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RESOURCE USE AND SOCIOECONOMIC SYSTEMS:
CASE STUDIES OF FISHING AND HUNTING IN
ALASKAN COMMUNITIES

Robert J. Wolfe and Linda J. Ellanna,
compilers

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Contributors:

Elizabeth F. Andrews, Steven R. Behnke, Richard A. Caulfield,
Ralph Courtney, Linda J. Ellanna, James A. Fall, Susan E.
Georgette, Muriel M. Germeau, Deborah L. Greenberg, Patricia I.
Harper, James S. Magdanz, A. Gayle Martin, Richard K. Nelson,
Carolyn E. Reed, Robert Schroeder, Robert J. Wolfe

Alaska Department of Fish and Game
Division of Subsistence
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CHAPTER 9

UNDERSTANDING RESOURCE USES IN ALASKAN SOCIOECONOMIC SYSTEMS

By Robert J. Wolfe, Ph.D.

The case studies of sixteen communities clearly show that many Alaskan communities are economically and socially dependent on the harvest of wild and renewable resources for local uses. In this chapter, our current understanding of the role of fishing and hunting in rural socioeconomic systems is presented, drawing upon the information from the previous eight chapters. It will be shown that fishing and hunting activities and resource uses in certain communities are components of complex social and economic systems with particular characteristics. The socioeconomic systems illustrated by the case communities display considerable diversity across regions, and are not easily represented by simple generalizations. Nevertheless, some common threads run through the apparent diversity, discussed below in the comparisons and contrasts of cases.

SOCIOECONOMIC SYSTEMS OF COMMUNITIES AND REGIONS

Patterns of use of wild and renewable resources can be understood only in relation to the "socioeconomic systems" of the communities within which they occur. It is important to define what is meant by a socioeconomic system at onset, before comparing and contrasting examples of these systems from the case studies. In general, a "system" is a set of interacting, interrelated, or interdependent elements forming a collective entity. A socioeconomic system is that functionally related set of elements which provides material and social support for a community or regional population.

The socioeconomic system comprises the basic structural relationships underlying the material and social wellbeing of a group. A breakdown in the system can lead to social disruptions, community disintegration, and economic hardships. Signs of an improperly functioning socioeconomic system can be demographic (such as community population decline, outmigration, low birth or survival rates), economic (such as low standards of living, high real unemployment, and high inflation rates), and social (such as family instability, crime, and substance abuse).

A socioeconomic system is composed of several interrelated elements. The first is a set of socially-constituted groups, such as family units, economic firms, and corporate organizations. These groups are organized to perform essential activities for a community, such as food and material production, exchanges of goods and services, education and rearing of children, and so forth. A division of labor is frequently provided in learned social roles, such as occupations and job tasks. The social groups and social roles organize human interaction in the system.

Two other elements in a socioeconomic system are the mode of production and the economic resource base. The mode of production consists of the technological means for producing, distributing, and consuming goods within the system. The production technology is used to extract and convert material from the base of natural resources. A community's resource base (its lands, waters, and their physical and living assets) are developed to provide a livelihood for the community.

Economic theory categorizes these three system parts as labor, capital, and land. Social science theory calls them social organization, technology, and environment. Either way, the socioeconomic system comprises an arrangement of these factors in a functioning whole which provides for the material

support and continuation of a community.

A socioeconomic system organizes a community or region, and exists at a higher level of complexity than the individual. Individuals operate within the socioeconomic system of a community, becoming part of it by birth or immigration. They learn to enact the social roles within the system, and through their enactment persevere and modify the system. However, the socioeconomic system of a community has an existence apart from any individual member. The system has a history that predates and a future that outlasts particular members. Thus, the system is not reducible to individual characteristics of its members (such as age, health, personality, income, or ethnic status), although these characteristics under certain qualified circumstances might be used as identifying marks of a particular socioeconomic system.

As will be discussed below, the case studies show that in many communities, fishing and hunting for local uses are parts of a socioeconomic system at the community and regional level. The fishing and hunting pattern is not an attribute of an individual, but of an entire community or regional group. The patterns of resource use have a relatively long and continuous time depth within the community, passed on from one generation to the next through instruction and learning. A person may adopt the fishing and hunting patterns by becoming socialized into the community. However, the behaviors of any individual are not a complete or sufficient representation of the socioeconomic system.

TYPES OF SOCIOECONOMIC SYSTEMS AND RESOURCE USES

Alaska is unique because of the cultural diversity and historic depth of her rural communities. Our understanding of the socioeconomic systems

of these communities is just beginning. How the customary and traditional use of fish and wildlife contributes to the material and social wellbeing of communities is a complex matter. The case studies of communities provide some insights.

It is useful to try to classify socioeconomic systems according to characteristics of their social and economic base. Small, dispersed settlements worldwide tend to be characterized by the production of food and raw material, such as by plant cultivation, animal husbandry, forestry, and fishing (Larson 1968:581). The economic base of such communities are "food extractive" in nature. This contrasts with urban areas worldwide which display other economic bases, such as manufacturing, trade, governmental services, finance, and defense.

Many dispersed settlements of varying sizes in Alaska seem to have food extractive economies. It may be useful to view a "subsistence-based" socioeconomic system as one type of system based on the extraction of food and raw materials. In a subsistence-based socioeconomic system, communities are dependent on the customary and traditional procurement and use of fish and wildlife. The community is socially and materially dependent on fish and game. Without the continued access to the fish and wildlife base, there might occur extreme disruptions in a community's social and economic wellbeing.

In a subsistence-based socioeconomic system, the means of production, social groups, the education of children, distribution and exchange networks, and other socioeconomic institutions are intricately connected with the customary and traditional uses of resources. The following comparisons and contrasts provide a picture of the role of fishing and hunting in the organization and functioning of these socioeconomic systems. The discussion

focuses on several characteristics of subsistence-based systems: "mixed economy" characteristics; a "domestic mode of production"; a seasonal round of economic activity; networks of distribution and exchange; traditional systems of land use and occupancy; and systems of beliefs and ideologies.

"MIXED" SUBSISTENCE-CASH SYSTEMS

One common misconception of "subsistence" is that subsistence uses occur within "cashless" economies. Another misconception is that subsistence fishing and hunting do not use "modern" technologies purchased with cash, such as gill nets, plywood skiffs, snowmachines, rifles, or steel traps. On the contrary, the socioeconomic systems of all Alaska's communities utilize currency and current technologies. It is not the presence per se of cash or technology that distinguish subsistence-based socioeconomic systems, but how cash and technology are integrated into the community's economic and social activities. In many subsistence-based socioeconomic systems, cash and technologies are integrated with fishing, hunting, trapping, and gathering for subsistence uses so as to be mutually supportive. In nonsubsistence-based systems, the market sector is central to the community's social and economic organization so as to overshadow and obviate the hunting and fishing sector. These relationships are explored in the following sections with data from the case studies of Chapters 2-8.

The term "mixed economy" has been used to describe the subsistence-based economies of the communities of the Yukon River Delta and Nondalton in the Bristol Bay region (Chapters 3 and 4; cf., Wolfe 1979, 1981; Behnke 1982). The term, "mixed", recognizes that there exists a "subsistence sector" to the community's economy and social life, and a "market sector,"

and that the socioeconomic system is viable because the sectors are complementary and mutually supportive.

In Yukon delta communities and Nondalton, fishing, hunting, and gathering provide major means of economic security for the community. The production of food and materials for local use by fishing and hunting is a major economic base. (As discussed in the cases, Yukon delta communities produced an average annual harvest of 4,597 pounds dressed weight per household of subsistence foods; Nondalton produced between 4,141 to 4,959 pounds per household. These are sizable economic outputs.) The "market" sector of these communities consisted of salmon fishing for commercial export sale, local wage employment (such as fish processing, high school maintenance, and construction), commercial fur trapping, and cottage craft industries. Typically, wage employment activities are of short duration (short-term projects, part-time jobs), seasonal, and low paying. As a consequence, average monetary incomes are low, although on particular years for certain households cash incomes may be higher.

The market sector is integrated at the family level in a strategic manner. Extended family clusters invest cash incomes in fishing and hunting equipment, such as skiffs, motors, nets, snowmachines, fuel, and ammunition, which are used in local fishing and hunting efforts. Combined with labor from kinship-based production groups, the cash produces a greater output in wild fish and game than the equivalent spent on imported foods. Thus, there are two sectors to the socioeconomic system -- a subsistence and market sector. Production occurs in each, and each supports the other. Hence the term, "mixed economy."

On the Yukon River delta, fishing and hunting for local uses is not "welfare mechanism" shoring up a weak market economy. Instead, the mixed

economy is an adaptive, efficient system in its own right, on an equal stature with other resource extractive systems (minerals production, agriculture, and manufacturing). An analysis of kinship-based production units by Wolfe (1979, 1981) showed no inverse relationship between monetary income and wild food outputs. The most successful households in the socio-economic systems are those which can produce both a steady monetary income through remunerative employment and an income of local fish and game products. A major source of income in Yukon River delta communities is commercial salmon fishing during summer, an occupation particularly compatible with subsistence salmon fishing in this region, using similar equipment, labor requirements, knowledge, and value orientations. It is a form of cash generation easily integrated into local patterns of fishing and hunting.

The integration of commercial salmon fishing with subsistence fishing and hunting is somewhat different at Nondalton. Nondalton's participation in commercial fishing is more peripheral, due in part to Nondalton's distance from the coast, the high capital expenses of competing in the Bristol Bay commercial fisheries system, and the less reliable sockeye runs. In comparison with the Yukon River delta communities, Nondalton's integration of wage activities with fishing and hunting is more difficult and less reliable from year to year.

The integration of fishing and hunting with the wage sector of the community's economy at Dot Lake and Tyonek (see Chapters 5 and 7, pt. 5) resemble those of Nondalton and the Yukon River delta communities in several respects. The market sector of each community offers few and sporadic job opportunities and low monetary incomes. These two areas differ from the Yukon delta and Nondalton in that job markets are more accessible by transportation networks (Dot Lake is 160 road miles from Fairbanks, Tyonek is

43 air miles from Anchorage). However, the case studies suggest that road connectedness and proximity do not mean an automatic "spill over" of economic benefits from urban areas. Tyonek residents were not found to be regularly a part of the Anchorage employment market, largely because of lack of skills and education. They earned income from local jobs and in the commercial fishery of Upper Cook inlet. The limited monetary incomes from local sources are invested into local fishing and hunting opportunities to support the community. Periodic trips are made to Anchorage by certain family members to purchase food staples and materials as a cost saving measure.

Another pattern of integrating jobs with fishing and hunting activities occurs at Dot Lake. At times, certain family members secure temporary wage employment outside the community, commonly as laborers on road construction projects. Money from seasonal, nonlocal work is brought back to support family members remaining in the community, some of whom fish and hunt during the wage earner's absence.

When the economic base of a community derives primarily from market industries owned by non-family firms, the relationship between cash employment and fishing and hunting in the community seems to display a different character. The Kenai Peninsula cases may illustrate this type of socioeconomic system. Petroleum development and the southward expansion from Anchorage of manufacturing, service, finance, and trade businesses has led to the superimposition of an industrial-based economy on the pre-existing economy of the Kenai Peninsula. A number of complex developments occurred simultaneously. Jobs of longer durations, more regular schedules, and with higher wage scales became more numerous. Instead of self-employment, more persons could derive income from the sale of their labor. As the

number of occupations diversified, specialization of employment became more common. As land and resources became converted into fee simple title for private development, the potential increases for changes in habitat and wildlife. With these changes, large volumes of in-migrants populated the peninsula as new employees, persons who had never been socialized into a socioeconomic system in which fishing and hunting were major components.

Under these interrelated circumstances, fishing and hunting develop particular relationships with the market sector. For many households in Kenai, Homer, and Ninilchik, fishing and hunting appear as subordinate economic and social activities to the market sphere of production. As illustrated in the case studies, in many households fishing and hunting were foregone, restricted, or scheduled around other activities. Wage occupations were more central to the household's range of activities, and fishing and hunting were more peripheral, in part due to the time constraints of working under schedules set by one's employer or the industrial-based system. For many households, fishing and hunting took on the character of a "recreational" pursuit, scheduled as a break from work activities.

However, other households in the same communities seemed to integrate fishing and hunting differently. For these households, harvesting a few target species was a highly valued activity. Efforts were made to procure resources such as salmon, halibut, and clams for the use of their families.

The Homer, Sitka, and Ninilchik cases seemed to suggest that fishing and hunting for a family's use may regularly occur in association with a community economy including a commercial fishing industry. Many commercial fishing communities commonly experience uncontrollable fluctuations in wage earnings due to cyclic fish runs and market prices. Schroeder's Sitka case described households for which fishing and hunting for local

use provided a form of insurance against household failure during years of low commercial fishing earnings. In these cases, fishing and hunting represented a means of long term food security for households against economic boom-bust cycles. The technology and knowledge utilized in commercial fishing may be used for fishing for personal family use. Also, the seasonal nature of commercial fishing may allow free time for other resource harvests.

The case by Caulfield on the users of the Tanana River salmon fishery illustrates a system where fishing and hunting are not central economic activities for the community (Fairbanks), or for most households who participate in the fishery. The profile of the majority of users indicated a substantial involvement in the Fairbanks wage economy (66.8 percent held full-time wage occupations). Salmon fishing and other resource uses (gardening, moose and caribou hunting, and trout fishing) were scheduled around wage jobs and engaged in for the value of "being outdoors" and "recreation yielding a food return." However, a small number of the sampled fishermen fished for salmon for more economic reasons, for food for families and dogteams, as part of a self-sufficient, "interior way of life." Overall, the socioeconomic system of the Fairbanks area clearly cannot be termed a "mixed" subsistence-based economy.

DOMESTIC MODE OF PRODUCTION

Just as there are differences between communities in terms of the integration and relative contribution of the "market" and "subsistence" sectors to the community's economic base, there are differences in the social mode of production. Production in a socioeconomic system are activities of social groups. The socioeconomic systems of communities in

Alaska can be compared according to the types of social units engaged in production.

In the case communities of Nondalton, Dot Lake, Tyonek, and the Yukon River delta, the primary economic activities of the community occur within social groups typically composed of family members, with a division of labor allocated by the age, sex, skill, and kinship relations of group members. This organizational form, where production occurs within kinship-based units which own the production capital, has been termed a "domestic mode of production" (Sahlins 1962). A domestic mode of production contrasts with the predominate social organizational form of industrial-based economies, where economic production occurs in non-family, institutional firms based on formal contract. In the domestic mode, the production and consumption of goods are activities of the same group, a network of family members. In the industrial mode, production and consumption are separate, as economic firms and families are typically separate. Frequently there are rules forbidding the intrusion of kinship principles into the workplace (for instance, the State of Alaska maintains nepotism rules).

The organization of the domestic mode of production can be complex (Wolfe 1981, Foster 1982). The size and composition of domestic production units can differ depending upon the type of production activity. For instance, in Tyonek and Yukon delta communities, salmon is harvested and processed within cooperative work groups composed of an alliance of several households, usually along bilaterally traced kinship lines. These groups may establish temporary seasonal settlements, share in the use of common capital property (cutting tables, fishracks, smokehouses), and fish from traditionally held use areas. Labor is allocated along traditional lines, men harvesting, women and children, processing and storing, older members

assuming roles of leadership and responsibility. The proceeds of the cooperative effort is divided among and consumed by the seasonally allied households. At different seasons for harvesting other species, work groups will be differently constituted. For instance, at Tyonek, one or several boat crews will be organized by a "claming leader" for the harvesting of intertidal resources and sea mammals. Thus, over the course of a year, the organization of the community's economic production is comprised of a number of these networks of cooperative domestic groups, recruited for the purposes of taking particular types of resources, utilizing capital owned by group members, and exploiting traditional use areas.

Within a domestic mode of production, a community's economy is integrated by the kinship-based production networks formed to harvest wild resources. If there were disruptions in fishing and hunting by these production groups, there would occur disruptions in community integration and stability. The enactment of the complementary social roles involved in fishing and hunting by group members provides order within the extended family networks and the community.

The socioeconomic systems of Fairbanks, Sitka, Kenai, and Homer contrast with production organized at the domestic level. In these communities, economic production occurs primarily in non-kinship based groups. Capitalization of production primarily is owned by non-family firms, and not by family networks. The social organization of economic production utilizes a different social configuration from the organization of fishing and hunting activities. Hence, decreases in fishing and hunting for local use do not have the the same community-wide socioeconomic ramifications as they do under the domestic mode.

The social organization of fishing and hunting activities within these communities are yet to be described fully. In the case studies of Kenai Peninsula communities, some households reported that fishing and hunting activities were performed as "family activities". Compared with a domestic mode of production, the breadth of socially significant activities performed by these family groups are narrower. The case examples suggest that the family groups do not take the structure of complex, extended family units connecting multiple households, as occurs in the case of Nondalton, Yukon Delta, Dot Lake, and Tyonek. The fishing and hunting groups more frequently may be composed of simple nuclear households.

In the heterogeneous communities of Fairbanks and Kenai, fishing and hunting for local uses are engaged in by a subset of the population. Fishing and hunting behavior may be transmitted and learned within the context of smaller, more specialized groups, such as particular families (where a father passes on an individual family tradition), hunting clubs (secondary non-kin associations established to transmit a body of knowledge), and hunting partnerships (sometimes resembling an apprenticeship system). Knowledge about fishing and hunting is to a lesser degree the shared tradition of a whole community as it is the possession of a small body within the community. This contrasts with the domestic mode of production, where most community members are socialized into fishing, hunting, and processing roles, a relatively common body of knowledge, ideas, and sentiments passed on within the community, frequently from older to younger within the context of domestic production groups.

THE SEASONAL ROUND OF PRODUCTION ACTIVITY

Among mixed, subsistence-based socioeconomic systems the types and scheduling of production activities within the community are typically tied to the seasonal arrival and fluctuations of fish and game resources. It is possible to identify a single seasonal cycle of activities to characterize certain community cases, a relatively regular pattern of community activities. Seasonal rounds have been depicted for the communities of the Yukon River delta, Nondalton, Tyonek, Dot Lake, and Nome in the case studies. Variations occur from year to year in timing, species selection, and harvest success, but these are recognizable permutations in an overall pattern.

Some comparisons between cases reveal interesting similarities and differences in the nature of the seasonal round of activities. First, the number of species harvested varies among cases. Some case communities appear to harvest a comparatively restricted range of species. For instance, in Kenai Peninsula cases (Homer, Ninilchik, and Kenai), harvest effort within the community seemed targeted on a few main resources -- salmon, halibut, clams, and to a lesser degree, moose. Similarly, the majority of participants of the Tanana River salmon fishery described by Caulfield mix salmon fishing with a few other harvest pursuits -- moose hunting, trout fishing, and gardening.

This contrasts with the large variety of species utilized by households in other cases. For instance, according to Fall, Tyonek households regularly utilize five salmon species, moose, Dolly varden, rainbow trout, eulachon, razor clams, butter clams, seal, belukha, black bear, ducks, geese ptarmigan, spruce grouse, porcupine, berries, and wood. Although not all households have members procuring these resources, extensive distribution networks supply these products to most households. Ellanna found

that about 65 percent of households in Nome harvested six or more categories of resources, including salmon, berries, trout and grayling, moose, ptarmigan, crab, tomcod, waterfowl, char, greens and roots, hare, whitefish, capelin, burbot, herring, eggs, caribou, bear, walrus, seal, and beluka. Similarly, according to Wolfe, Yukon delta households regularly use a wide range of resources, investing in a diversified fishing and hunting pattern as a strategy against insecurities in the economic system.

The diversity of resource uses also differs between communities, although the cases do not systematically explore this factor. The Kenai Peninsula and Tanana River cases primarily show harvests for consumption by humans and dogs (21 percent of the Tanana River sample gave salmon to dogs). The products utilized are narrow in comparison with other cases, where wild resources are used for food, materials for shelter, handicraft, barter, transportation, and other uses. Dot Lake households use the head, entrails, hooves, and bones of moose for different purposes. Nondalton households dry salmon eggs, backs, fins, and heads in addition to the flesh.

The volume of output differs markedly among case communities, although again the information gathered does not yet allow complete, systematic comparisons. The highest outputs appear to be in Yukon Delta communities, producing an estimated 783 pounds per household member in 1980, and Nondalton, producing 738 pounds per household member in 1981. This compares with outputs at Kenai of 36 pounds per household member, at Ninilchik of 63 pounds, and at Homer of 77 pounds. Caulfield found that the majority of the Tanana River fishery participants from Fairbanks were content with relatively restricted salmon harvest limits. High outputs make greater contributions to a community's economy, as discussed previously.

The stability and regularity of the seasonal round of fishing and hunting activities varies between case communities. There are problems characterizing other communities with a single seasonal round. As shown in the Kenai, Homer, Sitka, and Ninilchik cases, tremendous variations appear between the activities of one household in comparison with others, and even in the activities of a single household from year to year. One household's activities are usually substantially different from another's. In fact, Georgette and Reed found that households in Kenai and Homer commonly did not know the economic activities of their neighbors, a situation not characteristic of smaller communities. This reflects the relative heterogeneity of these communities.

In Kenai Peninsula case communities, an interesting mixture of procurement methods were discovered for taking resources. Halibut and salmon at various times were purchased from commercial fishermen, gleaned from a friend's commercial net, taken by trolling or rod and reel river fishing, dealt for in exchange for services like the use of a smoker or access to land, dipped at Seldovia, and other creative techniques. Some households appeared unsure from one year to the next how salmon would be obtained. This is clearly a sign of an irregular seasonal round of activities. It contrasts with the regular seasonal round of activities in communities like those on the Yukon River delta where salmon is obtained the same way each year, with set and drift gill nets. Part of the irregularity of procurement methods on the Kenai Peninsula may be due to rapidly changing hunting and fishing regulations, affecting means, methods, open seasons, bag limits, and open areas. These changes are associated with expanding populations and user groups creating more competition for peninsula resources.

NETWORKS OF DISTRIBUTION AND EXCHANGE

A socioeconomic system provides for a mechanism for the transfer of goods and services among segments of the community. In industrial-based socioeconomic systems, the economic market provides this mechanism. One characteristic of subsistence-based socioeconomic systems is the presence of substantial non-commercial transfers of food and materials, especially fish and game resources. The Tyonek, Nondalton, Yukon Delta, and Nome cases illustrate these non-commercial distribution and exchange networks. Non-monetary sharing, distribution, and exchange of food products are frequent, occur between a wide range of people, and include a large number of products.

Wolfe (1981) described a number of social contexts within which food and material transfers occur -- several varieties of outright gifts with no obligation for return compensation; division of subsistence products between cooperating members of a hunting party or work group; barter transactions where one product is exchanged for another; limited market transactions where currency is involved; and exchanges and gifts during ceremonial occasions where the products symbolize systems of beliefs and sentiments. The complex flow of goods along kinship networks has been documented by Foster (1982a, 1982b) for salmon and moose at Tyonek.

Research is revealing that production within subsistence-based economic systems is not homogeneous across domestic units. In fact, there is accumulating evidence that a specialization of role tasks commonly occurs within communities. Only a portion of the households in a community may harvest a particular species. For instance, the Nondalton case showed that about half the households successfully harvested moose in 1973, 1980, and 1981. Some households are extremely productive, others are less so

due to a number of factors, such as lack of working members, age, health problems, skill, capital equipment, and so forth. In fact, one characteristic of a domestic mode of production is that normal cycles of productivity occur during the lifespan of domestic units, ranging from high to low periods of productivity. The distribution and exchange networks insure that food and material products produced by a portion of the community is disseminated to support less productive households. The network provides for less fortunate community members, such as the elderly and widows.

Second, the distribution and exchange networks allow for efficiency in production. One household may have the capital and equipment to harvest sea mammals, another the equipment for trapping blackfish. The proceeds from these different capital holdings can thereby be exchanged. Third, there is evidence that the distribution and exchange system may facilitate the integration of the market and subsistence sectors. Some segments of an extended family may participate in wage employment, others in subsistence production, and their activities may support one another. The cash produced by one may pay for the equipment used by another to produce food products.

Once again, the distribution and exchange networks demonstrate that subsistence-based socioeconomic systems operate at a community level. Subsistence activities are not primarily individual or even household concerns. Instead, subsistence activities serve to provide for the social and economic wellbeing of an entire network of extended families that comprise a community.

Distribution and exchange networks in other communities provide interesting contrasts with the cases discussed above. Of the Tanana River

salmon fishery participants interviewed by Caulfield, 83 percent used all or most of the salmon within their own household, and 90 percent used none for barter or non-commercial trade. In Fairbanks, most economic goods and services are provided by the commercial markets, and not non-commercial distribution and exchange networks. The behavior of the Tanana salmon fishermen is consistent with this socioeconomic organization.

In certain Kenai Peninsula communities, especially Homer, "swapping" of products seemed to be a common practice among households which utilized wild products. Outright purchase of salmon and halibut from commercial fishermen, transactions extraneous to regular market channels, was also comparatively frequent. These patterns suggest that distribution and exchange networks outside regular commercial markets may be more common on the Kenai Peninsula in comparison with Fairbanks. According to Schroeder and Nelson's research, there appear to be well developed distribution and exchange networks in Sitka. About 47 percent of sampled households in Sitka reported giving meat to an average of 4.5 other households, while 72 percent reported giving fish to 9.2 other households. This suggests that sharing and exchange of wild products in this community is substantial. In this respect it resembles communities with mixed economies.

TRADITIONAL SYSTEMS OF LAND USE AND OCCUPANCY

One aspect of resource uses not covered in the preceding cases are the traditional systems of land use and occupancy that organize fishing, hunting, and gathering activities. Recent mapping by the Division of Subsistence following methodologies developed in Canada has shown that complex systems of uncodified land use rights frequently exist in subsistence-based socioeconomic systems. Land and resources are frequently organized into

socially-defined geographic areas, and rights to access and use of the resources of these units are allocated among segments of the population.

Some common aspects of these land use systems are suggested from work by Pedersen (1979), Wolfe (1981), Behnke (personal communication), and Caulfield (in press). First, frequently there appear to be definable use areas for particular communities. Residents of communities typically harvest resources within the range of these "village use areas." Use areas of neighboring communities are largely exclusive, although boundaries commonly overlap. Second, within a community's use area, use rights to certain areas commonly are allocated to particular extended kinship groups. For instance, eddy sites for set nets, trap lines, fish camps, and fish trap sites may be recognized as the traditional area of a particular kinship group. Members outside that kinship group can use the areas only after being granted permission from the recognized users. Third, the size and shape of use areas vary considerably across species. The rules of access to these species may vary accordingly. Fourth, enforcement of the land use system occurs at the local community level, usually outside of the formal bureaucratic legal framework.

In certain areas of the State, traditional systems of land use and occupancy have changed in association with the appearance of an industrial-based socioeconomic system in the area. Land becomes converted under land classifications recognized by the political and jural system of the urban-industrial centers. Land may be parcelled and disposed as fee simple title to private owners. Undisposed land may receive a variety of public land designations, each with a set of rules for access enforcable at the State and Federal levels. Fishing and hunting becomes altered considerably by these systems of land classifications.

THE REGIONAL CENTER AS A SOCIOECONOMIC SYSTEM

The Nome case study by Ellanna documents the patterns of resource use in one of Alaska's "regional centers". A regional center is a community which provides service and trade functions for adjacent remote areas of Alaska. Regional centers are the commercial, transportation, and governmental "hubs" for a network of smaller communities. The regional centers in Alaska, including Nome (population 3,249), Bethel (3,549), Dillingham (1,670), Barrow (2,539), and Kotzebue (2,250), have moderate population levels. Fishing and hunting play important roles in their social life and economy, in contrast with the roles played by fishing and hunting in other communities of comparable size, like Kenai. The socioeconomic systems of regional centers have relatively unique characteristics which reflect the functional relationships between the center and its satellite communities.

Ellanna concluded that Nome has a mixed, subsistence-based economy in which relatively heavy and diverse use of wild resources was integrated with a limited wage sector. From a randomized survey, Ellanna found that 43.3 percent of Nome's households used ten or more categories of resources annually; only 5.0 percent used no local resources. Of all interviewed households, over 80 percent harvested salmon and berries; almost 70 percent harvest grayling and trout, over 60 percent harvested moose and ptarmigan; and about 50 percent harvested crab, waterfowl, char, and tomcod.

These percentages are impressive, especially considering the heterogeneity of the Nome population. Nome's population, as that of other regional centers, is drawn from a diverse number of other places -- 20.2 percent of the population reported Nome as their place of origin. A third (32.7 percent) of Nome's population has immigrated from villages in northwestern Alaska, the villages served by Nome's service functions. A

complex in- and out-migration pattern commonly exists between regional centers and satellite communities, as people move to town to engage in wage employment, receive medical care, attend school, or visit relatives who reside more permanently at the regional center. Consequently, the village and center create a functional pair between which flow a labor force, money, information, services, goods, and other resources. Historically, when a winter village expanded in population, families would bud off or communities would fracture along schismatic lines, these segments establishing new settlements. Currently, families and individuals from rural communities are more likely to move to the regional center or other established villages than establish new winter settlements.

Additionally, 29.8 percent of Nome's population has migrated from outside of Alaska, and 17.2 percent from elsewhere in Alaska. These in-migrants predominately comprise Nome's 41.5 percent non-native population component. The recent in-migrants are likely to have come to Nome to fill professional positions requiring educational and work experiences not frequently occurring among Nome's long term population. These individuals turn over in their jobs approximately every two years. The average length of residency of Nome's Native Alaskan households is 26.5 years, compared with 9.6 years for non-native households.

Thus, one characteristic of a regional center's population is heterogeneity in terms of cultural background, educational levels, and work experiences. The heterogeneous population commonly organizes itself into identifiable enclaves or subpopulations. Subpopulations frequently are defined by village of origin, ethnicity, occupation (especially when employees are housed together, as frequently happens with BIA, hospital, and military personnel), and social class criteria (income and education).

A regional center is a collectivity of identifiable subcommunities, each displaying somewhat characteristic patterns of activities. Ellanna's breakout of resource use data by place of previous residency suggests these differences between subpopulations.

Understanding the role of fishing and hunting in the economy and social life of regional centers must take into consideration the social organization of the community, as well as the interrelationships of the regional center with the villages of its service area. For instance, the King Islanders represent one subcommunity in Nome. Members of this subcommunity harvest walrus and bearded seal from skin and aluminum boats, consistent with the seasonal round of activities of their King Island home. Non-native residents cannot legally harvest sea mammals, but moose, salmon, berries, and waterfowl are commonly taken by this group, especially using the highway system around Nome. Thus, different subgroups in a regional center may harvest a different mix of resources. However, across this diversity of subgroup patterns, there is a high use of resources.

The high level of resource use in part can be attributed to the cultural backgrounds of many of Nome's population. The socioeconomic systems from the population's communities of origin have been partially transplanted to Nome -- the seasonal round of activities, complex networks of distribution and exchange, a domestic mode of production, and traditional concepts of land use and occupancy. Wage opportunities have been integrated within these patterns. For many Nome residents, wage employment positions are short term, relatively low paying, seasonal, and part time. The cash proceeds from work cannot be relied upon to support the household. So the income is used as investment capital into fishing and hunting for domestic use and distribution. Thus, Ellanna calls this a mixed, subsistence-based

economy resembling in many respects those of small villages.

Ellanna also found that long term residents holding relatively well-paying professional positions also participate in the pattern of subsistence activities. Commonly, persons become socialized into the subsistence-based socioeconomic system the longer their terms of residency. The seasonal round is learned. Methods and means of harvest are acquired and practiced. The locations of use areas are discovered, as well as local conventions for access. Ellanna found no single, direct relationship between monetary income and resource participation in the regional economy. Participants in the subsistence sector of the mixed economy occurred at all income ranges.

The socioeconomic systems of regional centers probably are a special type. Unlike in some communities with similar population sizes, there exist in regional centers economic and social dependencies on fishing and hunting for local uses within the community. The high levels of resource use indicated by the case study suggests that the regional center has a mixed economy, where a cash sector and subsistence sector are both important to the community. Cash and subsistence are integrated by domestic production units. And the proceeds are distributed and exchanged along non-market networks, integrating households and communities within the regional center's service area.

CONCLUSIONS

This report has provided descriptions and analyses of the role of fishing and hunting in the economy and social life of sixteen communities in seven geographic areas. The cases were selected to examine patterns of resource use that occur in places with a range of characteristics,

representing some of the cultural, historical, and ecological diversity in the State. The information was organized in a manner to encourage the comparative exploration and analysis of tentative generalizations about fishing and hunting in Alaska.

The case studies of the sixteen communities demonstrate that many communities in Alaska are economically and socially dependent on the harvest of wild and renewable resources for local uses. Fishing and hunting activities and resource uses in certain communities are components of complex social and economic systems with particular characteristics.

A "subsistence-based socioeconomic system" was identified as one type of socioeconomic system in the State. A subsistence-based socioeconomic system is "food extractive" in nature, contrasting with economies displaying other economic bases, such as manufacturing, trade, government, finance, and defense. A subsistence-based system has several characteristics:

- (1) a "mixed economy" with mutually supportive "market" and "subsistence" sectors;
- (2) a "domestic mode of production" where production capital, land, and labor are controlled by extended, kinship-based production units;
- (3) a stable and complex "seasonal round of production activities" within the community tied to the seasonal arrival and fluctuations of fish and game resources;
- (4) substantial non-commercial networks of sharing, distribution, and exchange of food and materials;
- (5) traditional systems of land use and occupancy; and
- (6) complex systems of beliefs, knowledge, and values associated with resource uses passed on between generations as the cultural and oral traditions and customs of a social group.

The cases provided several examples of these mixed, subsistence-based socioeconomic systems, including Nondalton, Yukon River delta communities, Dot Lake, and Tyonek.

The "regional center" was identified as a second type of socioeconomic system heavily dependent upon fishing and hunting for local uses. The regional center was a community providing service, trade, and transportation functions for remote areas of Alaska. The case study of Nome showed that regional centers also may display the characteristics of a mixed, subsistence-based economy described above. Heavy and diverse use of fish and game were integrated with a limited wage sector. Regional centers tend to have larger, more heterogeneous populations and complex in- and out-migration patterns. The high use of resources in part reflects the continuance of socioeconomic patterns of regional villages at the regional centers. Wage employment positions for many residents are short term, relatively low paying, seasonal, and part time, so incomes are used for fishing and hunting to support the family units.

The cases explored the role of fishing and hunting in other socioeconomic systems which are different from the mixed economy type. The case studies of Kenai, Homer, Ninilchik, and Sitka showed interesting similarities and contrasts in resource uses within areas having more diversified economic bases. In Kenai City, an area of rapid economic development due to petroleum-related industries, fishing and hunting are peripheral to the central base of the community's economy -- wage employment. Ninilchik and Homer showed higher uses of fish and game than Kenai City, perhaps reflecting differences in economic base and perceived "country-like" lifestyle patterns. However, in comparison with Yukon delta communities and Nondalton, food output was on a different order of magnitude, being one-tenth

the volume. Sitka, a relatively large southeastern community, showed comparatively high uses of fish and game, raising interesting questions as to the factors associated with patterns of resource use.

The fishing and hunting patterns of Fairbank's area residents participating in the Tanana River salmon fishery were found to be part of a non-food extractive socioeconomic system of a large city. The majority of users showed a short history of use, high-turnover rates, short fishing times, low harvest levels, and were engaged in fishing for "recreational" values. Resource harvest for local use was not a central sector of the community's economy.

Alaska is characterized by a diversity of socioeconomic systems and patterns of resource use. Our understanding of these contemporary systems is just beginning. Research like these case studies contributes information on the role of fishing and hunting in the diverse socioeconomic systems of the State. It seems clear that the economic and social stability of many communities depend upon access to and utilization of renewable fish and wildlife resources. Disruptions of the relationships between the community and the resource base may affect the viability of these ways of life. Keeping open options in relation to resource use may allow for the continuance of the socioeconomic systems in Alaska which are based upon the use of fish and wildlife.