipment, such as boats and nets, in the near future.

The welfare policy pressures persons to divest themselves of equipment used for fishing, hunting, and trapping for subsistence use and commercial sale. The effect is similar to fishing permits. A person is offered the opportunity to choose between holding the capital necessary for being self-employed in a subsistence economy or the retention of transfer entitlements.

These political administrative policies clearly act as disincentives to fishing, hunting, trapping, and gathering. The disincentives act selectively, creating difficult economic and social conditions for only a particular set of individuals -- persons who fish and hunt with partially disabling conditions (like arthritis or respiratory problems

common in the Kuskokwim region); persons with spouses who are blind or in need of medical care; persons of advanced age; and persons with large families and low incomes. These persons' abilities to hunt and fish allow them to maintain a certain degree of autonomy and self-support. However, for these persons the choice between a few hundred dollars a month in income with medical care or holding a fishing permit which earns them a few thousand dollars a year, or owning equipment that enables them to check a net, are difficult choices. The indications are that many of these persons who are least advantaged in the subsistence economy are in fact divesting themselves of fishing permits and equipment. They are giving up the means for a degree of economic and social autonomy, and giving up the means to pursue a traditional heritage, for the promise of a snail government payment to preserve their health or support dependent children. Greater dependencies on the government are created by a policy designed for the opposite purpose. In the aggregate, the actions of a segment of the population move the society one more step away from economic and cultural autonomy.

Government transfer policies need not have these results. As in the Canadian setting, they can be structured in a way to act as incentives for individuals to maintain their traditional subsistence and commercial activities and preserve the capacity to be self-employed. Currently the Alaska food stamp program is designed this way. By state policy, a person can qualify for food stamps with a fishing permit if the person offers proof he is using it. The income of the commercial permit is counted in such a manner to encourage commercial fishing during summer. The projected earnings of the permit based on

last year's earnings are prorated over the three-month summer fishing period only, so food stamp payments are terminated in June with reapplication permissible in September. The three-month proration recognizes that most commercial fishing money is used up in summer to repay winter debts, grubstakes, and summer living expenses. Other parts of the state prorate seasonal earnings over 12 months. Further, food stamps can be used to purchase several categories of equipment used for subsistence activities -- nets, hooks, fishlines, and traps, although not guns, ammunition, or gasoline. It is allowable for food stamps from several households to be pooled to purchase equipment. This is to encourage capitalizing for fishing and hunting to produce local foods of better quality than imported foods. The food stamp program represents a welfare program which carefully considers the impacts of federal welfare on a cultural system. The program's application is adjusted in appropriate ways to support the local economy and social life.

CHAPTER 12

CONCLUSIONS: SOUTHWEST ALASKAN SUBSISTENCE ECONOMIES, A SPECIAL CASE OF CULTURE CHANGE?

From the purview of world cultures, the socioeconomic systems of western and southwestern Yup'ik communities are notably exceptional. Human history has witnessed a rapid and seemingly irreversible disappearence of sociocultural systems with subsistence economies based on hunting, fishing, and gathering. The "hunter" and '*gatherer" statuses seem to be rapidly disappearing occupations in the historic record of cultural livelihoods. By and large, subsistence economies have not disappeared because they were inherently non-viable economic systems. They usually have been forced out of existence by changing economic, ecological, and social conditions from the directed intrusions of outside sociopolitical systems.

Yet, the Yup'ik communities of western and southwestern Alaska present outstanding exceptions to this cultural trend. Here exist well-established and expanding sociocultural groups, with economic systems still based on hunting, fishing, and gathering for subsistence, mixed with fishing for commercial sale and some wage employment. The data presented here show these economies are apparently strong and viable socioeconomic systems, composed of a combination of the traditional and the contemporary, and demonstrating a rather irrepressible cultural tenacity.

Understanding the factors which account for these remarkably successful sociocultural systems requires the development of a theory

counterpoised to other predictive theories of hunter-gatherer cultured change. This report has advanced a theory and set of concepts which purport to account in part for the continued strong emphasis on hunting, fishing, and gathering in the four study communities.

This chapter summarizes the theory and findings of this report. It also suggests how the socioeconomic changes observed in these western and southwestern Alaskan communities fit within the general theory of culture change outlined in Chapter 2 (cultural ecology and historic materialism). It is proposed that the subsistence-based economies of the study communities may represent a special case within that general theory, and that the cultural changes these communities have experienced occur under a particular set of conditions.

ECONOMIC DIFFERENTIATION THROUGH GRADUAL, CUMULATIVE CHANGE

This report has argued that changes in the sphere of production, distribution, and exchange in the local economies of the four study communities, in response to increased participation in the outside market economy, have been gradual and cumulative rather than radical and discontinuous. There has been no upheaval or transformation in the organization of the traditional economy due to the penetration of this area of Alaska by outside market forces. The changes alleged to have occurred in the subsistence economies of the Montagnais and the Mundurucu do not seem to apply to these four communities:

> The process of gradual shift from a subsistence economy to dependence upon trade is evidently irreversible, provided access to trade goods is maintained. It can be said, therefore, that the

> aboriginal culture is destined to be replaced by a new type which reaches its culmination when the responsible processes have run their course. The culmination point may be said to have been reached when the amount of activity devoted to production for trade grows to such an extent that it interferes with the aboriginal subsistence cycle and associated social organization and makes their continuance impossible. (Murphy and Steward 1956:336, emphasis added; see Chapter 2 for a discussion of this theory)

In the four study communities, production for market trade has not interfered with the aboriginal subsistence cycle,. though residents of the communities have been involved in production for market sale and have acquired new imported technologies since before the turn of the present century. The current levels of market involvement and technological acquisition have not disrupted the traditional economy. Nor has the incorporation of market production made the traditional social organization maladaptive and obsolete. The local social order continues at the traditional level of organization (a domestic mode), albeit in a modified form.

This report has argued that production for market sale, new technologies, and wage employment have been integrated into the traditional local economy. Introduced, innovative economic activities have been grafted upon the original cultural base, producing a unique hybrid of old and new economic features which draw upon and preserve the inherent identity of the traditional socioeconomic foundation.

This study has found that one result of market involvement is a more differentiated local economic system, with more local options in production and distribution. There is a constellation of subsistence activities in which a relatively wide range of foods is produced for local and regional use -- essentially the same spectrum of activities

available aboriginally. To this has been added a commercial sector, in which a relatively delimited range of wild, renewable resources (furs, salmon, herring roe) are harvested for sale on non-local markets. During the past 20 years, salmon has become the primary marketable resource, and the salmon fishery has become the overriding feature of the commercial sector. Finally, the local economy offers limited employment in a marginal wage sector. Participation in wage employment arose during the second world war in conjunction with non-local cannery employment at Bristol Bay, contracted with the development of local commercial fisheries, and has expanded again in the last decade with the growth of local jobs in government-financed services.

This study found that members of domestic family groups, the main economic units of production and consumption in the communities, commonly participated in each economic sector. Subsistence, commercial, and wage activities were strategically integrated by domestic units. The particular mix of subsistence and cash-related activities varied depending upon the composition and resources of the family group. As yet, stratification had not occurred along occupational lines in the social organization of the society. However, the potential exists for emergent stratification, and incipient signs of stratification were present in the commercial salmon fishery.

Currently, families combine fishing for market sale, wage employment, and subsistence production in a mutually supportive fashion. Participation in cash-related activities typically is tailored to enhance the family's participation in traditional subsistence production and distribution. Increased cash earnings or participation in

cash-related activities was not found to be associated with several factors predicted by some culture change models. Firstly, there was no evidence of nucleation of the family unit and a restriction in the circle of obligations linking members of large extended families. Families and communities with high and low cash levels were found to be similarly organized in networks of kin-related households, pooling labor, subsistence food products, and technology. Secondly, there was no evidence of diminished subsistence production due to increased cash activities. Instead, a domestic unit's active involvement in commercial salmon production, or wage employment mixed with commercial salmon production, was often found in association with active involvement in subsistence production. Lastly, there was no evidence of a reduced participation in subsistence distribution networks due to greater cash involvement. Highly productive households (in subsistence and cash earnings) tended to share. with less productive segments of the community. Similar social rules for dividing, distributing, and exchanging subsistence products were found in each community regardless of the community's income level.

Increased market involvement was found in association with certain factors. First, among case households, high involvement in commercial fishing, or wage employment mixed with commercial fishing, was associated with increased breadth and number of subsistence and commercial fishing gear. This is explainable because cash profits are commonly invested in technology used in production. Increased capitalization usually did not involve the development of debt relations. By and large, households remained debt-free, owning the means of production

outright. At times, persons purchased equipment on time from the village profit corporations, paying back the interest-free "loan" after a commercial season.

At the community level, greater capitalization in commercial fishing gear was associated with greater monetary value of the local commercial fishery. The elaboration of commercial fishing gear was attributed to increased outside competition by non-local fishermen operating in the more lucrative fisheries, rather than an internally-generated push toward increasing complexity and expense of commercial gear.

Additionally, as mentioned above, among case households high productivity in commercial fishing, wage employment, and subsistence fishing and hunting were found together. Highly productive domestic units had large work forces and at times more than one commercial fishing permit. The proceeds of several producers in multiple occupational pursuits were pooled to make the household highly productive.

Lastly, greater productivity in subsistence and cash-related activities triggered certain economic leveling mechanisms, primarily the sharing of subsistence products and equipment (but not cash) with other kinsmen in the community. With greater earnings came a greater press of obligations toward supporting less productive segments of the community. The ethic of sharing, coupled with rules of bilateral inheritance and non-exclusive rules of private property in chattel and land, serve to reduce disparities among households and help maintain the egalitarian organization within the economy and overall society.

Thus, one finding of this study was that commercial and wage sectors have been integrated with traditional subsistence production, distribution, and exchange such that they are mutually supportive. The market sectors of the economy are accommodated within traditional production and distribution systems. Rather than being disintegrative, the new features are additive and supportive of the traditional economy.

THE ORGANIZATION OF PRODUCTION

What accounts for this integrative process of culture change? One factor that seems central is that commercial resources can be extracted through the traditional organization of production. Extracting salmon for sale uses an economic organization similar to, and compatible with, the organization of traditional fishing and hunting pursuits. It has not led to the development of a new form of organization which might conflict with the subsistence-based System. The relations of production are similar between commercial salmon fishing and subsistence fishing and hunting, even though production is directed toward different ends (export markets versus local use).

Commercial fishing (a form of "simple commodity production'" for sale) resembles subsistence fishing and hunting (a "domestic mode of production" for local use) in several respects. First, in both economic pursuits the family (the domestic group) is sufficient to supply the division of labor required for production. Commercial fishing requires a small fishing crew, usually only one or two persons. This simple labor force can be (and usually is) supplied by a kinship group. In

both commercial and subsistence production, the family is the primary economic firm. Production is a task of family groups, and labor is allocated to production tasks by age, sex, and kinship relation. Thus, relations of production in the major commercial industry (salmon) are closely linked with the kinship system which organizes the local society as a whole.

Closely related to this, the level of technology used in commercial fishing and subsistence fishing and hunting is small-scaled, affordable, and capable of being wielded by the domestic production group. Commercial fishing does not require expensive catchment gear that would drive production out of the hands of the kinship unit. It is relatively inexpensive and obtainable without the establishment of long-term debt relations.

Thus, the commercial fisheries development in each community did not require a reordering of the social relations of production already underlying subsistence pursuits. No new local business structures were required (although fishermen's associations have emerged in each of the communities for dealing with price setting and political lobbying). No new local wage form was required (partnerships for shares were developed, a variation of traditional hunting partnership forms). No new large investment and loan structure was required beyond the reach of related households. Commercial activities could be, and were, conducted by the traditional domestic group. The viability of traditional domestic groups in the new market sector helped reaffirm the efficacy and validity of the traditional social order of the subsistence sector.

Developing a commercial salmon fishery did not disrupt the egalitarian property system underlying subsistence production, as might have accompanied other types of land-based resource extraction. Changing property relations were identified as a critical variable by Murphy and Steward's analysis: commercial fur and rubber extraction lead to individually-controlled resource extraction areas. In the four study communities, the open access usufruct system continued after the establishment of the commercial salmon fishery (although in the Kuskokwim district, subsistence fishing times became regulated within commercial fisheries management). The development of a commercial fisheries did not lead to a property system creating closed access to subsistence resources, although the limited entry system has restricted access to salmon for some households.

One major difference separating the simple commodity production of the commercial fisheries from the domestic mode of the subsistence sector was loss of local control over disposition of the product. The commercial salmon fishery requires an expensive and relatively complex system of processing and marketing which, up to now, has been beyond the capacities of the local communities. Processing requires relatively large capital investments (in holding facilities, freezing and canning operations, transportation vessels). Marketing requires substantial financial expertise and backing (acquiring loans for investment in commodity markets). Consequently, the study communities have not performed the processing or marketing roles, relying instead on middlemen buyers, processors, and distributors from outside the area. This has been a weak link in the commercial chain connecting the communities and the

outside market: the fishery's value realized by the local fisherman is lower than its potential because of surplus value paid to middlemen or lost due to marketing inefficiencies. As discussed in Chapter 6, each community is making attempts to take control over parts of the processing and marketing chain through village profit corporation ventures and fishermen associations acting as bargaining organizations. One may predict these efforts will expand. However, gaining control of processing and distribution requires an organization at a different structural level than the domestic mode. It remains to be seen how successful the communities will be in coordinating extended family interests within the structures of voluntary associations and profit corporations.

One reason for the compatibility of the commercial fishery with subsistence production is psychosocial: both draw upon similar skills, aptitudes, and value orientations. A resident's assumption of the role of commercial fisherman requires no great shift in social identity or work habits. It is not surprising that commercial fishing as an occupation has acquired the same high prestige as has subsistence fishing and hunting in the traditional culture. Aside from its remunerative benefits, there is great motivation by residents to be commercial fishers because of the high prestige associated with the status' position and role. The local preference is to be a commercial fisherman rather than perform any other form of remunerative employment.

Finally, for three of the four communities, commercial fishing does not require relocation away from traditional fishing and hunting areas. Its close proximity to home has made this form of cash procurement

particularly compatible with traditional fishing and hunting activities. New Stuyahok is the exception: families seasonally relocate to the coast to engage in the commercial fishery. To maintain subsistence output during early summer, New Stuyahok families have established a new subsistence fishing area near the mouth of the Nushagak River. The relatively short duration of the commercial season does not adversely impact subsistence activities as much as would a longer absence. Further, seasonal moves of the family were also part of the historical yearly subsistence cycle, and consequently are not viewed as particularly disruptive within the culture.

SOUTHWEST ALASKA AS A SPECIAL CASE: CONDITIONS OF CASH-SUBSISTENCE INTEGRATION

As proposed above, the subsistence economies of western and southwestern Alaska may represent a special case within the general culture change theory advanced in Chapter 2. The mutually supportive integration of market production and subsistence may occur under a special set of conditions. If these conditions do not obtain, another course of change may result. Several conditions are identified below, along with sociopolitical factors outside the subsistence economies which are pressuring change in these conditions.

First, population density relative to resources is low. The demographic transformation which has affected other subsistence systems impacted by market influences -- that is, rapid population increases relative to the resource base due to immigration of colonizers or

improved health care -- has not occurred. Certainly demographic patterns have changed markedly in the study area since historic contact. The population is more nucleated in a few, larger, sedentary communities. The nuclear or extended household has replaced the traditional residential pattern of merits house separate from the dwellings of women and children. Other Yup'ik populations have migrated into the region, especially Kuskokwim populations moving into the Bristol Bay area. Also, local populations have been growing in recent decades through improved health care. However, in terms of total size, the local populations are still smaller than reported early historic levels. The recent expansion of local populations through in-migration and better health care is repopulating areas decimated by historic epidemics. Also, the consolidation of the population into a few places is offset by improved modes of transportation (snowmachines, outboards), so people can reach traditional territories for resource extraction in shorter periods of time. Thus, the study area still shows relatively low population densities.

Second, resources on which the local population depends are in adequate supply, and have not been degraded. This is true for most species. By and large, the same species available today appear to have been available historically in comparable numbers. The isolation of the area has helped preserve it from encroachment by outsiders. Gold, silver, and platinum mining at the turn of the century apparently have left negligible permanent habitat damage, except to a few spawning streams in the Platinum area.

Third, the external demand for land and other resources is limited. Historically, this has been true for most resources except for salmon. Historic external demand for commercial salmon has been so high in the Bristol Bay region that only federal, territorial, and state intervention preserved the runs.. Through management programs, external demand for salmon and herring was "controlled" within levels which did not lead to permanent environmental degradation. New demands for land and resources are growing -- commercial herring; recreational use of salmon, trout, caribou, and brown bear; and, most recently, petroleum development.

Fourth, political factors have made local labor and capital feasible for extracting resources. That is, primarily the local population has supplied the manpower and capital in production. This was achieved in the commercial salmon fishery through the limited entry permit system. In regards to subsistence resources, the state law providing priority for subsistence use over recreational and commercial uses plays a role in preserving local priority in the extraction of non-commercial fish and game species. However, up to now it has been primarily the area's isolation which has protected subsistence resources from outside competition.

Fifth, the traditional system of land tenure provides strong usufruct rights to the local society, with no private property ownership. This was the pre-ANCSA condition. Property forms did not provide barriers to resource access. Now, a private property system is legally instituted in the region, and usufruct claims by the local society are more tenuous.

Sixth, substantial portions of the value of local production have not been appropriated through taxation or other social obligation by outside political structures. The value of subsistence production has never been taxed. Formally, it is still not recognized as income by the government. Currently, individual monetary income is taxed, but at relatively low rates because of sliding income tax scales which provide breaks to low income earners. ANCSA again will change this situation in 1991, after which time the value of lands conveyed to the Native profit corporations is subject to taxation.

As discussed in Chapter 11, there are currently powerful forces from outside the region operating to change these conditions. The most notable is ANCSA, which alters property relations with ramifications throughout the entire system. Native profit corporations now hold rights to surface and subsurface rights to village lands, while local societies allegedly has given up rights to aboriginal claims to resources outside of the conveyed lands.

ANCSA is a powerful tool which can lead to the alienation of the local population from its traditional resource base through a variety of routes. Land holdings may be sold. Sale of corporate holdings may be forced to pay off debts created by the taxation system. The interests of Native profit-making corporations may become opposed to the interests of subsistence-dependent families, if corporations choose to invest in minerals extraction or commercial recreational ventures which conflict with subsistence activities.

The interests of the subsistence-based communities may conflict with those of the managers of the lands outside of Native holdings,

lands which are still part of the local society's traditional subsistence use area. These lands may become subject to minerals entry, recreational uses, land disposals, or conservation management. As non-Native lands are opened up to minerals extraction and settlement entry, there is decreasing isolation of the region and increasing competition for resources by outsiders. Commercial resource extraction commonly improves roads and airstrips which attract visitors and new residents to an area. Settlement entry programs of the State and in-migration of workers in mines, fisheries, and other commercial enterprises may increase human population densities relative to fish and game populations. Commercial guiding interests increase competition for fish and game by urban residents.

The limited entry permit system is the other powerful force at work in the region. The loss of commercial permits to outsiders by sale alienates the local society from its resource base. With the development of the fisheries, the market value of commercial permits increases, making sales for short-term gain more attractive. The opening of new commercial fisheries without limits on outside competition holds the potential for degradation of the resource or loss of the value of the resource to more heavily capitalized competitors. Further, the need to preserve a commercial resource from over-exploitation requires the application of restrictive management systems from state or federal agencies.

An adaptive response on the part of local societies to these forces of change will be critical if the current compatibility of the market and subsistence sectors is to be maintained. The local communities

have expressed concerns over minerals development, commercial recreational guiding, and settlement entry because of their potential for radically altercating the subsistence-based economy. The communities are expanding their political participation in the fish and game regulatory system through fishermen's associations, the local fish and game advisory system, regional council system, and regional Native nonprofit organizations. Legal challenges to the provisions of ANCSA can be expected as 1991 approaches. The transfer of Native corporation holdings to IRA and other traditional councils is being explored by residents of the Yukon-Kuskokwim delta area as a mechanism to avoid loss of lands through sale or taxation. Other means of activating the special powers of tribal organizations in matters of land and resources are also being explored.

CONCLUSIONS

While the four Study communities have established links with market-oriented, industrial-capital systems and sociopolitical structures, as yet they have not lost control of their traditional resource base or their domestic organization of production. The communities have retained access to the fish and game which is the basis of their economy. Primarily because of their geographic isolation, these communities were fortunate in that neither the habitat nor its wild resources has suffered major biological changes. Further, the communities have been able to exercise freedom in organizing the local economy under

the domestic mode. They have maintained control over the factors of production -- labor, capital, the land, and its resources.

The major forces of change in the system do not seem to be coming from increased cash earnings or increased market participation. It may be predicted that the local cash sector and subsistence sector in these communities will continue to be mutually supportive as long as external sociopolitical structures do not disrupt the communities' abilities to utilize their economic resources in the manner they choose.

The major pressures on the subsistence-based system come from without . In particular, the property system of the industrial-capital economy of the urban-state being applied to rural areas in association with northern minerals development appears to be the factor with potentially the most disruptive impact on the subsistence system. With the property system come potentially restrictive changes in land classifications, resource management systems, habitat, and human population levels due to new development activities. As these are primarily issues of governmental economic policy, the future viability of the subsistence economies of the four study communities may be primarily determined in the sociopolitical arena.

The theory advanced in this report argues that developments in the monetary sector that transform the several economic, demographic> and ecological conditions outlined above may result in decreases in subsistence production and distribution. If these conditions can he maintained, then increased participation in the market sector should continue to be compatible with traditional subsistence production and distribution. Economic developments in the region will be resisted by

local residents to the extent that they are viewed as disrupting these conditions.

The major question today is whether out of the interaction of the two contemporary societies -- Yup'ik and urban-state -- there will evolve sociopolitical structures which will preserve some measure of local control over the traditional lands and social order. If SO, the hunters, fishers, and gatherers of western and southwestern Alaska may have the freedom to choose the future directions of their own economic system.

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APPENDIx A

HOUSEHOLD CASES OF SUBSISTENCE AND CASH ACTIVITIES

INTRODUCTION

This appendix presents five illustrative cases of households from each community with varying degrees of participation in cash and subsistence related economic activities. Each case covers a specific range of information which depicts the demographic, social, material, and economic characteristics of each case household as they relate to a specific type of cash production and the degree of participation in subsistence activities. The case households include those with very limited sources of income, those in which the source of income is strictly derived from wages, households with low income derived mainly from simple commodity production, households with high income derived primarily from simple commodity production, and finally cases of households which have income from both sources (wages and simple commodity production). The cases then present five different sources and levels of income, which were analyzed in Chapter 9 as they related to participation in subsistence activities.

The cases indicate a range of strategies employed by households in varying circumstances in pursuit of both cash income and subsistence. It is important at this point to note that the cases can not be considered "representative" in any sampling sense but rather illustrative. From the 20 cases, which are supported by numerous other cases from each community not reported here, important patterns related

to income and subsistence pursuits are isolated, described and analyzed within and between the communities.

The cases are presented by income source rather than by community. This procedure facilitates comparison by holding source of cash income as the constant and permitting level of subsistence participation and other social characteristics of households to vary.

CASE HOUSEHOLDS, FULL-TIME WAGE EMPLOYMENT

These households illustrate the fishing and hunting patterns in which monetary income is derived solely from full-time wage occupation within the respective communities. The literature (Chapter 2) suggested that full-time wage employment could be difficult to integrate with subsistence fishing and hunting at the household level: (i) if the employment involved relatively long, inflexible work schedules, which restricted a hunter's ability to take advantage of the-natural cyclic appearances of fish and game resources; and (2) if the employment required the worker to be sedentary (i.e. remain at the job site) and work distant from resource catchment areas. How household members are able to integrate full-time wage employment with fishing and hunting pursuits in the study communities is an important question which was examined by means of the cases. Further, at the macroinstitutional level, the literature suggested that the development of an economy with a large, wage sector in part entailed a constellation of institutional charges, such as a class structure with laborers separate from the owners of production capital; non-kinship businesses; and private

land and property relationships. How these institutional structural changes relate to a household's capacity and desire to fish and hunt was a second theoretical issue. The household cases provided information which examine whether the household's participation in wage employment in the community influenced the development of macroinstitutional structures.

Quinhagak

Household Composition. The head of this household is a man in his late 30s, married, with 4 children between the ages 1 and 6 (household size is 6 persons).

House Characteristics. The household is located in the 1979 housing development, with two bedrooms, a kitchen, living room, and bathroom. It has electricity, no running water, no plumbing, and is heated with a combination of a fuel oil stove and a wood-burning stove. A propane stove and a Coleman camp stove burning white gas are used for cooking. The wood stove and camp stove are used when it is too expensive to purchase imported fuels. The refrigerator is turned off in order to conserve electricity.

Related Structures. The household does not have a freezer, fish rack, smokehouse, storage shed, or steambath.

Technology. The household owns a snowmachine, 3-wheel all-terrain vehicles, anti an aluminum boat with a 35 hp outboard motor.

Sources of Income. The head of this household holds one of the few full-time, wage-paying occupations in the community, a maintenance

position in city services. His job has one of the most inflexible schedules of all the wage-paying occupations in the community, as the equipment he maintains must be regularly monitored. His position's work schedule calls for five hours per day, six days per week, year-round employment. In fact, he has been putting in up to ten hours per day recently due to understaffing in the facility. Two assistant positions designed to assume part of the workload have been subject to regular turnover in personnel. The job requires a comprehensive set of responsibilities, including ordering parts, engineering, maintenance, cleaning, welding, hauling, supervision, and construction. The wage scale is $7 per hour or about $11,000 per year. This is the household's only source of monetary income.

Subsistence Involvement. The regular, inflexible hours set by the wage-paying job severely limit the amount of time that the household head is able to fish and hunt for subsistence uses. He states that he does not do much fishing or hunting during winter. He hunts and fishes more actively during summer, but only periodically on weekends. The City allows him to take a couple of weeks of annual leave to pursue hunting and fishing activities, but this year he chose not to do so. Despite his inability to fish and hunt regularly, his household eats "just about only subsistence foods," which they harvest themselves or receive through a network of relatives and friends.

Last summer after hours or during off-days, the household head harvested about 30 king salmon and 100 red salmon using his aluminum boat and 40 hp engine. They were not dried or smoked. Instead, they were cut and frozen in his wife's mother's freezer, from which they

were used during the year. As of May, the fish were completely gone. On weekends during the winter, he and his wife take trips with his snowmachine up the river to jig through the ice for arctic char. The head estimates that throughout the entire winter of 1982-83, they harvested about 100 fish. On these trips he also harvested two hares. During early spring, his wife jigged close by the community for smelt, taking about 20 pounds. He also took one spring hunting trip for waterfowl, harvesting five geese. In total, he harvested about 1,219 pounds dressed weight of fish and game, or about 208 pounds per household member. The range of species harvested was relatively narrow (for instance, he harvested no sea mammals), and his investment of time was low.

During the last year, however, household members consumed a much wider range of fish and game species than the head harvested. These resources were received through a distribution network. Last year, the household also consumed grayling, rainbow trout, round whitefish, blackfish, cisco, beaver, squirrel, brown bear, caribou, ptarmigan, several duck species, bearded seal, ringed seal, spotted seal, and burbot. These products came from a variety of sources, several of which the head identified. The beaver came from the head's brother, who traps every winter and harvested about 30 last year. The blackfish came from the wife's brother and from a next-door neighbor. The ground squirrel, which is dried and cooked in stews, came from the head's mother, who harvested them at a spring squirrel camp. The burbot came from the wife's sister living in Oscarville along the Kuskokwim River. In this manner, the household utilized a much broader range of products

than the head was able to harvest himself. He also pointed out, that although his household did not use sea lion, walrus, or needlefish this past year, they have used them in previous years.

Sociocultural Characteristics. The household head has had a varied employment history outside of the community. His previous jobs have included firefighting, assembly-line packing work, inspecting in a Bristol Bay salmon cannery, employment in the Pribilof Islands' seal industry, search and rescue work in Oregon, employment as a "cracker" at a Tanner crab cannery in Kodiak, assistant river piloting for a commercial tender, and fish handling in the Kuskokwim River commercial salmon fishery. When he was in the military stationed overseas, he received some training in electrical work, which has proved useful in diagnosing electrical problems associated with his job. As he relates, some of these jobs were "okay," but he did not like nonlocal work and returned to Quinhagak in order to live at home.

Goodnews Bay

Household Composition. The head of this household is a female, a widow in her early 30s with a young child under the age of 10. There are two members in the household. 'She was born in Goodnews Bay but her deceased husband was not.

House Characteristics. The house and site of the household belong to the head's brother, who resides in the village. The house provided at no cost to the head. It is an older, single room structure of approximately 700 square feet. It is heated by an oil-fueled combination cooking range/heating stove. There is no telephone.

Related Structures. Although there is a number of sheds associated with the house, they are used by the house's owner for storage by his household.

Technology. none

Sources of Income. The household's primary income is derived from a full-time position with local government held by the widow. The rate of pay is $7 per hour or $14,000 annually. She once participated as a fisher in the herring fishery and worked occasionally in the past as a salmon fishing boat crew member. She did not work as a crew member in 1983.

Subsistence Involvement. The level of subsistence involvement by this household in 1982-83 was low and sporadic, with the types of subsistence activities characterized by low capital input, conducted in close proximity to the village, and of short duration (e.g. berry picking, ice fishing in the Bay, and egg gathering).

This minimal involvement in subsistence production activities is influenced by the constraints placed on available time by a full-time wage job; by the fact that there is only one adult in the household; and by the fact that the predominant cultural patterns of sexual stratification of subsistence practices limit the activities which can be pursued by the female head; and by the small size and composition of the kinship unit to which the household belongs. For example, the head is excluded from the hunting of both marine and terrestrial mammals because of her sex. Also, as she is dependent upon others for transport and help, and as she belongs to a small kin and "partnership'" unit, opportunity for involvement in subsistence activities is restricted.

While the members of the household do not hunt or subsistence fish for salmon, they receive such products from others, especially from the head's sibling. In this household, food and other products obtained via subsistence pursuits subsidize the household's need rather than being the primary sources of food and raw materials.

Togiak

Household Composition. The head of the household is a married man in his early 40s with 5 children, whose ages range from 10 to 18. He is originally from the Kuskokwim River area, and his wife has spent most of her 40 years in Togiak.

House Characteristics. The house was constructed as part of a HUD program. It consists of three bedrooms, a kitchen, living room, bathroom, and a storage room, and has electricity and full plumbing. The . . house is heated by an oil-fueled range. The cooking stove is fueled by propane, and the refrigerator and freezer are electric. The house was paid off by the head in five years.

Related Structures. The only other structure belonging to this household is their old house, which is being used by his wife's sister and family. There was a steambath, but it burned down. The household has a close relationship with the head's wife's parents' household, which has fish racks, smokehouses, and the like.

Technology. The household owns an older pickup truck, one new model snowmachine, two three-wheelers, two aluminum skiffs, and one Togiak boat. The household also owns a 15 hp, two 35 hp, one 50 hp,

and one 85 hp outboard motors. Over the years, the head of the household has purchased a large assortment of tools, including carpentry, plumbing, and engine repair tools.

Sources of Income. The head of this household has a full-time wage-paying occupation, a maintenance position in city services. His job requires constant monitoring of equipment, in addition to emergency and other repairs in private homes. The position's work schedule is eight hours daily, six days weekly, year-round, but the head often works many more hours due to equipment failures and emergencies in homes. There is also one part-time assistant position designed to provide the head with assistance, but this position has not been filled until summer 1983. The job requires a comprehensive understanding of mechanics, engineering problems, construction, ordering parts, welding, and supervision. Because of the skills required, the city recently increased his salary to $11 per hour or $27,456 annually, making him one of the highest paid city employees. Three other members of the household earn seasonal incomes from the cannery. These incomes are often used for the purchase of children's clothing and other personal needs.

The head also fished with his wife's brother in the summer of 1982 but not in 1983. While out fishing, he would have his family monitor the city's equipment and he would make repairs on the weekends. During the summer of 1983, the head contracted to work with a construction company, building the local airstrip. He splits his time between the two jobs. Hence, he earns in excess of $30,000 over the year, which

does not include the income of family members derived from cannery employment.

Subsistence Involvement. The regular and seemingly inflexible hours set by the wage-paying job appear to severely restrict the amount of time that the household head is able to devote to fishing and hunting for subsistence uses. Yet he is one of the highest subsistence producers in the community. Generally he harvests resources on weekends, early in the morning, or simply takes a day or two off work. However, in the spring and fall he devotes long stretches of time to subsistence activities, traveling long distances and staying away for four to five consecutive days. For example, this spring he and his cousin traveled above Quinhagak and were gone about five days. During this time they shot a walrus, a number of seals, a large number of ducks and geese, and explored every bay and river mouth between Quinhagak and Togiak on their return.

During the past year the head harvested 21 species, not including berries, vegetables, and eggs, for a total of 7,760 pounds dressed weight of fish and game. This total is about 1,110 pounds per family member.

Over the winter of 1982-83, the household head did not take off much time to hunt or fish, largely due to equipment problems at work. During spring 1983 he shot one brown bear, nine seals, one walrus, four porcupine, and numerous ducks and geese. In early spring he seined in the river and harvested approximately 500 Dolly Varden shortly after break-up, and in June he harvested 75 chum salmon in one sweep. During fall 1982 he harvested 3 caribou, 300 reds, and about 7 beaver.

The head hunts with various partners in the spring and fall, traveling, in some cases, long distances in short periods of time by snowmachine and boat. He and his family members share in the cache of his parents-in-law, which is also shared in and contributed to by five other households. Two of these households are also highly productive, and hence they share with many other families. In terms of consumption, approximately 70 percent of their diet includes local resources.

Sociocultural Characteristics. The household head has had a long work history outside of the community. He is a journeyman carpenter and has worked on various government and private construction projects, including the building of the HUD houses in Togiak. He will take employment out of Togiak, but only for short periods of time. He has worked as a carpenter for six months on the North Slope and for about six months on Adak Island. He received some of his training in the military, but most of it was self-taught, including his knowledge of electricity, plumbing, and auto mechanics.

He has a political position with the school district. Although he did not start school until he was about 12 years of age, he finished school in 4 years and is one of the more fluent speakers of English in the community. He can move between English and Yup'ik with equal facility. He is a strong advocate of formal education, including postsecondary education. However, at the same time he strongly promotes Yup'ik tradition and values.

New Stuyahok

Household Composition. Seven individuals reside in this household, a mother (in her 40s), two daughters (in high school), two sons (in their 20s), and the wife and infant daughter of one of the sons. The mother is from the local area, although her ex-husband was not.

House Characteristics. The house is a single story, wooden-frame structure built in 1971-72 under an Alaska State Housing Authority (ASHA) program. The house covers approximately 1,000 square feet and includes 5 rooms. It is heated with a gravity-fed oil heater and an oil-fired cookstove. The family owns an electric freezer. The home is financed by ASHA, with the amount of the payment dependent on household income at the time of construction.

Related Structures. No sheds, caches, racks or other structures are associated with this household. The household uses racks and caches belonging to two related households.

Technology. Household members own one two-year old snowmachine. They do not have a sled, but borrow one from a related household. Four years ago they purchased an 18-foot aluminum skiff and 35 hp outboard motor. One son has a dog team used primarily for recreation.

Sources of Income. No one in this household holds a commercial salmon fishing permit. One son has held a full-time job since 1981. It is a 12-month position, paying approximately $13,000 per year. There is quite a bit of flexibility in the hours that may be worked. Arrangements may also be made to take extended time off for resource harvest activities. The other son did not have any income from wages

in 1982, although he fished as crew with the boyfriend of a sister who lives in Dillingham, earning roughly S1,000 in 1982. The mother and the two school-age daughters work at a cannery in Dillingham during the fishing season where they each earn approximately $2,500 yearly. Household members have earned approximately $15,000 to $20,000 per year over the past 5 years.

Subsistence Involvement. The household reported harvesting 32 species (of 45 total species considered), including 2,412 pounds of mammal meat (344 pounds/household member), 165 pounds of birds, 139 pounds of freshwater fish, and 26 gallons of berries. No record of salmon harvests were available, although household members assist related households and share preserved salmon from their caches. Both sons hunt, fish, and trap, and assist their mother and sisters in salmon fishing and berry picking. One son hunted seals and picked clams while commercial fishing in the Togiak district. He also fished for smelt and ate blackfish in Manokotak when visiting to play basketball. Both sons went moose and caribou hunting. One son went moose hunting once in the fall and caribou hunting twice (in August and March). The son with the full-time job went moose hunting twice in the fall and caribou hunting three times in the period August to February. The married son caught one porcupine during the year and hunted ducks and geese near Dillingham in the spring with his commercial fishing partner. One son hunted small game nearer home, catching 15 spruce grouse, porcupines, rabbits, and other species. Both sons set a few traps for fox and caught two each. One also trapped a marten. Neither went trapping for beaver, but they did harvest a couple in their fish

net in the fall. The son with the year-round job helps with subsistence salmon fishing, since he is home all summer. He sets the net, picks the fish from the net and helps hang the fish. His mother, sisters, and sister-in-law help clean and split the salmon when they are home. Subsistence salmon are put up with two other households, using the other households racks, smokehouses, and caches. The husband in one household and wife in the other are siblings of the mother in the case household. Both sons catch other fish -- with nets up at Tikchiks in the fall and nearer home with rod and reel and by jigging through the ice. Berries are gathered in several locations -- salmonberries were picked by the mother on a visit to Manokotak; blueberries, blackberries, and cranberries were picked on a family outing way up the Mulchatna River near Red Veils over 100 river miles from New Stuyahok; and some more cranberries were picked close to home. When moose or caribou meat is obtained in large quantities, the meat is often taken to the caches of two related households, where individual families withdraw what they need for immediate use and for freezing in small portions in each household's individual freezers. Four households use the caches which belong to two of the households. Besides moose and caribou, the caches are used for storing dried fish -- salmon, whitefish and pike -- for the four households. The two sons usually hunt or fish together or with other young men, but they do occasionally go with their uncle, an older, more experienced hunter and fisherman. The son with the full-time job went caribou hunting with some visitors from Manokotak and a few other local men in February, although most of the catch went to Manokotak hunters.

Sociocultural Characteristics. All seven children in the family have completed or are nearly through high school. Both sons have received firefighting training. The full-time job held by one son required specialized training. English is spoken most of the time in the household. None of the household members are active in local political organizations.

CASE HOUSEHOLDS, SIMPLE COMMODITY PRODUCTION WITH HIGH INCOME

These cases illustrate the fishing and hunting patterns of households whose monetary income is derived primarily from commercial salmon fishing and, in some cases, commercial trapping. The income for these households falls within the upper ranges of commercial fishermen income in the respective communities.

As discussed in the literature review (Chapter 2), simple commodity production is the small scale production of goods for sale on nonlocal markets. In the study communities, salmon and herring fishing are the primary forms of simple commodity production, representing major sources of income for the communities.

The manner in which simple commodity production is integrated with fishing and hunting for subsistence uses at the household level may be different from the way wage employment is integrated by households. Simple commodity production entails different social relations in production. The independent fisher owns and controls production capital. He is essentially self-employed, establishing his own hours of work within the constraints of the fishery. The independent fisher is

linked with international markets through middlemen buyers and processors. The household cases illustrate how this work structure affects each household's pattern of resource harvest and use activities. The relatively greater independence of being self-employed in a natural resource extractive industry may be more compatible with fishing and hunting activities for subsistence production, since work schedules are more flexible, seasonal, and utilize similar" skills and equipment. Further, at the macroinstitutional level, the development of a commercial fishery may be associated with systems of property relations in regard to land and resource use which may be more compatible with traditional subsistence resource uses.

The cases also present information on the socioeconomic system termed "simple commodity mode of production," described in Chapter 2. This theoretical type of socioeconomic system purportedly is transitional between the "domestic mode" and the "industrial capital mode." According to this theory, the most successful simple commodity producers eventually gain social and economic advantage which leads to a class structure and wage form. The case households presented below represent some of the most successful commercial fishers in each community. The cases can be examined to see what patterns of subsistence resource use are associated with high incomes from commercial fishing. These can be compared with the patterns of resource use by low income earners described in later cases. The relationship between income levels and extent of subsistence participation allows for a partial test of the relative validity of the "simple commodity mode" typology for the study communities.

Quinhagak

Household Composition. The head of this household is a married man in his early 40s with 5 children (2 boys and 3 girls, the eldest in their late teens).

House Characteristics. The household is located in a 1979 housing development, with four bedrooms, a kitchen, living room, and bathroom. It has electricity, no running water, no plumbing, and is heated with a combination of a fuel oil stove and a wood-burning stove. A propane stove is used for cooking. The refrigerator is turned off in order to conserve electricity. The household has a freezer in a large service porch, which was added to the front of the house and is used as a storage and work area.

Related Structures. Two large storage sheds and a steambath are built on the house's lot. The household owns a fish rack along a nearby slough, about a two-minute walk from the house, but has not yet built a smokehouse,

Technology. The household head owns one of the largest boats in the community -- about 30 feet in length and 8 to 9 feet in width, wooden, V-hull, with a cabin, a 140 hp outboard engine, and citizen band radio. There is no other electronic gear. The head also owns an aluminum herring skiff and a flat-bottomed riverboat. He has one of the largest assortment of equipment in the community -- a half-dozen snowmachines in various stages of repair, five three-wheeled all-terrain vehicles, an automobile, and a truck.

Sources of Income. There are two commercial fishing permits held within this household, one by the father and one by the eldest son. Generally, the father commercial fishes nonlocally, as he estimates that he can earn more income than by fishing in the local district. Last year (1982) was the first year the son began fishing in the local district, but because of poor catches and prices, he joined his father and fished as his partner the remainer of the season. In 1983, the head left the community about June 14 for commercial fishing.

Subsistence Involvement. The members of this household actively participate in fishing and hunting for subsistence uses. Last year, before leaving for commercial fishing, the household head drifted for kings, taking about 25 for his household. After returning from commercial fishing, household members put up 100 coho as well. The household has a fish camp upriver, but did not use it last year. In addition, the head helped support the household of his elderly father and mother, providing them fish which they dried and smoked using their own fish rack and smokehouse.

In fall the household head made one trip upriver to net arctic char and in spring took two additional trips. He estimates that he harvested about 300 pounds each trip. On one of the trips, he split half of the take with his boat partner, the head of a neighboring household. His wife froze the char taken in fall and dried the char taken in spring. During fall, he also used a net for cisco on a nearby river, filling a 150-pound sack.

Household members occasionally jig during winter for char and rainbow trout. In addition to char, they take about 10 round whitefish,

15 grayling, and "a few" rainbow trout. 'L'his spring, the wife jigged twice for smelt near the community, taking about 60 pounds, which she strung and dried. During winter, the head hunted sea mammals from the sea ice and by boat among the ice floes, In 1983 he also harvested two bearded seal, three ringed seal, seven spotted seal, one sea lion, and three walrus, although in 1982 he harvested two walrus. On different hunting trips in 1983 he also took 1 moose, 8 caribou, and about 60 ptarmigan. The household obtained about 145 geese and 25 ducks last year.

The household head is one of the community's most active trappers during winter. He uses the meat and some of the fur for his household and sells a portion of the fur on commercial markets. This year he took 28 beaver, approximately 50 fox, 27 mink, 5 otter, 3 snowshoe hare, and 8 tundra hare. He has never harvested muskrat. According to 1982 commercial sales records, he sold more furs than any other trapper in the community, including at least 39 fox at a value of $2,680. Skins of beaver and seal frequently can be seen drying on plywood outside of his house for local use.

Overall, a relatively broad range of resources are harvested by members of this household in substantial quantities. In 1982-83 they harvested about 7,247 pounds dressed weight of fish and game, or about 1,035 pounds per household member.

According to the household head, much of the food he harvested in 1982-83 was not consumed within his own household, but was distributed to other households in the community. The head regularly sent food to the household of his elderly parents, who reside in the community,

to augment the fishing and hunting they were able to do. The household head estimates that his household provided food to about 15 households in the community during this period of time. Some products were widely distributed throughout the community. For instance, when the head brought down a boat load of char from upriver and had taken enough for his household, he announced over the citizen's band radio that people could come down to the river to help themselves, and they "cleaned out the boat." Similarly, the walrus he harvested was distributed widely. Thus, the fish and game produced by this household are shared to provide support to a number of other households in the community.

Goodnews Bay

Household Composition. The members of this household include a married couple in their 50s and 4 children, whose ages range between 10 and 23 years.

House Characteristics. Their dwelling is a recently constructed Bureau of Indian Affairs three-bedroom house which includes a kitchen, living room and bathroom. It is heated by an oil-fueled stove which also functions as a cooking range. There is a telephone in the house.

Related Structures. The dwelling of this household is situated among those of four other related households. These households share two of the storage sheds belonging to the case household, while the latter uses the drying racks and sweatbaths belonging to other households in the cluster.

Technology. Household members own three wooden fishing boats, one aluminum skiff, two snowmobiles, one three-wheeler, and two motorcycles. They also have access-to the technology of the other households in the cluster.

Sources of Income. Household members have one Bristol Bay and three Kuskokwim commercial fishing permits. The Bristol Bay permit and one Kuskokwim permit are owned by the male household head; the remaining two are in the names of his wife and eldest son who is in his 20s. Although individually not all of them are highly productive fishers, cumulatively their income is well above the average of other fishing households in Goodnews Bay. In general, the crews are composed of household or extended family members, often parents and children but also other combinations of kinsmen.

Subsistence Involvement. Although there is household autonomy in some aspects of subsistence production, the extended family (i.e. daughters and spouses who reside in other households and the wife's stepfather) is the organization from which members of subsistence production units are recruited. It is also primarily within the perimeters of the extended family that the distribution and consumption of subsistence products transpires. The household has a spring camp on the Bering Sea coast south of Platinum, where the entire household and other members of the extended family go to participate in the harvest of resources. In the spring of 1983, the household was at camp for approximately five days and was successful in the harvesting of seals, sea lions, brown bear, squirrels, and birds.

As all of the adults in the household are involved in commercial salmon fishing efforts, and this enterprise dominates the activities of late spring and summer, members of the household take time, however, in late spring to travel upriver for beaver and freshwater fish. During the summer, subsistence salmon are taken, and flounder, which are incidentally caught in salmon nets, are kept and processed by drying. Eggs from rookeries on Bering Sea islands are gathered and, if seen, walrus are harvested. This pattern of subsistence productivity is sustained throughout the year and identifies the household and family as one of the more intensive subsistence producers in Goodnews Bay. The harvest is processed by members of the extended family and is stored in a large, common cache (approximately 10 by 35 feet), which is situated near the center of the extended family cluster. Harvest levels for this household were considered confidential and not available to the researcher.

Sociocultural Characteristics. The household is part of a large extenderI family, which is involved in generalized reciprocity. The older members of these households speak primarily Yup'ik, but the younger members speak mostly English with Yup'ik as a second language. Older household members have few years of formal education.

Togiak

Household Composition. This household is composed of a husband and wife in their mid to late 40s, with 5 children ranging in age between 16 and 27 and a grandson. The eldest three children are girls.

The husband is from the Togiak area and the wife is from a village along Kuskokwim Bay. They have one married daughter in the village.

House Characteristics. The dwelling was recently built and privately financed. It is very large, of frame construction, and has two floors. Its size is approximately 3,500 square feet of living space with 4 to 5 bedrooms, kitchen, living room, bathroom, and storage rooms. It is completely plumbed and has electricity, although heating is derived from an oil-fueled furnace. The freezer and refrigerator are electric.

Related Structures. Household members own two adjacent dwellings, one occupied by the male head's father and the other by a daughter's fiance. In addition, they have one large fish rack, a very large cache, three sheds, a smokehouse, and a steambath.

Technology. The household head has a new fiberglass Togiak skiff, a number of wooden Togiak skiffs in various states of repair, two Togiak wooden skiffs in use, three aluminum skiffs, and seven outboard motors ranging in size from 35 to 135 hp. In addition, the household has a four-wheel drive pickup, 3 snowmachines, 2 three-wheelers, 1 new four-wheeler, and about 11 dogs. They also have a summer camp near Tongue Point.

Sources of Income. The household has four drift commercial fishing permits. Two are held by the couple, one by the eldest daughter, and one by their only son. Two of the permits were inherited from the father's parents. Although incomes of individual family members derived from fishing are not exceptionally high, collectively they are relatively high with earnings in the top five percent for households in

Togiak. One permit was infrequently used in 1982 and it was reported that it will be used occasionally in 1983 for commercial purposes. The holder has income from another source and currently uses her fishing gear primarily for subsistence fishing, with the surplus going to" commercial buyers. The male head is one of the few from Togiak to fish the Nushagak as well as Togiak Bay the past few years. He commercially harvested roe-on-kelp and his son fished for sac roe, each earning about the same income from the herring. There is some recent wage income which has come into the household through two of the daughters and the wife. This income is used primarily for personal consumption and does not increase substantially the overall household income.

Subsistence Involvement. These household members are active participants in the subsistence economy of the community. The primary producers of subsistence products are the parents and their 18-year old son. This past year they harvested approximately 22 species, not including varieties of vegetable foods, berries, bird eggs, and clams. The total production for the year was approximately 6,522 pounds dressed weight of fish and game for an average of 893 pounds per household member. There are two households of single male adults who share in the cache but also contribute to it. The main hunters are the father and son, who hunt either together or independently. The mother, with assistance from resident daughters and married daughters, harvests and prepares salmon. Although she has a commercial drift net permit, much of her catch the past two years has been used within the household. This past year she caught and processed 70 kings, 150 reds, and about 50 chum. Some were frozen, but the majority were split, dried, and

smoked. The kings were cut into strips and stored in the cache and freezer. In 1982-83, freshwater fish harvests were conducted in the spring and fall by the male head and other household members. Some household members also went to the spring camp near Tongue Point for about one week. The male head conducts a lot of resource harvesting without a partner, except when hunting sea mammals, ducks, and larger game.

The frequency of subsistence resource harvest trips has varied from year to year. This past year the male head made four trips upriver to sweep seine for char, whitefish, and pike, The char were split and dried. In the spring he also harvested ducks, geese, seals, sea lions and brown bears. In May kelping season is a common period to hunt sea lions, seals, and even walrus. In the fall, moose and caribou are 'nunted and beaver and other mammals are taken opportunistically. This past year the male head and partners traveled by chartered plane to the Alaska Peninsula and harvested three caribou each. Although he has harvested moose in the past, he did not get one this year.

During the winter months the head's daughters and wife engage in ice fishing for various trout and char. They usually go on weekends and no more than twice monthly. The male head and other members of his family occasionally go jigging through the ice for smelt. Last year they harvested about 200 pounds of smelt. Members of the household engage in the distribution and exchage of food with four other households on a regular basis. The male head supports his aged father, provides major support for a married daughter, and supports another daughter and her fiance. He also has regular exchanges with one of

his hunting partners who is also a kinsman. He is involved in occasional exchanges with other families.

Sociocultural Characteristics. This household acts as the center for receiving and distributing subsistence products for three other households. The case household harvests and processes subsistence resources, which are the main source of food for the other three households. Although the household heads do not speak English well nor were they formally educated, two of their daughters are working towards college degrees. The male head is involved in local community politics and holds an elected office.

New Stuyahok

Household Composition. This household is composed of a large nuclear family. The husband (in his mid-40s) and wife (early 40s) were both raised in the local area. They have 8 children between 10 and 21 years of age and an adopted daughter about 10 years old.

House Characteristics. Their home is one of the ASHA houses built in 1971-72, which they have added on to. It is a single-story, frame structure with 7 or 8 rooms and probably 1,300 square feet of floor area. The home is heated by both oil and wood stoves, and the household has an electric freezer.

Related Structures. Adjacent to the house are a storage shed and cache. The household also has a cabin, fish racks, and smokehouse at Lewis Point and another cabin up the Mulchatna River.

Technology. The household has four snowmachines, all Less than three years old, and two sleds. Two skiffs and three outboard motors are owned by the family. They have one three-wheeler. The husband commercial fishes with a 32-foot fiberglass gillnetter, which is about 5 years old. Their dog team is used for trapping and hunting as well as for recreation.

Sources of Income. The husband holds a limited entry permit for the Bristol Bay commercial drift and gillnet salmon fishery. His older sons usually fish with him, but in 1982 one son fished with another man from a neighboring village. The husband and older sons also make a small amount of money by trapping.

Subsistence Involvement. The household harvests the wiriest variety of species, 35 of 45 species considered, of any household interviewed in New Stuyahok. They brought home 3,927 pounds of mammal meat (357 pounds/person), 405 pounds of birds, 5,200 pounds of salmon, 554 pounds of freshwater fish, and 39 gallons of berries -- a total of 10,086 pounds dressed weight of meat and fish or 917 pounds/household member.

The household has their summer fishing camp at Lewis Point. The husband and older sons get camp set up with everyone's help before commercial fishing starts and help set the net for subsistence fishing when they are not commercial fishing. The household shares their racks, smokehouse, and labor with a close relative and her household. 'Whitefish are caught by the sons in nets in the spring and fall; they are dried in the spring and frozen in the fall. Pike and whitefish are taken by net and also by jigging during the winter and spring. Grayling are caught through the new ice in the fall by jigging. The

husband and wife annually take a two to three week trip in April to catch lake trout and char. They usually take some relatives or friends along. Lush are taken just before freeze-up in the fall when ice is drifting downstream. The household receives smelt from a close relative, who spends some time down in Dillingham, and dried herring from Manokotak.

In the past year, the husband took part in two successful moose hunts. In September 1982 he went up the Mulchatna River with one other hunter and brought one moose back. In December, he went with six others one mile downstream from New Stuyahok and they harvested one moose. The two oldest sons went hunting together for moose twice in the fall. They took one moose and brought it home, where their father decided how to distribute it. Large portions were given to the wife's mother. The hushand went caribou hunting at least three times and was reportedly successful on all three trips, but he brought home meat only once. The remaining times, meat was given to visitors from other villages or was sent to other villages. In the past year, the sons harvested caribou on at least four different occasions, three times in the fall and early winter and once in February. They took a brown bear in the fall with several other young men, and the meat was used primarily for dog food. Household members do not regularly hunt black bear, but they did receive black bear meat from a neighbor. Porcupines are taken frequently by the hunters in the household. They estimate that they caught 75 or so in the past year, and many are given to household elders who no longer hunt. Arctic hares are sought incidentally or on specific forays, and snowshoe hares are taken in

snares. Marine mammal meat and oil are received irregularly from Togiak and Manokotak friends.

Geese are caught upriver and near Lewis Point. Ducks are taken all along the river, and cranes are harvested around Lewis Point. Ptarmigan and spruce grouse are hunted on the tundra and in the willows along the river during winter. The husband and older sons set traps for otter, mink, lynx, red fox, and wolf. During beaver season, the sons camped up the Mulchatna River at the family's cabin and trapped that area. The husband trapped near the village.

Salmonberries are picked at Lewis Point by the family, and about a gallon were received from a friend in Manokotak in 1982. The husband and wife travelled up the Mulchatna River to pick blackberries in the fall. Cranberries were picked by family members around the village. Wild vegetables are eaten a few times during the summer, and tea is picked for medicinal purposes about once per year. A teenage daughter is learning traditional uses of plants from her grandmother. Firewood is collected by the sons for use in heating their home and cooking the dogs' food.

The household does not belong to a well-defined exchange network that stores goods in a common cache. They produce an abundance of subsistence goods and share them widely in the village. They frequently share food with two elderly couples who no longer produce many subsistence foods on their own. They also frequently share with the wife's relatives.

Sociocultural Characteristics. The husband went through fourth grade in the local school and the wife through third grade. The

children have already or are planning to complete high school. One daughter is attending college, and other children are planning to continue their education beyond high school. The husband and wife are active in church and traditional cultural activities.

CASE HOUSEHOLDS, SIMPLE COMMODITY PRODUCTION WITH LOW INCOMES

These cases illustrate the fishing and hunting patterns of households whose monetary incomes are derived principally from commercial fishing, but which rank in the lower levels of monetary earnings among commercial fishermen. As with the previous category of cases, these households earn monetary income through self-employment in natural resource extractive industry. However, unlike the previous cases, the households are relatively less successful in this commercial enterprise. How low income levels may be related to patterns of subsistence activities can be examined with these case households.

Quinhagak

Household Composition. The head of the household is a married man in his late 30s with a young child (household size is 3).

House Characteristics. Household members live in one of the older houses in the community, with one bedroom and a combined living and cooking area. It has electricity, no running water, no plumbing, and cooking and heating are done with an oil-burning stove. There is a freezer in the arctic entryway.

Related Structures. Being a relatively new household unit, the members as yet have no storage shed, steambath, fish rack, or smokehouse.

Technology. Household members own an 18-foot aluminum skiff with a 35 hp outboard, an old snowmachine, and a three-wheel all-terrain vehicle.

Sources of Income. The household head has a limited entry permit for commercial salmon fishing and a permit for commercial herring fishing. Fishing for salmon without a partner, he grossed approximately $6,200 in commercial salmon sales last year, which was just under the average for the entire community. This spring, he fished as a partner for commercial herring on a friend's 26-foot aluminum skiff. They entered the fishery late, fished a single opening, and earned enough to cover gasoline expenses. The monetary income of this household is derived solely from the sale of commercial salmon.

Subsistence Involvement. The household head fishes and hunts throughout the year with several different partners and typically divides his harvests with other households within and outside the community. Last year he harvested about 25 king, 5 chum, 50 red, and 40 coho salmon, which were stored in his freezer. His household did not dry or smoke fish within an extended family unit. His wife was taking care of an infant and also had no mother in the community, the person with whom she most likely would cut fish. As mentioned previously, the household also had no rack or smokehouse.

Twice during fall and once during spring the head used a sweep seine for taking char, rainbow trout, round whitefish, and grayling

upriver. In addition, he regularly took his snowmachine upriver during winter to jig through the ice for fish, filling several sledloads at times. Over the entire year, the household head harvested approximately 30 100-pound plastic trash sacks of char and other river fish. During November he jigged for cod on a nearby river, taking about 500 pounds.

During the fall of last year, the household-head was unsuccessful seal hunting, striking but losing a bearded seal. During spring, he hunted several times with different partners from the sea ice. He harvested 2 ringed seal, 15 spotted seal, and 2 walrus himself. The seal meat was cut into strips and dried on a cousin's rack, the oil stored in bottles, and the skins scraped and dried. He planned to carve the walrus ivory into craft items for sale. During the fall on a hunting expedition with five hunters, the household head killed a large brown bear. The meat and fat were eaten, and the hide scraped and saved. Last fall he did not hunt waterfowl, but this spring he harvested 20 geese, 6 ducks, and waterfowl and seagull eggs. He also took 15 ptarmigan and 1 beaver. Overall, the household harvested a relatively wide range of resources in substantial quantities. Last year, he harvested an estimated 6,237 pounds dressed weight of fish and game, or 3,079 pounds per household member.

Clearly, a household of three could not consume the quantities of food the head produced. Much of the food he harvested was given away to households within and outside the community. He regularly supported the household of a widow within the community, his wife's aunt, where he frequently ate. He sent trout, walrus, and seal oil to households

in Atmautluak, Kipnuk, and Bethel. He received products from each of the communities: whitefish and pike from Atmautluak; walrus, seal oil, blackfish, needlefish, and geese from Kipnuk; herring eggs from Tooksok Bay; and "vegetables'" from Bethel. Two resources he did not harvest -- moose and bearded seal -- were received from persons within the community. The boat loads of char he harvested were first split with his fishing partner, and the excess was distributed among other households in the community. When he killed the walrus, he and a partner filled up their boat; a second boat came along and was also filled. The hunters kept some for themselves, while the rest went to others in and outside the community. Similarly, the brown bear was cut up and shared among the five hunters, the meat and fat eventually being distributed to many households. In this manner, the fish and game from this very productive hunter was used to support other households within the community.

Goodnews Bay

Household Composition. The head of this household is a woman in her late 50s, who has a resident son in his early 30s. She has a number of unmarried and married offspring with children residing in separate households within the village.

House Characteristics. The dwelling is a recently constructed BIA house. It is of frame construction with three bedrooms, a living room, a kitchen, and a bathroom. Heat is provided by an oil-fueled combination cooking range/heating stove.

Related Structures. The case household has an older house, which is now used as a workshop and storage area. Several storage sheds and a drying rack are also associated with the household.

Technology. The household owns a locally-built 30-foot fishing boat with a 50 hp outboard motor. They also have an aluminum skiff. They do not own a three-wheel all-terrain vehicle, a snowmachine, or an automobile.

Sources of Income. The head of the household makes and sells Native crafts. Her son fishes for herring and salmon commercially in Goodnews Bay. In 1982 the son's fishing income was below average for a Goodnews Bay fisherman.

Subsistence Involvement. The head of the household is no longer physically able to participate in subsistence production activities. She does process subsistence products, but is usually aided by her unmarried daughter. It is the union of the case household and the household of the head's unmarried daughter which results in the primary subsistence production and consumption unit. The resident son is active in sea mammal hunting anti usually conducts these activities with his male kinsmen. In the spring of 1983, he went to seal camp south of Platinum. While at camp and on other harvest ventures, birds and squirrels were taken. During late spring and early summer, the son takes trips upriver to obtain freshwater fish and beaver.

In 1983 the son was involved in commercial fishing for herring and salmon and did not subsistence fish for salmon. However, the head's unmarried daughter took subsistence salmon both from a beach set net located in front of the village and by drifting in the Bay. In drifting

for salmon and in gathering of firewood and other resources upriver and around the Bay, the daughter utilizes a wooden fishing boat which she inherited from a deceased male sibling who was part of this household's subsistence network prior to his death.

The household also receives subsistence products from other households in which the head's offspring are members. While the subsistence network described above harvests most of the subsistence resources available to the village of Goodnews Bay during an annual cycle, the relatively small size of the household and ratio of producers to dependents in the functional unit of production makes fulfillment of harvest demands rather easy. Thus the members of the, subsistence unit are not required to devote a large portion of their time to harvesting subsistence resources.

Sociocultural Characteristics. Yup'ik is the dominant language in the household, although the son speaks English and has completed two years of college. He also is a trained carpenter.

Togiak

Household Composition. There are 8 members in this household, which is composed of a married couple in their late 40s to early 50s, 5 children ranging in age from the late teens to mid-20s, and a grandchild (a daughter's daughter). Both the husband and wife are from the Togiak area. The eldest four children are females.

House Characteristics. Household members occupy an older, owner-built, plywood, framed house consisting of a single room walled off by curtains and half-walls. The dwelling is plumbed for water and has electricity. Heating is derived from an oil-fueled stove and cooking is done on a propane stove. There is a freezer in a storage area and a refrigerator in the kitchen area.

Related Structures. There is a drying rack, a shed, a smokehouse, and a sweatbath located near the house. Household members also have a camp upriver.

Technology. Household members own a Togiak skiff, two aluminum skiffs, and three outboard motors. In addition, their land vehicles include one three-wheel all-terrain vehicle and six operative snowmachines. They have a large number of other fishing and hunting equipment.

Sources of Income. The male head of this household fished commercially in the past for salmon, but transferred his drift permit to his son a few years ago. The son recently graduated from high school. The son is not an exceptional fisherman and his earnings are in the bottom ten percent for drift net fishermen in Togiak. He usually fishes with a sister or a close friend. The mother of the household works seasonally at the cannery as does one daughter. The daughter's earnings are used for her college education. The male head of the household has a small income from commercial trapping.

Subsistence Involvement. The household head hunts and fishes throughout the year, primarily alone but occasionally with partners or a member of his family. His most frequent partner is his son. The

father will travel upriver in the fall and winter and stay for a number of days at their camp, during which time he will hunt, trap, and fish. On the other hand, the son is the primary sea mammal hunter, harvesting seals, sea lions, and other subsistence products from the bay and sea. In the fall of 1982, the son harvested seven seals, and in the spring of 1983, he harvested another five seals and two sea lions. In addition, the son and a friend shot a moose, dividing it evenly. In the spring the son shot over 100 ducks and 2 swans.

The male head of the household often goes upriver hunting, trapping, and fishing alone or with family members. In the past year he trapped ten beaver, three land otter, and eight red fox; the latter were sold on the market. He also harvested approximately 100 ptarmigan and a number of grouse. In the fall, he traveled with other household members to Togiak Lake, where they harvested in excess of 100 lake trout, 200 spawned reds, 20 whitefish, 20 rainbow trout, and a large number of arctic char. He reports that he harvests one bucket of smelt daily for two months each winter.

In the 1982-83 period., this household harvested an estimated 6,221 pounds of fish and game dressed weight or a total of 731 pounds/person. Members harvested 22 different species, excluding berries and other vegetation. The mother of the male head receives subsistence products from the household on a regular basis. The two sea lions were given to a number of families, because the household head does not like the meat. His wife gives food to her sister, who is also raising the case household's oldest son. The household receives food from a number of friends and relatives, but not on a regular basis.

Sociocultural Characteristics. The male head of this household has no formal education and speaks limited English. The eldest daughter attends college and hopes to return to Togiak to hold a position in the school or in one of the administrative units. She and her mother have had a long history of working at the cannery during red harvests.

New Stuyahok

Household Composition. This household includes an elderly couple, their youngest daughter, and her child. Four sons and two daughters live in surrounding households with their spouses and offspring. Two other adult-aged children live in neighboring communities.

House Characteristics. Their home is a frame structure which was originally the village school. It has 4 or 5 rooms and covers approximately 1,100 square feet. Wood and oil stoves are used to heat the home and a freezer is used to store foods.

Related Structures. Around their home, this household has a shed, workshop, smokehouse, drying racks, a steambath, and a small, recently unused, sawmill. At Lewis Point, the household has a cabin, drying racks, smokehouse, and a steambath.

Technology. Members of this household own a two- to three-year old snowmachine and sled, a wooden skiff, two outboard motors, and a three-wheeler with trailer. The household shares a four wheel drive pickup with the households of two sons.

Sources of Income. The father holds a Bristol Bay drift permit and fishes with a 32-foot fiberglass boat. Moderate incomes are reported

by this household from commercial fishing. It is likely that a large proportion of the gross income goes to the crew, which is composed of linear descendants of this household. The household also receives a monthly income from benefits for the elderly. The daughter works at a wage-paying job for about nine months of each year.

Subsistence Involvement, This household harvests 22 of the 45 possible resources described in the formal inquiry. This included no mammal meat, 3,075 pounds of salmon, 28 pounds of birds, 990 pounds of freshwater fish, and 82 gallons of berries, for a total of 4,093 pounds or 1,169 pounds per household member.

The father has curtailed many of his subsistence pursuits in the past 10-15 years, but he uses a very broad range of resources. The household harvests salmon for subsistence use at Lewis Point. The father sets up camp with other household members, but the majority of fishing and preparation of fish is done by the women while the father is away from the camp commercial fishing. The women, work in conjunction with women of four closely related households. The dried and smoked salmon produced at Lewis Point are shared among five or six households. Whitefish and pike are netted in the spring following break-up, with catch and processing efforts, as well as products, shared among eight or more households. Grayling are caught by the father and mother jigging in the early winter just after freeze-up. In fall 1982, the father went upriver five times, but he did not harvest a moose. He did not attempt to harvest caribou in the past year. Moose and caribou were received from at least eight different households, primarily from sons, sons-in-law, or grandsons. This household

also received porcupines, beavers, geese, ducks, and other small game from a variety of households. The father did catch some ducks in the past year. He has not trapped for a number of years. The household picks berries, often with related household members. Wild vegetables are picked in the late spring and early summer. Firewood is gathered, often by grandsons, for use in the steambath and for heating the house.

The cache and related structures around this house are used by five or more related households as a depository and distribution point for large game and fish caught in bulk. This household is the center of one of the larger and most well-defined extended kinship networks in the community.

Sociocultural Characteristics. In addition to being the center of a large kin network, the parents of this case household are actively involved in the Russian Orthodox Church and in village politics.

CASE HOUSEHOLDS, MIXED EMPLOYMENT AND SIMPLE COMMODITY PRODUCTION

These cases illustrate the fishing and hunting patterns of households whose monetary income is derived from a significant mixture of wage employment and commercial fishing, trapping, crafts, and other simple commodity production. In the study communities, it was found that many households have multiple sources of monetary income during a year, through members holding multiple jobs concurrently or sequentially, and through more than one household member holding remunerative jobs. The cases that follow represent examples of households that mixed wage employment with simple commodity production during the past

years. The cases can be read to examine if fishing and hunting patterns of these households appear different from those of households with a single, major monetary income source.

Quinhagak

Household Composition. The head of this household is a married man in his late 40s with 4 children living at home (the oldest in his early 20s) and 2 children married and living nearby.

House Characteristics. The family resides in a house built by the household head, with three bedrooms, a kitchen, living room, and bathroom. It has electricity, no running water or plumbing, and is heated with a combination of a fuel oil stove and a wood-burning stove. A propane stove is used for cooking. The household has a freezer located in the arctic entryway.

Related Structures. A fish rack, a smokehouse, a steambath, and several sheds used for storage, work areas, and food caches are located near the house.

Technology. The household owns an aluminum and wooden skiff with 35 and 55 hp outboards, two snowmachines, a truck, and a three-wheel all-terrain vehicle.

Sources of Income. From 1982-83, the head of this household held a part-time, wage-paying occupation in the community, requiring about two to three hours of his time daily. The hours he worked were somewhat unpredictable from day to day, and so he commonly remained "'on-call" at his house in case he was needed.

During this time, a second source of monetary income to this household was commercial fishing. There were two commercial permits in the household, held by the household head and one son. The son fished from his own boat and retained his earnings. Last year, because of health problems, the father temporarily transferred his permit to another son, who fished from his father's boat. This year the father fished with a son-in-law as partner, using the son-in-law's larger boat, with each receiving equal shares of the profits.

This year the household's oldest son also fished for commercial herring at Goodnews Bay as a partner with the son-in-law. They were late in entering the fishery and fished a single period, earning only enough to cover operating expenses.

Subsistence Involvement. Household members actively participate in fishing and hunting for subsistence uses. Last year, the household harvested about 30 kings (20 were dried and 10 were frozen fresh); about 700 chums (for their dogs); 200 reds; and 300 cohos. The salmon is cut, dried, and smoked at a rack and smokehouse located near their residence. The fish are harvested by the father, son, and son-in-law and processed by the mother and two married daughters who live in their own households. Thus, the members of three households pool their labor and process the salmon. Most of the smoked salmon is stored at the parents' household. The daughters households take from this supply for their own meals or simply consume it while visiting with their parents.

During fall, the household head used a net for harvesting char upriver, taking about 210 pounds, which were dried and frozen by his

wife. From late March to the end of April, they also jigged for a few more char through the river ice to have some fresh fish. During these activities, they took about ten round whitefish, ten rainbow trout, and "a few" grayling. In November the household head set a blackfish trap which , over a few week period, took about 280 pounds. 'The head also used a sweep seine in a nearby river for cisco, taking about 53 pounds. During spring he used a dip net for smelt. They ate some fresh, and his wife dried five, three-foot long strings.

Last winter, the household head harvested 10 beavers, drying the carcasses for home consumption. He took two foxes, three minks, one otter, two porcupine, three snowshoe hare, one tundra hare, and four muskrats. He frequently sells fox to commercial buyers. There were 3 bundles of about 70 dried squirrel skins in his cache, representing the catches of 3 successive years. These will be made into parkas ant-l other items used locally. Last year the household head took three ringed seals and four spotted seals. He also harvested 1 moose, 1 caribou, 20 ducks, 15 geese, and 20 ptarmigan. His son received a third of a walrus as a member of a hunting crew.

Overall, during the last year a relatively diverse range of resources were harvested by the household in substantial quantities. The household harvested an estimated 9,018 pounds of fish and game, excluding the walrus received by the son as a crew member. This represents an average of about 1,503 pounds per household member. The figure was high because the consumption unit is actually larger than the single household. The fish and game are shared within an extended family network within the community. The households of the two married

daughters regularly ate at their parents' house and shared from the household's cache. If the households are considered to be a single consumption unit with 13 members, then the average harvest per household member was about 694 pounds dressed weight of fish and game.

Goodnews Bay

Household Composition. This case household consists of a married couple in their early to mid-40s, 2 teenage sons, and a daughter in her early 20s with a child or a total of 6 members. The household is part of an extended family who reside in a number of other households.

House Characteristics. The dwelling is a ten-year old BIA construtted house with three bedrooms, a living room, kitchen, and a bathroom. It is heated by an oil-fueled range and an oil stove. The household has a telephone.

Related Structures. Household members have a shed, a small residential dwelling, a drying rack, and a sweatbath located in association with the primary residential unit.

Technology. Household members own two commercially-built wooden fishing boats that have a combined value of $30,000. They also own two skiffs, one three-wheeler, a car, three snowmachines, and a motorcycle, in addition to fishing equipment and gear.

Sources of Income. The household engages in both commercial salmon fishing and wage employment. Four of the members have part-time employment with different employers within the village, and they collectively earn approximately $1,500 to $2,000 monthly. The hours of

employment for all members are flexible, and in two cases individuals substitute for one another if one cannot work. The household also owns three Kuskokwim permits and one Bristol Bay commercial fishing permit. Only two of the permits were used in 1982 and 1983. Yet the fishers from this household were among the top five percent of the households in Goodnews Bay in earnings derived from commercial fishing. They fished for both salmon and herring in 1982 and 1983. Finally, the head of the household traps commercially for forbearers during the winter season.

Subsistence Involvement. The males of the household are very active in subsistence production and provide fish and game for other related households as well as for their own. Because of involvement in the commercial herring and salmon fisheries, the head is fully occupied during the summer and is not able to participate in subsistence activities. Prior to the start of the commercial fishing season, he travels to seal camp with male-in-laws and will remain there for five days to two weeks in order to obtain an adequate quantity of seals and sea lions for his household's needs and to supplement the needs of his mother's and his parents-in-law's households. During the fall and winter, the head hunts for moose, traps for fox and other furbearers, and nets freshwater fish. While his sons fish together in both the Goodnews Bay herring and salmon commercial fisheries, their continued residence in the community allows them to participate in late spring and summer subsistence harvest activities. Collectively, they travel upriver to obtain beaver, birds, and freshwater fish. In the spring, they hunt for seals in the Bay and, to a limited degree, subsistence

fish for salmon during summer months. In contrast to the greater than average frequency of harvest activities of the males in this household, the females engage in such activities at a lower than average level. They do so as a result of choice rather than because of employment or physical constraints.

The products of the harvests are either processed by male or female members of the case household or are distributed to related households.

Sociocultural Characteristics. This household was one of the more affluent in the community. The household head had a history of wage employment and had once worked for the mining company at Platinum. The head's spouse had received formal job training. Yup'ik is the dominant language in the household.

Togiak

Household Composition. This household includes a couple in their mid-50s, with 10 resident children ranging in age from late teens to mid-30s, and a grandchild, for a total of 13 members. There are 7 males over the age of 20 in this household. This household moved to Togiak as a unit from the Kuskokwim Bay region over 20 years ago.

House Characteristics. The main dwelling is a large, frame house over 1,500 square feet. It is owner-constructed, completely plumbed and serviced with electricity. It consists of four to five bedrooms, living room, kitchen, and bath. Heat is derived from an oil-fueled stove and the cooking range is fueled by propane. The household has two freezers and a refrigerator.

Related Structures. Adjacent to the main house there are two smaller residences in which some of the sons sleep, although they eat in the main house. Other structures include a large drying rack, storage shed, cache, smokehouse, and a sweatbath.

Technology. Household members have a four-wheel drive truck, 3 snowmachines, 3 aluminum skiffs, 2 Togiak skiffs, and 7 outboard motors ranging in size from 28 hp to 140 hp. They also have a wide range of fishing gear and trapping equipment and eight adult dogs.

Sources of Income. The male head of this household holds a full-time position with the school district. This means that he is off work from late spring to early fall, in addition to other periodic vacations such as at Christmas. His wife works seasonally at the cannery, and two of the sons have part-time positions in the National Guard.

The male head and an older son each hold a commercial salmon drift permit. The father has fished the past two years with an older grandson, while the son fishes with a resident brother. One of the older sons works as a crewman on his father's brother's boat, who fishes on the Nushagak River. Although the individual incomes from fishing are not above average, the total earnings for this household including all sources are in the top ten percent for households in the community.

Subsistence Involvement. Household members participate actively in fishing and hunting for subsistence uses. This past year members harvested an estimated 5,626 pounds of dressed fish and game, which averages about 458 pounds per person in the household. There were 20 species taken, excluding berries, vegetables, clams and bird eggs. Salmon are taken from commercial fishing nets and are processed either

by the head's wife or by daughters. Silvers are frozen while kings are dried and frozen. There are only approximately 100 reds taken for subsistence from the Bay, with the remaining 100 or more being taken out of Togiak Lake where the household has a fall camp. The household head, his wife and some family members rarely remain in Togiak for the commercial silver fishery in August, but instead travel to Togiak Lake to net spawned-out reds and lake trout and to harvest other products such as berries. During the winter, various members of the household ice fish for char, smelt, and other trout. They provide fish to local relatives and particularly to the household of a married daughter.

Most of the hunting is done either by the head of the household, who has a number of different partners, and/or an older son who does not have a commercial fishing permit. This past fall, the head went to New Stuyahok and harvested five caribou, which were shared with married offspring and his hunting partner. He also got a moose, which he split evenly with his hunting partner. This past spring fall and spring, the son harvested ten seals, which were shared with friends and local relatives.

Although household members did not harvest brown bears or walrus this year, they received enough of these products through gifts to feed the entire family for a few meals. They were also given geese, halibut, and other species by friends and relatives. They are regularly involved in an exchange network including at least four different households.

Sociocultural Characteristics. The household head has worked for wages since he resided in Togiak. Although the head's offspring are

high school graduates with a few nearing completion of college, neither he nor his wife is a fluent English speaker.

New Stuyahok

Household Composition. This household is composed of a nuclear family, including a husband in his early 4(3s, a wife in her mid-30s, and their 4 children aged 17, 16, 15, and 4. Both the husband's and wife's families are from the local area.

House Characteristics. This home is one of the 17 five-room houses with roughly 1,000 square feet constructed by ASHA. The home is heated by oil and the household has a freezer.

Related Structures. There is a shed next to the main house, but the family commonly uses the husband's parents' cache to store food. The family has a cabin, drying rack, smokehouse, and cache at Lewis Point.

Technology. Household members have a two-year old snowmachine and a nearly new sled. They also have a year-old aluminum skiff and outboard motor. The husband rents a wooden 32-foot boat to use during the commercial salmon season. He keeps a dog team for recreational use.

Sources of Income. The husband owns a Bristol Bay commercial salmon drift net permit. He also holds two part-time jobs in the village. The jobs require only a few hours of work per day, but the husband is on call at all hours to make repairs as problems arise. It is inconvenient to the community if he is absent for more than half a day, although he leaves the community during the commercial salmon season.

Subsistence Involvement. Members of this household harvested 19 of the 45 species considered, including 864 pounds of mammal meat dressed weight (144 pounds/person), 19 pounds of birds, 4,660 pounds of salmon, 197 pounds of freshwater fish, and 24 gallons of berries -- a total of 5,740 pounds of meat and fish, or 957 pounds per household member. The family harvests and processes subsistence salmon at Lewis Point. The husband helps set up camp and sets the net when he is at Lewis Point, but he is usually away from the camp commercial fishing. The wife sets the net, picks fish from the net, splits, hangs and smokes the fish -- often in the company of her husband's mother. The husband gets red fish (spawned-out reds) up the Mulchatna River in the fall and shares them in the village. He nets whitefish and pike for drying and freezing for his household and that of his parents. Grayling are caught in the fall. Suckers are caught in nets and used for dog food. The head hunted moose up the Mulchatna River near Red Veils in September and caribou hunted in the same area later in the month. This past year the family received moose meat from seven households (four are closely related). Caribou was received from five households (all but one closely related). The head reported harvesting about eight porcupine, but did not take or receive any rabbits, ptarmigan, grouse, or marine mammals. He harvested geese and ducks . He has not 'crapped actively since 1972, but did take four beavers during the 1982-83 season. The family picked blackberries about four miles upriver from New Stuyahok and lowbush cranberries immediately around the village. Firewood is gathered for cooking the dogs' food. No wild vegetables or herbs are gathered.

The head's parents' cache is used by this household and his brothers' households for storage of dry fish and frozen fish and meat during the winter, although each household has its own freezer. The brothers often hunt together and work jointly on projects for their parents. Subsistence products are mostly shared within the circle of parents and siblings. Cash may also be shared in the same network. Family members also share with elders who are no longer able to hunt, fish, or gather for themselves.

Sociocultural Characteristics. The head has a fourth grade education and his spouse completed eight years of formal education. The husband has considerable experience with a variety of mechanical equipment. He is active in local government and participates in traditional cultural activities.

CASE HOUSEHOLDS, VERY LIMITED EARNED INCOMES

This final set of cases illustrates the fishing and hunting patterns of households with very limited earned monetary incomes. Researchers in each community attempted to identify households with limited involvement in the market sector, and consequently with limited earned monetary incomes. As will be shown below, many of these cases receive forms of transfer payments through state and federal agencies.

Quinhagak

Household Composition. The head of the household was an elderly woman in her 70s, with 2 unmarried sons and a daughter in their 40s and 50s living with her.

House Characteristics. Household members had recently moved to the community and were staying at one of the older houses, which had one bedroom, a combined kitchen and living room, electricity, no running water, no plumbing, a fuel oil stove for heating and cooking, and no freezer or refrigerator.

Related Structures. The household had no fish racks, smokehouse, or sauna.

Technology. The household possessed one snowmachine but no boat, all-terrain vehicle, or other conveyance.

Sources of Income. The householders major source of monetary income last year was transfer payments — social security, state longevity payments, and food stamps. Last year one of the sons fished for commercial salmon as a partner with a brother who resides outside of the community, but he earned only $500 for the whole season. This was spent on fuel oil for the house. This year one of the sons planned to work at the cannery in Bristol Bay to earn money.

Subsistence Involvement. Household members did not fish for subsistence salmon during the 1982 summer season. "People gave us fish," according to a son. During fall, one of the sons was taken upriver by a friend in the community to fish with a sweep seine, taking char and a few rainbow trout, silver salmon, and round whitefish. They filled

a large washtub twice and split it between them. Some were dried and some were frozen. During this same time, the sister gathered one bucket each of salmonberries, cranberries, and blackberries from the tundra near the community.

During winter household members supported themselves by jigging for fish through the ice. The two sons jigged for char several times on a lake about 8 miles from the community, taking about 250 pounds during the entire winter. From February into May, the two sons jigged about two or three times a week for smelt and "a few" cisco on the river near the community, filling about two large plastic trashsacks. These were eaten fresh with seal oil.

Household members harvested no sea mammals or land mammals last year. However, people shared seal and walrus with them. The household was given "lots of seal oil." With a friend, the two sons traveled down the coast to hunt waterfowl during spring, but were only able to take a few ducks and geese. -They did not gather wood, but relied on fuel oil to heat the house.

Overall, the range of species harvested by this household was relatively narrow, primarily confined to fish species near the winter community, which could be harvested without extensive capital equipment or operating expenses. The household harvested approximately 504 pounds dressed weight of fish, or 126 pounds per household member. They were primarily on the receiving end of the distribution network in the community and were provided with other resources by relatives and friends. They did not report giving fish to other households.

Goodnews Bay

Household Composition. The head of this household is a female in her late 60s, who lives alone. She has married offspring in the community, but they have independent households. Her village kin network is extensive. The head was originally from up the Goodnews River and was born before Goodnews Bay was a community.

House Characteristics. The dwelling is a small, single room, oil-heated, older structure of about 625 square feet.

Related Structures. There are no associated sheds. but the household has a fish drying rack.

Technology. The head of the household does not have any vehicles or other subsistence or fishing equipment.

Sources of Income. Her only source of income is governmental pensions and old age assistance.

Subsistence Involvement. The sex and age of the single resident of this case household limit the extent and nature of the subsistence activities which she can undertake. While she does not engage in harvest activities, she does process subsistence resources provided to her by her three offspring. The amount of harvest received from her offspring is adequate to satisfy her requirements for food and raw materials.

Sociocultural Characteristics. The head speaks only Yup'ik and has no formal education.

Togiak

Household Composition. This household is composed of a married couple, both of whom are in their early 70s. The husband was reared locally and the wife came from the Kuskokwim River area.

House Characteristics. The dwelling is a frame house constructed through a federal housing program. It has three bedrooms, a kitchen, and a living room/dining room with a storage entryway. The house is fully plumbed with electricity which powers a refrigerator and a large freezer.

Related Structures. Adjacent to the new house is the old house, which the household occasionally rents out. There are two large drying racks, two large storage sheds, a raised cache, one large smokehouse, and a large steambath on the premises. Married offsping often store and repair equipment in the sheds and on the surrounding property.

Technology. The couple does not own any vehicle. They have a wooden skiff with a 50-hp outboard motor and a large assortment of fishing nets and other subsistence equipment. They also have access to their offsprings equipment, which is often stored near the house.

Sources of Income. The couple's only source of income is a state's longevity payment and federal old age assistance. They did not qualify for. social security, because they had not worked the required number of quarters.

Subsistence Involvement. Household members are most active as producers of subsistence products during the spring, summer, and fall. This year, as a couple, they harvested an estimated 2,204 pounds of

fish, game, and other subsistence products for a total of 8 species. Most of the harvest consisted of salmon and freshwater fish, but smelt were also jigged for in the spring before break-up. Together the husband and wife are the major harvesters of salmon for five other related households, and the wife does the major portion of the processing. They are the center of these five other households in production, processing, and distribution of subsistence products. Most of the subsistence products harvested by the other households are taken to them for processing, although some may be kept in individual freezers for household consumption.

In the summer the couple set a subsistence net in the river, which they check daily until the wife perceives that they have enough salmon of certain varieties for the season. The typical production unit is the husband and a grandchild. The processing unit is the wife, with daughters and daughters-in-law assisting her whenever possible. In the fall, the couple travel with at least one of their offspring to Lake Togiak, where they seined for spawned-out reds and lake trout which they process at the camp. At the same time they gather berries and a variety of other resources.

In the spring, the couple generally accompanies some of their grandchildren to their camp near the old village of Osviak, where they stay for a few weeks trapping squirrels and harvesting other resources for immediate consumption and for their cache. It is during this time that clams, bird eggs, early salmon, varmits, and spring greens are harvested by the couple, while an accompanying son hunts

seal and other sea mammals. Their year-round diet is primarily derived from local resources.

Sociocultural Characteristics. Although household members do not speak or read English, they are literate in Yup'ik. They are hosts for the extended family's kinsmen from other communities. Although not politically active, they have prestige due to their age but also due to the size of their extended family (about 25 persons).

New Stuyahok

Household Composition. This household includes a nuclear family composed of a husband and wife (in their early 30s or late 20s) and their 4 children {all younger than 8 years). The husband's family is " from the Stuyahok area, and his wife was raised in a-neighboring region.

House Characteristics. The house is a small (less than 400 square feet), single-story, two-room, frame structure, which was built-many years ago by a relative of the husband. It is heated with a wood stove. The household has a freezer.

Related Structures. There are no sheds, caches, or racks associated with this house. The head's parents' original home (currently used by brothers and sisters of the husband) is nearby and he uses their storage and work area facilities.

Technology. Household members own an older snowmachine and recently received a sled from the head's 'stepfather. The head owns an old wooden skiff and" an old 40 hp outboard, but rarely uses them. Instead he goes out with his brother in his brother's aluminum skiff.

Sources of Income. No one in this household holds a commercial salmon fishing permit. Most years the husband commercial fishes during the salmon season, but he has not made much money in recent years. In 1982 he fished as a captain for a woman from Bristol Bay who owns a boat and permit. The head and the woman fished for a coop and were never paid. In previous years the head has fished with several different partners. He worked ten days on a village construction project in 1982 earning $600. He made about $400 gross from trapping this year. Household members probably received more than $2,000 in transfer payments in 1982.

Subsistence Involvement. This household harvested 22 of 45 species considered, including 1,400. pounds of mammal meat (233 pounds/person), 155 pounds of birds, 257 pounds of freshwater fish, and 35 gallons of berries. Salmon harvests were not recorded, but most preserved salmon comes from the husband's mother.

The family has stayed in New Stuyahok during the summer rather than going to Lewis Point for the past six to seven years. They assist the husband's parents in catching and processing salmon. All the dried and smoked salmon they use is provided by the parents. In the fall and spring the husband harvests whitefish, pike and grayling in nets under the ice, five miles or so up the Nushagak River from New Stuyahok. In the past he traveled up to the Tikchik Lakes in the fall to net whitefish and lake trout, but he has not gone in the past couple of years.

The head moose hunted up the Mulchatna River three times in the fall with a brother, and he finally harvested one moose and one caribou

on the last trip. The meat went to individual freezers of three households related to the head. In the winter, he went caribou hunting about five times, three times near the village by himself or with his brother and twice with visitors from Togiak and Manokotak. He hunts geese and ducks in the spring and fall. He set traps with his brother for a variety of furbearers, but he caught only one otter in addition to his limit of beaver.

The husband and wife picked blackberries, blueberries, and cranberries in the vicinity of the village and received salmonberries from both of their parents. They have used firewood to heat their home for the past two years.

In most cases, harvests of large quantities of resources by this household and relatives are divided immediately and distributed to individual households for storage in freezers or caches. This is true for dried and smoked salmon, moose, caribou, whitefish, and other freshwater fish taken in quantity. The individual who catches the resource is the one who decides how it will be distributed. The head hunts and fishes frequently with one" brother and uses that brother's skiff and outboard motor. In 1982 the head relied on his parents for dried and smoked salmon and depended upon his mother and stepfather for store-bought staples, such as flour, coffee, and others. He commonly shares subsistence products with households in which his parents or siblings live. The husband and wife receive moose meat from two households (one a sibling's) and caribou meat from three households (the same two he received moose from and another sibling's household). Most exchange is directly with closely related kin, but the head also

reports sharing with old folks who are no longer able to hunt or fish for themselves. The head caribou hunted twice in the winter with visitors from Togiak or Manokotak -- people he had met while commercial fishing, not relatives. In past years, he has hunted seal with relatives in Dillingham, and he has eaten sea lion, walrus and belukha with Manokotak and Togiak friends. When visitors come from those two villages to hunt in New Stuyahok, they often bring seal oil or meat as a gift. Household members commonly (two to three times yearly) travel to the wife's home village and the head hunts brown bear while visiting there. Most travel occurs in the fall by skiff or plane or during Slavi by snowmachine or plane.

Sociocultural Characteristics. The head graduated from a high school he attended outside Alaska. He also received vocational training in three different fields and held a full-time, year-round job in the village for a couple of years. English is the common language in the household. Neither the head nor his spouse holds positions in any local political group.