Wild Resource Harvests and Uses by Residents of Selected Communities of the Kenai Peninsula Borough

By

James A. Fall, Vicki Vanek, Louis Brown,
Gretchen Jennings, Robert J. Wolfe, and Charles Utermohle

Technical Paper Number 253

Division of Subsistence
Alaska Department of Fish and Game
Juneau, Alaska

May 2000

ADA PUBLICATIONS STATEMENT

The Alaska Department of Fish and Game operates all of its public programs and activities free from discrimination on the basis of sex, color, race, religion, national origin, age, marital status, pregnancy, parenthood, or disability. For information on alternative formats available for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 1-800-478-3548 or (fax) 907-586-6595. Any person who believes she or he has been discriminated against should write to:

Alaska Department of Fish and Game
PO Box 25526
Juneau, AK 99802-5526

or

O.E.O.
U.S. Department of the Interior
Washington, D.C. 20240

ABSTRACT

This report presents the results of a study of harvests and uses of wild fish, wildlife, and plant resources by residents of selected areas of the Kenai Peninsula, southcentral Alaska. Demographic and other economic data are also presented. The research focused on two portions of the Kenai Peninsula Borough classified in 1990 as "rural" by the Federal Subsistence Board: "Ninilchik" and the "Homer Rural Area." For this study, these areas included five sampling areas: Ninilchik, North Fork Road (near Anchor Point), Nikolaevsk, Fritz Creek East (along the East End Road east of McNeil Canyon), and Voznesenka. Most residents of Nikolaevsk and Voznesenka are members of the "Old Believer" branch of the Russian Orthodox faith. (Interviewing did not take place in two other Old Believer communities within the general study area, Razdolna and Kachemak Selo). The study was conducted by the Division of Subsistence of the Alaska Department of Fish and Game, with funding from the US Fish and Wildlife Service.

Data were collected through face-to-face household interviews using a standard questionnaire. Households also mapped areas on the Kenai Peninsula used for noncommercial fishing, hunting, and gathering over the last 10 years. Random samples of households were selected and interviewed for the Ninilchik, North Fork Road, and Fritz Creek East areas, while an attempt was made to interview every year-round household in Nikolaevsk and Voznesenka. In total, 279 households were interviewed, including 65 in Fritz Creek East (43.3 percent of the estimated number of year-round households in the community), 37 in Nikolaevsk (74.0 percent), 101 in Ninilchik (25.3 percent), 58 in North Fork Road (34.9 percent), and 18 in Voznesenka (29.0 percent). Of all households contacted, 50 (15.2 percent) declined to be interviewed. The surveys were conducted in February and March 1999. Data were collected for calendar year 1998.

The population of the study area has grown very rapidly in the last several decades, with an estimated 432 percent increase since 1980. Estimated population sizes for the study year were as follows: Fritz Creek East, 434; Nikolaevsk, 235; Ninilchik, 1,073; North Fork Road, 467; and Voznesenka, 327. Only three of the sample areas had an Alaska Native segment in their population. These were Ninilchik (9.6 percent of the total population was Alaska Native), North Fork Road (1.8 percent), and Fritz Creek East (0.5 percent). The average length of residency in the study communities for household heads ranged from a high of 17.9 years for Nikolaevsk to a low of 11.7 years for Voznesenka. About 88 percent of the household heads in the five study areas were born in outside of Alaska.

In 1998, most adults (at least 70 percent of more in each sampling area), had some cash employment. As in much of the Kenai Peninsula, there was a seasonal pattern to cash employment. In no community did a majority of employed adults work year-round. Commercial fishing was especially prominent as a source of jobs and income in Nikolaevsk and Voznesenka. Jobs in construction, manufacturing (fish processing and logging), trades (stores and restaurants), and services (health care, guiding) were important in Ninilchik, North Fork Road, and Fritz Creek. Most jobs held by Ninilchik residents (52 percent) were in Ninilchik itself; most Fritz Creek residents' jobs were in Homer (56

percent); and most jobs held by North Fork Road residents were in Homer (38 percent) or Anchor Point (22 percent). Many jobs held by Nikolaevsk and Voznesenka residents were in commercial fisheries in areas other than the Kenai Peninsula/Cook Inlet (43 percent and 39 percent, respectively).

Household cash incomes in the five study areas for 1998 were quite similar, ranging from a high of about $54,000 in Voznesenka to a low of $50,000 in Ninilchik. Because of differences in household size, per capita incomes ranged from a high of $18,664 at Ninilchik, to $18,138 at North Fork Road, $17,400 at Fritz Creek East, $11,140 at Nikolaevsk, and $10,160 at Voznesenka. Income from retirement sources was important in each study area except Voznesenka, but especially so in Ninilchik. There, about 30 percent of all households received retirement income, accounting for about 14 percent of total community income.

In 1998, almost all the surveyed households used wild resources, including 100 percent of the households in Fritz Creek East, Nikolaevsk, and Voznesenka; 99 percent in Ninilchik; and 98 percent in North Fork Road. A large majority of households in each study area also engaged in hunting, fishing, or gathering wild resources; received at least one kind of wild resource from another household; and gave away a wild resource to another household. At least 75 percent of the population of each area was involved in at least one resource harvest activity in 1998, with a majority of persons in each area fishing and gathering wild plants. The percentage of residents who hunted ranged from a high of about 40 percent of residents of Ninilchik, to 23 percent in North Fork Road, 19 percent in Fritz Creek East, 19 percent in Voznesenka, and 16 percent at Nikolaevsk. Few study area residents trapped.

Halibut ranked as the most frequently used resource in all study areas but Nikolaevsk, where it ranked second after sockeye salmon. The range of resources used was fairly similar across the study areas. The average number of different kinds of resources used per household in 1998 ranged from a high of 9.4 kinds in Fritz Creek East, to 9.1 kinds at Nikolaevsk, 8.6 kinds in Ninilchik, 8.6 kinds in Voznesenka, and 7.6 kinds in North Fork Road.

As estimated in pounds usable weight per person, wild resource harvests in 1998 in the study areas ranged from a high of 167 pounds per person at Voznesenka, followed by Ninilchik at 164 pounds per person, Nikolaevsk at 133 pounds per person, Fritz Creek East at 105 pounds per person, and North Fork Road at 98 pounds per person. As expressed by a percentage of the total harvest, salmon ranked first in all study areas but Ninilchik, where land mammals (primarily moose) ranked first. Resources removed from commercial harvests for home use provided 42 percent of the total harvest in Nikolaevsk, and 47 percent at Voznesenka, but less in Ninilchik (8 percent), North Fork Road (1 percent), and Fritz Creek East (4 percent).

In North Fork Road, Fritz Creek, and Ninilchik, rod and reel harvests provided by far the largest number of salmon for home use, with personal use fisheries second. Removal from commercial catches was the major source of salmon for Voznesenka and Nikolaevsk. In three study areas, Fritz Creek East, Nikolaevsk, and North Fork Road, personal use dipnet fisheries accounted for over half the sockeye salmon harvest and a quarter or more of all salmon harvested.

Of fish other than salmon, halibut were by far the most important in the harvests of the five study areas in 1998. Rod and reel harvests predominated for non-salmon finfish in Ninilchik, Fritz Creek East, and North Fork Road, while removal from commercial harvests accounted for most of these fish at Nikolaevsk and Voznesenka.

Moose was by far the most frequently used land mammal in the study areas, with most of the harvest taking place on the Kenai Peninsula. Ninilchik residents took the most moose in total (estimated at 95+/-35 animals) and per capita (about 0.1 moose per person), accounting for much of the difference in total harvest levels between Ninilchik on the one hand, and North Fork Road and Fritz Creek East on the other.

At the household level, there were substantial differences in harvest levels and the range of resources used. For example, in North Fork Road, 25 percent of the households accounted for 79 percent of the area's total harvest, while in combination, half the households produced just three percent of the total. Generally in each study area, households which ranked in the top quarter in terms of harvest levels used three to four times as many kinds of resources as did the lowest quarter, and it did not appear that most low-producing households received a range of wild foods from those in their communities who harvested them in substantial quantities. In Ninilchik, there was a weak positive relationship between length of residency in the community and harvest levels, but there was no such relationship in the other study areas. The study found no statistically significant differences between Alaska Native and other households in Ninilchik in terms of per capita harvests, average number of resources used, average number of resources harvested, or average number of resources received. Alaska Native organizations at Ninilchik conduct educational set net fisheries for salmon, which promote the teaching of traditional knowledge and values.

The report's final chapter compares study findings for Ninilchik and Fritz Creek East with the results of research conducted for 1982. Most of Ninilchik's household heads (56 percent) were not living in the community at the time of the previous research, reflecting the continuing population growth due to in-migration, including many retired people. Ninilchik's economy has diversified since 1982, with more employment and higher cash incomes (when adjusted for inflation). While of the role of commercial fishing has declined at Ninilchik over the last two decades, it is still important as a source of jobs and income. Ninilchik has benefited, along with the rest of the road-connected portion of the Kenai Peninsula Borough, from the large growth in the tourism industry and stability or more modest growth in other economic sectors.

As estimated in pounds usable weight per person, harvests for home use in Ninilchik in 1998 (164 pounds per person) were more than double that of 1982 (77 pounds per person). Salmon harvests increased substantially, reflecting more opportunity through personal use set net and dipnet fisheries and more involvement in rod and reel fisheries. In 1982, removal of salmon from commercial catches was the primarily source of salmon for home use in Ninilchik (54 percent), declining to 24 percent in 1998. Harvests of other finfish also increased, likely reflecting the growth of opportunities to harvest halibut with

rod and reel utilizing recreational charter services. While in 1982, Ninilchik households commonly complained about the difficulties of harvesting moose due to scarcity and competition with non-local residents, in 1998, Ninilchik households were particularly successful in their moose hunts. Longer state hunting seasons may account for much of this increased success. In contrast to harvest quantities, the range of resources used by Ninilchik households was similar in the two study years: an average of 8.0 kinds per household in 1982 and 8.6 kinds per household in 1998. Despite the increased harvest, the role of the harvest of wild resources for home use in the community economy and way of life does not appear to have changed. Ninilchik remains heterogeneous in terms of resource uses, with a small segment of the population producing and using most of the wild foods. With an expanding population and local cash economy, Ninilchik continues to resemble other communities along the road system in the Kenai Peninsula Borough and elsewhere in southcentral Alaska.

The Fritz Creek East study area can be compared with the results of study of Homer and the surrounding area conducted for 1982. This area, like Ninilchik, has undergone substantial population growth over the last two decades. The economy has diversified, although it retains a strong seasonal dimension linked to the summer tourism industry. The relative role of commercial fishing in the local economy has declined since 1982.

The pattern of wild resource uses in Fritz Creek East in 1998 resembled that of the general Homer area in 1982. Harvest levels in pounds per person were similar: 94 pounds in 1982, 105 pounds in 1998. The average range of resources used and harvested per household were also similar across study years: an average of 8.8 kinds per household in 1982 and 9.4 kinds in 1998. Marine invertebrate harvests in 1998 were lower than in 1982, likely due to declining stocks of crab and shrimp. On the other hand, salmon harvests increased, likely due, as in Ninilchik, to expanded opportunities through personal use fisheries and the arrival of new families who participate in personal use and rod and reel fisheries. The findings for 1998 indicted continuation of a trend in the general Homer area detected in 1982: the arrival in the community of many new families with no ties to commercial fishing who are accustomed to harvesting resources for home use in recreational fisheries and regulated hunts.

The report includes comparisons of the study areas with other communities of the Kenai Peninsula Borough for which comparable data area available. The study areas displayed a more seasonal pattern of employment than Kenai, the Kenai Peninsula's largest community. However, per capita monetary incomes in Ninilchik, Fritz Creek East, and North Fork Road were generally in the same range as Kenai, at the high end of the scale for the Kenai Peninsula Borough, and were higher than those of more remote areas of the state.

There is a clinal continuum in per capita wild food harvests across populations on the Kenai Peninsula, from a low in Kenai (85 pounds) to a high in Nanwalek/Port Graham (254 pounds), with other populations falling between. For most recent study years, a population's harvest level was not significantly different from the harvest levels of immediate neighboring population(s) on the continuum, while a population's harvest level was significantly different from the harvest levels of populations farther

up or down the continuum. For the diversity of resources used, Nanwalek and Port Graham (two small Alaska Native communities off the road system) stood alone, with a significantly higher range of resources used (18 kinds per household) than any other Kenai Peninsula population. The other populations illustrate the clinal relationship that was also evident for harvest levels, with Seldovia (which is also off the road system) ranking highest. This was largely the case regarding sharing, as expressed in the average number of resources received or given away per households. Nanwalek and Port Graham had significantly higher means for the number of resources received and given away per household. Seldovia also was significantly different from the road-connected communities in these measures of resource sharing.

The Old Believer communities of Nikolaevsk and Voznesenka in 1998 exhibited some distinctiveness in resource use patterns. This included a very significant use of resources removed from commercial catches. These communities have adapted to the contemporary regulatory system in place when the communities were established, taking advantage of personal use fisheries and moose hunting opportunities, among other activities, but do not represent a way of life with deep roots on the Kenai Peninsula.

In closing, the report concludes that the five study areas fit within the pattern that characterizes the road-connected communities of the Kenai Peninsula Borough, with low to moderate harvest levels, a narrow range of resource used, and most harvests and uses concentrated in a small segment of the populations. This use pattern exists within an economic context of cash economies like those of the most populous part of the state, with a diverse and expanding local employment picture. These uses take place in a demographic context of very rapid growth due to in-migration. That most households use and harvest wild foods demonstrates that harvest activities are highly valued as a source of recreation, of nutritious foods, and as an expression of a valued lifestyle. These uses do not link most of the households in the study areas to the traditions and history of the Kenai Peninsula. Rather, most households in the study areas engage in fishing and hunting as valued recreational activities that provide wild food harvests to supplement a primarily cash-based household socioeconomic system.

TABLE OF CONTENTS

LIST OF TABLES

Appendix Tables

LIST OF FIGURES

Appendix Figures

ACKNOWLEDGMENTS

First and foremost, we thank the many people who took the time to be interviewed and who provided most of the information upon which this report is based. We are grateful to Zach Reutov in Voznesenka and Alexey Kalugin of Nikolaevsk for facilitating the research in their communities. Dunia Martushev provided translator services in Nikolaevsk, and Stephanie Reutov and Ksenia Kuzmin did the same in Voznesenka.

We acknowledge the US Fish and Wildlife Service (USFWS), Office of Subsistence Management, for providing funding support for this project through a cooperative agreement with the Alaska Department of Fish and Game. We are especially grateful to former USFWS staff member Rachel Mason, who was an active participant in each phase of the research. Rachel helped with the study design, participated in the staff training session, helped with some interviewing, and provided very useful comments and suggestions on the first draft of this report.

This project would not have been possible without the excellent work of ADF&G seasonal employees from the divisions of Commercial Fisheries and Sport Fish who conducted many of the interviews and whose knowledge of the local area greatly facilitated the fieldwork. Thanks go to Susan McNeil, Janice Higbee, Dave Lyons, Louise Sequela, Jennifer King, Melanie Guerrero, Jim O'Rourke, Mike Cavin, Roger Dunbar, and Shane Nicholson. Carol Barnhill, Division of Habitat, prepared several of the maps in this report. Division of Subsistence employees Jessie Mallery and Mariah Kolb performed the data entry.

Kenai Peninsula Borough employees Jane Gabler and Chris Cough were very helpful in guiding project staff in the use of the borough maps and tax records that were the basis of our sample selection. Finally, we thank the ADF&G staff in the Homer office for their hospitality and help with logistical and administrative matters.

CHAPTER ONE: INTRODUCTION

BACKGROUND

This report presents the results of a study of harvests and uses of wild fish, wildlife, and plant resources by residents of selected areas of the Kenai Peninsula, southcentral Alaska (Fig. 1). Demographic and other economic data are also presented. The research focused on two portions of the Kenai Peninsula Borough which were classified as "rural" by regulations adopted by the Federal Subsistence Board in 1990: "Ninilchik" and the "Homer Rural Area."[1] In contrast, the State of Alaska Joint Board of Fisheries and Game included both of these areas within the Kenai Peninsula Nonsubsistence Area, established in 1992.

The study was conducted by the Division of Subsistence of the Alaska Department of Fish and Game (ADF&G), with funding from the Office of Subsistence Management of the US Fish and Wildlife Service (USFWS). The USFWS requires this information as part of its subsistence management responsibilities under Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA).[2] For example, the study findings can be used in customary and traditional use ("c&t") determinations for particular communities, wildlife populations, and fish stocks. The findings can also be applied in future reexaminations of the "rural" and "non-rural" status of the Kenai Peninsula. In addition, the information is also used by ADF&G to implement the requirements of the state subsistence statute and to enhance an understanding of patterns of resource uses in a range of communities in Alaska.[3]

The research followed procedures used in other Division of Subsistence projects. To date, similar projects have been conducted in well over 100 Alaska communities (Scott et. al 1999). However, only limited comparable information was available about resource use patterns in the Kenai Peninsula study areas (Georgette 1983, Reed 1983, Wolfe and Ellanna 1983, Reed 1985). It is important that these communities be represented in the growing database about resource uses in Alaska so that resource management agencies can serve them better. Applications of the research findings include regulation change, land use planning, and fish and wildlife management plans. During the research, there was also an opportunity for community representatives and individuals to comment on resource management

---

[1] On May 4, 2000, as this report was its final stages of completion, the Federal Subsistence Board ruled that the entire Kenai Peninsula is "rural" for purposes of implementing Title VIII of ANILCA.

[2] ANILCA, adopted by Congress in 1980, requires that rural Alaska residents have the opportunity to engage in subsistence uses of fish and wildlife on public (federal) lands, consistent with scientific principles of fish and wildlife conservation, and that subsistence uses have a priority over other consumptive uses whenever it is necessary to restrict the taking of fish and wildlife (Sec 802). The State of Alaska implemented the provisions of Title VIII until the Alaska Supreme Court in the *McDowell* decision in December 1989 ruled that a rural priority violated the Alaska constitution. Since then, the Federal Subsistence Board has managed subsistence uses of federal lands. The USFWS serves as staff to the federal board. As of the preparation of this report, the state had not acted to bring its subsistence regulations back into compliance with ANILCA.

[3] The current state subsistence statute, adopted in 1994, requires the Alaska Board of Fisheries and Board of Game to identify customary and traditional subsistence uses of fish stocks and wildlife populations and to adopt regulations providing a reasonable opportunity for Alaska residents to engage in these subsistence uses. In times of shortage, subsistence uses have a preference over other uses, such as commercial, recreational, and personal use (AS 16.05.258). The procedures followed by both boards utilize information such as that developed in this research to identify subsistence uses and create appropriate regulations (5 AAC 99.010).

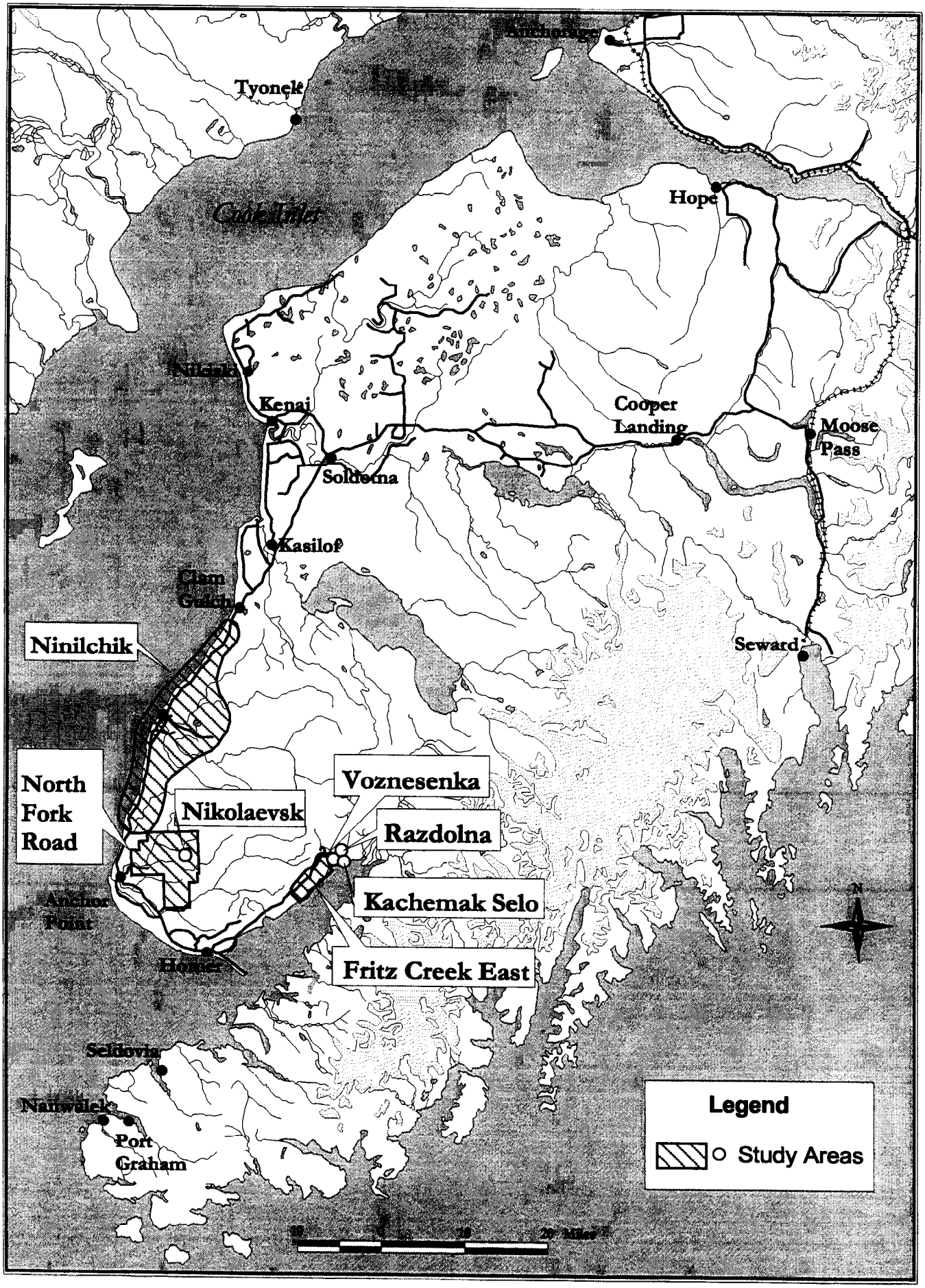


Figure 1. The Kenai Peninsula showing location of study areas.

issues, and to ask questions and learn more about ADF&G and USFWS programs. Participants' comments were typed and included as part of the permanent database for this project.

PURPOSES AND OBJECTIVES

For a sample of households in the Kenai Peninsula rural area study areas, the following information was collected through systematic, face-to-face interviews, pertaining to a 12-month study period conforming to calendar year 1998.

⇒ Resource harvest and use information:

- Whether the household used, attempted to harvest, harvested, received, or gave away each resource during the study year
- Harvest estimates for each resource, and by gear type for fish, in appropriate units, such as numbers of animals or fish, gallons, buckets, or useable pounds
- Removal of resources from commercial harvests for home use, including quantities removed
- Households' estimates of the percentage of their annual use of meat, fish, and poultry derived from wild resources
- Areas used for hunting, fishing, and gathering resources in the study year (selected resources/categories)
- Areas used by each household to hunt and fish for selected resources over the last 10 years

⇒ Demographic data:

- For each household member: age, sex, relation to household head, birthplace, ethnicity, length of residency in the study community, involvement in hunting, fishing, trapping, gathering, and processing wild resources during the study year

⇒ Economic data:

- Type of jobs held by each adult (16 years of age or older)
- Employer types
- Income from each job
- Employment patterns, such as location of jobs and seasonality of employment
- Income from non-job sources (e.g., permanent fund dividend, transfer payments)
- Household expenses for purchasing food

COMMUNITY SAMPLING AREAS

Challenges to Defining Sampling Areas

The study area included two portions of the Kenai Peninsula Borough in Game Management Unit (GMU) 15 on the road system that, at the time of the research, were classified as "rural" by the Federal Subsistence Board.[4] These are "Ninilchik" and the "Homer Rural Area." Precise identification of the boundaries of these sampling areas proved difficult for several reasons. First, federal regulations contained no legal descriptions of either of these rural areas, although their general boundaries were depicted on hand-drawn maps provided by the USFWS (Fig. 2, Fig. 3). More recent, small-scale USFWS maps depicted the boundaries of "non-rural" areas, with the remainder of the Kenai Peninsula by default classified as rural (Fig. 4), although, again, legal descriptions were lacking. Also, a summary of federal regulations in effect during the study period named two "non-rural" areas in the western Kenai Peninsula (Federal Subsistence Board 1999:4). These were:

- "Kenai area (including Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Glutch)"; and
- "Homer area (including Homer, Anchor Point, Kachemak City, and Fritz Creek)."

None of the places named in parentheses in the summary were defined and they are not all depicted on the "non-rural area" map which appears in this report as Figure 4. In part, this lack of precision in boundary definition was a result of gaps in the administrative record. Information presented in this report may help improve this record in the future.

A second set of difficulties is that the study areas cannot be defined or subdivided based on existing political or census units. There are only two incorporated communities with official boundaries near the general study area: Homer (a first class city incorporated in 1964) and Kachemak (a second class city incorporated in 1961, not to be confused with the Old Believer[5] community of Kachemak Selo). "Census designated places" (CDPs) as defined by the US Census do not cover the entire remaining area. Sections between the Ninilchik CDP and the Clam Gulch CDP (in the Ninilchik Rural Area), and along the North Fork Road (in the Homer Rural Area) are included in the broad "remainder of the Kenai-Cook Inlet census subarea" in census records.

A third set of problems is that the boundaries of the federal rural and non-rural areas, as best they can be determined from the available maps, do not always conform to the boundaries of the CDPs. These boundaries also do not conform to those of sections and townships used by the Kenai Peninsula

---

[4] The Federal Subsistence Board must identify rural and nonrural areas to determine who is a "rural Alaska resident" eligible to participate in federal subsistence hunts and fisheries. However, federal regulations may allow subsistence hunting and fishing outside rural areas. Under the state subsistence statute, the Joint Board of Fisheries and Game establishes "non-subsistence areas" (AS 16.05.258[c]). The fish stocks and game populations of these areas may only be taken under nonsubsistence regulations, although residents of these areas may participate in state subsistence hunts and fisheries in other parts of the state. With the exception of a small area around Seldovia, Port Graham, and Nanwalek, all of the Kenai Peninsula (GMUs 15 and 7) are part of the "Anchorage-Matsu-Kenai Nonsubsistence Area" (5 AAC 99.015[3]).

[5] See Chapter Two for an explanation of the term "Old Believer."

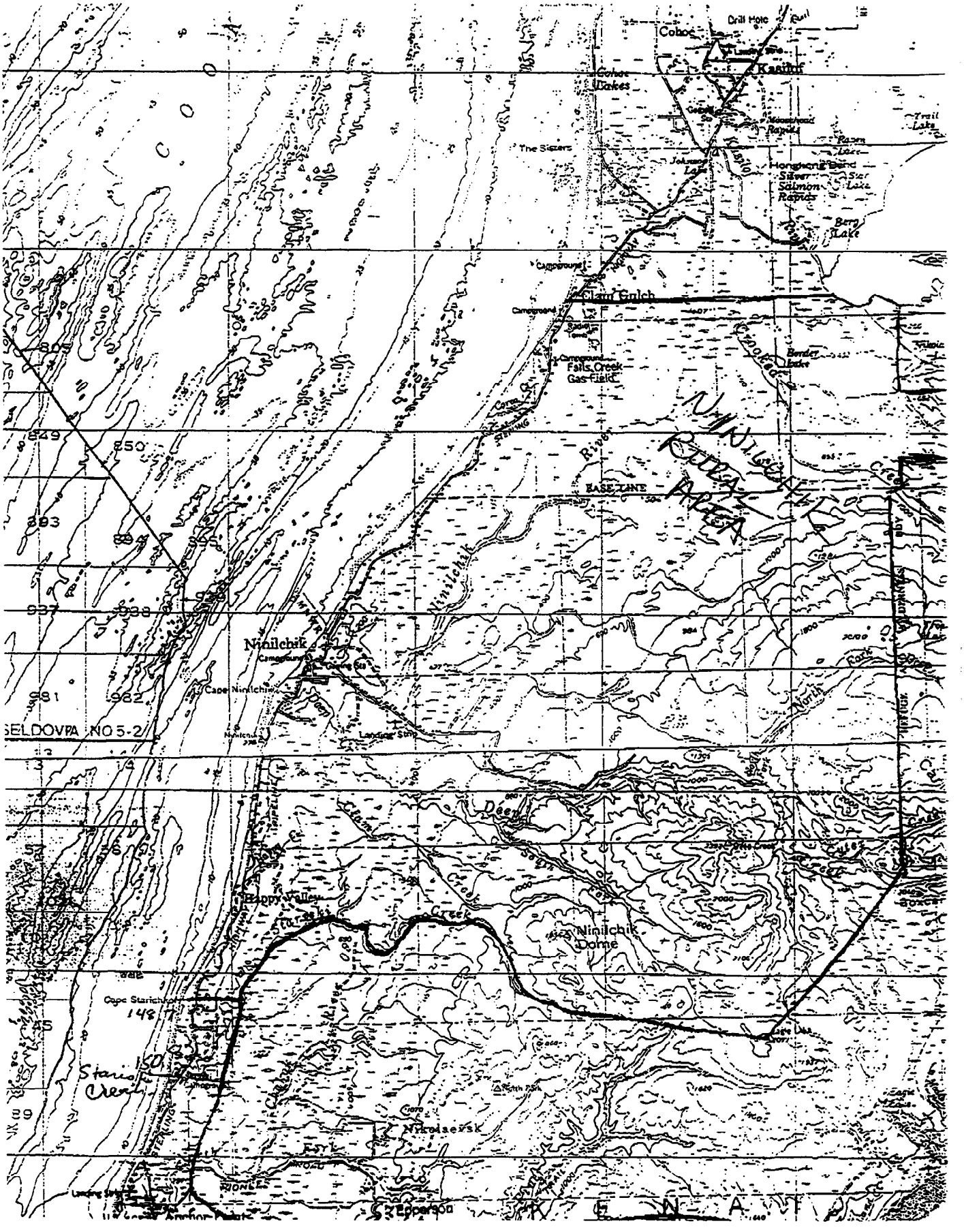


Figure 2. The "Ninilchik Rural Area"as Depicted by the US Fish and Wildlife Service

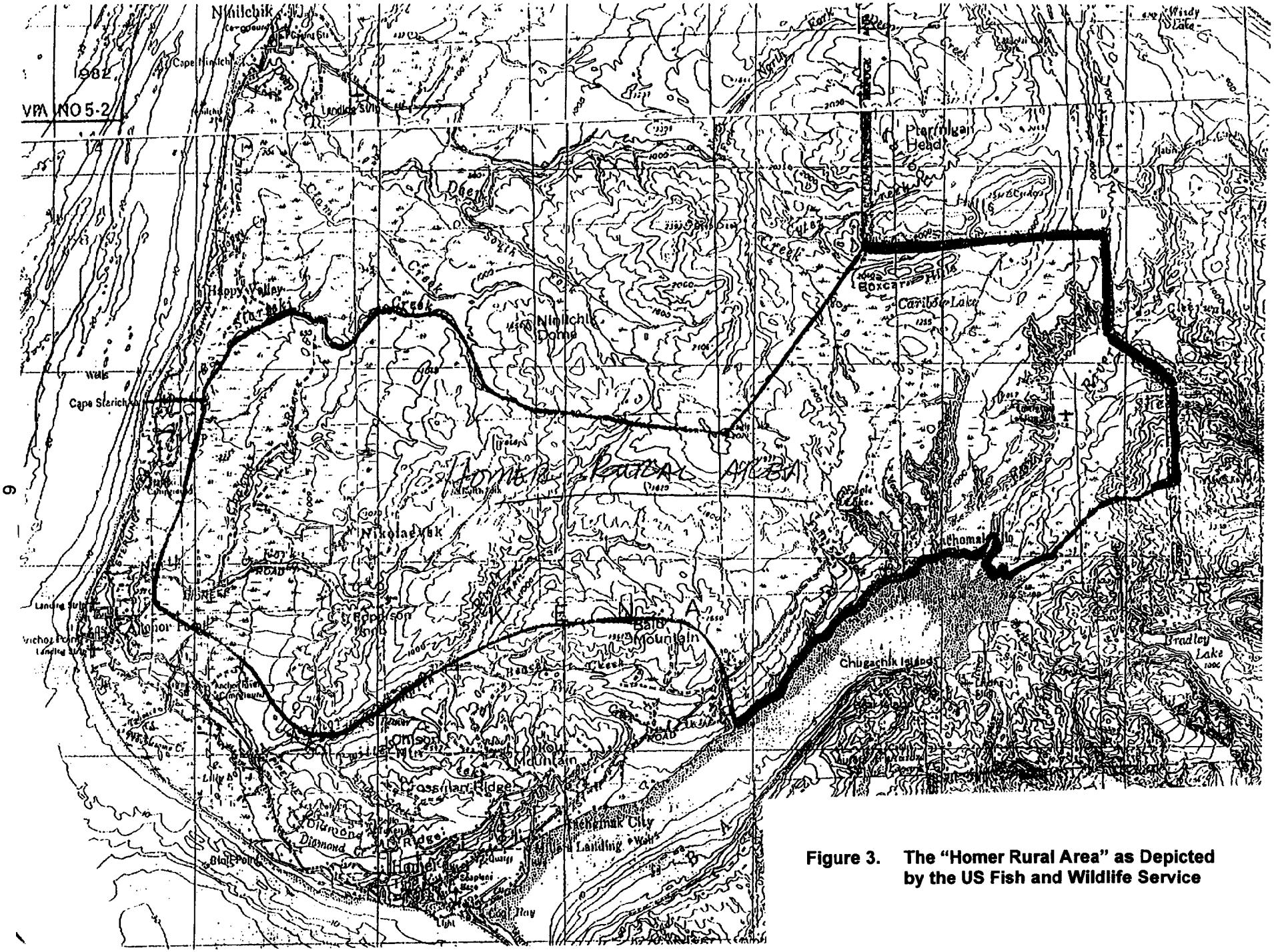
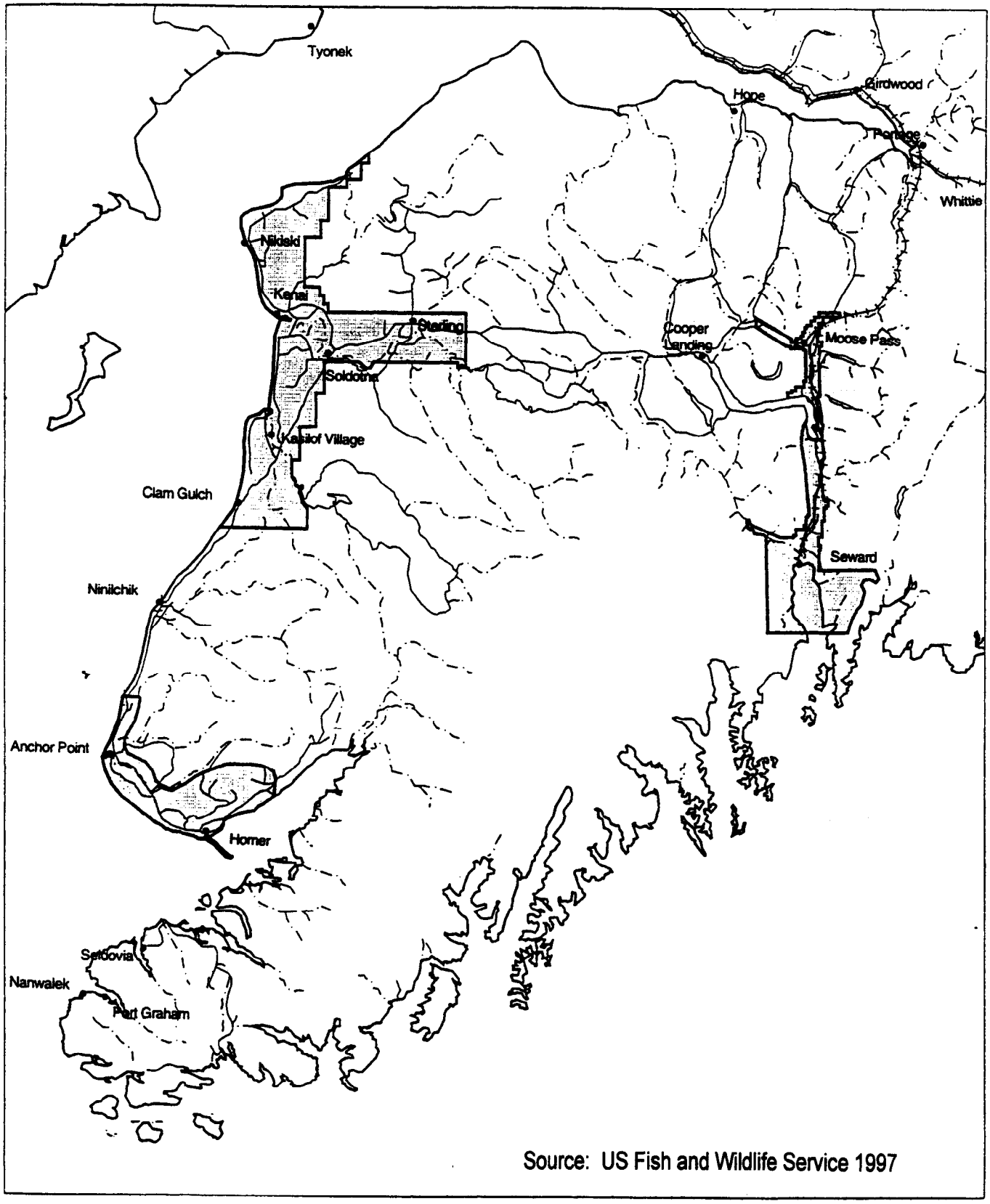


Figure 3. The "Homer Rural Area" as Depicted by the US Fish and Wildlife Service

Figure 4.

Kenai Peninsula Nonrural Areas



bke_nonrural_view 8/97

Borough planning department to record the locations of property which had to be used for sample selection.

Descriptions of Sampling Areas

As defined by the USFWS maps, the Ninilchik Rural Area generally conforms to the area north of Anchor Point at Stariski Creek (Sterling Highway Milepost 151)[6] and south of the Clam Gulch census designated place (CDP) at about Milepost 121 (Fig. 5). This rural area clearly includes two census designated places, the Ninilchik CPD and the Happy Valley CPD, plus a section of the Sterling Highway north of the Ninilchik CDP and south of the Clam Gulch CDP that is outside any census designated place. The population of this latter area is reported with the "remainder of the Kenai-Cook Inlet Census Subarea" in census reports (e.g. Alaska Department of Labor 1999). However, the USFWS maps of "nonrural areas" and "rural areas" had conflicting northern boundaries. The study team chose the more northern boundary as depicted on the "rural area" map, which included a small portion of the Clam Gulch CPD along about 0.5 miles of the Sterling Highway. This matches the Kenai Peninsula Borough's dividing line between the "Ninilchik" set of property maps and the "Kasilof" set. The Ninilchik Rural Area was treated as one sampling unit in this study and is called "Ninilchik" in this report (Fig. 6).

The maps provided by the USFWS showed that the "Homer Rural Area" includes an arc of land generally east and north of Homer. This area includes the four Old Believer communities of Nikolaevsk (including two subcommunities of Nahodka and Kluchevaya), Kachemak Selo, Voznesenka, and Razdolna. It also includes the population along the East End Road east of the McNeil Canyon Elementary School (at which point the paved portion of the road ends) and the population along the North Fork Road east of Anchor Point that is not included in Nikolaevsk Village. In total, the Homer Rural Area includes the census designated places of Nikolaevsk and Fox River, a portion of the Fritz Creek CDP, a small portion of the Anchor Point CDP, and an area southeast of the Nikolaevsk CDP and Anchor Point along the North Fork Road that is included in the "remainder of the Kenai-Cook Inlet Census Subarea" (Fig. 6). Because of the dissimilarities between sections of this nonrural area, for sampling and data compilation it was divided into six sampling areas. These were Nikolaevsk, North Fork Road, Fritz Creek East, Kachemak Selo, Voznesenka, and Razdolna. In terms of road connection, the first two of these communities are not contiguous with the other four. One must pass through the "Homer Non-Rural Area" in order to drive from the North Fork Road and Nikolaevsk areas to the East End Road, which leads to the other four (Fig. 6, Fig. 7).

In summary, the research design divided the two federal rural areas into seven "sampling areas." These are defined as follows.

[6] "Mileposts" in this report derive from "The Milepost" (1999) combined with project staff investigations of the approximate mileage between key points along the Sterling Highway and the North Fork Road. They use the system that appears along the Sterling Highway, which marks mileage from Seward.

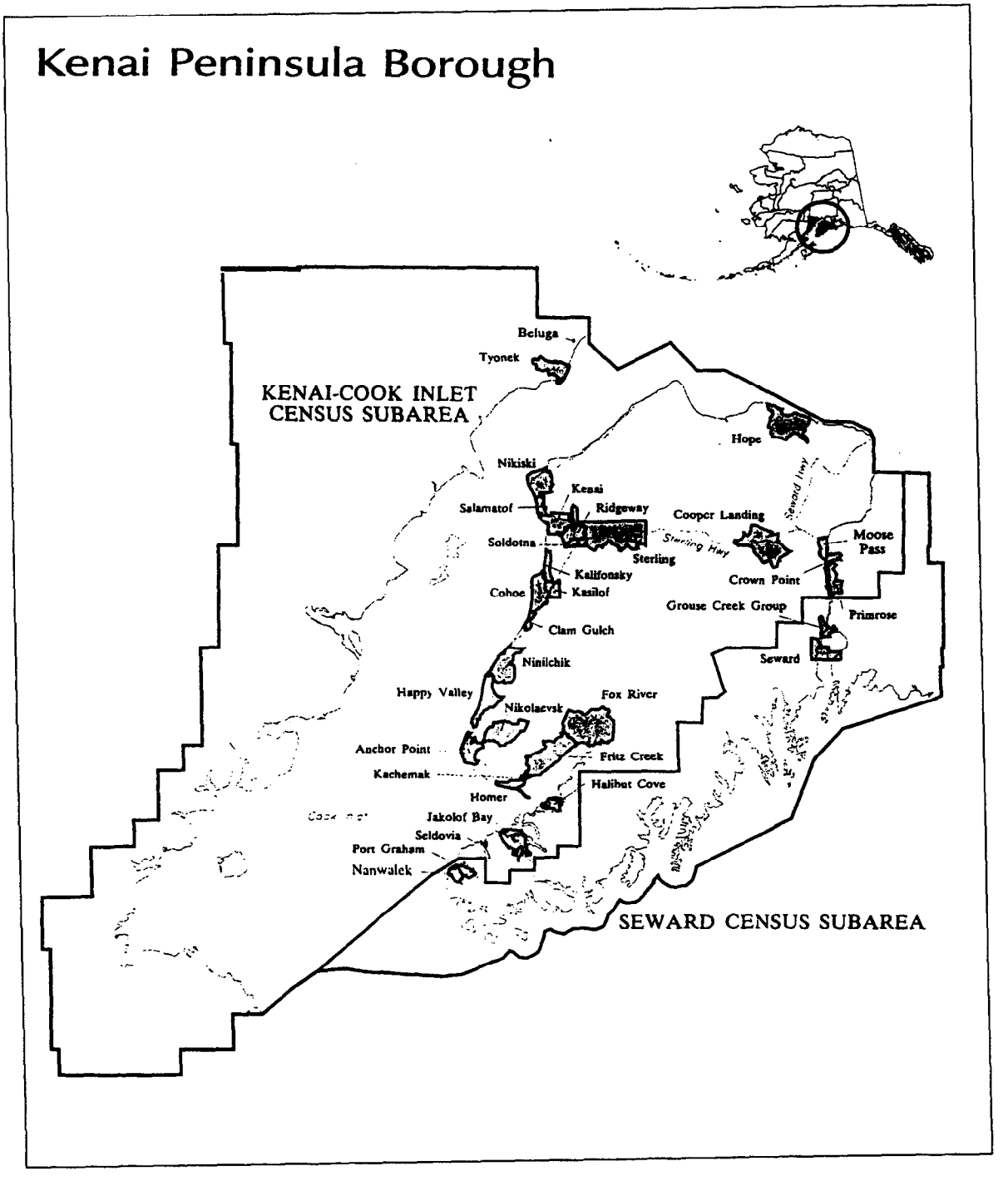


Figure 5. Census Subareas and Census Designated Places, Kenai Peninsula Borough (Source: Alaska Department of Labor 1999:117)

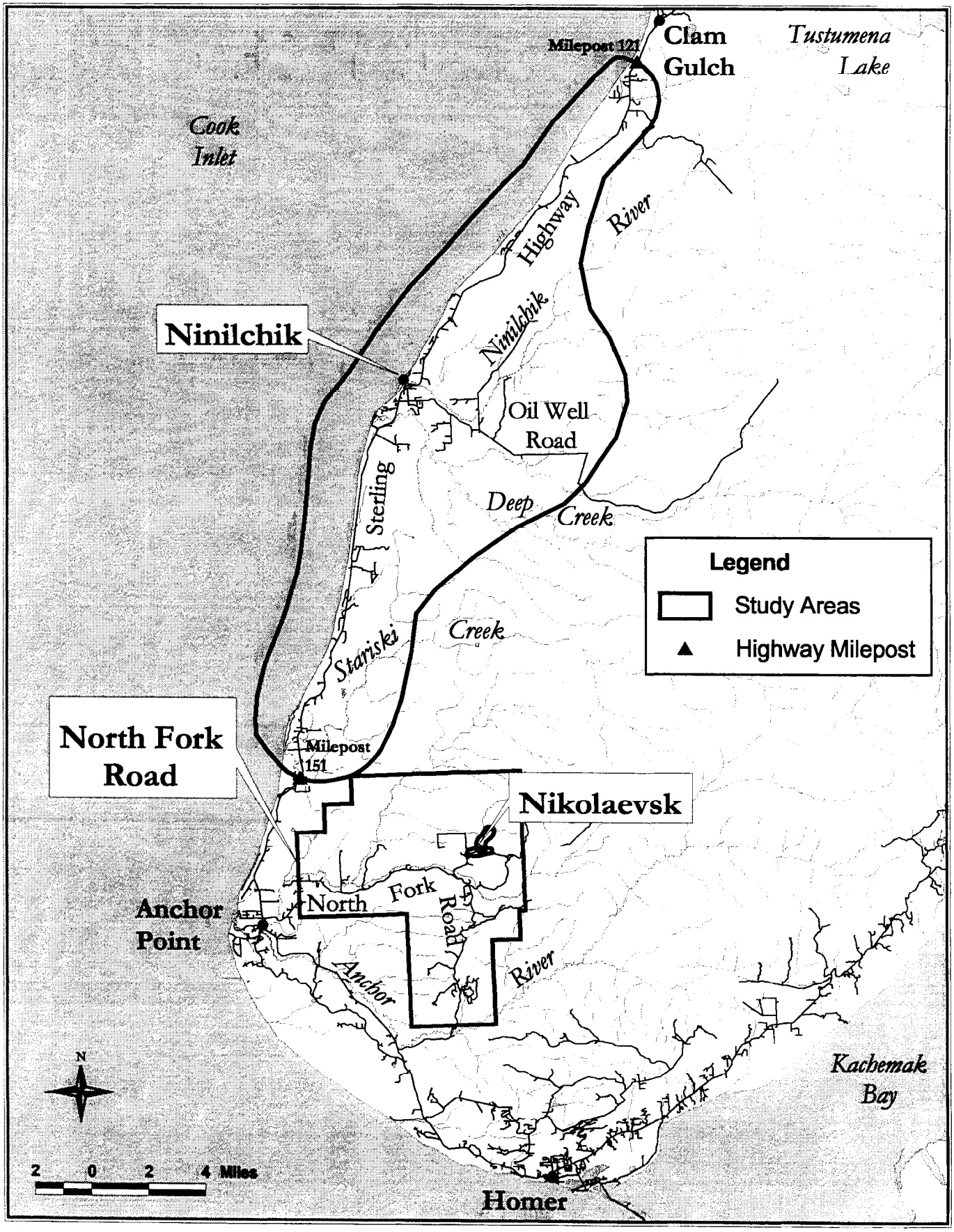


Figure 6. Ninilchik, North Fork Road and Nikolaevsk Sampling Areas.

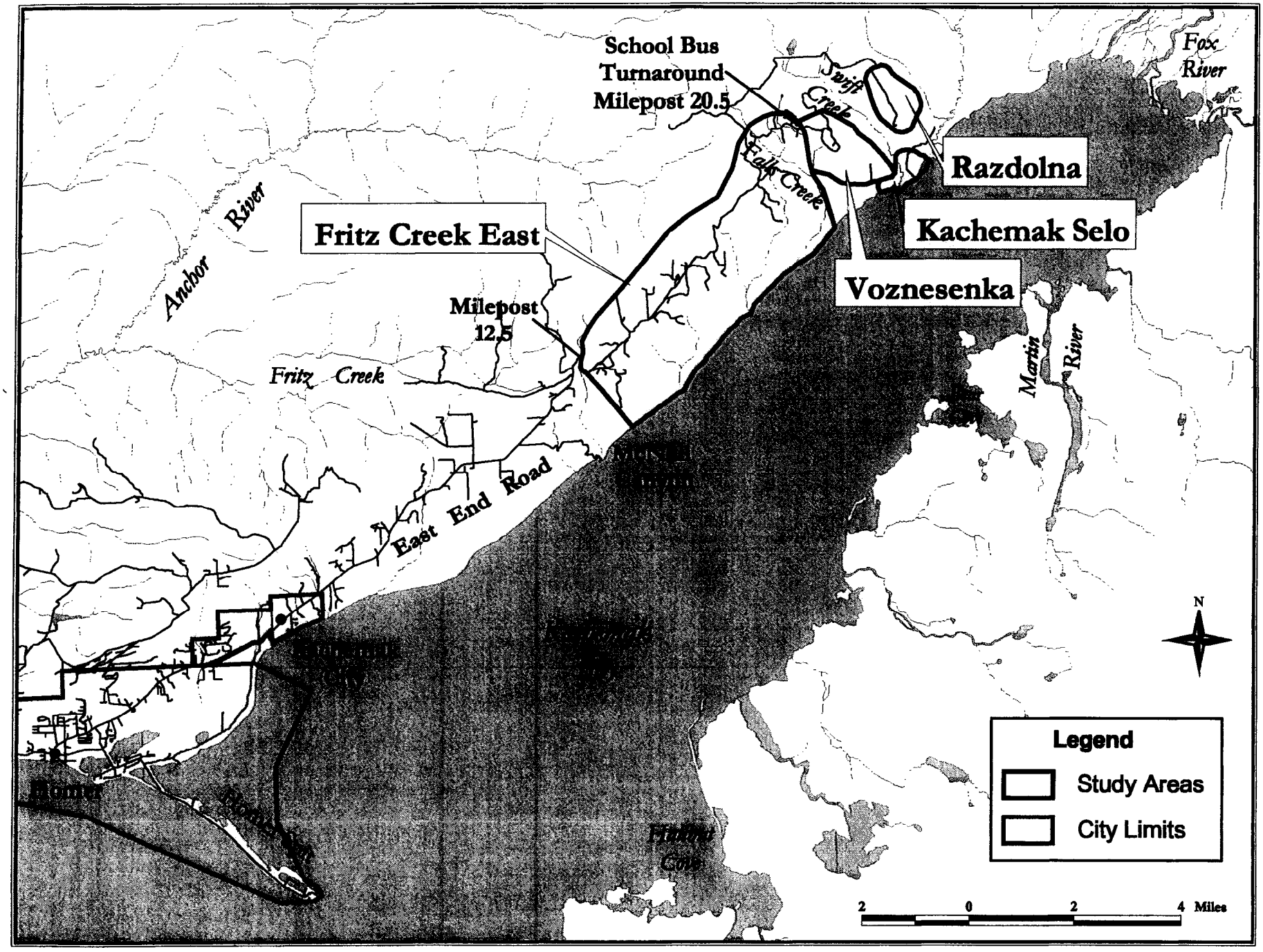


Figure 7. Fritz Creek East, Voznesenka, Razdolna, and Kachemak Selo.

1. **Ninilchik**: includes Ninilchik CDP and Happy Valley CDP, plus the population north of the Ninilchik CDP to the Clam Gulch CDP, and a small portion of the Clam Gulch CDP to approximately Milepost 121 (including the "Clammers Haven" subdivision with a northern boundary at "Clam Shovel Ave.") (Fig. 6).
2. **Nikolaevsk** includes Nikolaevsk, Nahodka, and Kluchevaya Old Believer villages. This area conforms to the portion of Section 24 on the Borough's "Anchor River 27" map along the Nikolaevsk Road. It does not conform to the larger Nikolaevsk CDP. This more limited area was selected to attempt to restrict the Nikolaevsk sampling area to Old Believer households connected to the three villages, based on the hypothesis that these households may exhibit different demographic, economic, and resource use characteristics than other households within the Nikolaevsk CDP (Fig. 6). Nevertheless, a few non-Old Believer households (such as school teachers and retirees who purchased homes there) were still included in the Nikolaevsk sample.
3. **North Fork Road** includes the portion of the "Homer Rural Area" within the Anchor Point CDP and in the "remainder of the Kenai-Cook Inlet Census Subarea" along the North Fork Road south and east of the Nikolaevsk CDP, including any dispersed population within the Nikolaevsk CDP which is not part of the Old Believer communities (as defined in 2, above). As shown in the USFWS map of the Homer Rural Area, the boundary of this area near Anchor Point cut through the "Virginia Subdivision" in Section 36. The sampling area was defined to include this entire section. It should be noted that the western boundary of this sampling area along the North Fork Road cuts through an inhabited area that is established on both sides of the road. The Anchor River Bridge was chosen as the southern boundary of the North Fork Road area (Fig. 6).
4. **Fritz Creek East** includes the portion of the Fritz Creek CDP along the East End Road east of McNeil Canyon except Voznesenka. The dividing line between Fritz Creek East and Voznesenka was at the "school bus turnaround" where state maintenance ends on the East End Road at approximately Mile 20.5. It should be noted that Old Believer families associated with Voznesenka live in the Fritz Creek East area, interspersed with other households (Fig. 7).
5. **Voznesenka** is that portion of the Fritz Creek CDP beyond Mile 20.5 of the East End Road. Most, but not all, households in this area are associated with the Old Believer community (Fig. 7).
6. **Razdolna** is a portion of Fox River CDP, associated with the Old Believer community (Fig. 7).
7. **Kachemak Selo** is a portion of Fox River CDP associated with the Old Believer community (Fig. 7).

As explained below, no interviews took place in Razdolna or Kachemak Selo. Therefore, the final project results include information from five sampling areas.

STAFFING, TRAINING, AND FIELD IMPLEMENTATION

Staffing

Table 1 provides an overview of project staffing. Staff assigned to the Homer and Ninilchik areas shared assignments and worked with staff from the other team in the later stages of the fieldwork. Local residents were hired as Russian language translators to assist with the interviewing in the Old Believer communities of Nikolaevsk and Voznesenka.

Confidentiality and Informed Consent

Under its research ethics guidelines, the Division of Subsistence does not conduct a study such as this without approval from the community governing body (if one exists). Additionally, each selected household had the option to decline to be interviewed, or to decline to answer any specific question. Participation was entirely voluntary. Also, individual and household-level responses to the questions are anonymous and confidential. The community governing bodies had then opportunity to review and comment on the study findings before they appeared in this final report.

Meetings took place with representatives of the governing bodies of the Old Believer communities (see below). A one-page project description was prepared as an overview for households selected for interviewing and the longer study design was available upon request. A local Homer radio station interviewed program manager James Fall about the project and aired sections of the interview, providing another opportunity to inform the local population about the study plans.

Fieldwork Procedures

Project personnel conducted two scoping trips to portions of the study area to assist with study planning and design. The first took place in August 1998. Vicki Vanek (ADF&G) and Rachel Mason (USFWS) worked with Kenai Peninsula Borough personnel in Soldotna to obtain necessary maps and property records. It was learned that the Borough records could not distinguish between parcels that had permanent or seasonal occupants. Vanek and Mason also "ground-truthed" some of the maps along the Oil Well Road east of Ninilchik and contacted several key respondents about community contacts and the locations of remote households in the Ninilchik area.

Mason and Vanek made a second scoping trip in December 1999, this one focusing on the "Homer Rural Area." Meetings took place with representatives of the Old Believer communities of Voznesenka, Kachemak Selo, and Razdolna. The team also visited Nikolaevsk, meeting with a key respondent who identified local contacts and provided background on the community. Although at the

Table 1. Project Staff

Project lead:	James Fall, Regional Program Manager
Data management lead:	Charles Utermohle, Program Coordinator
Programmers	Louis Brown, Analyst Programmer Gretchen Jennings, Analyst Programmer
Data entry	Jessie Mallery, Administrative Clerk II Mariah Kolb, College Intern
Cartography	Carol Barnhill, Cartographer III
Field research lead	Vicki Vanek, Wildlife Biologist I
Field research staff: Homer	Susan McNeil, F&W Technician III* Janice Higbee, F&W Technician III* Dave Lyons, F&W Technician II Louise Seguela, F&W Technician II Jennifer King, F&W Technician II
Field research staff: Anchor Pt.	Melanie Guerrero, F&W Technician III* Roger Dunbar, F&W Technician II Jim O'Rourke, F&W Technician II Mike Cavin, F&W Technician II Shane Nicholson, F&W Technician II
Russian language translators	Stephanie Reutov, Voznesenka Ksenia Kuzmin, Voznesenka Dunia Martushev, Nikolaevsk
USFWS Liaison	Rachel Mason

* Coordinator for the field research team.

time the community leadership was not available for a meeting, leaders were later contacted by phone and the project goals and procedures were described to them.

The fieldwork phase of the research began with a staff training session in Soldotna on February 1, 1999, conducted by James Fall and Charles Utermohle, and guided by a training manual. Topics included: project background, survey administration, mapping procedures, sample selection, daily logs, coding, and other administrative matters such as time sheets and vehicle mileage reports. Each researcher was supplied with a survey instrument training manual, a code book, daily log sheets, time sheets, vehicle mileage report forms, mapping supplies, letters of introduction, and project overviews.

Following the training, the research staff divided into two groups of approximately five members each. One was based out of Homer and was responsible for interviewing in the Fritz Creek East and Voznesenka sampling areas. The other was based out of Anchor Point and was responsible for Ninilchik, Nikolaevsk, and North Fork Road.

For random sample communities, samples of improved parcels with cabins, mobile homes, single family residences, and duplexes were selected from lists of improved parcels provided by the Kenai Peninsula Borough. (There were no apartment buildings in any of the sampling areas. "Group quarters," such as nursing homes or fish processing facilities were not part of the sample.) As noted, the Borough records did not separate permanent from seasonal units. US Census records indicated that a relatively high vacancy rate should be expected (Table 2). Therefore, initially a sample of parcels representing about 200 percent of the interviewing goal was selected, allowing for vacancies, seasonal residents, no contacts, and refusals. These selected parcels were then located on plat maps also provided by the borough, and then located by the study teams on the ground. In many cases, finding the selected parcel and structure proved difficult because of discrepancies between the maps and the physical reality, such as the location (or existence) of roads, as well as uncooperative weather (there was heavy snow cover during the fieldwork period). At times, study teams recruited the assistance of local residents to locate households.

For the most part, initial contacts were made in person. Phones could only be used if the identity and phone number of the occupant of the parcel was known in advance. Team members left letters of introduction at houses when no one was home.

Interviewers generally worked in pairs as a safety measure, to standardize survey administration procedures, and to simplify mapping procedures and capturing supplemental information. To further standardize procedures, researchers at times worked with different partners over the course of the project, and more experienced interviewers paired with those who were administering the survey form for the first time.

Each researcher/pair maintained a daily log of contacts and attempted contacts. For each selected parcel, the following were potential outcomes: interview completed; declined to be interviewed; no contact; vacant; seasonal dwelling; non-residential structure (i.e. a dwelling unit that is only used as an

Table 2. Population Estimates and Occupancy Rates for Census Designated Places within the Study Area

	1990 United States Census						1997 Alaska Department of Labor Estimates	
	Population	Occupied Units	Average Size	Vacant Units	Total Units	Occupancy Rate	Population	Est. Occupied Units[7]
Ninilchik CDP[1]	456	185	2.46	145	330	56.06%	655	266
Happy Valley CDP[1]	309	118	2.62	91	209	56.46%	391	149
Nikolaevsk CDP[2]	371	80	4.64	34	114	70.18%	474	102
Fox River CDP[3]	382	67	5.70	36	103	65.05%	435	76
Fritz Creek CDP[4]	1,426	491	2.90	152	643	76.36%	1,972	679
Voznesenka[5]								40
Fritz Creek East[6]								216

[1] Part of Ninilchik Rural Area as defined by the Federal Subsistence Board and part of Ninilchik sampling area for this study. There is a population north of the Ninilchik CDP and south of the Clam Gulch CDP also in the study, for which separate census data are not reported.

[2] Includes Nikolaesvk, Nahodka, and Kluchevaya villages; specific data not available for North Fork Road.

[3] Includes Kachemak Selo and Razdolna.

[4] Only a portion of this census designated place included in study area. Precise data for study area not available.

[5] Key respondent estimate for number of households, 1998.

[6] Estimate based on number of improved parcels in area as reported by the Kenai Peninsula Borough and 1990 census occupancy rate.

[7] Equals 1997 estimated population divided by average household size in 1990.

Sources: Alaska Department of Labor 1991, 1998

office or workshop); non-resident household (see below); or non-local resident (person had permanent home at another location).

"No-contact" meant that after three or more attempts at different times of the day and different days, no contact was made with the occupants; or, it was learned from a neighbor that the household would be temporarily absent for the duration of the fieldwork. If the date of a selected household's return could be learned, these households were contacted later rather than being classified as "no contact." If a dwelling appeared to have been vacant for some time or it could be learned from another source that it was unoccupied or seasonally occupied only, it was classified as such and not as a "no contact." Most "no contact" parcels were checked one last time just before the fieldwork ended.

Only permanent residents of the study community who had lived there for at least 3 months within the study period (that is, at least since October 1, 1998) were interviewed. Therefore, upon initial contact, it was established that, 1) the household is a permanent resident of the study community, and 2) that they had lived there at least 3 months in 1998. If not, they were thanked for their time and it was briefly explained that they did not meet the minimum requirements for interviewing. These households were classified as "non-resident" on the tracking log sheet.

In each field office, one person was assigned a coordination role. These were Melanie Guerraro in Anchor Point, and Susan McNeil and later Janice Higbee in Homer. They maintained files and records, tracked sample accomplishment, logged in survey forms as they were completed and coded, and sent the forms on to the next responsible party. When the interviewing was complete, each fieldworker submitted a short overview of their perspectives on the field portion of the project.

The first interviews were conducted in the first week of February and virtually all surveys were done by early March. A few temporarily-absent households in Nikolaevsk were interviewed in mid-March. Most interviewing in Voznesenka took place in early March with a local assistant completing the last survey on March 11.

Supplemental Fieldnotes

Often, households voluntarily provided supplemental information, either about their resource uses or their observations of resource populations. This can be very valuable information, either for this study to provide a context for data analysis or more broadly for other department programs. This information was recorded either as marginal notes on the survey form, at the back of the survey instrument, or in a separate notebook. Marginal notes were transcribed to the space provided on the survey form after the interview. They were typed as part of the data entry process, indexed by household identification number, as a permanent part of the project record. Interviewers turned in notebooks and files at the end of the fieldwork phase of the project.

SAMPLE ACHIEVMENT

Sample Objectives

Table 3 summarizes preliminary sample objectives for each study area. Two sampling procedures were followed. In the sampling areas of Ninilchik, North Fork Road, and Fritz Creek East, random samples were selected. As preliminary goals, fixed targets of 100 interviews in Ninilchik, 75 in Fritz Creek East, and 50 for the North Fork Road were established, based upon preliminary population estimates. In these three areas, samples were selected from lists of parcels with improvements (cabins, mobile homes, single family dwellings, and duplexes) provided by the Kenai Peninsula Borough. Preliminary information from the Kenai Borough Planning Department suggested that most "cabins" included in this total are not used year-round, but sampling procedures for this project evaluated each parcel that was randomly selected.

Initially, when the entire CDP was included in the sampling area, the goal for Nikolaevsk was a 50 percent sample, estimated at about 33 households. Because of the change in the definition of the sampling area to only include the general area of Nikolaevsk Village and the absence of several households from the village, the goal was changed to a census sample. A local assistant provided a list of all community members and a map of the village. These were used for sample development and tracking rather than the borough property records.

For Voznesenka, the goal was to interview all year-round households (a census sample). The preliminary estimate from community leaders was that there were about 62 households in Voznesenka. A complete list of households this community was developed with the assistance of community officials and key respondents and used to track sampling progress.

As noted above, a goal of the project was to also conduct interviews in the Old Believer communities of Razdolna and Kachemak Selo. In each community, the plan was to attempt a census sample. Initial contacts with the community leadership in Razdolna in December 1998 indicated support for the project. When fieldwork was underway in February, the study team began taking steps to hire a local assistant. At that time, it was learned that the community, which consists mainly of one large extended family, was in the process of relocating to South America and that virtually all of the adult men had already left Alaska. Homes in the village had been put up for sale. Thus there was no longer any purpose in trying to conduct interviews in Razdolna and the community was dropped from the study.

When initial contacts were made with the community leadership in Kachemak Selo, it was learned that virtually all the adult men in the community would be involved in commercial cod fishing until the end of February. By mid-March, it was anticipated that most would be fishing for halibut. Although community leaders suggested that the fall would be the best time to conduct the research, there appeared to be a two-week window in early March when interviews could take place. This was the preferred option for the study team since delaying until fall would require that a different study year be used for Kachemak Selo.

Table 3. Sampling Areas and Preliminary Sampling Goals

Sampling Area	Total Improved Parcels	Occupancy Rate[2]	Estimated Number of Households	Sample Type	Sampling Fraction	Interview Goal
Ninilchik	937	0.562	527	Random	18.99%	100
Nikolaevsk[3]	93	0.702	65	Random	50.00%	33
North Fork Road	247	0.657	162	Random	30.81%	50
Fritz Creek East	283	0.764	216	Random	34.69%	75
Kachemak Selo[4]			56	Census	100.00%	56
Razdolna[4]			20	Census	100.00%	20
Voznesenka[5]			40	Census	100.00%	40
Total			924		40.43%	374

[1] Source = Kenai Peninsula Borough Planning Department

[2] See Table 2. For Ninilchik, average of Ninilchik CDP and Happy Valley CDP; for North Fork Road, equals rate for "balance of Kenai-Cook Inlet census sub-area."

[3] Includes Nikolaevsk, Nahodka, and Kluchevaya (55 = key respondent estimate) plus remainder of Nikolaevsk CDP

[4] Key respondents estimated 35 households in Kachemak Selo and 12 to 10 in Rasdolna. Total here is based on population estimate for Fox River census subarea for 1997, divided by average household size for this subarea in 1990 census. See Table 2.

[5] Part of Fritz Creek census subarea. 40 is key respondent estimate.

However, the cod season was extended into March and most men continued fishing and then directly transitioned into halibut fishing. At no time during the fieldwork were most adult men in the village nor was the community leadership available for consultation. Because it was impossible to conduct interviews with knowledgeable household heads, Kachemak Selo was dropped from the research plan. It should also be noted that access to this community in the winter is very difficult. If future research is planned for this community, it should be scheduled in late fall (October) during the hiatus in the annual cycle of commercial fisheries and when heavy snow is not on the ground.

Sample Achievement

Sample achievements for each sampling area and the study overall are reported in Table 4. In Ninilchik, 101 interviews were completed. This represents a random sample of 25.3 percent of the estimated 400 households in the community. Of all households contacted, 9 declined to be interviewed, for a relatively low refusal rate of 8.2 percent.

In Nikolaevsk, 37 households were interviewed, 74.0 percent of the estimated 50 households in the community. Four households declined to be interviewed, a refusal rate of 9.8 percent.

For the North Fork Road sampling area, interviews were completed with 58 households, 34.9 percent of the estimated 166 households in the area. As in Ninilchik and Nikolaevsk, the refusal rate was low, 9.4 percent (six households).

In Fritz Creek East, 65 interviews were completed, representing 43.3 percent of the estimated 150 year-round households in this area. Thirteen households declined to participate in the survey, a refusal rate of 16.7 percent.

The project fell short of sampling goals in Voznesenka. The target was a census sample of the 62 households in the community; 18 interviews were completed for a sample of 29.0 percent. There were two reasons for this low achievement rate. First, 18 households declined to be interviewed, a 50.0 percent refusal rate. At least in part, this high refusal rate was related to questions concerning the utility of the research for the community raised by one influential elder when the interviews were about to begin. This elder eventually concluded that each person should decide for themselves whether to be interviewed, but this episode left an impression on community members that likely discouraged participation. The second reason was that at least 13 households had male heads who were commercial fishing during the entire research period and therefore were not contacted for an interview. Local assistants had advised project personnel that women would be reluctant to be interviewed without their husbands' knowledge and that it would be best to interview the men because they were the most knowledgeable about the households' hunting and fishing activities. As in Kachemak Selo, it was anticipated that there would be a window of opportunity between cod and halibut fishing when these men

Table 4. Sample Achievement

	Fritz Creek East	Nikolaevsk	Ninilchik	North Fork Road	Voznesenka	Total
Initial Estimated Households	242	63	936	270	62	1,573
Non-Residential Structures	0	0	0	0	0	0
Revised Estimate of Households	242	63	936	270	62	1,573
Preliminary Interview Goal	75	63	100	50	62	350
Households Interviewed	65	37	101	58	18	279
Households Failed to Contact	16	9	8	26	26	85
Househods Refused	13	4	9	6	18	50
Moved/Vacant/Non-Resident Households	57	13	158	56	0	284
Total Households Attempted	151	63	276	146	62	698
Refusal Rate	16.7%	9.8%	8.2%	9.4%	50.0%	15.2%
Final Estimate of Number of Households	150	50	400	166	62	828
Percentage Interviewed	43.3%	74.0%	25.3%	34.9%	29.0%	33.7%
Interview Weighting Factor	2.308	1.351	3.960	2.862	3.444	NA
Sampled Population	188	174	271	163	95	891
Estimated Population	434	235	1,073	467	327	2,536

returned briefly to the community. However, the two seasons ran back-to-back and quite a few of these fishermen did not have the time to participate in the survey.

Although the relatively low sampling fraction in Voznesenka raises questions about how well the study findings represent the entire community, two points in particular encourage confidence in the results. First, as discussed in Chapter Two, a large portion of the sampled Voznesenka households (82 percent of all those with employment) were engaged in commercial fishing in the study year, similar to the percentage in Nikolaevsk (77 percent). This suggests that commercial fishers were not underrepresented in the Voznesenka sample. Second, as shown in Chapter Three, patterns of wild resource uses as documented by the survey were very similar in Voznesenka and Nikolaevsk, a finding that was expected given the two communities' similar culture and histories.

In sum, 279 households were interviewed in the five study areas. The overall project refusal rate was a modest 15.2 percent. In comparison, in a similar project conducted by the division with randomly-selected households in Kenai, the refusal rate was 24.2 percent in 1992 and 24.1 percent in 1994 (Tomrdle et al. 1994:26). A comprehensive household survey in eight Gulf of Alaska communities in 1998 had an overall refusal rate of 13.9 percent (Fall and Utermohle 1999:14).

On average for the entire study, interviews took about 0.71 hours (43 minutes) to complete (Table 5). The average ranged from about 0.59 hours (35 minutes) in the North Fork Road sampling area to 0.77 hours (46 minutes) Fritz Creek East. This includes the time required to complete the survey itself as well as to map use areas.

Substantial project resources had to be invested to achieve the sample goals. In total, the study teams had to investigate 698 parcels to achieve the 279 interviews. In other words, researchers had to visit, sometimes multiple times, 2.5 parcels to order to complete one interview. By far, the study teams were able to determine that most of these parcels contained vacant or seasonal dwellings. Adding to the challenges were the dispersed settlement patterns in most of the study areas, poor travel and weather conditions, and sometimes incomplete or inaccurate maps.

Table 5. Average Length of Interviews

Community	Number of Surveys	Length of Interviews (hours)		
		Mean	Maximum	Minimum
Fritz Creek East	65	0.77	1.88	0.28
Nikolaevsk	37	0.72	1.83	0.17
Ninilchik	101	0.73	2.00	0.12
North Fork Road	58	0.59	1.58	0.17
Voznesenka	18	0.74	1.60	0.33
Total	279	0.71	2.00	0.12

It should also be noted that, overwhelmingly, households that were interviewed were cordial, cooperative, and very interested in the project. The challenges for the interviewers lay in locating dwellings and contacting their occupants, rather than in actually conducting the interviews themselves.

SURVEY INSTRUMENT

The primary data gathering procedure was formal interviews using a standard survey instrument. [Appendix B contains a sample of the form.] The form was similar to that administered in other division studies, including interviews conducted in other Kenai Peninsula communities (Seitz et al. 1994; Fall and Utermohle 1995; Fall and Utermohle 1999). The large majority of the interviews were conducted face-to-face, most frequently in respondents' homes, although other locations were used if so desired by the respondent. A small number of interviews were conducted over the phone. The survey instrument was not designed for self-administration, so in no case was a form left with a household to fill out on their own.

As in all division surveys, each household was asked whether it engaged in harvest activities and to estimate harvest quantities. Under both state and federal regulations, upon submittal of the appropriate paperwork, individuals may fish or hunt as proxies for others, including people outside their own households. In this study, such activities, including harvests, were recorded on the survey forms of the individuals actually harvesting, not on the form of the individual for whom the harvest occurred. This method was chosen to approximate practices in rural Alaska, where harvesting for elders, those who are ill, and others unable to harvest for themselves, is commonplace and operates outside bureaucratic controls.

MAPPING METHODS

Two procedures were used to document harvest areas, depending upon the time period.

1. The study year itself (1998). On the survey instrument, the general location of hunting, fishing, and gathering effort for selected resources/categories was recorded (see list below). Respondents pointed to letter-coded areas on a map of the Kenai Peninsula (GMUs 15 and 7 and adjacent waters) to indicate which were used in 1998. For wildlife, the areas where harvests occurred were also indicated. Kenai Peninsula areas were defined by game management subunit, federal unit boundary, and marine/freshwater systems. Areas used that were in other parts of Alaska were recorded on the survey form. The areas on the Kenai Peninsula used recording harvesting activities were as follows (see also Figure 23 in Chapter Three):

    A. GMU 15A, areas outside outer boundaries of the Kenai NWR
    B. GMU 15A, areas within the outer boundaries of the Kenai NWR

C. GMU 15B, areas outside the outer boundaries of the Kenai NWR
D. GMU 15B, areas within the outer boundaries of the Kenai NWR
E. GMU 15C, areas outside the outer boundaries of the Kenai NWR
F. GMU 15C, areas within the outer boundaries of the Kenai NWR
G. GMU 7, areas outside the outer boundaries of the Chugach National Forest, the Kenai Fjords National Park, and the Kenai NWR
H. GMU 7, areas within the outer boundaries of the Chugach National Forest and the Kenai NWR; the Kenai Fjords National Park is closed to hunting
I. Upper Cook Inlet Area marine waters
J. Lower Cook Inlet Area marine waters east to Gore Point, including Kachemak Bay
K. Marine waters of the Gulf of Alaska along the Kenai Peninsula and GMU 7 east of Gore Point including Resurrection Bay.

2. Over the last ten years (while living in the community). Households which engaged in resource harvest activities were asked to depict areas they have used for hunting, fishing, and gathering of selected resources over the last 10 years (late 1980s to late 1990s) while living in the study community. Using color pens, they drew boundaries around these areas on clear film overlays placed on top of a base map of the Kenai Peninsula area corresponding to Game Management Units 7 and 15. If the household had used other areas in Alaska, these were listed in the survey form by game management subunit or fishing district/area or water body. Mapping categories were as follows:

- Moose
- Caribou
- Goat
- Sheep
- Black Bear
- Brown Bear
- Salmon (subsistence, personal use, and rod & reel as a single category; commercial areas were not mapped)
- Steelhead
- Other freshwater fish
- Marine invertebrates (subsistence and personal use; commercial areas were not mapped)

It should be noted that areas used exclusively for catch and release fishing were not mapped, only areas used where a harvest was intended. This especially limited areas mapped for steelhead fishing, an activity that is largely (but not entirely) catch and release in Kenai Peninsula waters.

Table 6 reports the number of households in each sampling area that completed maps. In some cases, households had just used one or a few very small areas (such as "Homer Spit" or "mouth of Ninilchik River"). In these cases, it was deemed unnecessary to depict these on the mylar overlays. Rather, a written description was recorded on the survey form. An electronic record with a standard polygon for each named place was created for these households. Because preparation of the map database was incomplete when this report was prepared, the maps will be presented in a future technical paper.

Table 6 . Map sample

	Number of Households			
	Total Interviewed	Total Mapped	Descriptive Information Only	No Use Area Data
Fritz Creek East	65	58	2	5
Nikolaevsk	37	29	4	4
Ninilchik	101	87	6	8
North Fork Road	58	45	2	11
Voznesenka	18	15	2	1
Total	279	234	16	29

DATA MANAGEMENT

Data Coding

Field researchers coded the completed surveys, with the exception of certain data on the economics section of the form, for data entry and analysis. Charles Utermohle and Vicki Vanek conducted a coding training session for project staff, in Homer, about mid-way through the fieldwork. To the extent possible, staff coded each other's surveys as an added level of review. A codebook was provided as a guide to coding the data. Coded forms were provided to Vicki Vanek, who was responsible for review of all coded forms. She submitted the reviewed forms to Charles Utermohle of the data management unit in Anchorage. Economic data related to standard industrial codes were coded by Charles Utermohle in Anchorage. All data entry took place in Anchorage.

Data Analysis

Data were entered for analysis using the SPSS (Statistical Package for the Social Sciences) program. To assure accuracy, data from each survey were entered twice into an Access 99 database. Harvest estimates in numbers, gallons, buckets, or whole weights were converted into usable pounds using standard factors (Appendix C).

Map data were entered using the GIS system of ArcInfo by a Division of Habitat cartographer (Carol Barnhill) in Anchorage.

LIMITATIONS

Several limitations to the study and the analysis of the study findings need to be pointed out at the outset. First, only limited comparisons with other data sources are possible. Systematic survey data for the study communities are limited to the results of research conducted by the Division of Subsistence in Ninilchik and Homer in 1983 for a 1982 study year (Reed 1983, Reed 1985, Georgette 1983). For both communities, study area boundaries differed in 1983 from those employed in this study. In 1983, "Ninilchik" only included the Ninilchik census area. As noted above, the "Ninilchik rural area" studied in 1999 also included the Happy Valley CDP and the population north of the Ninilchik CDP to Clam Gulch, which is not part of any CDP. In 1983, interviews were conducted in the city of Homer itself and in the "Homer Area," defined as the Diamond Ridge, Fritz Creek, and Kachemak City census districts. The findings for these two areas were reported separately in Reed (1986). However, because of the many similarities in the findings, the data were combined into a single entry called "Homer" in the Community Profile Database (Scott et al. 1999). As noted above, the "Fritz Creek East" sampling area includes just a portion of the Fritz Creek CDP.

Due to the discrepant boundaries of the federal rural and non-rural areas in comparison with census and other political borders, comparisons of the survey data with other demographic, economic, and resource harvest data are difficult. For example, harvest records maintained by the Department of Fish and Game can be analyzed by zip code and place of residence. However, these do not match precisely any of the boundaries of the sampling areas. Harvest data for the "North Fork Road" sample, for example, appear as Anchor Point in the ADF&G records and those for "Fritz Creek East" and Voznesenka are included with those of Homer.

Another limitation for cross-community comparisons is that no reference communities, that is, Kenai Peninsula communities classified as "non-rural" by the Federal Subsistence Board, were included in the project, although the initial project design prepared by ADF&G recommended that interviews take place in one or more, such as the city of Homer or Soldotna. The division had fairly recent (1991, 1992, and 1993) systematic harvest and use data for Kenai which, while not the same study year, are used for comparative purposes in this report. Data for federally-classified rural places on the Kenai Peninsula is available for various study years in the 1990s, including Hope (1990), Copper Landing (1990), Seldovia (1991, 1992, 1993), Port Graham (1991, 1992, 1993, 1998), and Nanwalek (1991, 1992, 1993, 1998).

REPORT ORGANIZATION

In addition to this final report, a short summary of the study findings was prepared and sent to each participating household that requested one (Appendix D). The results of this study also appear in the latest version of the Community Profile Database.

The remaining chapters of this report are as follows. Chapter Two contains a short description of each sampling area as well as a brief overview of the history of the general study area of the Kenai Peninsula. This is followed by study findings on demography and cash economy. Chapter Three provides a discussion of the study results regarding resource harvests and uses, as well as a limited comparison of the survey findings with data from other sources, primarily Department of Fish and Game records. The final chapter, Chapter Four, compares the study results for Ninilchik and Fritz Creek East with previous study findings from 1982 for Ninilchik and Homer, and compares all five study areas with other Kenai Peninsula communities which have been part of previous division studies. Chapter Four concludes with observations about the role of wild resource harvests and uses in the five study areas in the context of other Kenai Peninsula communities both on and off the road system.

CHAPTER TWO: COMMUNITY BACKGROUND, DEMOGRAPHY, AND CASH ECONOMY

HISTORICAL BACKGROUND[1]

The study area, as well as most of the Kenai Peninsula, is the traditional homeland of the Dena'ina (Tanaina) Athabaskan Indians (Osgood 1937). In their own language, the Kenai Peninsula Dena'ina called themselves "*Yaghanen Ht'ana Dena'ina*," the "Good Land People" (Kalifornsky 1991:310). The Russians called the Dena'ina "Kenaitze," a name derived from the Alutiiq name for the Dena'ina, "Kenaiyut" (Leer 1978, Townsend 1981:638). Today, the Dena'ina of the Kenai area call themselves "Kenaitze" and belong to the Kenaitze Tribe. The name "Kenaitze" is not used by other Dena'ina such as those of upper Cook Inlet or Iliamna Lake/Lake Clark, nor, within the study area, by the Alaska Natives who belong to the Ninilchik Tribe.

Euro-American presence in the Cook Inlet area began with Captain James Cook's exploration of 1778. By the late 1700s, the Russians had established trading stations at Alexandrovsk (English Bay; 1786), Kasilof (in 1787), and Kenai (in 1791). The fur trade became important in the local economy and the Russian Orthodox Church was established among the Alaska Native population. A severe consequence of the arrival of Europeans was the introduction of diseases which reached epidemic proportions among the Dena'ina. For example, a smallpox epidemic in the late 1830s took the lives of perhaps half the Dena'ina population.

Ninilchik was founded in 1847 by former employees of the Russian-American Company and their families (Arndt 1996). Most of these first settlers of Ninilchik were classified by the Russian authorities as "creoles," of mixed Russian and Alaska Native descent. The Alaska Native heritage of most of these first Ninilchik settlers was Alutiiq, primarily from Kodiak Island. Evidently, the site for the new community of Ninilchik was chosen in part because of its distance from Dena'ina villages, so as not to interfere with Dena'ina subsistence activities (Arndt 1996:239).[2] Over the years, intermarriage took place between the Ninilchik settlers, Kenaitze Dena'ina, and Alutiiq people from Kachemak Bay communities. Of 58 Alaska Native people living in Ninilchik in 1980, 67 percent were "Aleut," 26 percent were "Indian," and 7 percent were "Eskimo" (Bureau of the Census 1984:31). The corresponding figures for 1990 (for the Ninilchik CDP population of 89 Alaska Natives) were 45 percent "Aleut," 49 percent "Indian," and 6 percent "Eskimo" (ADCED 1999).

After the purchase of Alaska in 1867 by the United States, commercial fishing and processing became a major component of the local economy of the Kenai Peninsula. The first salmon cannery was established at Kasilof in 1882. Commercial fishing and processing remained the backbone of the

[1] For more detail, see the summary in Reed 1985:12-26; see also Pedersen and Pedersen 1983.

[2] In the south of Ninilchik, Dena'ina settlements on the Kenai Peninsula at this time were located at Anchor Point and present-day Seldovia. To the north, there were Dena'ina villages near the Kasilof and Kenai rivers. The community's name is evidently of Dena'ina origin: *Niqnalchint* or "lodge is built place;" in the Dena'ina language, the general Ninilchik area is called *Hbunen'a* or "other people's (Russian) land" (Kalifornsky 1991:341).

economy for the first half of the twentieth century. Although some mining and homesteading took place, growth and change remained slow until after World War II.

Two developments in the 1950s resulted in an economic and demographic transformation in the Kenai Peninsula. First, the Sterling Highway linking the Peninsula's major communities with Anchorage and the rest of the state's road system was completed in 1951. This opened up areas for settlement and facilitated the development of recreational fishing and other tourism. In terms of economic stimulation, more important was the discovery and development of oil and gas in the Swanson River fields and in Cook Inlet beginning in 1957. The result was very rapid population growth (see below) and a shift in the nature of the local economy from one focusing on a few core industries to much more diversification. This growth and development continued into the 1960s, 1970s, and 1980s with development of the North Slope oil fields and increasing tourism.

Although economic growth slowed somewhat in the 1990s, in a recent overview, Fried and Windisch-Cole (1999:3) conclude that "the Kenai Peninsula Borough's economy is one of amazing diversity." Their analysis showed that the "foundation" of the Borough's economy includes fishing, tourism, oil and gas production and refining, and government, and that "in addition to a diversified basic sector, the Peninsula's economy has gained tremendous amount of breath with the expansion of its support sector." This diversity is important in that if one sector, such as fishing, encounters problems, others can sustain the economy and even support more growth. Fried and Windisch-Cole (1999:15) conclude that "The economic diversity the Peninsula enjoys remains the envy of much of the rest of the state."

The first Old Believer community on the Kenai Peninsula was founded at Nikolaevsk in 1967, with the first families settling permanently in 1968 (Moore 1983:120, Basargin 1984). "Old Believers" are a branch of the Russian Orthodox faith that established a distinct identity beginning in the seventeenth century. As a result of persecution in their native Russia, Old Believers began a series of migrations to Siberia, China, South America, and the United States (Dolitsky and Kuz'ina 1986, Dolitsky 1994). The founders of Nikolaevsk had lived in the Willamette Valley of Oregon before moving to Alaska (Nikolaevsk School 1995, Basargin 1984). Several other Old Believer communities have since been founded on the Kenai Peninsula, including Nahodka, Kluchevaya, Kachemak Selo, Voznesenka, Razdolna, and Dolina. Dolina, in the Fox River valley, was later abandoned for economic reasons. As noted below, most Razdolna families were in the processing of leaving the state as the fieldwork for this study got underway.

POPULATION HISTORY

The size of the Kenai Peninsula Dena'ina population at contact with Euro-Americans in the late 1700's is unknown. The population of all Dena'ina-speaking groups, including those of the Cook Inlet basin, the Iliamna/Lake Clark area, and the Stoney River drainage may have been as high as 4,000 to 5,000 (Townsend 1981:637). In 1818, after years of conflict and epidemic disease, the Russian-

American Company estimated the Native population of the entire Cook Inlet area at 1,471 (Rollins 1978). In 1860, following the smallpox epidemic of the late 1830s, the Alaska Native population "living along Kenai Bay [Cook Inlet]" was estimated at 938 (Tikhmenev 1978:416; Rollins 1978).

Throughout the remainder of the Russian and early American periods, the population of the Kenai Peninsula remained small. US Census data for the period 1880 through 1990 and the Alaska Department of Labor estimates for 1998 for the Kenai Peninsula are reported in Figure 8. The rapid population growth after 1950 was triggered initially by local oil and gas development and the completion of roads linking Kenai Peninsula communities with Anchorage and each other. In addition, more recent increases in population since the 1970s are related to the construction and operation of the trans-Alaska oil pipeline and the further development of the tourism industry on the Kenai Peninsula.

It is only possible to approximate changes in the population in the study area itself using US Census data because of the incongruous boundaries with census areas and imprecise reporting of data in published records. For example, until recent censuses, published data often did not report the dispersed population along the road system except for the Kenai Peninsula Borough as a whole. Nevertheless, there is no question concerning the rapid and large population growth in the general study area since statehood and especially since 1980 (Table 7, Figure 9). The best estimate is that a minimum of approximately 971 people lived in the general study area in 1980. The population had grown to 5,167 in 1998, an increase of 432 percent. During that 18 year period, all the subareas grew: Ninilchik (including Happy Valley) from 341 to 1,075 (a 215 percent increase); Anchor Point (including Nikolaevsk) from 226 to 1,655 (up 632 percent); and Fritz Creek/Fox River from 404 to 2,437 (up 503 percent).

COMMUNITY DESCRIPTIONS

The Ninilchik study area stretches along about 30 miles of the Sterling Highway from Clam Gulch, approximately at Milepost 121 (MP 121), to Stariski Creek at MP 151. This includes the Ninilchik and Happy Valley CDPs, plus a section to the north of the Ninilchik CDP (which ends at about MP 128), approximately up to the border with the Clam Gulch CDP. The study area is thus much larger than the older "village site," at MP 135. Most services are now on the Sterling Highway itself and have developed in response to the growing tourism industry, much of which focuses on sport fishing for salmon and halibut as well as winter snowmachining. Although part of the Kenai Peninsula Borough, Ninilchik is an unincorporated community, with no state-charted local government. Headquartered at Ninilchik is the Ninilchik Traditional Council, the federally-recognized tribal government. The Ninilchik Native Association, the for-profit ANCSA village corporation, has its headquarters in Anchorage. The Ninilchik School (grades K to 12) had 238 students enrolled in 1998/99. The Oil Well Road (also known at the "Kingsley Road") begins at MP 136 on the Sterling Highway and continues for about 19 miles to the east of Ninilchik. Only the first six miles are paved and state-maintained. There are few habitations on this road past MP 6, although there is a "wilderness lodge" at the end of the road.

Figure 8. Population of Kenai Peninsula Borough Area, 1880 - 1998

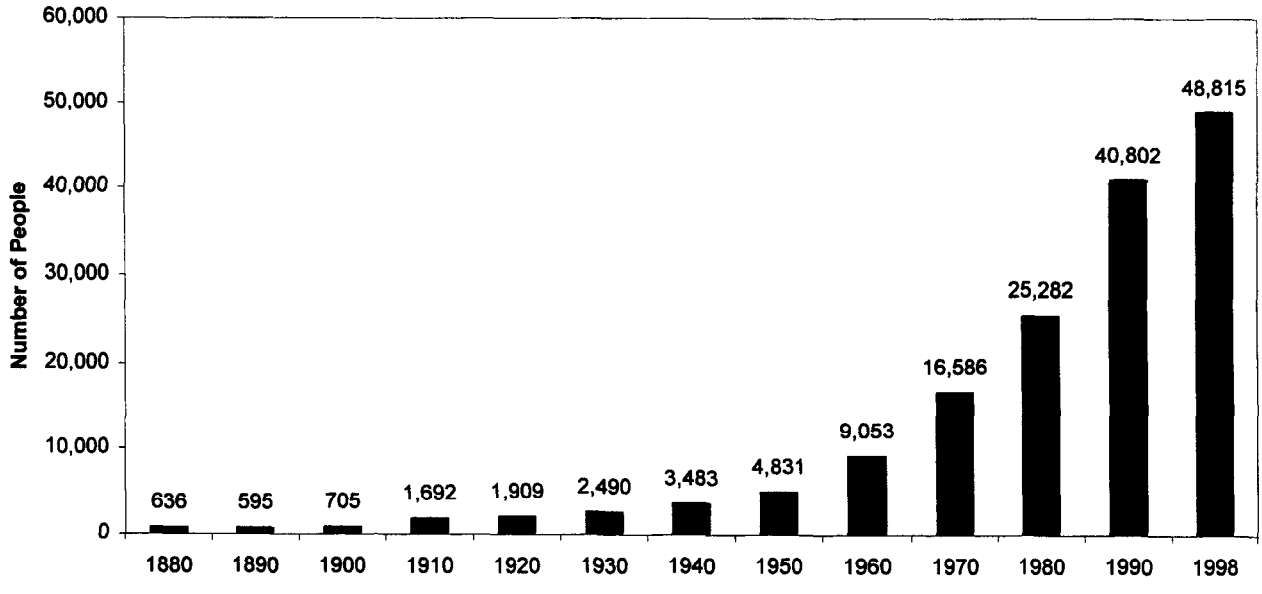


Figure 9. Population of Selected Kenai Peninsula Areas, 1950 - 1998

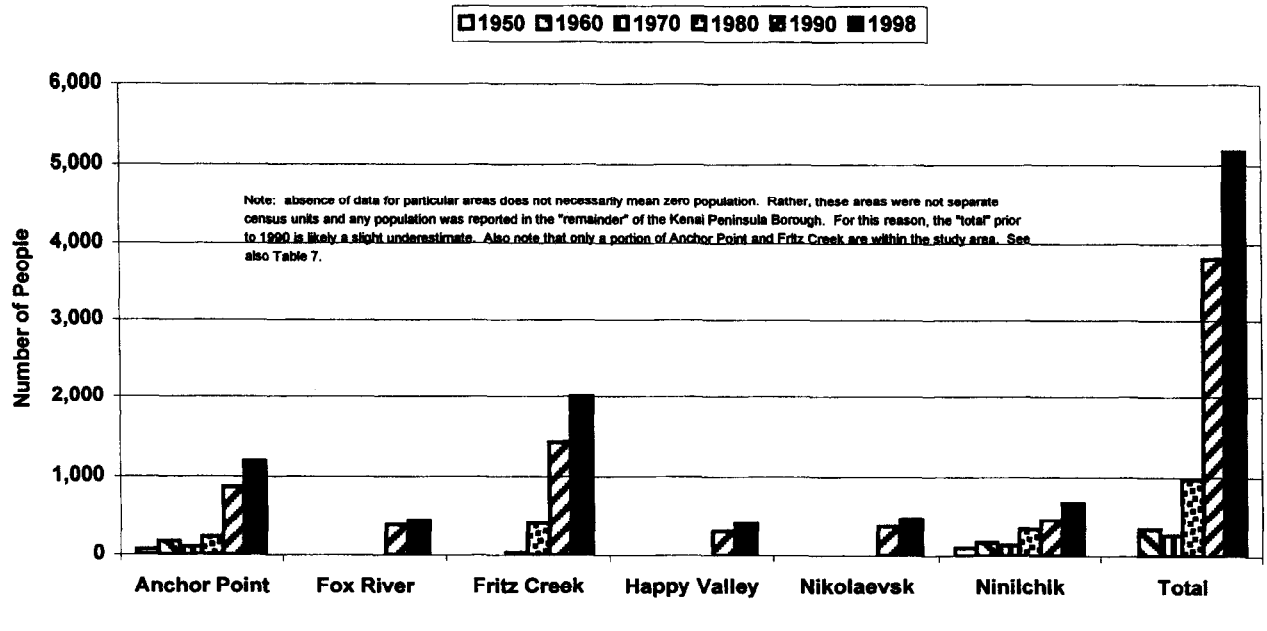


Table 7. Population of Selected Areas of the Kenai Peninsula, 1880 to 1998

	1880[a]	1890[c]	1900	1910	1920	1929	1939	1950	1960	1970[e]	1980	1990	1998
Anchor Point							20	65	171	102	226	866	1,188
Fox River												382	439
Fritz Creek										27	404	1,426	1,998
Happy Valley												309	400
Laida[b]	29												
Nikolaevsk												371	467
Ninilchik	53	81			87	124	132	97	169	134	341	456	675
Subtotal[d]									340	263	971	3,810	5,167
Clam Gulch										47	50	79	108
Homer							325	307	1,247	1,083	2,209	3,660	4,155
Kachemak										76	301	365	419
Total									1,587	1,469	3,531	7,914	9,849

[a] 1880 census for Ninilchik: 53 "creole" (Rollins 1978:1880-9)

[b] Former Dena'ina "camp or settlement" near Anchor Point also known as "Kasnatchin" (Orth 1967:500), population all Athabaskan.

[c] 1890 census for Ninilchik: 12 "white," 53 "mixed," 16 "Indian" (ie. Alaska Native; no Aleut or Eskimo categories used in this census) (Rollins 1978:1890-7).

[d] Includes communities generally within the study area. Portions of Fritz Creek and Anchor Point are outside the study area, and most of the North Fork Road sampling area is outide any census designated place.

[e] The apparent decline in overall population between 1960 and 1970 is puzzling, and is perhaps a result of contracting of community boundaries rather than an actual drop in the number of people in the area.

Source: Rollins 1978; Alaska Department of Labor 1991, 1999

The North Fork Road is a loop, beginning at Anchor Point at MP 157 of the Sterling Highway and generally heading east and then south for about 18 miles to intersect again with the Sterling Highway at MP 164. The first three miles of the road are paved; the remainder is a state-maintained gravel road. The study area began at about mile 2 and continued to the bridge over the Anchor River at about mile 16. Most of the study area is outside any census designated place (CDP), but small portions are within the Anchor Point CDP and the Nikolaevsk CDP. There are no commercial services in the study area. Area residents utilized services such as stores, schools, and postal facilities in Anchor Point, Nikolaevsk (school, post office and small gift shop only), or Homer. It should be noted that homes along "the North Fork Loop" are generally viewed locally as belonging to the Anchor Point community, "almost like the suburb of a city" (Chapman 1983:117).

The Nikolaevsk study area included a portion of the Nikolaevsk CDP directly associated with the Old Believer community of Nikolaevsk and the subcommunities of Nahodka and Kluchevaya. Most of the population lives on the Nikolaevsk Road beginning about 1.5 miles from its intersection with the North Fork Road (which is about nine miles from Anchor Point). Nahodka and Kluchevaya are separated from Nikolaevsk by about one mile of road. They have their own small church building and maintain separate community governing bodies. Nikolaevsk has a Russian Orthodox Church. There is a school at Nikolaevsk that serves the three local Old Believer communities and other families in the North Fork Road area. The school covers grades K-12 and had 147 students in 1998. About a third of the students are from non-Old Believer families in the North Fork Road and Anchor Point areas (Kenai Peninsula Borough School District 1999; Nikolaevsk School 1999). Other services at Nikolaevsk are limited; there is a post office and two small gift shops, one of which also sells snacks, sewing supplies, and some clothing. There is no service station. Residents of Nikolaevsk shop for groceries and other supplies in Homer, Anchor Point, Kenai/Soldotna, or Anchorage. The Nikolaevsk Old Believer community selects a "mayor" who serves a one-year term. Internal governance of Old Believer communities occurs within religious institutions. There is a council of elders (*ustavschiki*) and the "church group" (*Sobor*), selected by adult men, which attend to both spiritual and secular matters (Dolitsky and Kuz'mina 1986;227). Old Believer families attempt to assure their food supply for an entire year through gardening, fishing, raising cattle, and hunting, and try to minimize food purchases. There is specialization among families in food production and such skills as boat building, animal husbandry, and making traditional garments. Families trade or buy these goods and services among themselves, and communities strive to be as self-sufficient as possible (Dolitsky and Kuz'mina 1986:227).

The Fritz Creek East study area western boundary lies at McNeil Canyon on the East End Road where the pavement ends (approximately mile 12.5), which is also the site of the McNeil Elementary School.[3] The gravel road is state-maintained to mile 20.5 (approximate), the "school bus turnaround," which was the eastern boundary of the study area. The study area is part of the Fritz Creek CDP,

[3] Key respondents indicated in late 1998 that the remainder of the East End Road, to the "school bus turnaround" was slated for paving in the near future, that is, within the next few years.

although the western portion of this CDP is part of the federal "Homer non-rural area" and the eastern-most portion, beyond the state-maintained road, is the Voznesenka study area. There are no commercial services within the study area. Residents drive to Homer for most shopping and other business. The East End Road developed when homesteaders began to settle the area on the north shore of Kachemak Bay east of Homer. In recent decades, most of these homesteads have been subdivided, accounting for the population growth in the general Homer community, of which the population of the East End Road is a part (Pedersen and Pedersen 1983:135).

The Old Believer community of Voznesenka and the Voznesenka sampling area are the eastern-most portion of the Fritz Creek CDP in the Falls Creek watershed. Although Voznesenka is on an extension of the East End Road, this road is not state-maintained and access to the community in the winter is difficult. There is a school in Voznesenka, started in 1986, with 113 students in 1997/98 (Kenai Peninsula Borough School District 1999). There are no other services. People drive to Homer for shopping. As at Nikolaevsk, the Old Believer community selects a "mayor" each year. (See above under Nikolaevsk for governing bodies and Old Believer views on food production.) A few non-Old Believer families live in this sampling area, mostly in the western portion near the border with the Fritz Creek East area. It should also be noted that some Old Believer households associated with Voznesenka live in the Fritz Creek East sampling area, mostly along East Falls Creek Road and West Falls Creek Road and were not considered part of Voznesenka for this study.

DEMOGRAPHY

Table 8 presents information on the demographic characteristics of the sampling areas based on the survey results. These findings, plus those for economic characteristics to be presented below, can be compared with selected results of the 1990 US Census, reported in Table 9. The estimated population for Ninilchik based on the survey results of 1,073 is very similar to the estimate of the combined Ninilchik CDP and Happy Valley CDP for 1998 of 1,075. This is the only population estimate that can be easily compared with those from other sources. The population estimates of 434 for Fritz Creek East and 327 for Voznesenka (total of 761) compare with an estimate for the entire Fritz Creek CDP for 1998 of 1,998. The finding that the combined Fritz Creek East and Voznesenka population is less than half the estimate for the Fritz Creek CDP overall is consistent with the more densely populated settlement pattern in the western portion of the CDP, which was outside the study area. For Nikolaevsk, the population estimate of 235 is lower than that of the Nikolaevsk CDP in 1998 (467), which is in part explained by the more restricted area included in the sampling area. Nevertheless, the estimate was lower than other recent estimates for the Old Believer community, such as 450 in the early 1980s (Moore 1983:120), 500 in 1984 (Basargin 1984), and about 360 Old Believers in the mid 1990s (Nikolaevsk School 1999). Finally, the population for the North Fork Road sampling area was estimated at 467. Most of this area is outside of any CDP and the estimate cannot be compared with that from other published sources.

Table 8. Demographic Characteristics of Households, Study Areas, 1998

Characteristics	Fritz Creek East	Nikolaevsk	Ninilchik	North Fork Road	Voznesenka
Sampled Households	65	37	101	58	18
Number of Households in the Community	150	50	400	166	62
Percentage of Households Sampled	43.3%	74.0%	25.3%	34.9%	29.0%
Household Size					
Mean	2.89	4.70	2.68	2.81	5.28
Minimum	1	1	1	1	2
Maximum	6	9	9	6	10
Sample Population	188	174	271	163	95
Estimated Community Population	434	235	1,073	467	327
Age					
Mean (years)	32.54	24.47	37.03	34.28	21.61
Minimum	0.10	0.25	2.00	0.50	1.00
Maximum	80.00	80.00	85.00	82.00	67.00
Median	37	19	40	39	14
Length of Residency - Population					
Mean (years)	10.40	12.73	13.83	12.08	9.63
Minimum	0.1	0.25	0.4	0.3	1
Maximum	47.00	33.00	69.00	52.00	34.00
Length of Residency - Household Heads					
Mean (years)	12.79	17.85	16.62	14.45	11.65
Minimum	0.5	1	0.6	0.3	2
Maximum	47.00	33.00	69.00	52.00	34.00
Sex					
Males					
Number	238	120	562	249	183
Percentage	54.8%	51.1%	52.4%	53.4%	55.8%
Females					
Number	196	115	511	218	145
Percentage	45.2%	48.9%	47.6%	46.6%	44.2%
Alaska Native					
Households (Either Head)[2]					
Number	0	0	59	3	0
Percentage	0.0%	0.0%	14.9%	1.7%	0.0%
Estimated Population					
Number	2	0	103	9	0
Percentage	0.5%	0.0%	9.6%	1.8%	0.0%

[1] Length of residency in study community. The Old Believer community of Voznesenka was founded in the 1980s, but some non-Old Believer households were included in the sampling area, accounting for the maximum of 34 years.
[2] A household was classified as "Alaska Native" if either or both of the household heads was Alaska Native.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999.

Table 9. Selected Demographic and Economic Characteristics of the Kenai Peninsula Borough, 1990

	Demographic Characteristics				Economic Characteristics			
Name	Population	% Alaska Native	Total Housing Units	Occupied Housing Units	Median HH Income	Per Capita Income	% HHs Below Poverty**	% Unemployed
Within the Study Area:								
Anchor Point*	866	3.7%	405	314	$42,847	$17,453	0.7%	17.5%
Fox River	382	0.0%	103	67	$93,848	$21,327	9.1%	0.0%
Fritz Creek*	1,426	3.4%	643	491	$45,143	$18,698	3.4%	6.1%
Happy Valley	309	6.1%	209	118	$16,250	$10,691	32.8%	25.6%
Nikolaevsk	371	1.3%	114	80	$19,688	$6,070	46.1%	0.0%
Ninilchik	456	19.5%	330	185	$31,518	$15,118	9.6%	24.4%
Outside Study Area, on the Road System:								
Clam Gulch	79	12.7%	56	29	$60,233	$29,179	0.0%	0.0%
Cohoe	508	1.8%	339	187	$33,550	$16,849	15.9%	14.0%
Cooper Landing	243	1.2%	281	101	$42,250	$51,902	3.6%	0.0%
Crown Point	62	4.8%	42	24	$43,864	$24,533	0.0%	0.0%
Grouse Creek	580	No data reported						
Homer	3,660	3.6%	1,673	1,411	$36,652	$19,182	5.0%	7.9%
Hope	161	3.1%	164	72	$17,250	$17,994	33.5%	38.4%
Kachemak City	365	3.0%	175	140	$55,000	$25,449	7.3%	4.0%
Kalifornsky (Kalifonsky)	285	4.2%	140	99	$52,354	$28,658	12.2%	25.6%
Kasilof	383	2.9%	151	125	$51,439	$19,410	2.5%	18.4%
Kenai	6,327	8.5%	2,681	2,329	$42,889	$17,877	7.3%	12.1%
Moose Pass	81	11.1%	51	33	$22,083	$10,827	0.0%	25.0%
Nikiski	2,743	6.1%	1,045	888	$44,242	$18,823	7.0%	14.5%
Primrose	63	0.0%	38	23	$46,563	$16,373	0.0%	0.0%
Ridgeway	2,018	4.6%	827	686	$48,967	$17,404	6.1%	6.3%
Salamatof	999	10.4%	424	264	$38,203	$12,896	9.8%	14.6%
Seward	2,699	15.2%	1,010	886	$37,049	$16,615	10.7%	9.2%
Soldotna	3,482	4.5%	1,460	1,284	$38,004	$15,800	5.7%	8.7%
Sterling	3,802	2.1%	2,179	1,283	$51,145	$18,436	7.6%	7.4%
Remainder, KCI CA***	6,751	No data reported						
Remainder, Seward CA	658	No data reported						
Outside Study Area, Off the Road System:								
Halibut Cove	78	3.8%	93	23	$68,760	$62,263	0.0%	0.0%
Jakolof Bay	28	0.0%	94	13	$21,875	$17,903	0.0%	0.0%
Nanwalek****	158	91.1%	51	42	$46,563	$12,615	11.0%	46.4%
Port Graham****	166	90.4%	68	60	$33,750	$17,265	2.1%	38.8%
Seldovia	459	15.2%	221	129	$27,500	$14,052	16.2%	11.8%
Tyonek	154	92.2%	92	55	$11,591	$8,761	37.1%	37.7%
Kenai Peninsula Borough	40,802	7.2%	19,364	14,250	$42,403	$18,173	7.7%	10.3%

* Portion of the CDP is outside study area

** Poverty threshold for a family a four was $12,674 in 1989. For more details, see Bureau of the Census 1992:B27 - B28.

*** Kenai-Cook Inlet Census Subarea. A small portion is within the study area.

****Income data for these communities, which pertain to 1989, are inflated and atypical due to employment related to cleanup following the Exxon Valdez oil spill (Fall and Utermohle 1995).

Source: Bureau of the Census 1992; Alaska Department of Community and Economic Development 1999

Only three of the sample areas, Ninilchik, North Fork Road, and Fritz Creek East, had an Alaska Native segment to their population (Table 8). In two of these areas, the estimated Alaska Native population was very small: 2 in Fritz Creek East (0.5 percent of the total population) and 9 in North Fork Road (1.8 percent). For Ninilchik, the estimated Alaska Native population was 103 (9.6 percent). US Census data for 1990 estimated 89 Alaska Natives in the Ninilchik CDP (19.5 percent) and 19 in the Happy Valley CDP (6.1 percent) (Table 9), for a combined total of 108 (14.1 percent). This suggests that virtually all of the population growth in this sampling area since 1990 (to 1,075 in 1998) has been in the non-Native segment of the population. The population of the Kenai Peninsula Borough overall was 7.2 percent Alaska Native in 1990 (Table 9).

The average length of residency in the study communities for all household heads ranged from a high of 17.9 years for Nikolaevsk to a low of 11.7 years for Voznesenka. Most households in Ninilchik and Fritz Creek East had arrived in the study area since the last comprehensive resource use survey was conducted in Ninilchik and Homer for the 1982 study year. As illustrated in Figure 10, 55.5 percent of Ninilchik households and 66.2 percent in Fritz Creek East had lived in the study area for 15 years or less, as had 51.7 percent in North Fork Road and 83.3 percent in Voznesenka. A relatively large portion of households in Nikolaevsk (45.9 percent) had lived in the community for 26 to 35 years, a result of the founding of the community in the late 1960s.

As reported in Table 10, more than three-quarters of the household heads in the five study communities combined were born in a state other than Alaska. Just over 12 percent of the household heads were born in Alaska; 8.1 percent were born in Kenai Peninsula communities. The highest percentage of Alaska-born household heads was at Ninilchik, at 16.9 percent, and the lowest was at Nikolaevsk, at 3.0 percent. Ninilchik also had the highest percentage of household heads born in a Kenai Peninsula community, 10.5 percent. The majority of the household heads in Nikolaevsk and Voznesenka were born outside the United States, reflecting the recent migrations of their Old Believer families.

Table 10. Birthplace of Household Heads, Study Areas

	Percentage of Household Heads					
Birthplace:[1]	Fritz Creek East	Ninilchik	Nikolaevsk	Voznesenka	North Fork Road	Total
Kenai Peninsula	7.0%	10.5%	3.0%	8.8%	5.0%	8.1%
Other Alaska	1.7%	6.4%	0.0%	2.9%	3.0%	4.2%
Other US	91.3%	80.2%	33.3%	26.5%	90.0%	76.9%
Foreign	0.0%	2.9%	63.6%	61.8%	2.0%	10.7%

[1] Defined as where the person's parents were living when the person was born.

Table 11 through Table 15 and Figure 11 through Figure 15 present population profiles for each of the five study areas. The relatively young population of Nikolaevsk (average age 24.5 years) and

Figure 10. Length of Residency of Households in the Study Areas, 1998

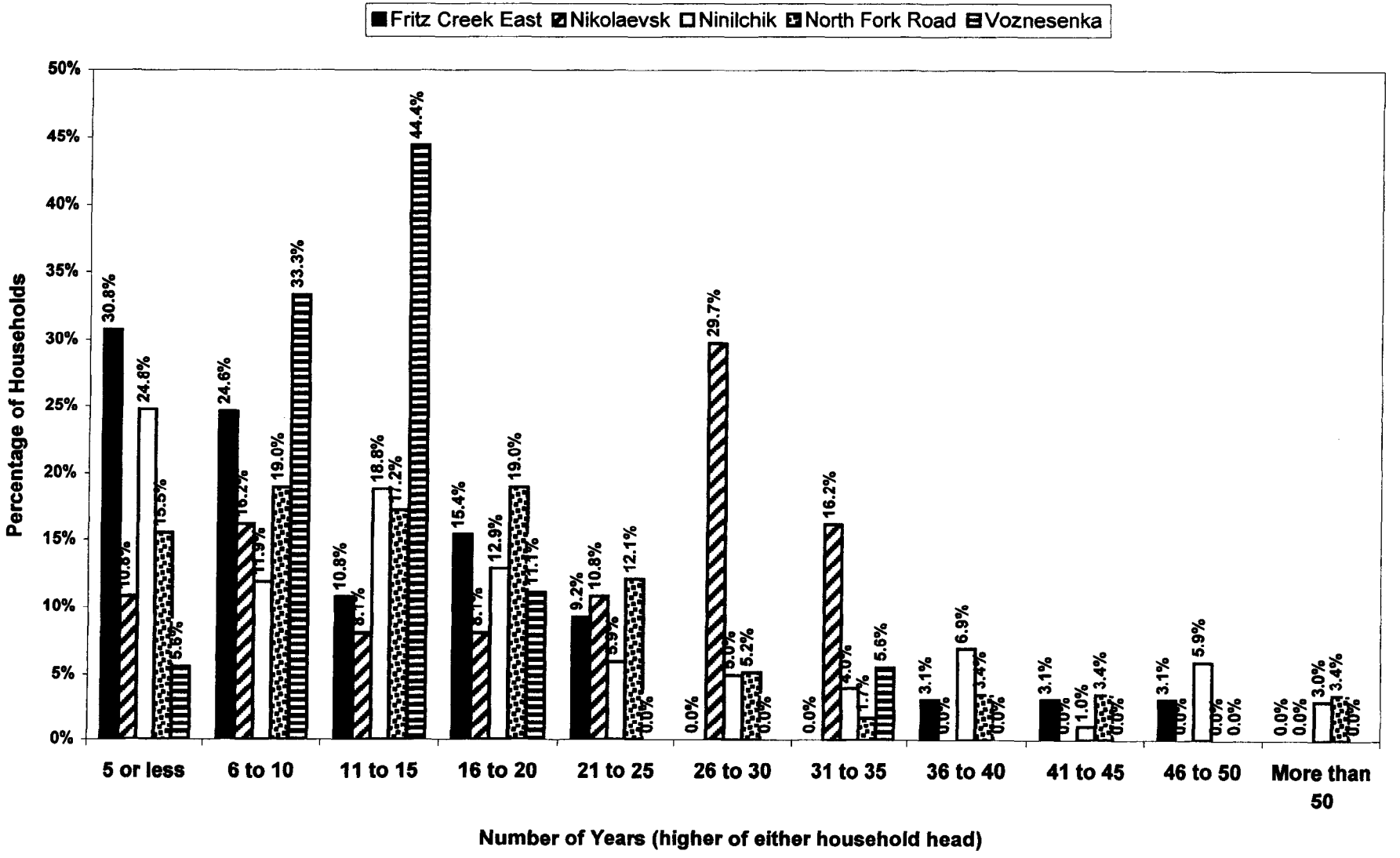
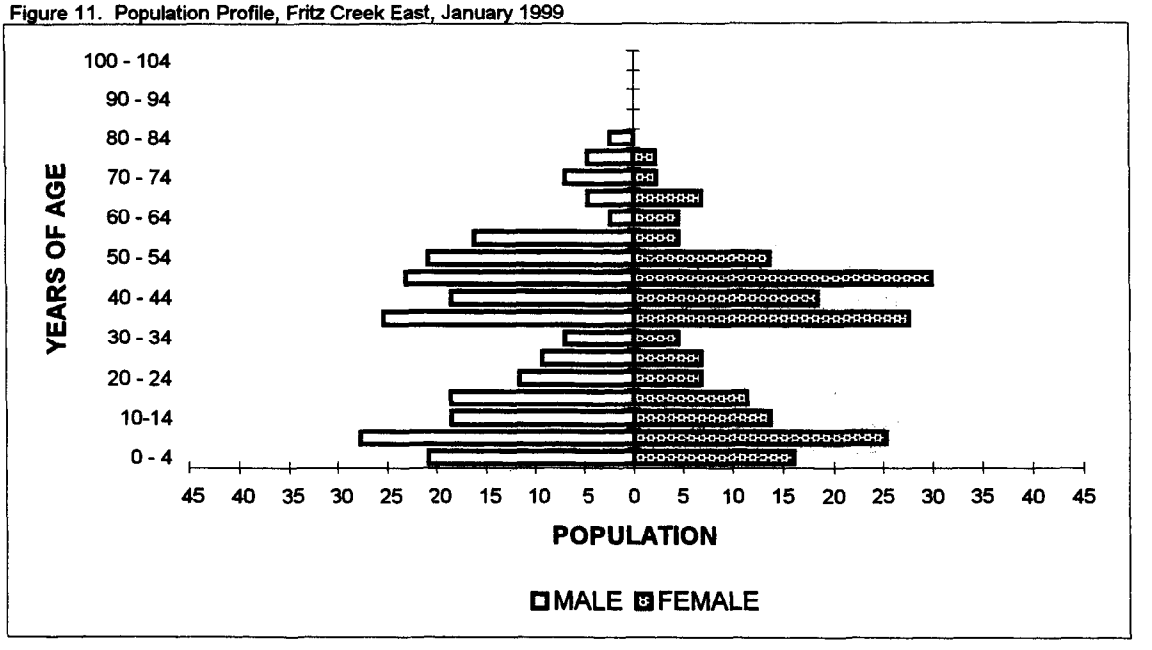


Figure 11. Population Profile, Fritz Creek East, January 1999

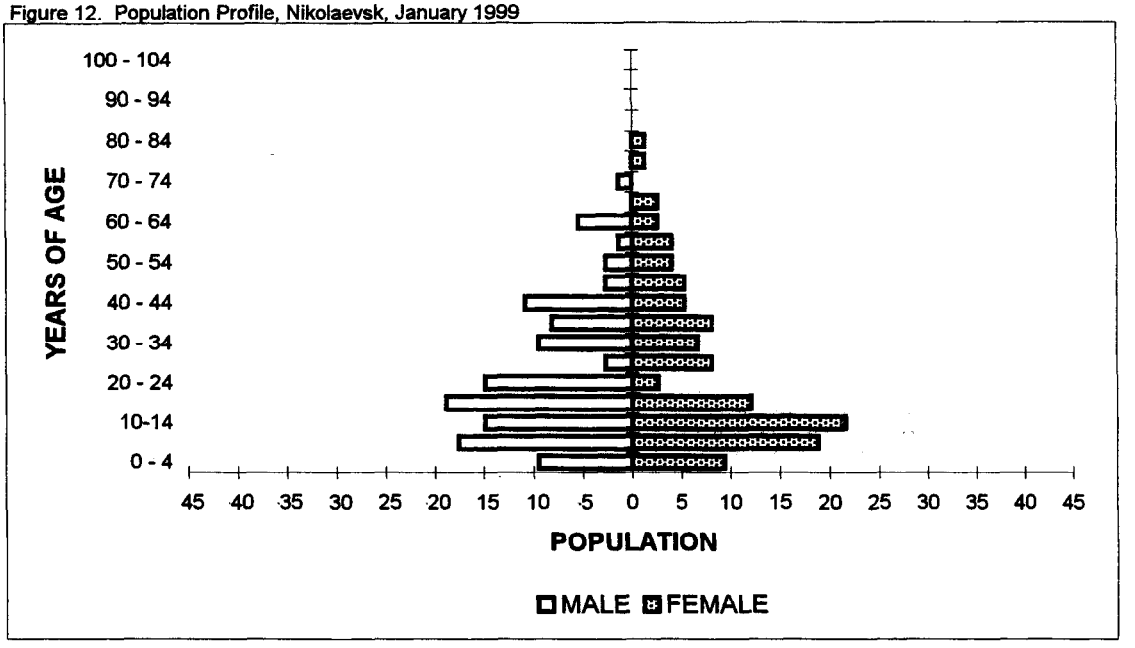


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 11. Population Profile, Fritz Creek East, January 1999

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT
0 - 4	20.77	8.74%	8.74%	16.15	8.24%	8.24%	36.92	8.51%	8.51%
5-9	27.69	11.65%	20.39%	25.38	12.94%	21.18%	53.08	12.23%	20.74%
10-14	18.46	7.77%	28.16%	13.85	7.06%	28.24%	32.31	7.45%	28.19%
15 - 19	18.46	7.77%	35.92%	11.54	5.88%	34.12%	30.00	6.91%	35.11%
20 - 24	11.54	4.85%	40.78%	6.92	3.53%	37.65%	18.46	4.26%	39.36%
25 - 29	9.23	3.88%	44.66%	6.92	3.53%	41.18%	16.15	3.72%	43.09%
30 - 34	6.92	2.91%	47.57%	4.62	2.35%	43.53%	11.54	2.66%	45.74%
35 - 39	25.38	10.68%	58.25%	27.69	14.12%	57.65%	53.08	12.23%	57.98%
40 - 44	18.46	7.77%	66.02%	18.46	9.41%	67.06%	36.92	8.51%	66.49%
45 - 49	23.08	9.71%	75.73%	30.00	15.29%	82.35%	53.08	12.23%	78.72%
50 - 54	20.77	8.74%	84.47%	13.85	7.06%	89.41%	34.62	7.98%	86.70%
55 - 59	16.15	6.80%	91.26%	4.62	2.35%	91.76%	20.77	4.79%	91.49%
60 - 64	2.31	0.97%	92.23%	4.62	2.35%	94.12%	6.92	1.60%	93.09%
65 - 69	4.62	1.94%	94.17%	6.92	3.53%	97.65%	11.54	2.66%	95.74%
70 - 74	6.92	2.91%	97.09%	2.31	1.18%	98.82%	9.23	2.13%	97.87%
75 - 79	4.62	1.94%	99.03%	2.31	1.18%	100.00%	6.92	1.60%	99.47%
80 - 84	2.31	0.97%	100.00%	0.00	0.00%	100.00%	2.31	0.53%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	237.69	54.79%		196.15	45.21%		433.85	100.00%	

Figure 12. Population Profile, Nikolaevsk, January 1999

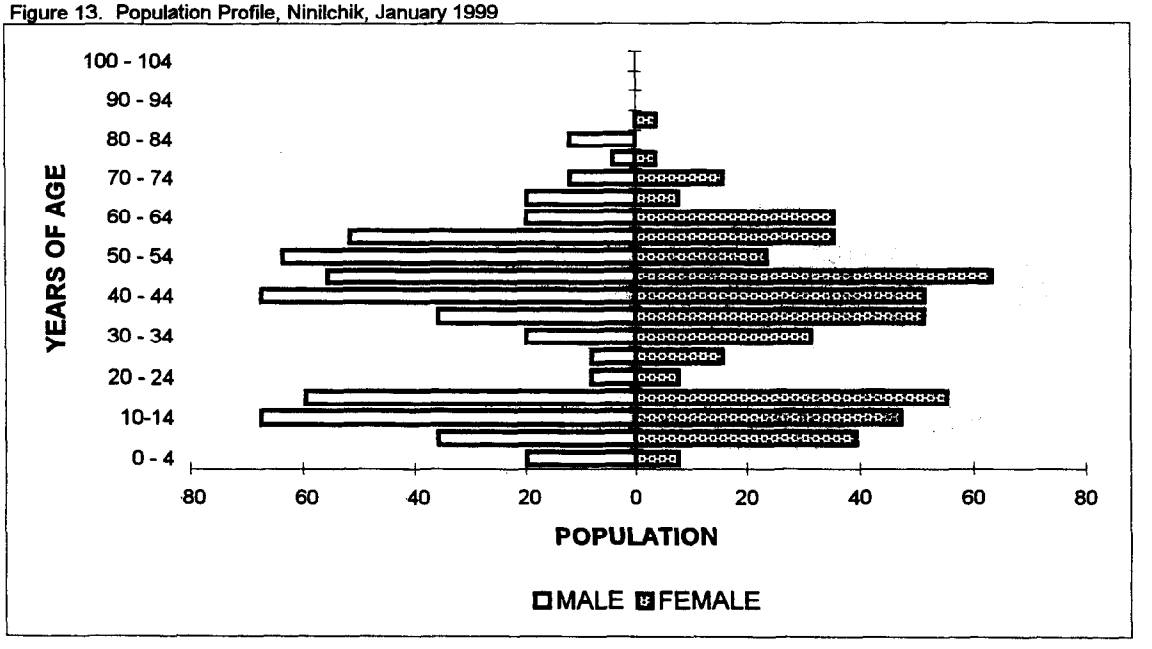


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 12. Population Profile, Nikolaevsk, January 1999

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT
0 - 4	9.46	7.87%	7.87%	9.46	8.24%	8.24%	18.92	8.05%	8.05%
5-9	17.57	14.61%	22.47%	18.92	16.47%	24.71%	36.49	15.52%	23.56%
10-14	14.86	12.36%	34.83%	21.62	18.82%	43.53%	36.49	15.52%	39.08%
15 - 19	18.92	15.73%	50.56%	12.16	10.59%	54.12%	31.08	13.22%	52.30%
20 - 24	14.86	12.36%	62.92%	2.70	2.35%	56.47%	17.57	7.47%	59.77%
25 - 29	2.70	2.25%	65.17%	8.11	7.06%	63.53%	10.81	4.60%	64.37%
30 - 34	9.46	7.87%	73.03%	6.76	5.88%	69.41%	16.22	6.90%	71.26%
35 - 39	8.11	6.74%	79.78%	8.11	7.06%	76.47%	16.22	6.90%	78.16%
40 - 44	10.81	8.99%	88.76%	5.41	4.71%	81.18%	16.22	6.90%	85.06%
45 - 49	2.70	2.25%	91.01%	5.41	4.71%	85.88%	8.11	3.45%	88.51%
50 - 54	2.70	2.25%	93.26%	4.05	3.53%	89.41%	6.76	2.87%	91.38%
55 - 59	1.35	1.12%	94.38%	4.05	3.53%	92.94%	5.41	2.30%	93.68%
60 - 64	5.41	4.49%	98.88%	2.70	2.35%	95.29%	8.11	3.45%	97.13%
65 - 69	0.00	0.00%	98.88%	2.70	2.35%	97.65%	2.70	1.15%	98.28%
70 - 74	1.35	1.12%	100.00%	0.00	0.00%	97.65%	1.35	0.57%	98.85%
75 - 79	0.00	0.00%	100.00%	1.35	1.18%	98.82%	1.35	0.57%	99.43%
80 - 84	0.00	0.00%	100.00%	1.35	1.18%	100.00%	1.35	0.57%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	120.27	51.15%		114.86	48.85%		235.14	100.00%	

Figure 13. Population Profile, Ninilchik, January 1999

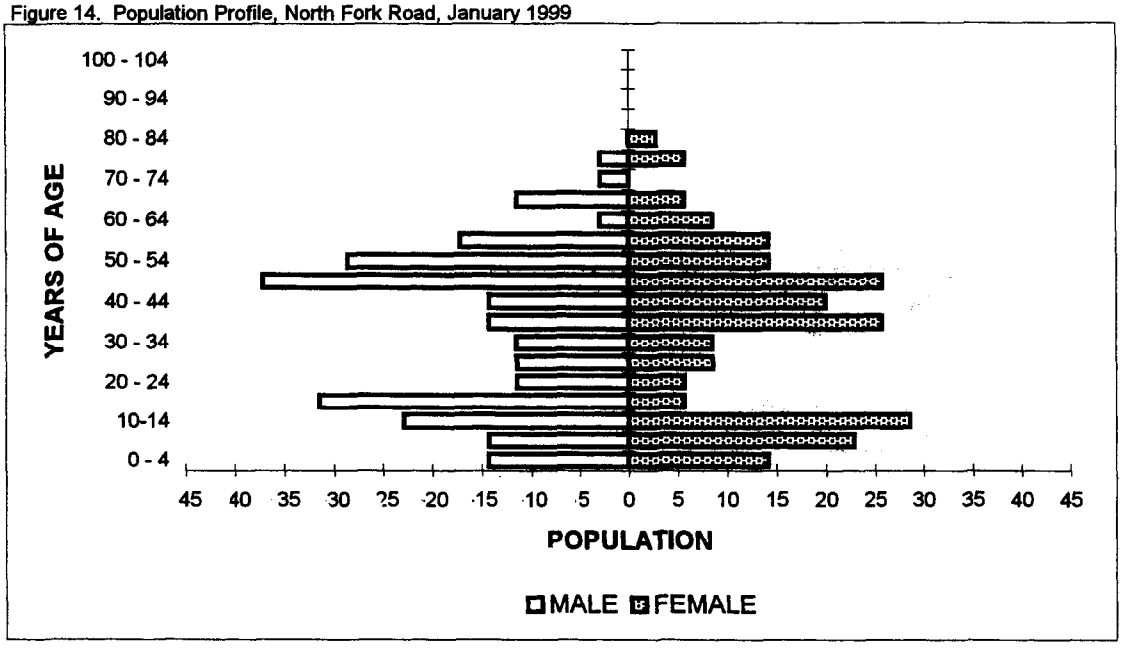


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 13. Population Profile, Ninilchik, January 1999

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT
0 - 4	19.80	3.52%	3.52%	7.92	1.55%	1.55%	27.72	2.58%	2.58%
5-9	35.64	6.34%	9.86%	39.60	7.75%	9.30%	75.25	7.01%	9.59%
10-14	67.33	11.97%	21.83%	47.52	9.30%	18.60%	114.85	10.70%	20.30%
15 - 19	59.41	10.56%	32.39%	55.45	10.85%	29.46%	114.85	10.70%	31.00%
20 - 24	7.92	1.41%	33.80%	7.92	1.55%	31.01%	15.84	1.48%	32.47%
25 - 29	7.92	1.41%	35.21%	15.84	3.10%	34.11%	23.76	2.21%	34.69%
30 - 34	19.80	3.52%	38.73%	31.68	6.20%	40.31%	51.49	4.80%	39.48%
35 - 39	35.64	6.34%	45.07%	51.49	10.08%	50.39%	87.13	8.12%	47.60%
40 - 44	67.33	11.97%	57.04%	51.49	10.08%	60.47%	118.81	11.07%	58.67%
45 - 49	55.45	9.86%	66.90%	63.37	12.40%	72.87%	118.81	11.07%	69.74%
50 - 54	63.37	11.27%	78.17%	23.76	4.65%	77.52%	87.13	8.12%	77.86%
55 - 59	51.49	9.15%	87.32%	35.64	6.98%	84.50%	87.13	8.12%	85.98%
60 - 64	19.80	3.52%	90.85%	35.64	6.98%	91.47%	55.45	5.17%	91.14%
65 - 69	19.80	3.52%	94.37%	7.92	1.55%	93.02%	27.72	2.58%	93.73%
70 - 74	11.88	2.11%	96.48%	15.84	3.10%	96.12%	27.72	2.58%	96.31%
75 - 79	3.96	0.70%	97.18%	3.96	0.78%	96.90%	7.92	0.74%	97.05%
80 - 84	11.88	2.11%	99.30%	0.00	0.00%	96.90%	11.88	1.11%	98.15%
85 - 89	0.00	0.00%	99.30%	3.96	0.78%	97.67%	3.96	0.37%	98.52%
90 - 94	0.00	0.00%	99.30%	0.00	0.00%	97.67%	0.00	0.00%	98.52%
95 - 99	0.00	0.00%	99.30%	0.00	0.00%	97.67%	0.00	0.00%	98.52%
100 - 104	0.00	0.00%	99.30%	0.00	0.00%	97.67%	0.00	0.00%	98.52%
Missing	3.96	0.70%	100.00%	11.88	2.33%	100.00%	15.84	1.48%	100.00%
TOTAL	562.38	52.40%		510.89	47.60%		1,073.27	100.00%	

Figure 14. Population Profile, North Fork Road, January 1999

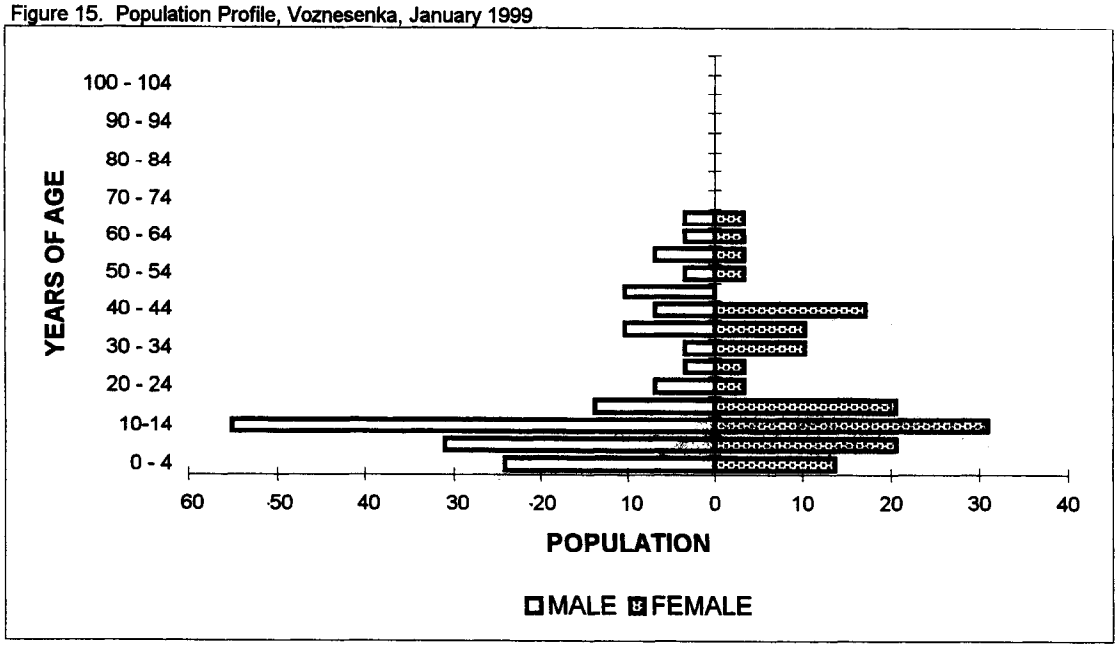


SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 14. Population Profile, North Fork Road, January 1999

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT
0 - 4	14.31	5.75%	5.75%	14.31	6.58%	6.58%	28.62	6.13%	6.13%
5-9	14.31	5.75%	11.49%	22.90	10.53%	17.11%	37.21	7.98%	14.11%
10-14	22.90	9.20%	20.69%	28.62	13.16%	30.26%	51.52	11.04%	25.15%
15 - 19	31.48	12.64%	33.33%	5.72	2.63%	32.89%	37.21	7.98%	33.13%
20 - 24	11.45	4.60%	37.93%	5.72	2.63%	35.53%	17.17	3.68%	36.81%
25 - 29	11.45	4.60%	42.53%	8.59	3.95%	39.47%	20.03	4.29%	41.10%
30 - 34	11.45	4.60%	47.13%	8.59	3.95%	43.42%	20.03	4.29%	45.40%
35 - 39	14.31	5.75%	52.87%	25.76	11.84%	55.26%	40.07	8.59%	53.99%
40 - 44	14.31	5.75%	58.62%	20.03	9.21%	64.47%	34.34	7.36%	61.35%
45 - 49	37.21	14.94%	73.56%	25.76	11.84%	76.32%	62.97	13.50%	74.85%
50 - 54	28.62	11.49%	85.06%	14.31	6.58%	82.89%	42.93	9.20%	84.05%
55 - 59	17.17	6.90%	91.95%	14.31	6.58%	89.47%	31.48	6.75%	90.80%
60 - 64	2.86	1.15%	93.10%	8.59	3.95%	93.42%	11.45	2.45%	93.25%
65 - 69	11.45	4.60%	97.70%	5.72	2.63%	96.05%	17.17	3.68%	96.93%
70 - 74	2.86	1.15%	98.85%	0.00	0.00%	96.05%	2.86	0.61%	97.55%
75 - 79	2.86	1.15%	100.00%	5.72	2.63%	98.68%	8.59	1.84%	99.39%
80 - 84	0.00	0.00%	100.00%	2.86	1.32%	100.00%	2.86	0.61%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	249.00	53.37%		217.52	46.63%		466.52	100.00%	

Figure 15. Population Profile, Voznesenka, January 1999



SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 15. Population Profile, Voznesenka, January 1999

AGE	MALE			FEMALE			TOTAL		
	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT	NUMBER	PERCEN	CUM. PERCENT
0 - 4	24.11	13.21%	13.21%	13.78	9.52%	9.52%	37.89	11.58%	11.58%
5-9	31.00	16.98%	30.19%	20.67	14.29%	23.81%	51.67	15.79%	27.37%
10-14	55.11	30.19%	60.38%	31.00	21.43%	45.24%	86.11	26.32%	53.68%
15 - 19	13.78	7.55%	67.92%	20.67	14.29%	59.52%	34.44	10.53%	64.21%
20 - 24	6.89	3.77%	71.70%	3.44	2.38%	61.90%	10.33	3.16%	67.37%
25 - 29	3.44	1.89%	73.58%	3.44	2.38%	64.29%	6.89	2.11%	69.47%
30 - 34	3.44	1.89%	75.47%	10.33	7.14%	71.43%	13.78	4.21%	73.68%
35 - 39	10.33	5.66%	81.13%	10.33	7.14%	78.57%	20.67	6.32%	80.00%
40 - 44	6.89	3.77%	84.91%	17.22	11.90%	90.48%	24.11	7.37%	87.37%
45 - 49	10.33	5.66%	90.57%	0.00	0.00%	90.48%	10.33	3.16%	90.53%
50 - 54	3.44	1.89%	92.45%	3.44	2.38%	92.86%	6.89	2.11%	92.63%
55 - 59	6.89	3.77%	96.23%	3.44	2.38%	95.24%	10.33	3.16%	95.79%
60 - 64	3.44	1.89%	98.11%	3.44	2.38%	97.62%	6.89	2.11%	97.89%
65 - 69	3.44	1.89%	100.00%	3.44	2.38%	100.00%	6.89	2.11%	100.00%
70 - 74	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
75 - 79	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
80 - 84	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
85 - 89	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
90 - 94	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
95 - 99	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
100 - 104	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
Missing	0.00	0.00%	100.00%	0.00	0.00%	100.00%	0.00	0.00%	100.00%
TOTAL	182.56	55.79%		144.67	44.21%		327.22	100.00%	

Voznesenka (average age 21.6 years) is evident, reflecting the relatively large families and household sizes in these communities (see also Table 8). The oldest population was at Ninilchik (average age 37.0 years), although Fritz Creek East (average age 32.5 years) and North Fork Road (34.3 years) were just slightly younger on average.

CASH EMPLOYMENT

Table 16 presents study findings regarding employment characteristics for each sampling area. Most adults (at least 70 percent or more in each sampling area) had some cash employment in 1998 and over 80 percent of the households in each area had at least one employed adult. Generally, a seasonal pattern of cash employment typified each community; due to the importance of commercial fishing and processing and tourism, there is a seasonal pattern to employment in the Kenai Peninsula Borough overall as well (Fried and Windisch-Cole 1999:9). The average number of months employed per employed adult in the study communities ranged from a low of 6.8 months at Nikolaevsk to a high of 9.0 months in North Fork Road. In no community did a majority of employed adults work year-round; this ranged from a low of 10.0 percent of employed adults at Voznesenka, to 43.4 percent at Ninilchik.

Table 17 through Table 21 present profiles of employment by industry in 1998 for each sampling area, including the percentage of jobs, percentage of households employed, percentage of individuals employed, and percentage of income by industry type. As illustrated in Figure 16, commercial fishing was especially prominent in Nikolaevsk and Voznesenka, providing 52.2 percent and 43.9 percent of the communities' jobs, respectively. Manufacturing jobs, including fish processing and logging, were most important at Ninilchik and North Fork Road. Jobs in trades (such as stores and restaurants) and services (such as health care, guiding, sport fishing charters, and auto repair) were important everywhere but Nikolaevsk, while construction provided 10 percent or more of the jobs in each sampling area. At Ninilchik, 6.9 percent of households had employment with businesses that provide services to sport fishermen, such as guiding and boat charters. Employment with federal, state, or local governments provided the largest percentage of jobs for the North Fork Road sample (25.0 percent) and the least for Ninilchik households (6.6 percent of all jobs).

Table 22 reports the location of jobs held by adult residents of the study communities. In Ninilchik, the majority of jobs (51.7 percent) were in Ninilchik itself, but in the other four study communities, most jobs were located outside the Kenai Peninsula "rural" area. Most jobs held by Fritz Creek East residents were in Homer (55.9 percent), and most held by North Fork Road residents were either in Homer (38.2 percent) or Anchor Point (21.8 percent). For the two Old Believer communities of Nikolaevsk and Voznesenka, most jobs were either in Alaska locations outside the Kenai Peninsula (42.5 percent and 39.0 percent, respectively) or in "urban" areas of the Kenai Peninsula (38.1 percent and 29.3 percent, respectively). The large number of "other Alaska" jobs is related to involvement in commercial fisheries in such locations as Bristol Bay and Prince William Sound.

Table 16. Employment Characteristics, Study Areas, 1998

Characteristics	Fritz Creek East	Nikolaevsk	Ninilchik	North Fork Road	Voznesenka
All Adults					
Number	309	139	828	338	148
Mean Weeks Employed	31.12	22.49	27.95	29.54	24.87
Employed Adults					
Number	258	107	602	255	103
Percentage	83.6%	76.7%	72.7%	75.4%	69.8%
Jobs					
Number	332.31	152.70	839.60	320.55	141.22
Mean	1.29	1.43	1.39	1.26	1.37
Minimum	1.00	1.00	1.00	1.00	1.00
Maximum	3.00	4.00	6.00	3.00	3.00
Months Employed					
Mean	8.60	6.77	8.88	9.04	8.23
Minimum	1.00	1.00	1.00	1.00	1.00
Maximum	12.00	12.00	12.00	12.00	12.00
Percent Employed Year-Round	42.9%	12.7%	43.4%	39.3%	10.0%
Mean Weeks Employed	37.23	29.32	38.43	39.16	35.65
HOUSEHOLDS					
Number	150	50	400	166	62
Employed					
Number	138.46	41.89	328.71	140.24	58.56
Percentage	92.3%	83.8%	82.2%	84.5%	94.4%
Jobs per Employed Household					
Mean	2.40	3.65	2.55	2.29	2.41
Minimum	1.00	1.00	1.00	1.00	1.00
Maximum	7.00	10.00	8.00	5.00	6.00
Number of Employed Adults					
Minimum per Employed Household	1.00	1.00	1.00	1.00	1.00
Maximum per Employed Household	4.00	7.00	4.00	4.00	3.00
Mean					
For Employed Households	1.87	2.55	1.83	1.82	1.76
For Total Households	1.72	2.14	1.50	1.53	1.67
Mean Weeks Employed	64.15	62.61	57.83	60.10	59.42

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999.

Table 17. Employment by Industry, Fritz Creek East, 1998

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number	332.31	138.46	258.46	
Agriculture, Forestry, Fishing	11.81%	20.00%	14.29%	9.14%
Agriculture/Forestry	2.08%	5.00%	2.68%	1.56%
Agriculture	1.39%	3.33%	1.79%	0.00%
Forestry	0.69%	1.67%	0.89%	1.56%
Fishing, Hunting, Trapping	9.72%	15.00%	11.61%	7.58%
Hatchery/Enhancement	0.00%	0.00%	0.00%	0.00%
Commercial Fishing	9.72%	15.00%	11.61%	7.58%
Hunting/Trapping	0.00%	0.00%	0.00%	0.00%
Mining	2.78%	6.67%	3.57%	13.47%
Construction	13.89%	25.00%	16.07%	13.67%
Manufacturing	4.86%	11.67%	6.25%	4.71%
Cannery	0.00%	0.00%	0.00%	0.00%
Other Manufacturing	2.78%	6.67%	3.57%	2.95%
Logging/Timber	2.08%	5.00%	2.68%	1.76%
Transportation, Communications, and Utilities	5.56%	11.67%	6.25%	8.88%
Trade	9.03%	16.67%	11.61%	3.96%
Wholesale	0.00%	0.00%	0.00%	0.00%
Retail	9.03%	16.67%	11.61%	3.96%
Finance, Insurance, and Real Estate	0.69%	1.67%	0.89%	0.34%
Services	35.42%	48.33%	39.29%	25.45%
Government	15.28%	33.33%	19.64%	20.37%
Federal	0.00%	0.00%	0.00%	0.00%
State	4.86%	11.67%	6.25%	2.84%
Local	10.42%	21.67%	13.39%	17.54%
Local Government	2.08%	5.00%	2.68%	1.97%
Local Education	8.33%	16.67%	10.71%	15.57%
Unknown	0.69%	1.67%	0.89%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table18 . Employment by Industry, Nikolaevsk, 1998

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number	152.70	41.89	106.76	
Agriculture, Forestry, Fishing	56.64%	83.87%	75.95%	68.74%
Agriculture/Forestry	1.77%	6.45%	2.53%	1.30%
Agriculture	0.88%	3.23%	1.27%	0.00%
Forestry	0.88%	3.23%	1.27%	1.30%
Fishing, Hunting, Trapping	54.87%	77.42%	73.42%	67.43%
Hatchery/Enhancemen	0.00%	0.00%	0.00%	0.00%
Commercial Fishing	52.21%	77.42%	73.42%	67.43%
Hunting/Trapping	2.65%	3.23%	3.80%	0.00%
Mining	1.77%	3.23%	2.53%	2.45%
Construction	13.27%	45.16%	17.72%	11.18%
Manufacturing	4.42%	16.13%	6.33%	2.25%
Cannery	1.77%	6.45%	2.53%	0.59%
Other Manufacturing	2.65%	9.68%	3.80%	1.65%
Logging/Timber	0.00%	0.00%	0.00%	0.00%
Transportation, Communications, and Utilities	0.88%	3.23%	1.27%	1.96%
Trade	4.42%	16.13%	6.33%	1.86%
Wholesale	0.00%	0.00%	0.00%	0.00%
Retail	4.42%	16.13%	6.33%	1.86%
Finance, Insurance, and Real Estate	0.00%	0.00%	0.00%	0.00%
Services	6.19%	22.58%	8.86%	1.97%
Government	12.39%	29.03%	13.92%	9.60%
Federal	0.88%	3.23%	1.27%	0.00%
State	0.00%	0.00%	0.00%	0.00%
Local	11.50%	25.81%	12.66%	9.60%
Local Government	0.88%	3.23%	1.27%	0.33%
Local Education	10.62%	25.81%	12.66%	9.28%
Unknown	0.00%	0.00%	0.00%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 19. Employment by Industry, Ninilchik, 1998

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number	839.60	328.71	601.98	
Agriculture, Forestry, Fishing	14.62%	26.51%	20.39%	6.28%
Agriculture/Forestry	1.42%	3.61%	1.97%	0.18%
Agriculture	0.94%	2.41%	1.32%	0.06%
Forestry	0.47%	1.20%	0.66%	0.11%
Fishing, Hunting, Trapping	13.21%	22.89%	18.42%	6.11%
Hatchery/Enhancement	0.00%	0.00%	0.00%	0.00%
Commercial Fishing	12.26%	20.48%	17.11%	6.09%
Hunting/Trapping	0.94%	2.41%	1.32%	0.02%
Mining	3.77%	9.64%	5.26%	11.11%
Construction	10.85%	24.10%	15.13%	11.28%
Manufacturing	17.45%	36.14%	22.37%	20.09%
Cannery	6.13%	12.05%	8.55%	5.03%
Other Manufacturing	0.94%	2.41%	1.32%	0.57%
Logging/Timber	10.38%	21.69%	12.50%	14.49%
Transportation, Communications, and Utilities	3.77%	9.64%	5.26%	9.71%
Trade	14.15%	25.30%	16.45%	8.79%
Wholesale	0.00%	0.00%	0.00%	0.00%
Retail	14.15%	25.30%	16.45%	8.79%
Finance, Insurance, and Real Estate	2.36%	4.82%	3.29%	3.22%
Services	25.94%	44.58%	30.26%	24.40%
Government	6.60%	15.66%	9.21%	5.12%
Federal	0.47%	1.20%	0.66%	0.00%
State	0.00%	0.00%	0.00%	0.00%
Local	6.13%	14.46%	8.55%	5.12%
Local Government	0.94%	2.41%	1.32%	0.64%
Local Education	5.19%	12.05%	7.24%	4.48%
Unknown	0.47%	1.20%	0.66%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 20. Employment by Industry, North Fork Road, 1998

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number	320.55	140.24	254.72	
Agriculture, Forestry, Fishing	6.25%	10.20%	7.87%	2.23%
Agriculture/Forestry	0.00%	0.00%	0.00%	0.00%
Agriculture	0.00%	0.00%	0.00%	0.00%
Forestry	0.00%	0.00%	0.00%	0.00%
Fishing, Hunting, Trapping	6.25%	10.20%	7.87%	2.23%
Hatchery/Enhancemen	0.00%	0.00%	0.00%	0.00%
Commercial Fishing	6.25%	10.20%	7.87%	2.23%
Hunting/Trapping	0.00%	0.00%	0.00%	0.00%
Mining	1.79%	4.08%	2.25%	7.42%
Construction	10.71%	22.45%	12.36%	12.66%
Manufacturing	14.29%	20.41%	13.48%	11.16%
Cannery	5.36%	10.20%	5.62%	0.73%
Other Manufacturing	0.89%	2.04%	1.12%	0.04%
Logging/Timber	8.04%	12.24%	8.99%	10.38%
Transportation, Communications, and Utilities	6.25%	10.20%	7.87%	2.33%
Trade	15.18%	28.57%	17.98%	14.80%
Wholesale	0.00%	0.00%	0.00%	0.00%
Retail	15.18%	28.57%	17.98%	14.80%
Finance, Insurance, and Real Estate	1.79%	4.08%	2.25%	1.15%
Services	16.96%	28.57%	20.22%	12.27%
Government	25.00%	38.78%	29.21%	35.99%
Federal	4.46%	8.16%	5.62%	4.84%
State	8.04%	14.29%	8.99%	9.33%
Local	12.50%	22.45%	15.73%	21.82%
Local Government	3.57%	8.16%	4.49%	6.76%
Local Education	8.93%	16.33%	11.24%	15.06%
Unknown	1.79%	4.08%	2.25%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 21. Employment by Industry, Voznesenka, 1998

	Jobs	Households	Individuals	Percentage of Income
Estimated Total Number	141.22	58.56	103.33	
Agriculture, Forestry, Fishing	46.34%	82.35%	63.33%	53.28%
Agriculture/Forestry	2.44%	5.88%	3.33%	0.00%
Agriculture	2.44%	5.88%	3.33%	0.00%
Forestry	0.00%	0.00%	0.00%	0.00%
Fishing, Hunting, Trapping	43.90%	82.35%	60.00%	53.28%
Hatchery/Enhancemen	0.00%	0.00%	0.00%	0.00%
Commercial Fishing	43.90%	82.35%	60.00%	53.28%
Hunting/Trapping	0.00%	0.00%	0.00%	0.00%
Mining	0.00%	0.00%	0.00%	0.00%
Construction	9.76%	17.65%	13.33%	13.81%
Manufacturing	0.00%	0.00%	0.00%	0.00%
Cannery	0.00%	0.00%	0.00%	0.00%
Other Manufacturing	0.00%	0.00%	0.00%	0.00%
Logging/Timber	0.00%	0.00%	0.00%	0.00%
Transportation, Communications, and Utilities	0.00%	0.00%	0.00%	0.00%
Trade	12.20%	17.65%	13.33%	6.85%
Wholesale	0.00%	0.00%	0.00%	0.00%
Retail	12.20%	17.65%	13.33%	6.85%
Finance, Insurance, and Real Estate	0.00%	0.00%	0.00%	0.00%
Services	17.07%	35.29%	23.33%	10.56%
Government	14.63%	23.53%	20.00%	15.50%
Federal	0.00%	0.00%	0.00%	0.00%
State	0.00%	0.00%	0.00%	0.00%
Local	14.63%	23.53%	20.00%	15.50%
Local Government	0.00%	0.00%	0.00%	0.00%
Local Education	14.63%	23.53%	20.00%	15.50%
Unknown	0.00%	0.00%	0.00%	0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Figure 16. Percentage of Jobs by Industry, Study Areas, 1998

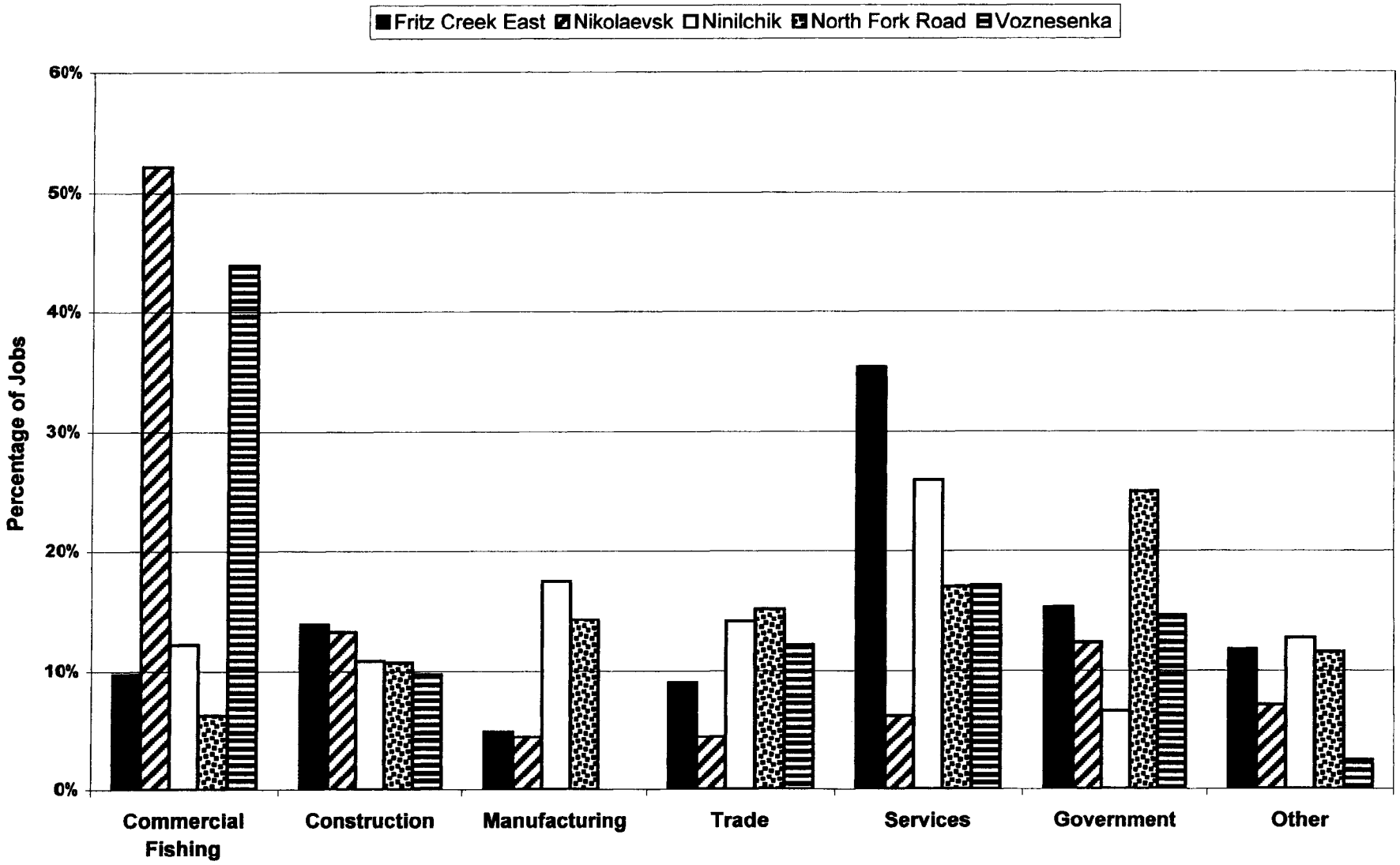


Table 22. Location of Jobs, Study Areas, 1998

Location of Job:	Percentage of Jobs Held by Adults Living in:					
	Fritz Creek East	Ninilchik	Nikolaevsk	Voznesenka	North Fork Road	Total
Fritz Creek East	11.9%	0.0%	0.0%	0.0%	0.0%	2.2%
Kachemak Selo	1.4%	0.0%	0.0%	0.0%	0.0%	0.3%
Nikolaevsk	0.0%	0.0%	15.9%	0.0%	2.7%	1.9%
Ninichik	0.0%	51.7%	0.0%	0.0%	3.6%	25.0%
North Fork Road	0.0%	0.0%	0.0%	0.0%	2.7%	0.5%
Voznesenka	1.4%	0.0%	0.0%	22.0%	0.0%	2.0%
Subtotal, Kenai Peninsula "Rural"	14.7%	51.7%	15.9%	22.0%	9.1%	31.8%
Anchor Point	0.7%	7.1%	0.0%	0.0%	21.8%	7.4%
Clam Gulch	0.0%	0.9%	0.0%	0.0%	0.0%	0.5%
Homer	55.9%	5.2%	22.1%	19.5%	38.2%	23.1%
Kasilof	0.0%	0.9%	0.0%	0.0%	0.0%	0.5%
Kenai	0.7%	2.4%	0.0%	0.0%	0.0%	1.3%
Nikiski	0.0%	0.5%	0.0%	0.0%	0.9%	0.4%
Seward	0.0%	0.5%	0.9%	0.0%	0.0%	0.3%
Soldotna	0.0%	5.2%	0.0%	0.0%	2.7%	2.9%
Other Kenai Peninsula[1]	7.0%	10.4%	15.0%	9.8%	5.5%	9.3%
Subtotal, Kenai Peninsula "Urban"	64.3%	33.2%	38.1%	29.3%	69.1%	45.5%
KENAI PENINSULA SUBTOTAL	79.0%	84.8%	54.0%	51.2%	78.2%	77.2%
Other Alaska[2]	16.8%	10.9%	42.5%	39.0%	19.1%	18.4%
Other US	2.8%	2.8%	0.0%	4.9%	1.8%	2.6%
Foreign	0.7%	0.0%	0.0%	0.0%	0.0%	0.1%
Missing	0.7%	1.4%	3.5%	4.9%	0.9%	1.7%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

[1] Inlcudes commercial fishing in the Cook Inlet Management Area.

[2] Includes commercial fishing in management areas other than Cook Inlet.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

CASH INCOME

Table 23 through Table 27 report estimated community, mean household, and per capita cash incomes by industry type for each sampling area in 1998. Table 28 through Table 32 provide more detail on cash income from sources other than jobs. Mean household incomes were remarkably similar among the five study communities, ranging from a low of $50,078 per household in Ninilchik to a high of $53,625 per household in Voznesenka (Fig. 17). However, because of differences in average household sizes, the communities fell into two groups in terms of per capita income. Three communities had very similar per capita incomes: Ninilchik ($18,664 per capita), North Fork Road ($18,138 per capita), and Fritz Creek East ($17,400 per capita). The two Old Believer communities had per capita incomes similar to each other but lower than the other three: Nikolaevsk ($11,140 per capita) and Voznesenka ($10,160 per capita). It is interesting to note that Voznesenka was the community with the highest mean household income and the lowest per capita income, while Ninilchik, the community with the lowest mean household income, had the highest per capita income.

Figure 18 illustrates the role of commercial fishing in the local economies of each study area (see also Tables 16 through 21). Commercial fishing was most prominent at Nikolaevsk and Voznesenka. In both communities, a large majority of the households were employed in commercial fisheries (77.4 percent and 82.4 percent, respectively) as were the majority of employed adults (73.4 percent and 60.0 percent, respectively). Commercial fishing provided 67.4 percent of the cash income in Nikolaevsk and 53.3 percent in Voznesenka. In the other communities, commercial fishing played a less dominant role. In Ninilchik, a community with a long historic link to commercial fishing, about 20.5 percent of the households were involved in this industry in 1998, although it produced only 6.1 percent of the community's cash income. There was less involvement in commercial fishing in Fritz Creek East (15.0 percent of households; 7.6 percent of income) and North Fork Road (10.2 percent of households, 2.2 percent of income).

Regarding other income sources, by far the most important in each study area except Ninilchik were Alaska Permanent Fund dividends (Table 28 through Table 32). As shown in Table 33, virtually every household received permanent fund checks, which contributed between 7.2 percent (in Ninilchik) to 14.2 percent (in Voznesenka) of the total community incomes.

Income from retirement sources, including pensions and social security, was important in each study area except Voznesenka, but especially so in Ninilchik (Table 33). A larger percentage of households in Ninilchik (29.7 percent, an estimated 119 households) than any other area received retirement income (pensions and/or social security). On average, retired households in Ninilchik received $22,885 in 1998 from pensions and social security, about 50 percent more on average than in the other communities. Only in Ninilchik did retirement income outrank permanent fund dividends as a cash source, providing 13.6 percent of the community's total income (compared to 6.0 percent for Nikolaevsk, the next highest community) compared to 7.2 percent for permanent fund checks.

Table 23. Community, Household, and Per Capita Incomes, All Sources and by Employer Types
Fritz Creek East, 1998

INCOME SOURCE	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$7,549,134.93	$50,327.57	$17,400.49
Earned Income	5,909,081.85	39,393.88	13,620.22
Agriculture, Forestry, Fishing	540,032.97	3,600.22	1,244.76
Agriculture/Forestry	92,307.69	615.38	212.77
Agriculture	0.00	0.00	0.00
Forestry	92,307.69	615.38	212.77
Fishing, Hunting, Trapping	447,725.27	2,984.84	1,031.99
Hatchery/Enhancemen	0.00	0.00	0.00
Commercial Fishing	447,725.27	2,984.84	1,031.99
Hunting/Trapping	0.00	0.00	0.00
Mining	796,153.85	5,307.69	1,835.11
Construction	807,869.82	5,385.80	1,862.11
Manufacturing	278,092.31	1,853.95	640.99
Cannery	0.00	0.00	0.00
Other Manufacturing	174,246.15	1,161.64	401.63
Logging/Timber	103,846.15	692.31	239.36
Transportation, Communications, and Utilities	525,000.00	3,500.00	1,210.11
Trade	234,230.77	1,561.54	539.89
Wholesale	0.00	0.00	0.00
Retail	234,230.77	1,561.54	539.89
Finance, Insurance, and Real Estate	20,076.92	133.85	46.28
Services	1,503,736.75	10,024.91	3,466.06
Government	1,203,888.46	8,025.92	2,774.92
Federal	0.00	0.00	0.00
State	167,561.54	1,117.08	386.22
Local	1,036,326.92	6,908.85	2,388.70
Local Government	116,423.08	776.15	268.35
Local Education	919,903.85	6,132.69	2,120.35
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$1,640,053.08	$10,933.69	$3,780.26

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 24. Community, Household, and Per Capita Incomes, All Sources and by Employer Types
Nikolaevsk, 1998

INCOME SOURCE	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$2,619,415.60	$52,388.31	$11,140.04
Earned Income	2,072,877.32	41,457.55	8,815.69
Agriculture, Forestry, Fishing	1,424,864.86	28,497.30	6,059.77
Agriculture/Forestry	27,027.03	540.54	114.94
Agriculture	AMT UNK	AMT UNK	AMT UNK
Forestry	27,027.03	540.54	114.94
Fishing, Hunting, Trapping	1,397,837.84	27,956.76	5,944.83
Hatchery/Enhancement	0.00	0.00	0.00
Commercial Fishing	1,397,837.84	27,956.76	5,944.83
Hunting/Trapping	AMT UNK	AMT UNK	AMT UNK
Mining	50,810.81	1,016.22	216.09
Construction	231,756.76	4,635.14	985.63
Manufacturing	46,562.16	931.24	198.02
Cannery	12,305.41	246.11	52.33
Other Manufacturing	34,256.76	685.14	145.69
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	40,540.54	810.81	172.41
Trade	38,513.51	770.27	163.79
Wholesale	0.00	0.00	0.00
Retail	38,513.51	770.27	163.79
Finance, Insurance, and Real Estate	0.00	0.00	0.00
Services	40,793.92	815.88	173.49
Government	199,034.75	3,980.69	846.47
Federal	AMT UNK	AMT UNK	AMT UNK
State	0.00	0.00	0.00
Local	199,034.75	3,980.69	846.47
Local Government	6,756.76	135.14	28.74
Local Education	192,277.99	3,845.56	817.73
Unknown	0.00	0.00	0.00
Other Income	$546,538.29	$10,930.77	$2,324.36

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 25. Community, Household, and Per Capita Incomes, All Sources and by Employer Types
Ninilchik, 1998

INCOME SOURCE	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$20,031,279.19	$50,078.20	$18,663.83
Earned Income	13,972,790.85	34,931.98	13,018.93
Agriculture, Forestry, Fishing	877,770.86	2,194.43	817.85
Agriculture/Forestry	24,554.46	61.39	22.88
Agriculture	8,712.87	21.78	8.12
Forestry	15,841.58	39.60	14.76
Fishing, Hunting, Trapping	853,216.41	2,133.04	794.97
Hatchery/Enhancemen	0.00	0.00	0.00
Commercial Fishing	850,721.36	2,126.80	792.65
Hunting/Trapping	2,495.05	6.24	2.32
Mining	1,552,475.25	3,881.19	1,446.49
Construction	1,576,237.62	3,940.59	1,468.63
Manufacturing	2,807,192.08	7,017.98	2,615.56
Cannery	703,524.75	1,758.81	655.50
Other Manufacturing	79,207.92	198.02	73.80
Logging/Timber	2,024,459.41	5,061.15	1,886.26
Transportation, Communications, and Utilities	1,357,095.71	3,392.74	1,264.45
Trade	1,227,872.57	3,069.68	1,144.05
Wholesale	0.00	0.00	0.00
Retail	1,227,872.57	3,069.68	1,144.05
Finance, Insurance, and Real Estate	449,900.99	1,124.75	419.19
Services	3,409,055.45	8,522.64	3,176.33
Government	715,190.32	1,787.98	666.37
Federal	AMT UNK	AMT UNK	AMT UNK
State	0.00	0.00	0.00
Local	715,190.32	1,787.98	666.37
Local Government	89,108.91	222.77	83.03
Local Education	626,081.41	1,565.20	583.34
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$6,058,488.35	$15,146.22	$5,644.90

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 26. Community, Household, and Per Capita Incomes, All Sources and by Employer Types
North Fork Road, 1998

INCOME SOURCE	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$8,461,807.97	$50,974.75	$18,138.25
Earned Income	6,945,362.68	41,839.53	14,887.69
Agriculture, Forestry, Fishing	155,086.93	934.26	332.44
Agriculture/Forestry	0.00	0.00	0.00
Agriculture	0.00	0.00	0.00
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	155,086.93	934.26	332.44
Hatchery/Enhancemen	0.00	0.00	0.00
Commercial Fishing	155,086.93	934.26	332.44
Hunting/Trapping	0.00	0.00	0.00
Mining	515,172.41	3,103.45	1,104.29
Construction	879,068.58	5,295.59	1,884.32
Manufacturing	774,905.17	4,668.10	1,661.04
Cannery	50,801.72	306.03	108.90
Other Manufacturing	2,862.07	17.24	6.13
Logging/Timber	721,241.38	4,344.83	1,546.01
Transportation, Communications, and Utilities	161,563.79	973.28	346.32
Trade	1,027,768.97	6,191.38	2,203.07
Wholesale	0.00	0.00	0.00
Retail	1,027,768.97	6,191.38	2,203.07
Finance, Insurance, and Real Estate	80,137.93	482.76	171.78
Services	851,927.85	5,132.10	1,826.14
Government	2,499,731.03	15,058.62	5,358.28
Federal	336,293.10	2,025.86	720.86
State	648,258.62	3,905.17	1,389.57
Local	1,515,179.31	9,127.59	3,247.85
Local Government	469,379.31	2,827.59	1,006.13
Local Education	1,045,800.00	6,300.00	2,241.72
Unknown	AMT UNK	AMT UNK	AMT UNK
Other Income	$1,516,445.30	$9,135.21	$3,250.57

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 27. Community, Household, and Per Capita Incomes, All Sources and by Employer Types
Voznesenka, 1998

INCOME SOURCE	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources	$3,324,728.08	$53,624.65	$10,160.46
Earned Income	2,666,012.53	43,000.20	8,147.41
Agriculture, Forestry, Fishing	1,420,363.64	22,909.09	4,340.67
Agriculture/Forestry	0.00	0.00	0.00
Agriculture	AMT UNK	AMT UNK	AMT UNK
Forestry	0.00	0.00	0.00
Fishing, Hunting, Trapping	1,420,363.64	22,909.09	4,340.67
Hatchery/Enhancemen	0.00	0.00	0.00
Commercial Fishing	1,420,363.64	22,909.09	4,340.67
Hunting/Trapping	0.00	0.00	0.00
Mining	0.00	0.00	0.00
Construction	368,280.00	5,940.00	1,125.47
Manufacturing	0.00	0.00	0.00
Cannery	0.00	0.00	0.00
Other Manufacturing	0.00	0.00	0.00
Logging/Timber	0.00	0.00	0.00
Transportation, Communications, and Utilities	0.00	0.00	0.00
Trade	182,555.56	2,944.44	557.89
Wholesale	0.00	0.00	0.00
Retail	182,555.56	2,944.44	557.89
Finance, Insurance, and Real Estate	0.00	0.00	0.00
Services	281,480.00	4,540.00	860.21
Government	413,333.33	6,666.67	1,263.16
Federal	0.00	0.00	0.00
State	0.00	0.00	0.00
Local	413,333.33	6,666.67	1,263.16
Local Government	0.00	0.00	0.00
Local Education	413,333.33	6,666.67	1,263.16
Unknown	0.00	0.00	0.00
Other Income	$658,715.56	$10,624.44	$2,013.05

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 28. Community, Household, and Per Capita Other Income by Source, Fritz Creek East, 1998

SOURCE	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$1,640,053.08	$10,933.69	$3,780.26
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	1.54	26,584.62	177.23	61.28
Adult Public Assistance	1.54	9,969.23	66.46	22.98
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	10.77	274,615.38	1,830.77	632.98
Longevity Bonus	7.69	62,307.69	415.38	143.62
Social Security	15.38	170,109.89	1,134.07	392.10
Workman's Comp./Insurance	1.54	13,846.15	92.31	31.91
Energy Assistance	3.08	1,730.77	11.54	3.99
Supplemental Security Income	4.62	103,596.92	690.65	238.79
Food Stamps	3.08	7,476.92	49.85	17.23
Unemployment	4.62	24,230.77	161.54	55.85
Native Corporation Dividend	0.00	0.00	0.00	0.00
Dividend/Interest	7.69	216,346.15	1,442.31	498.67
Child Support	1.54	6,923.08	46.15	15.96
Rental Income	4.62	18,461.54	123.08	42.55
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	1.54	13,846.15	92.31	31.91
Alaska Permanent Fund Dividend	93.85	610,992.42	4,073.28	1,408.32
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	3.08	1,938.46	12.92	4.47
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	1.54	73,846.15	492.31	170.21
ASRC Elder Trust	0.00	0.00	0.00	0.00
Supplemental Union Benefits	0.00	0.00	0.00	0.00
Gifts	0.00	0.00	0.00	0.00
Medicare/Medicaid	1.54	2,307.69	15.38	5.32
Other	1.54	923.08	6.15	2.13

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 29. Community, Household, and Per Capita Other Income by Source, Nikolaevsk, 1998

SOURCE	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$546,538.29	$10,930.77	$2,324.36
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	2.70	40,864.86	817.30	173.79
Adult Public Assistance	2.70	405.41	8.11	1.72
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	2.70	49,189.19	983.78	209.20
Longevity Bonus	2.70	4,054.05	81.08	17.24
Social Security	21.62	107,445.05	2,148.90	456.95
Workman's Comp./Insurance	0.00	0.00	0.00	0.00
Energy Assistance	8.11	1,351.35	27.03	5.75
Supplemental Security Income	2.70	AMT UNK	AMT UNK	AMT UNK
Food Stamps	8.11	5,748.65	114.97	24.45
Unemployment	0.00	0.00	0.00	0.00
Native Corporation Dividend	0.00	0.00	0.00	0.00
Dividend/Interest	13.51	11,495.95	229.92	48.89
Child Support	0.00	0.00	0.00	0.00
Rental Income	0.00	0.00	0.00	0.00
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	94.59	325,875.68	6,517.51	1,385.91
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	0.00	0.00	0.00	0.00
Supplemental Union Benefits	0.00	0.00	0.00	0.00
Gifts	0.00	0.00	0.00	0.00
Medicare/Medicaid	5.41	AMT UNK	AMT UNK	AMT UNK
Other	2.70	108.11	2.16	0.46

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 30. Community, Household, and Per Capita Other Income by Source, Ninilchik, 1998

SOURCE	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$6,058,488.35	$15,146.22	$5,644.90
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	1.98	76,039.60	190.10	70.85
Adult Public Assistance	2.97	69,702.97	174.26	64.94
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	21.78	1,822,267.99	4,555.67	1,697.87
Longevity Bonus	9.90	158,811.88	397.03	147.97
Social Security	20.79	896,702.31	2,241.76	835.49
Workman's Comp./Insurance	3.96	263,564.36	658.91	245.57
Energy Assistance	7.92	13,853.47	34.63	12.91
Supplemental Security Income	4.95	163,564.36	408.91	152.40
Food Stamps	1.98	20,198.02	50.50	18.82
Unemployment	20.79	176,435.64	441.09	164.39
Native Corporation Dividend	13.86	143,731.91	359.33	133.92
Dividend/Interest	33.66	404,162.38	1,010.41	376.57
Child Support	1.98	30,891.09	77.23	28.78
Rental Income	3.96	153,663.37	384.16	143.17
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.99	AMT UNK	AMT UNK	AMT UNK
Alaska Permanent Fund Dividend	90.10	1,432,423.76	3,581.06	1,334.64
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.99	1,980.20	4.95	1.85
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.99	AMT UNK	AMT UNK	AMT UNK
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.99	198,019.80	495.05	184.50
ASRC Elder Trust	0.00	0.00	0.00	0.00
Supplemental Union Benefits	0.00	0.00	0.00	0.00
Gifts	0.00	0.00	0.00	0.00
Medicare/Medicaid	0.00	0.00	0.00	0.00
Other	1.98	32,475.25	81.19	30.26

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 31. Community, Household, and Per Capita Other Income by Source, North Fork Road, 1998

SOURCE	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$1,516,445.30	$9,135.21	$3,250.57
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	3.45	29,605.24	178.34	63.46
Adult Public Assistance	1.72	3,720.69	22.41	7.98
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	8.62	216,086.21	1,301.72	463.19
Longevity Bonus	8.62	54,951.72	331.03	117.79
Social Security	18.97	282,239.43	1,700.24	604.99
Workman's Comp./Insurance	3.45	18,603.45	112.07	39.88
Energy Assistance	8.62	6,874.69	41.41	14.74
Supplemental Security Income	1.72	16,336.69	98.41	35.02
Food Stamps	3.45	4,235.86	25.52	9.08
Unemployment	18.97	93,748.66	564.75	200.95
Native Corporation Dividend	5.17	41,356.90	249.14	88.65
Dividend/Interest	15.52	62,250.00	375.00	133.44
Child Support	0.00	0.00	0.00	0.00
Rental Income	1.72	14,310.34	86.21	30.67
Veteran Disability	1.72	20,606.90	124.14	44.17
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	94.83	640,356.45	3,857.57	1,372.63
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	1.72	AMT UNK	AMT UNK	AMT UNK
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	3.45	11,162.07	67.24	23.93
ASRC Elder Trust	0.00	0.00	0.00	0.00
Supplemental Union Benefits	0.00	0.00	0.00	0.00
Gifts	0.00	0.00	0.00	0.00
Medicare/Medicaid	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 32. Community, Household, and Per Capita Other Income by Source, Voznesenka, 1998

SOURCE	OTHER INCOME			
	PERCENTAGE REPORTING	COMMUNITY TOTAL	AVERAGE HOUSEHOLD	PER CAPITA
All Sources		$658,715.56	$10,624.44	$2,013.05
Exxon Claims	0.00	0.00	0.00	0.00
Aid to Families with Dependent Children	5.56	44,777.78	722.22	136.84
Adult Public Assistance	0.00	0.00	0.00	0.00
Exxon Damages	0.00	0.00	0.00	0.00
Pension/Retirement	0.00	0.00	0.00	0.00
Longevity Bonus	5.56	12,400.00	200.00	37.89
Social Security	0.00	0.00	0.00	0.00
Workman's Comp./Insurance	0.00	0.00	0.00	0.00
Energy Assistance	0.00	0.00	0.00	0.00
Supplemental Security Income	11.11	49,600.00	800.00	151.58
Food Stamps	5.56	14,466.67	233.33	44.21
Unemployment	5.56	1,722.22	27.78	5.26
Native Corporation Dividend	0.00	0.00	0.00	0.00
Dividend/Interest	0.00	0.00	0.00	0.00
Child Support	0.00	0.00	0.00	0.00
Rental Income	11.11	59,933.33	966.67	183.16
Veteran Disability	0.00	0.00	0.00	0.00
Equipment Leasing	0.00	0.00	0.00	0.00
Rental Assistance	0.00	0.00	0.00	0.00
Fishing Permit Leasing	0.00	0.00	0.00	0.00
Per Diem	0.00	0.00	0.00	0.00
Disability	0.00	0.00	0.00	0.00
Alaska Permanent Fund Dividend	94.44	472,371.11	7,618.89	1,443.58
Weatherization	0.00	0.00	0.00	0.00
Veteran's Assistance	0.00	0.00	0.00	0.00
Investments/Stocks/Bonds	0.00	0.00	0.00	0.00
Bureau of Indian Affairs Grants	0.00	0.00	0.00	0.00
Housing Allowances/Off-Base Allowances	0.00	0.00	0.00	0.00
Women, Infants, and Children Program	0.00	0.00	0.00	0.00
General Assistance Grant	0.00	0.00	0.00	0.00
Foster Care	0.00	0.00	0.00	0.00
Inheritance	0.00	0.00	0.00	0.00
Contest Winnings	0.00	0.00	0.00	0.00
Capital Gains	0.00	0.00	0.00	0.00
ASRC Elder Trust	0.00	0.00	0.00	0.00
Supplemental Union Benefits	0.00	0.00	0.00	0.00
Gifts	0.00	0.00	0.00	0.00
Medicare/Medicaid	0.00	0.00	0.00	0.00
Other	5.56	3,444.44	55.56	10.53

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Figure 17. Average Household and Per Capita Cash Income, Study Areas, 1998

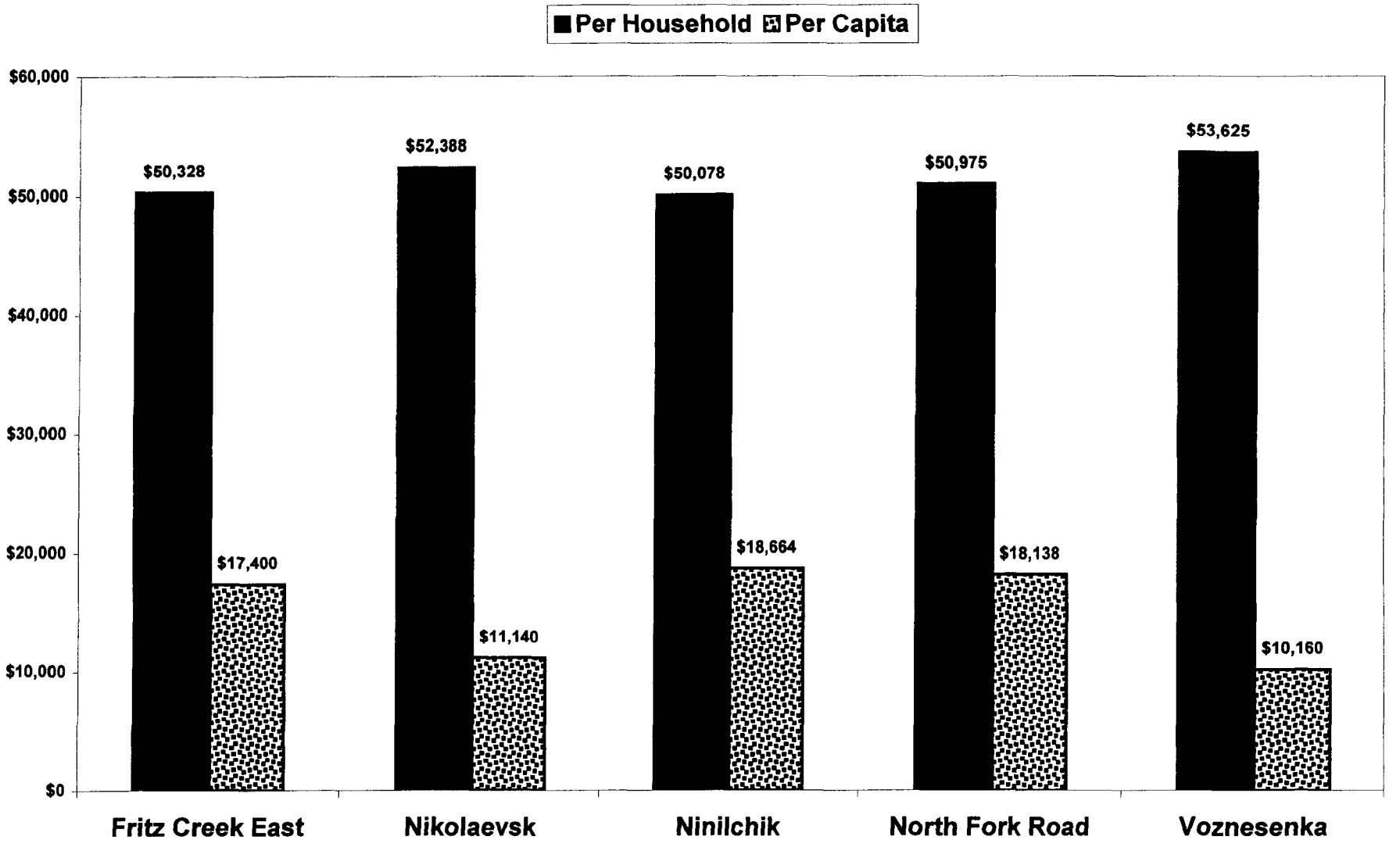


Figure 18. Commercial Fishing Involvement and Cash Income, Study Areas, 1998

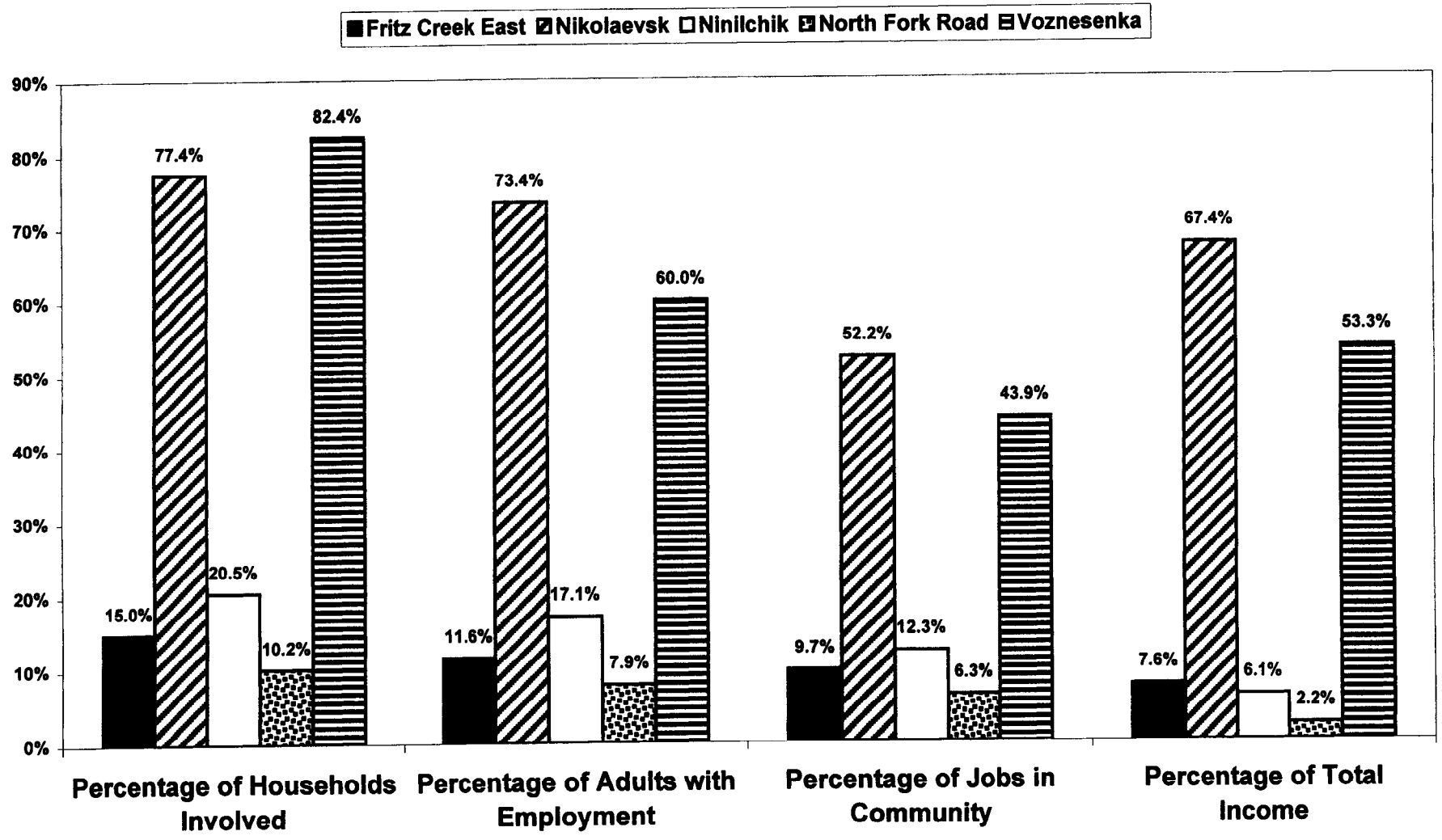


Table 33. Retirement Income and Permanent Fund Income, Study Areas, 1998

	Retirement Income				Permanent Fund Income			
	Estimated Number of Retired Households[1]	Percent of Total Households	Percent of Total Community Income from Retirement	Average Retirement Income for Retired Households	Estimated Number of Households Receiving	Percent of Total Households	Percent of Total Community Income from Permanent Fund Dividends	Average Income from Permanent Fund for those Households Receiving Dividends
Fritz Creek East	30	20.0%	5.9%	$14,824	141	93.9%	8.1%	$4,340
Nikolaevsk	11	21.6%	6.0%	$14,489	47	94.6%	12.4%	$6,890
Ninilchik	119	29.7%	13.6%	$22,885	360	90.1%	7.2%	$3,975
North Fork Road	37	22.4%	5.9%	$13,393	157	94.8%	7.6%	$4,068
Voznesenka	0	0.0%	0.0%	$0	59	94.4%	14.2%	$8,067

[1] "Retired Household" defined as one receiving pensions and/or social security. "Retired households" may have jobs.

Regarding the role of retirement income in the Kenai Peninsula Borough general, a recent study (Fried and Windisch-Cole 1999:11) notes that the borough's population is older on average than the rest of the state and that,

> This could mean a few things. More residents are choosing to stay on the Peninsula when they retire and, perhaps, a growing number of people outside of the Peninsula are retiring to the Peninsula. There is a lot of anecdotal evidence that people are increasingly choosing to retire in places such as Homer, Sterling, Anchor Point, along the Kenai River and elsewhere. The climate is relatively mild, the lifestyle is attractive to many, recreational opportunities abound, and compared to elsewhere in the state, the cost of living is low. This should come as no surprise. Many "resort" type areas around the nation have become attractive places for older Americans to retire. As this phenomenon has grown so has its economic impact. Some refer to this phenomenon as the "mail box" economy, with income for this population coming through the mail in the form of pension checks and asset disbursements but being spent locally. This could become a growing slice of the Peninsula's already diverse economic pie.

COST OF FOOD PURCHASES

Interviewed households were asked to estimate their monthly expenditures for purchasing food. (Note that these estimates do not include costs incurred to harvest and process wild resources, or the cost of raising gardens.) As shown in Table 34, average household annual food purchases ranged between $5,100 to $5,900 in four of the five study communities, with Voznesenka households' average higher, at $8,500 for the year. This difference is accounted for by larger household sizes at Voznesenka.

Annual food purchases per person ranged from $1,255 at Nikolaevsk to $1,973 at Ninilchik. Expressed as a percentage of cash income, food purchases consumed the most available dollars at Voznesenka (15.2 percent of total income) and the least at Ninilchik (9.5 percent).

Table 34 . Estimated Annual Cost of Purchasing Food, Study Areas, 1998

	Mean Household Cost of Annual Food Purchase	Cost of Food per Capita	Percent of Annual Cash Income Spent on Food
Fritz Creek East	$5,108	$1,768	10.2%
Nikolaevsk	$5,897	$1,255	11.3%
Ninilchik	$5,287	$1,973	9.5%
North Fork Road	$5,221	$1,858	10.2%
Voznesenka	$8,500	$1,610	15.8%

According to surveys conducted by the Alaska Cooperative Extension of the University of Alaska Fairbanks (Alaska Cooperative Extension 1999), the cost of food for a family of four (children age 6 to 11) for a week in March 1998 in Homer was 42 percent higher than in Anchorage. Data are not available for Ninilchik, but the cost of food in Kenai/Soldotna, where many if not most Ninilchik residents likely shop, was 7 percent higher than Anchorage. Costs of food in Kenai relative to Anchorage have declined, from 14 percent higher in September 1993. In contrast, food costs in Homer have risen relative to Anchorage, up from 17 percent higher in September 1993. It is likely that the expansion of major food and other merchandise stores into the Kenai/Soldotna area accounts for these changes.

CHAPTER THREE: RESOURCE HARVEST AND USE

REGULATORY CONTEXT

Nonsubsistence Areas and Rural/Non-rural Classifications

Although it is beyond the scope of this report to review the history of subsistence and personal use regulations on the Kenai Peninsula, some background is useful for understanding the context in which hunting and fishing by study community residents took place during the study year. Under state regulations in place during the study year and adopted in 1992 following the passage of a new state subsistence statute, most of the Kenai Peninsula was classified as a nonsubsistence area by the Joint Board of Fisheries and Game (5 AAC 99.015(3)). Under the state law, subsistence hunts and fisheries may not be authorized in nonsubsistence areas (AS 16.05.258(c,d)); harvests for home use take place under general hunting regulations and under sport and personal use fishing regulations. However, residents of nonsubsistence areas may participate in state-authorized subsistence fisheries and subsistence hunts in other areas of the state. A small portion of the Kenai Peninsula that is off the road system around Seldovia, Port Graham, and Nanwalek was outside the nonsubsistence area. There were subsistence fisheries near these communities that were open to all Alaska residents. Subsistence hunting for moose and goats in this area required state Tier II subsistence permits.

As discussed in Chapter One, the Federal Subsistence Board (FSB) classifies Alaska communities as either rural or nonrural. In the study year, all of the study communities were classified as rural by the FSB. Only residents of rural communities may participate in subsistence hunts and fisheries authorized by the FSB. These federal subsistence hunts and fisheries occur on federal public lands and are not necessarily limited to rural areas.

Hunting Regulations

A summary of state regulations governing big game hunting in GMUs 15 and 7 in the 1998/99 regulatory year (during which most of the hunting reported on the household surveys took place), appears in Table 35. In most of the Kenai Peninsula, regulations allowed a bag limit of one bull moose with a spike fork or 50 inch or greater antler, or three or more brow tines on at least one antler. Caribou hunting under a drawing permit was allowed in GMUs 15B, 15C, and 7. The caribou herds of the Kenai Peninsula are all the result of reintroductions and all are relatively small. The largest caribou herd accessible on the road system to study community residents in the Nelchina Herd in GMU 13. Tier II subsistence permits are issued for Nelchina caribou, and only those applicants with the longest history of use and fewest alternatives may hunt. Mountain goat hunting in GMUs 15 and 7 is also regulated by

Table 35. Some General Features of State Big Game Hunting Regulations in GMUS 15 and 7, 1998/99 Regulatory Year[1]

Species	Area	Permit Requirement,[2] Season, and Bag Limit[3]
Bear, Black	GMU 7&15	One bear July 1 - Dec. 31 and one bear Jan. 1 - June 30; skull and skin must be sealed
Bear, Brown	GMU 7&15	One bear every four regulatory years by registration permit; Oct. 15 - Oct. 31, May 10 - May 25; fall season closed in GMU 15A; skull and skin must be sealed
Caribou	GMU 15B	[Portion: Killey River Herd] One caribou by drawing permit; Aug. 10 - Sept. 20
	GMU 15C	[Portion: Fox River Herd] One caribou by drawing permit; Aug. 10 - Sept. 20
	GMU 7	[Portion: Kenai Mountains Herd] One caribou by drawing permit; Aug. 10 - Sept. 30 & Nov. 10 - Dec. 10
Goat	GMU 15	Portion outside nonsubsistence area: one goat by Tier II permit, Aug. 1 - Sept 30 or one goat by registration permit, Oct. 15 - Nov. 30
		Remainder: one goat by drawing permit Aug. 10 - Sept. 30 or one goat by registration permit, Oct. 15 - Nov. 30
	GMU 7	One goat by drawing permit Aug. 10 - Sept. 30, or one goat by drawing permit, Octo. 15 - Nov. 30
Moose[4]	GMU 15A	Skilak Loop Management Area: one antlerless moose by drawing permit, Sept. 15 - Sept. 30
	GMU 15A	Remainder: one bull (sf/50" or 3bt), Aug. 20 - Sept. 20, or by bow and arrow, Aug. 10 - 17
	GMU 15B	Portion: one bull with 50" or greater antlers or 3 or more brow tines on one side by drawing permit, Sept. 1 - 20 or Sept. 26 - Oct. 15
	GMU 15C	A portion outside nonsubsistence area: one bull by Tier II permit, Sept. 1 - Sept. 30
	GMU 15C	Portion: one bull (sf/50" or 3 bt), Aug. 20 - Sept. 20, or one antlerless moose by drawing permit, Nov. 1 - Nov. 30
	GMU 15B&C	Remainder: one bull (sf/50" or 3bt), Aug. 20 - Sept. 20
	GMU 7	Portion: one moose by drawing permit, Aug. 20 - Oct. 10 Remainder: one bull (sf/50" or 3bt), Aug. 20 - Sept. 20
Sheep	GMU15 & 7	Portion: one ewe by drawing permit or one full curl ram, Aug. 10 - Sept. 20 Remainder: one full curl ram, Aug. 10 - Sept. 20

[1] **PLEASE NOTE**: this table presents selected feaures of the regulations and may omit details of importance to hunters. Consult the regulations or ADF&G for definitive information.

[2] Harvest ticket needed if permit not required.

[3] "sf/50" or 3 bt " means bag limit of one bull moose with spike fork or 50" antlers or antlers with 3 or more brow tines on at least one side

[4] Under federal subsistence regulations, pertaining only to federally-managed lands, residents of Ninilchik, Nanwalek, Port Graham, and Seldovia could obtain a federal registration permit to hunt from August 18 to September 20 in GMU 15A (except the Skilak Loop Wildlife Management Area) and from August 10 to September 20 in GMU 15B and 15C (Federal Subsistence Board 1998).

Source: ADF&G 1998a

registration and drawing permit. Hunting for black bears and Dall sheep rams is open in season to all hunting license holders.

In the study year, the only major differences between federal and state hunting regulations for the study area pertained to moose. In 1998, residents of Ninilchik (as well as Nanwalek, Port Graham, and Seldovia) were eligible for a federal registration permit to take one antlered bull with a spike-fork or 50-inch antler or and antlers with three or more brow tines on at least one side, from August 18 through September 20 on federal lands in GMU 15A (except the Skilak Loop Wildlife Management Area) or from August 10 to September 20 in federal lands in GMU 15B and 15C. These were earlier and longer seasons than provided under state regulations.

Fishing Regulations

In 1998, the state provided four primary personal use salmon fisheries within the waters of the Kenai Peninsula and adjacent marine waters that were generally accessible by road to residents of the study areas. Summaries of the regulations for these fisheries for 1998 appear in Table 36. Depending upon the area, legal gear for personal use salmon fisheries was either dipnet or set gillnet. Participants in any personal use fishery were required to have an Alaska resident sport fishing license.

Personal use and subsistence fisheries in other parts of the state were open to study area residents. Except for the subsistence salmon fishery of the Copper River, all subsistence fisheries were off the road system. A few Kenai Peninsula residents participate in these fisheries. For example, 38 subsistence permits for the Bristol Bay area were issued to residents of Kenai Peninsula communities in 1998 (3 percent of all permits issued).

With the exception of the waters of Cook Inlet outside the nonsubsistence area, fishing for smelt, herring, and shellfish took place under personal use regulations. For herring and smelt, there were no permit requirements, bag limits, or possession limits. Smelt could be taken with dipnets in freshwater from April 1 through June 15 and with dipnets or gillnets in saltwater and in the Kenai River downstream of Beaver Creek from April 1 through May 31. Herring could be taken with gillnets. For shellfish, a personal use permit was required for the taking of crab or shrimp or the taking of other shellfish with pots. No permit was required for harvesting clams. The daily bag limit for razor clams was the first 60 clams harvested (ADF&G 1998b).

All other fishing opportunities were provided under state sport fishing regulations. These are too complex to briefly summarize here. Regulations for halibut included a daily bag limit of two fish. The possession limit was two daily bag limits. Legal gear for the sport halibut fishery was a rod or pole with line attached with no more than two hooks.

On October 1, 1999, the federal government assumed management of subsistence fisheries in Alaska in those waters in which the federal government held a reserved water right. On the Kenai Peninsula, these waters lie within the Kenai NWR and the Chugach National Forest. Initially, federal

Table 36. Personal Use Salmon Fisheries, Kenai Peninsula, Open during the Study Year of 1998

Fishery	Open Area	Season	Limits [1]	Other
Kasilof River Set Net Fishery	Inside the ADF&G regulatory markers on each side of the mouth of the Kasilof River, about one mile on each side	June 21 until closed by emergency order; daily, 6 a.m. to 6 p.m.	25 salmon per household head and 10 for each dependent	Closed by emergency order when 5,00 to 10.000 sockeye salmon harve been harvested. The fishery is ually open for about five days.
Kasilof River Dipnet Fishery	Lower Kasilof River from Cook Inlet to about one mile upstream.	July 10 through August 5, seven days a week, 24 hours a day	25 salmon per household head and 10 for each dependent; only one king salmon may be retained	
Kenai River Dipnet Fishery	In Cook Inlet north and south of the river mouth and upstream to the Warren Ames Bridge at River Mile 5.1.	July 10 through July 31, seven days a week, 24 hours a day	25 salmon per household head and 10 for each dependent; only one king salmon may be retained	
Kachemak Bay Set Net Fishery	In Kachemak Bay in waters within the non-subsisence area, with some closed waters.	August 16 to September 15, from 6 a.m. Monday to 6 a.m. Wednesday and from 6 a.m. Thursday until 6 a.m. Saturday.	25 salmon per household head and 10 for each dependent	Closed by emergency order when a guideline harvest range of 2,500 - 3,500 coho salmon are harvested.
China Poot Creek Dipnet Fishery	In China Poot Creek (south shore of Kachemak Bay, upstream of ADF&G markers.	July 1 to August 7	6 salmon per day; king salmon may not be retained	No permit required
Fox Creek Dipnet Fishery	In Fox Creek (upper Kachemak Bay), upstream from an ADF&G regulatory marker at the high tide line to Caribou Lake	August 16 to December 31.	None set by regulation.	Repealed 3/5/99

[1] One permit per household is issued for the Kasliof and Kenai river dipnet fisheries. The limits apply to the fisheries in combination.

Source: ADF&G 1998b

subsistence fishing regulations mirrored those established by the Alaska Board of Fisheries. No subsistence net fisheries were authorized in these waters.

PARTICIPATION IN RESOURCE HARVESTS AND USES

Table 37 provides an overview of characteristics of resource harvest and use in the five study areas in 1998, based on the household survey results. At the household level, use of wild resources was almost universal: 100 percent of the households in Fritz Creek East, Nikolaevsk, and Voznesenka, 99.0 percent in Ninilchik, and 98.3 percent in North Fork Road used at least one kind of wild resource during the study year. Most households were also involved in fishing, hunting, and gathering activities, ranging from 100 percent of the households in Voznesenka, to 97.0 percent at Ninilchik, 93.9 percent in Fritz Creek East, 89.2 percent in Nikolaevsk, and 86.2 percent in North Fork Road. Also, most households received gifts of at least one kind of wild resource in 1998, including 93.9 percent at Fritz Creek East, 93.1 percent at North Fork Road, 92.1 percent at Ninilchik, 83.3 percent in Voznesenka, and 78.4 percent in Nikolaevsk. Similarly, most households gave away wild resources to others, including 84.6 percent of the households in Fritz Creek East, 77.8 percent in Voznesenka, 73.3 percent in Ninilchik, 73.0 percent at Nikolaevsk, and 62.1 percent at North Fork Road.

Study findings regarding the involvement of individuals in hunting, fishing, trapping, gathering, and resource processing activities in each study community are presented in Table 38 and illustrated in Figure 19. At least 75 percent of the population of each area was involved in at least one harvest activity in 1998. Most study community residents fished (including marine invertebrate harvesting), ranging from a high of 75.8 percent of the population of Voznesenka, to 68.6 percent at Fritz Creek East, 67.5 percent at Ninilchik, 62.1 percent at Nikolaevsk, and 57.1 percent at North Fork Road. Gathering plants was also common, an activity engaged in by 72.3 percent of the population of Fritz Creek East, 66.4 percent at Ninilchik, 63.2 percent at North Fork Road, 59.8 percent of Nikolaevsk, and 56.8 percent at Voznesenka. Involvement in hunting was somewhat lower. At Ninilchik, 39.5 percent of the population hunted in 1998. Percentages were lower in the other study communities: 22.7 percent in North Fork Road, 19.1 percent in Fritz Creek East, 18.9 percent in Voznesenka, and 16.1 percent at Nikolaevsk. Few study community residents trapped, ranging from 2.3 percent in Nikolaevsk to 5.9 percent in Ninilchik. Most (over 75 percent in each study community) helped process wild resources.

RESOURCES USED AND HARVESTED

As illustrated in Figure 20, over 90 percent of the households in each study community used at least one type of fish other than salmon in 1998. In all communities but North Fork Road, over 90 percent of the households used salmon. Half or more of the households in each study community used wild

Table 37. Resource Harvest and Use Characteristics of the Study Areas, 1998

Study Area	Fritz Creek East	Nikolaevsk	Ninilchik	North Fork Road	Voznesenka
Mean Number Of Resources Used Per Household	9.43	9.05	8.56	7.64	8.56
Minimum	0	1	0	0	2
Maximum	37	19	29	19	21
95 % Confidence Limit (+/-)	12.76	7.68	11.66	14.08	28.46
Median	8	9	7	7	7.5
Mean Number Of Resources Attempted To Harvest Per Household	6.80	7.11	6.58	5.59	6.89
Minimum	0	0	0	0	1
Maximum	35	18	21	18	20
95 % Confidence Limit (+/-)	17.32	10.38	13.94	18.35	30.07
Median	5	7	5	5	6
Mean Number Of Resources Harvested Per Household	6.06	6.49	5.59	4.81	6.39
Minimum	0	0	0	0	1
Maximum	35	17	21	16	20
95 % Confidence Limit (+/-)	18.11	10.46	15.40	19.00	33.22
Median	5	7	4	4	5
Mean Number Of Resources Received Per Household	4.69	3.11	4.04	3.66	3.11
Minimum	0	0	0	0	0
Maximum	25	13	23	13	18
95 % Confidence Limit (+/-)	16.19	18.31	15.66	20.26	56.92
Median	4	2	3	2	2
Mean Number Of Resources Given Away Per Household	3.14	2.73	3.12	2.10	4.39
Minimum	0	0	0	0	0
Maximum	25	10	18	11	14
95 % Confidence Limit (+/-)	23.72	18.61	19.58	25.67	43.08
Median	2	2	2	1	3
Mean Household Harvest, Pounds	304.71	625.24	439.54	275.32	883.28
Minimum	0.00	0.00	0.00	0.00	4.00
Maximum	2,408.70	2,270.55	3,632.90	1,731.90	5,049.90
Total Pounds Harvested	45,706.58	31,262.21	175,816.73	45,703.88	54,763.57
Community Per Capita Harvest, Pounds	105.35	132.95	163.81	97.97	167.36
Percent Using Any Resource	100.00	100.00	99.01	98.28	100.00
Percent Attempting To Harvest Any Resource	93.85	89.19	97.03	86.21	100.00
Percent Harvesting Any Resource	93.85	89.19	96.04	86.21	100.00
Percent Receiving Any Resource	93.85	78.38	92.08	93.10	83.33
Percent Giving Away Any Resource	84.62	72.97	73.27	62.07	77.78
Number Of Households In Sample	65	37	101	58	18
Number of Resources Available	150	150	150	150	150

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 38. Participation in the Harvest and Processing of Wild Resources, Study Areas, 1998

			Fritz Creek East	Nikolaevsk	Ninilchik	North Fork Road	Voznesenka
Estimated Total Number of People			434	235	1,073	467	327
GAME	Hunt	Number	83	38	424	106	62
		Percentage	19.1%	16.1%	39.5%	22.7%	18.9%
	Process	Number	129	36	444	137	162
		Percentage	29.8%	15.5%	41.3%	29.4%	49.5%
FISH	Fish	Number	298	146	725	266	248
		Percentage	68.6%	62.1%	67.5%	57.1%	75.8%
	Process	Number	284	166	824	280	238
		Percentage	65.4%	70.7%	76.8%	60.1%	72.6%
FURBEARERS	Hunt or Trap	Number	12	5	63	11	17
		Percentage	2.7%	2.3%	5.9%	2.5%	5.3%
	Process	Number	9	5	67	14	17
		Percentage	2.1%	2.3%	6.3%	3.1%	5.3%
PLANTS	Gather	Number	314	141	713	295	186
		Percentage	72.3%	59.8%	66.4%	63.2%	56.8%
	Process	Number	316	116	725	295	200
		Percentage	72.9%	49.4%	67.5%	63.2%	61.1%
ANY RESOURCE							
	Attempt	Number	367	180	935	358	265
		Percentage	84.6%	76.4%	87.1%	76.7%	81.1%
	Process	Number	367	180	978	366	276
		Percentage	84.6%	76.4%	91.1%	78.5%	84.2%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999.

Figure 19. Individual Participation in Harvest Actitvities, Study Areas, 1998

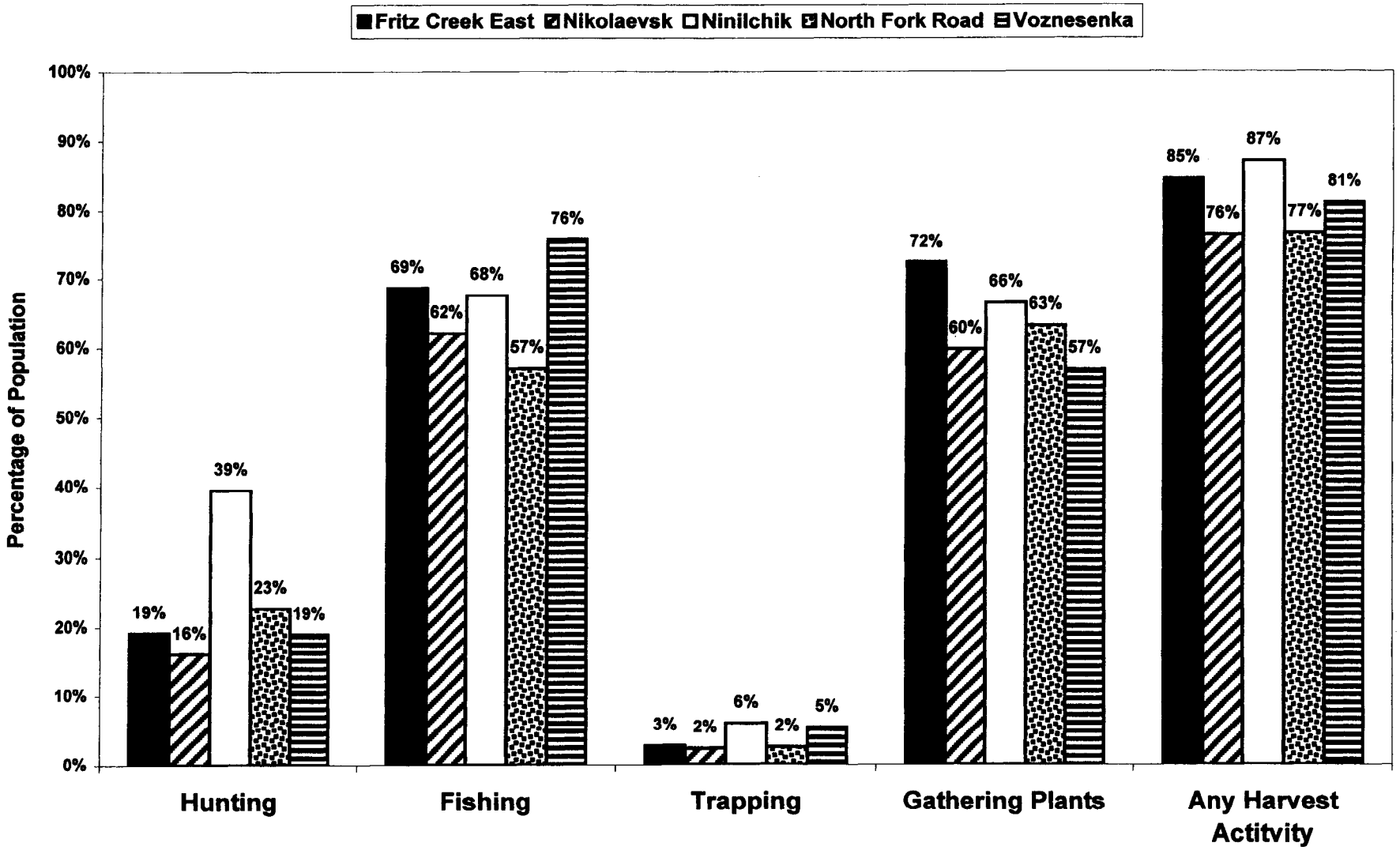
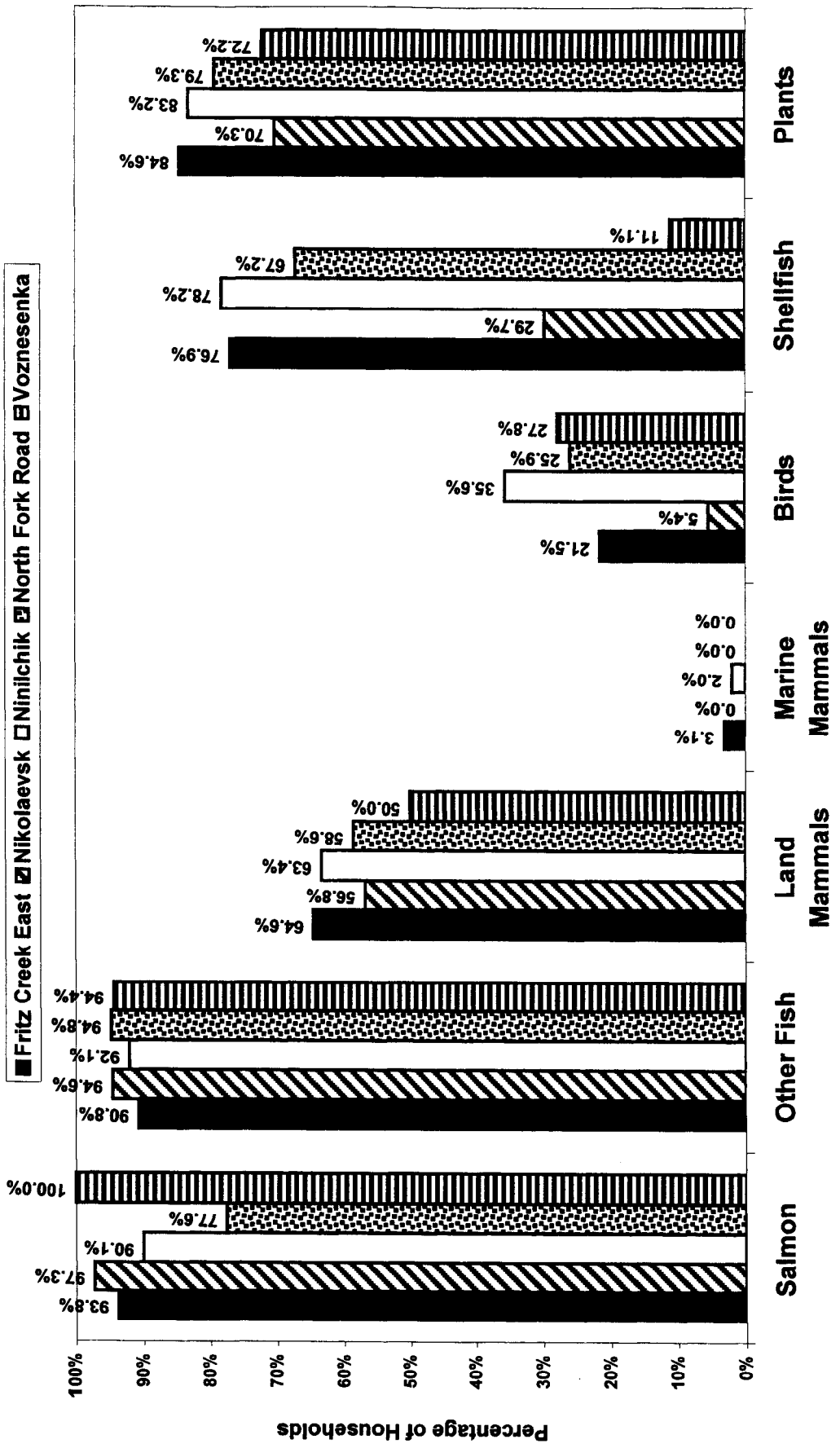


Figure 20. Percentage of Households Using Resource Categories, Study Areas, 1998



plants and land mammals. Over two-thirds of the households in Fritz Creek East, Ninilchik, and North Fork Road used marine invertebrates; this percentage was much less in Nikolaevsk (29.7 percent) and Voznesenka (11.1 percent). A minority of the households in each community used birds, and marine mammals were used by only a few households in Fritz Creek East (3.1 percent) and Ninilchik (2.0 percent). Table 39 through Table 43 give detailed study findings for each community on the percentage of households using, attempting to harvest, harvesting, receiving, and giving away each variety of wild resource in the 1998 study year.

The range of resources used and harvested was fairly similar across the study communities. As illustrated in Figure 21 (see also Table 38), the average number of different kinds of resources used per household in the study year ranged from a high of 9.4 kinds in Fritz Creek East, to 9.1 kinds at Nikolaevsk, 8.6 kinds in Ninilchik, 8.6 kinds in Voznesenka, and 7.6 kinds in North Fork Road. This average is one measure of "diet breadth," an indication of the relative diversity of wild foods used in each community. A second measure is the number of resources used by more than half of a community's households. Generally, a small number of resources was used by 50 percent or more of the households in each study community, ranging from five kinds in North Fork Road to seven kinds in Nikolaevsk, Ninilchik, and Voznesenka (Table 44). In all communities, the core resources (used by the most households) were halibut, berries, coho salmon, sockeye salmon, and chinook salmon. Moose was a core resource in Fritz Creek East, North Fork Road, and Ninilchik. Red rockfish and smelt were core resources in Nikolaevsk and Voznesenka.

Table 44. Ten Resources Used by the Most Households, Study Areas, 1998

	Fritz Creek East		Nikolaevsk		Ninilchik		North Fork Road		Voznesenka	
1	halibut	87.7%	sockeye	86.5%	halibut	90.1%	halibut	87.9%	halibut	77.8%
2	berries	75.4%	halibut	81.1%	chinook	69.3%	berries	67.2%	sockeye	77.8%
3	coho	64.6%	coho	73.0%	sockeye	66.3%	chinook	60.3%	coho	72.2%
4	sockeye	61.5%	chinook	73.0%	berries	65.3%	sockeye	53.4%	chinook	66.7%
5	chinook	56.9%	smelt	64.9%	razor clams	63.4%	moose	50.0%	berries	61.1%
6	moose	53.8%	berries	59.5%	moose	56.4%	coho	46.6%	red rockfish	55.6%
7	other plants	46.2%	red rockfish	54.1%	coho	53.5%	razor clams	44.8%	smelt	50.0%
8	razor clams	36.9%	other plants	37.8%	grouse	31.7%	Dolly Varden	29.3%	moose	44.4%
9	tanner crab	27.7%	moose	35.1%	tanner crab	23.8%	littleneck clams	24.1%	other plants	38.9%
10	king crab	27.7%	sablefish	35.1%	other plants	21.8%	other plants	22.4%	pink	33.3%

HARVEST QUANTITIES AND HARVEST COMPOSITION

As reported in Table 39 through Table 43, and illustrated in Figure 22, estimated average household harvests of wild resources in 1998 in pounds usable weight ranged from a high of 883.3

Figure 21. Average Number of Resources Used, Attempted to Harvest, Harvested, Received, and Gave Away per Household, Study Areas, 1998

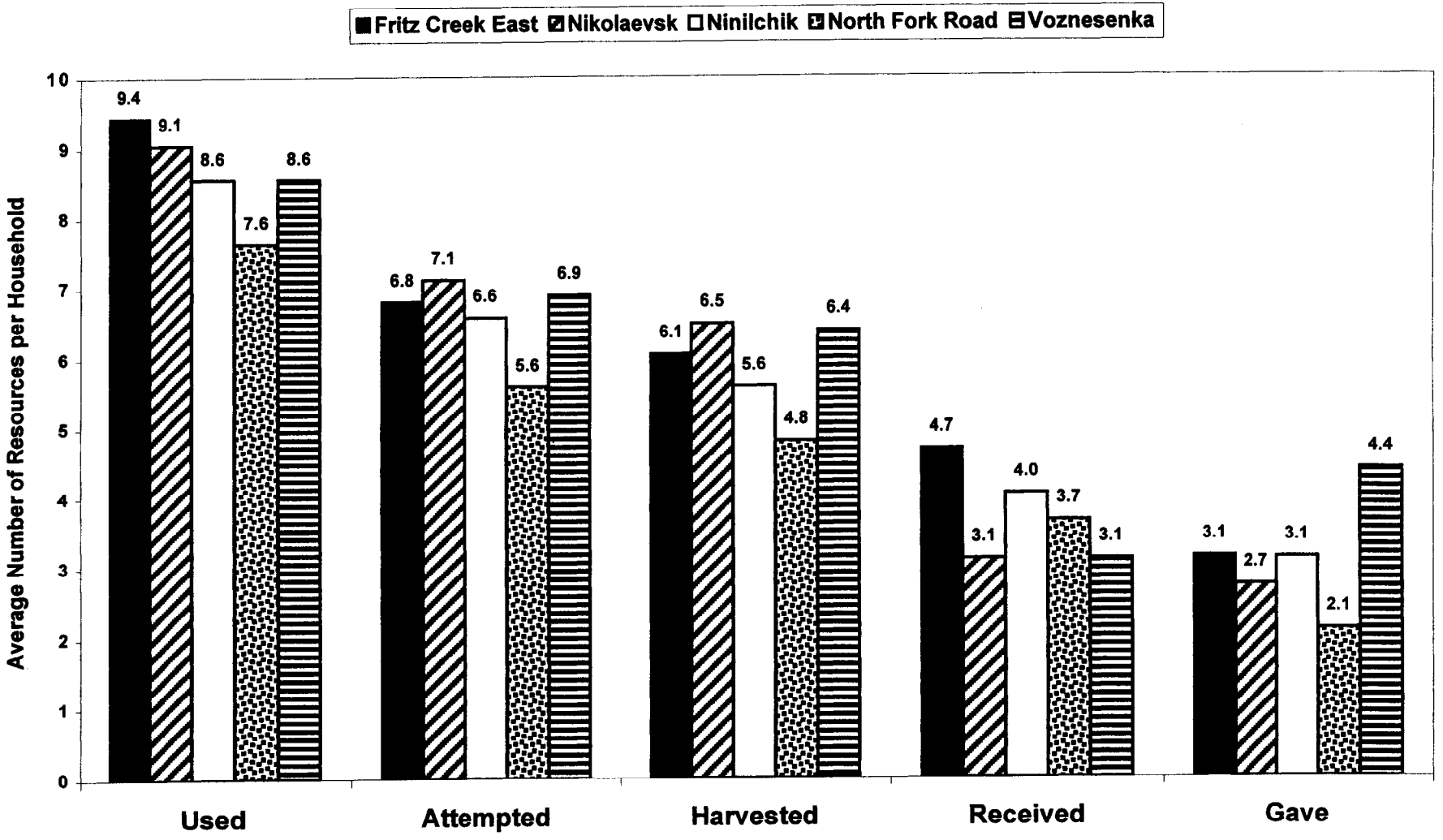


Table 39. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Fritz Creek East, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	100.0	93.8	93.8	93.8	84.6	45,706.58	304.71	105.35			28.49%
Fish	96.9	80.0	75.4	80.0	64.6	26,529.33	176.86	61.15			25.91%
Salmon	93.8	75.4	67.7	56.9	53.8	13,576.29	90.51	31.29	2,718.46	18.12	25.23%
Chum Salmon	4.6	4.6	4.6	0.0	1.5	186.92	1.25	0.43	34.62	0.23	105.74%
Coho Salmon	64.6	53.8	44.6	24.6	32.3	4,272.00	28.48	9.85	821.54	5.48	32.92%
Chinook Salmon	56.9	46.2	33.8	30.8	24.6	3,183.46	21.22	7.34	205.38	1.37	40.77%
Pink Salmon	16.9	16.9	15.4	3.1	7.7	775.38	5.17	1.79	323.08	2.15	71.70%
Sockeye Salmon	61.5	44.6	40.0	30.8	26.2	4,941.00	32.94	11.39	1,266.92	8.45	33.05%
Landlocked Salmon	3.1	3.1	3.1	0.0	1.5	38.08	0.25	0.09	25.38	0.17	116.20%
Unknown Salmon	7.7	3.1	3.1	4.6	1.5	179.45	1.20	0.41	41.54	0.28	111.38%
Non-Salmon Fish	90.8	61.5	58.5	67.7	41.5	12,953.04	86.35	29.86			32.47%
Herring	6.2	1.5	1.5	4.6	1.5	27.69	0.18	0.06	4.62 gal	0.03	150.38%
Herring Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Spawn on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Smelt	10.8	6.2	4.6	6.2	1.5	131.25	0.88	0.30	40.38 gal	0.27	107.66%
Eulachon	10.8	6.2	4.6	6.2	1.5	131.25	0.88	0.30	40.38 gal	0.27	107.66%
Unknown Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cod	21.5	16.9	16.9	4.6	4.6	401.54	2.68	0.93	159.23	1.06	57.18%
Pacific Cod	13.8	10.8	10.8	3.1	3.1	324.92	2.17	0.75	101.54	0.68	76.57%
Pacific Tom Cod	1.5	1.5	1.5	0.0	0.0	6.92	0.05	0.02	13.85	0.09	150.38%
Walleye Pollock	4.6	4.6	4.6	0.0	1.5	54.92	0.37	0.13	39.23	0.26	110.11%
Unknown Cod	3.1	1.5	1.5	1.5	0.0	14.77	0.10	0.03	4.62	0.03	150.38%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Flounder	7.7	6.2	6.2	1.5	3.1	256.15	1.71	0.59	85.38	0.57	92.31%
Starry Flounder	7.7	6.2	6.2	1.5	3.1	256.15	1.71	0.59	85.38	0.57	92.31%
Unknown Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Greenling	6.2	6.2	6.2	0.0	1.5	92.31	0.62	0.21	50.77	0.34	74.37%
Lingcod	1.5	1.5	1.5	0.0	1.5	55.38	0.37	0.13	13.85	0.09	150.38%
Unknown Greenling	4.6	4.6	4.6	0.0	0.0	36.92	0.25	0.09	36.92	0.25	86.84%
Halibut	87.7	61.5	52.3	55.4	40.0	10,740.46	71.60	24.76	654.91	4.37	36.26%
Rockfish	24.6	13.8	13.8	10.8	6.2	615.14	4.10	1.42	288.46	1.92	91.83%
Black Rockfish	15.4	12.3	12.3	3.1	4.6	304.62	2.03	0.70	203.08	1.35	104.03%
Red Rockfish	10.8	3.1	3.1	7.7	3.1	230.77	1.54	0.53	57.69	0.38	107.66%
Unknown Rockfish	1.5	1.5	1.5	0.0	1.5	79.75	0.53	0.18	27.69	0.18	150.38%
Sablefish	13.8	1.5	1.5	12.3	0.0	85.85	0.57	0.20	27.69	0.18	150.38%

Table 39. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Fritz Creek East, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shark	1.5	1.5	1.5	0.0	0.0	20.77	0.14	0.05	2.31	0.02	150.38%
Unknown Shark	1.5	1.5	1.5	0.0	0.0	20.77	0.14	0.05	2.31	0.02	150.38%
Skates	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sole	1.5	1.5	1.5	0.0	0.0	9.23	0.06	0.02	9.23	0.06	150.38%
Unknown Sole	1.5	1.5	1.5	0.0	0.0	9.23	0.06	0.02	9.23	0.06	150.38%
Wolffish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Char	23.1	20.0	16.9	7.7	6.2	432.92	2.89	1.00	309.23	2.06	54.85%
Arctic Char	1.5	1.5	1.5	0.0	0.0	19.38	0.13	0.04	13.85	0.09	150.38%
Dolly Varden	16.9	16.9	13.8	4.6	4.6	381.23	2.54	0.88	272.31	1.82	61.30%
Lake Trout	4.6	1.5	1.5	3.1	1.5	32.31	0.22	0.07	23.08	0.15	150.38%
Grayling	1.5	3.1	1.5	0.0	0.0	9.69	0.06	0.02	13.85	0.09	150.38%
Pike	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Pike	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sheefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Trout	12.3	9.2	9.2	3.1	3.1	126.00	0.84	0.29	90.00	0.60	83.49%
Cutthroat Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Rainbow Trout	9.2	6.2	6.2	3.1	3.1	106.62	0.71	0.25	76.15	0.51	97.23%
Steelhead	1.5	1.5	1.5	0.0	0.0	6.46	0.04	0.01	4.62	0.03	150.38%
Unknown Trout	1.5	1.5	1.5	0.0	0.0	12.92	0.09	0.03	9.23	0.06	150.38%
Whitefish	3.1	1.5	1.5	1.5	0.0	4.04	0.03	0.01	2.31	0.02	150.38%
Unknown Whitefish	3.1	1.5	1.5	1.5	0.0	4.04	0.03	0.01	2.31	0.02	150.38%
Land Mammals	64.6	30.8	15.4	55.4	20.0	12,764.77	85.10	29.42	124.62	0.83	55.65%
Large Land Mammals	64.6	30.8	15.4	55.4	20.0	12,764.77	85.10	29.42	110.77	0.74	57.06%
Bison	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Bear	6.2	6.2	4.6	1.5	4.6	401.54	2.68	0.93	6.92	0.05	85.46%
Brown Bear	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Caribou	12.3	4.6	4.6	9.2	4.6	2,423.08	16.15	5.59	16.15	0.11	97.42%
Deer	23.1	7.7	7.7	15.4	7.7	3,190.15	21.27	7.35	73.85	0.49	76.99%
Elk	6.2	1.5	1.5	4.6	0.0	519.23	3.46	1.20	2.31	0.02	150.38%
Goat	1.5	0.0	0.0	1.5	1.5	0.00	0.00	0.00	0.00	0.00	0.00%
Moose	53.8	21.5	6.2	49.2	12.3	6,230.77	41.54	14.36	11.54	0.08	77.96%
Dall Sheep	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 39. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Fritz Creek East, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Small Land Mammals	7.7	6.2	4.6	3.1	0.0	0.00	0.00	0.00	13.85	0.09	85.46%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Coyote	1.5	1.5	1.5	0.0	0.0	0.00	0.00	0.00	4.62	0.03	150.38%
Fox	3.1	4.6	3.1	0.0	0.0	0.00	0.00	0.00	9.23	0.06	105.50%
Red Fox	3.1	4.6	3.1	0.0	0.0	0.00	0.00	0.00	9.23	0.06	105.50%
Hare	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Snowshoe Hare	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mink	0.0	1.5	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Muskrat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Porcupine	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Parka Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tree Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolverine	0.0	1.5	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Small Land Mammals/Furbearers	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Mammals	3.1	0.0	0.0	3.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seal	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal (saltwater)	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Steller Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whale	3.1	0.0	0.0	3.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Belukha	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bowhead	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whale	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Birds and Eggs	21.5	18.5	16.9	6.2	3.1	748.73	4.99	1.73	840.00	5.60	92.26%
Migratory Birds	10.8	7.7	7.7	4.6	1.5	632.42	4.22	1.46	673.85	4.49	108.87%
Ducks	7.7	6.2	6.2	3.1	1.5	425.31	2.84	0.98	530.77	3.54	108.73%
Bufflehead	1.5	1.5	1.5	0.0	0.0	4.62	0.03	0.01	11.54	0.08	150.38%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goldeneye	1.5	1.5	1.5	0.0	0.0	11.08	0.07	0.03	13.85	0.09	150.38%
Unknown Goldeneye	1.5	1.5	1.5	0.0	0.0	11.08	0.07	0.03	13.85	0.09	150.38%

Table 39. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Fritz Creek East, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mallard	6.2	6.2	6.2	1.5	1.5	200.77	1.34	0.46	200.77	1.34	97.19%
Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red-Breasted Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Pintail	3.1	3.1	3.1	0.0	0.0	92.31	0.62	0.21	115.38	0.77	123.55%
Scaup	1.5	1.5	1.5	0.0	0.0	4.15	0.03	0.01	4.62	0.03	150.38%
Unknown Scaup	1.5	1.5	1.5	0.0	0.0	4.15	0.03	0.01	4.62	0.03	150.38%
Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Surf Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-winged Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Shoveler	1.5	1.5	1.5	0.0	0.0	1.38	0.01	0.00	2.31	0.02	150.38%
Teal	4.6	4.6	4.6	1.5	1.5	12.46	0.08	0.03	41.54	0.28	106.17%
Green Winged Teal	4.6	4.6	4.6	1.5	1.5	12.46	0.08	0.03	41.54	0.28	106.17%
Wigeon	4.6	4.6	4.6	0.0	0.0	98.54	0.66	0.23	140.77	0.94	125.31%
American Wigeon	4.6	4.6	4.6	0.0	0.0	98.54	0.66	0.23	140.77	0.94	125.31%
Unknown Ducks	1.5	0.0	0.0	1.5	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese	6.2	4.6	3.1	3.1	0.0	187.73	1.25	0.43	140.77	0.94	111.77%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Canada Geese	4.6	4.6	3.1	1.5	0.0	138.46	0.92	0.32	115.38	0.77	107.66%
Dusky Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lesser Canada Geese	4.6	4.6	3.1	1.5	0.0	138.46	0.92	0.32	115.38	0.77	107.66%
Unknown Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-fronted Geese	3.1	1.5	1.5	1.5	0.0	33.23	0.22	0.08	13.85	0.09	150.38%
Unknown Geese	1.5	1.5	1.5	0.0	0.0	16.04	0.11	0.04	11.54	0.08	150.38%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tundra Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Crane	1.5	1.5	1.5	0.0	0.0	19.38	0.13	0.04	2.31	0.02	150.38%
Sandhill Crane	1.5	1.5	1.5	0.0	0.0	19.38	0.13	0.04	2.31	0.02	150.38%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabirds & Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Double-Crested Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 39. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Fritz Creek East, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pelagic Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gulls	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Loon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffins	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Horned Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tufted Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Other Birds	16.9	15.4	13.8	3.1	3.1	116.31	0.78	0.27	166.15	1.11	59.77%
Upland Game Birds	16.9	15.4	13.8	3.1	3.1	116.31	0.78	0.27	166.15	1.11	59.77%
Grouse	12.3	10.8	9.2	3.1	1.5	63.00	0.42	0.15	90.00	0.60	67.49%
Ptarmigan	9.2	9.2	9.2	0.0	1.5	53.31	0.36	0.12	76.15	0.51	68.77%
Unknown Ptarmigan	9.2	9.2	9.2	0.0	1.5	53.31	0.36	0.12	76.15	0.51	68.77%
Bird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabird & Loon Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Seabird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Invertebrates	76.9	52.3	52.3	61.5	26.2	3,268.93	21.79	7.53			46.93%
Chitons	1.5	1.5	1.5	0.0	0.0	1.11	0.01	0.00	0.28 gal	0.00	150.38%
Red Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Black) Chitons	1.5	1.5	1.5	0.0	0.0	1.11	0.01	0.00	0.28 gal	0.00	150.38%
Clams	50.8	41.5	41.5	26.2	15.4	1,321.85	8.81	3.05	440.62 gal	2.94	31.77%
Butter Clams	16.9	15.4	15.4	6.2	4.6	263.08	1.75	0.61	87.69 gal	0.58	59.06%
Horse Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Pacific Littleneck Clams	23.1	15.4	15.4	9.2	6.2	245.77	1.64	0.57	81.92 gal	0.55	63.80%
Pinkneck Clams	4.6	4.6	4.6	0.0	0.0	5.88	0.04	0.01	1.96 gal	0.01	99.49%

Table 39. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Fritz Creek East, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Razor Clams	36.9	27.7	27.7	18.5	10.8	786.35	5.24	1.81	262.12 gal	1.75	37.26%
Unknown Clams	3.1	3.1	3.1	0.0	0.0	20.77	0.14	0.05	6.92 gal	0.05	111.38%
Cockles	3.1	3.1	3.1	3.1	3.1	50.19	0.33	0.12	16.73 gal	0.11	145.21%
Unknown Cockles	3.1	3.1	3.1	3.1	3.1	50.19	0.33	0.12	16.73 gal	0.11	145.21%
Crabs	52.3	20.0	18.5	43.1	16.9	1,774.62	11.83	4.09	1,127.16	7.51	70.28%
Dungeness Crab	13.8	9.2	9.2	9.2	4.6	103.38	0.69	0.24	147.69	0.98	68.43%
King Crab	27.7	6.2	4.6	23.1	10.8	342.00	2.28	0.79	148.70	0.99	100.68%
Unknown King Crab	27.7	6.2	4.6	23.1	10.8	342.00	2.28	0.79	148.70	0.99	100.68%
Tanner Crab	27.7	13.8	10.8	18.5	9.2	1,329.23	8.86	3.06	830.77	5.54	93.18%
Tanner Crab, Bairdi	26.2	13.8	10.8	16.9	7.7	1,329.23	8.86	3.06	830.77	5.54	93.18%
Tanner Crab, Opillio	1.5	0.0	0.0	1.5	1.5	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Mussels	23.1	18.5	18.5	7.7	4.6	88.67	0.59	0.20	59.12 gal	0.39	47.69%
Unknown Mussels	23.1	18.5	18.5	7.7	4.6	88.67	0.59	0.20	59.12 gal	0.39	47.69%
Octopus	6.2	4.6	3.1	4.6	0.0	18.46	0.12	0.04	4.62	0.03	105.50%
Oyster	3.1	0.0	0.0	3.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Oyster	3.1	0.0	0.0	3.1	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scallops	3.1	0.0	0.0	3.1	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Scallops	3.1	0.0	0.0	3.1	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Cucumber	1.5	1.5	1.5	1.5	0.0	6.92	0.05	0.02	3.46 gal	0.02	150.38%
Sea Urchin	3.1	3.1	3.1	0.0	1.5	5.38	0.04	0.01	10.77 gal	0.07	109.85%
Unknown Sea Urchin	3.1	3.1	3.1	0.0	1.5	5.38	0.04	0.01	10.77 gal	0.07	109.85%
Shrimp	1.5	0.0	0.0	1.5	1.5	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Snails	1.5	1.5	1.5	0.0	0.0	1.73	0.01	0.00	1.15 gal	0.01	150.38%
Whelk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Vegetation	84.6	84.6	84.6	47.7	50.8	2,394.81	15.97	5.52			35.57%
Berries	75.4	70.8	70.8	40.0	35.4	1,176.35	7.84	2.71	294.09 gal	1.96	28.62%
Plants/Greens/Mushrooms	46.2	43.1	43.1	16.9	16.9	1,186.15	7.91	2.73	296.54 gal	1.98	59.76%
Seaweed/Kelp	4.6	4.6	4.6	1.5	1.5	32.31	0.22	0.07	8.08 gal	0.05	129.44%
Unknown Seaweed	4.6	4.6	4.6	1.5	1.5	32.31	0.22	0.07	8.08 gal	0.05	129.44%
Wood	69.2	69.2	69.2	1.5	18.5	0.00	0.00	0.00	679.04 crd	4.53	41.03%
Coal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 40. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Nikolaevsk, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	100.0	89.2	89.2	78.4	73.0	31,262.21	625.24	132.95			15.81%
Fish	100.0	83.8	83.8	59.5	62.2	23,558.16	471.16	100.19			16.59%
Salmon	97.3	81.1	81.1	43.2	43.2	15,723.51	314.47	66.87	3,187.84	63.76	18.90%
Chum Salmon	21.6	13.5	13.5	10.8	8.1	1,904.59	38.09	8.10	352.70	7.05	54.66%
Coho Salmon	73.0	64.9	64.9	13.5	18.9	4,096.76	81.94	17.42	787.84	15.76	26.04%
Chinook Salmon	73.0	67.6	64.9	13.5	16.2	2,932.43	58.65	12.47	189.19	3.78	25.51%
Pink Salmon	32.4	21.6	21.6	10.8	5.4	398.92	7.98	1.70	166.22	3.32	48.29%
Sockeye Salmon	86.5	78.4	75.7	18.9	40.5	6,261.08	125.22	26.63	1,605.41	32.11	16.33%
Landlocked Salmon	8.1	8.1	8.1	0.0	0.0	129.73	2.59	0.55	86.49	1.73	67.65%
Unknown Salmon	10.8	0.0	0.0	10.8	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Non-Salmon Fish	94.6	78.4	78.4	54.1	59.5	7,834.64	156.69	33.32			17.06%
Herring	2.7	0.0	0.0	2.7	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Roe	2.7	0.0	0.0	2.7	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Spawn on Kelp	2.7	0.0	0.0	2.7	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Smelt	64.9	48.6	48.6	18.9	35.1	964.02	19.28	4.10	296.62 gal	5.93	22.52%
Eulachon	59.5	43.2	43.2	18.9	32.4	788.34	15.77	3.35	242.57 gal	4.85	21.89%
Unknown Smelt	5.4	5.4	5.4	0.0	2.7	175.68	3.51	0.75	54.05 gal	1.08	91.05%
Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cod	16.2	5.4	5.4	10.8	8.1	129.73	2.59	0.55	40.54	0.81	76.22%
Pacific Cod	16.2	5.4	5.4	10.8	8.1	129.73	2.59	0.55	40.54	0.81	76.22%
Pacific Tom Cod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Walleye Pollock	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Starry Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Greenling	10.8	8.1	8.1	2.7	2.7	183.78	3.68	0.78	45.95	0.92	91.30%
Lingcod	10.8	8.1	8.1	2.7	2.7	183.78	3.68	0.78	45.95	0.92	91.30%
Unknown Greenling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Halibut	81.1	56.8	56.8	37.8	27.0	4,231.08	84.62	17.99	257.99	5.16	20.11%
Rockfish	56.8	37.8	37.8	21.6	10.8	1,602.92	32.06	6.82	589.19	11.78	53.76%
Black Rockfish	16.2	13.5	13.5	2.7	2.7	445.95	8.92	1.90	297.30	5.95	71.79%
Red Rockfish	54.1	35.1	35.1	21.6	10.8	1,129.73	22.59	4.80	282.43	5.65	40.36%
Unknown Rockfish	5.4	5.4	5.4	0.0	0.0	27.24	0.54	0.12	9.46	0.19	89.46%
Sablefish	35.1	21.6	21.6	13.5	5.4	264.46	5.29	1.12	85.31	1.71	38.14%

Table 40. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Nikolaevsk, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Skates	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sole	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sole	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolffish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Char	24.3	24.3	24.3	5.4	8.1	346.22	6.92	1.47	247.30	4.95	42.63%
Arctic Char	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dolly Varden	18.9	16.2	16.2	2.7	5.4	181.62	3.63	0.77	129.73	2.59	58.45%
Lake Trout	8.1	8.1	8.1	2.7	2.7	164.59	3.29	0.70	117.57	2.35	67.36%
Grayling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Pike	2.7	2.7	2.7	0.0	0.0	40.54	0.81	0.17	13.51	0.27	103.41%
Unknown Pike	2.7	2.7	2.7	0.0	0.0	40.54	0.81	0.17	13.51	0.27	103.41%
Sheefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Trout	13.5	16.2	13.5	0.0	2.7	71.89	1.44	0.31	51.35	1.03	51.39%
Cutthroat Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Rainbow Trout	8.1	8.1	8.1	0.0	0.0	24.59	0.49	0.10	17.57	0.35	60.58%
Steelhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Trout	5.4	8.1	5.4	0.0	2.7	47.30	0.95	0.20	33.78	0.68	73.61%
Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Land Mammals	56.8	45.9	21.6	43.2	13.5	5,267.03	105.34	22.40	51.35	1.03	41.75%
Large Land Mammals	56.8	45.9	21.6	43.2	13.5	5,267.03	105.34	22.40	41.89	0.84	41.84%
Bison	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Bear	2.7	0.0	0.0	2.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Brown Bear	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Caribou	24.3	10.8	8.1	16.2	10.8	2,027.03	40.54	8.62	13.51	0.27	62.29%
Deer	29.7	18.9	13.5	16.2	2.7	1,050.81	21.02	4.47	24.32	0.49	55.02%
Elk	2.7	0.0	0.0	2.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Moose	35.1	35.1	5.4	29.7	2.7	2,189.19	43.78	9.31	4.05	0.08	76.22%
Dall Sheep	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 40. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Nikolaevsk, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Small Land Mammals	5.4	5.4	5.4	0.0	0.0	0.00	0.00	0.00	9.46	0.19	78.79%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Coyote	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Snowshoe Hare	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mink	5.4	5.4	5.4	0.0	0.0	0.00	0.00	0.00	9.46	0.19	78.79%
Muskrat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Parka Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tree Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Small Land Mammals/Furbearers	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Mammals	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal (saltwater)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Steller Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Belukha	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bowhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Birds and Eggs	5.4	2.7	2.7	2.7	0.0	0.95	0.02	0.00	1.35	0.03	103.41%
Migratory Birds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Ducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goldeneye	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Goldeneye	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 40. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Nikolaevsk, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mallard	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red-Breasted Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Pintail	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Surf Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-winged Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Green Winged Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
American Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Ducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dusky Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lesser Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tundra Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sandhill Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabirds & Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Double-Crested Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 40. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Nikolaevsk, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pelagic Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gulls	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Loon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffins	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Horned Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tufted Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Other Birds	5.4	2.7	2.7	2.7	0.0	0.95	0.02	0.00	1.35	0.03	103.41%
Upland Game Birds	5.4	2.7	2.7	2.7	0.0	0.95	0.02	0.00	1.35	0.03	103.41%
Grouse	5.4	2.7	2.7	2.7	0.0	0.95	0.02	0.00	1.35	0.03	103.41%
Ptarmigan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Ptarmigan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabird & Loon Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Seabird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Invertebrates	29.7	27.0	27.0	18.9	16.2	892.84	17.86	3.80			39.11%
Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Red Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Black Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Clams	8.1	5.4	5.4	2.7	5.4	179.05	3.58	0.76	59.68 gal	1.19	75.92%
Butter Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Horse Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Pacific Littleneck Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Pinkneck Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%

Table 40. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Nikolaevsk, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Razor Clams	8.1	5.4	5.4	2.7	5.4	179.05	3.58	0.76	59.68 gal	1.19	75.92%
Unknown Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Cockles	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Cockles	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Crabs	29.7	21.6	21.6	18.9	13.5	691.49	13.83	2.94	543.39	10.87	51.97%
Dungeness Crab	8.1	5.4	5.4	5.4	5.4	139.86	2.80	0.59	199.81	4.00	99.88%
King Crab	10.8	2.7	2.7	8.1	2.7	6.22	0.12	0.03	2.70	0.05	103.41%
Unknown King Crab	10.8	2.7	2.7	8.1	2.7	6.22	0.12	0.03	2.70	0.05	103.41%
Tanner Crab	29.7	21.6	21.6	13.5	13.5	545.41	10.91	2.32	340.88	6.82	46.76%
Tanner Crab, Bairdi	29.7	21.6	21.6	13.5	13.5	545.41	10.91	2.32	340.88	6.82	46.76%
Tanner Crab, Opillio	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Mussels	2.7	2.7	2.7	0.0	2.7	6.08	0.12	0.03	4.05 gal	0.08	103.41%
Unknown Mussels	2.7	2.7	2.7	0.0	2.7	6.08	0.12	0.03	4.05 gal	0.08	103.41%
Octopus	2.7	2.7	2.7	0.0	2.7	16.22	0.32	0.07	4.05	0.08	103.41%
Oyster	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Oyster	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Shrimp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Whelk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Vegetation	70.3	73.0	64.9	10.8	32.4	1,543.24	30.86	6.56			34.97%
Berries	59.5	54.1	54.1	8.1	27.0	1,132.43	22.65	4.82	283.11 gal	5.66	44.54%
Plants/Greens/Mushrooms	37.8	48.6	32.4	5.4	5.4	405.41	8.11	1.72	101.35 gal	2.03	44.09%
Seaweed/Kelp	2.7	2.7	2.7	0.0	0.0	5.41	0.11	0.02	1.35 gal	0.03	103.41%
Unknown Seaweed	2.7	2.7	2.7	0.0	0.0	5.41	0.11	0.02	1.35 gal	0.03	103.41%
Wood	27.0	24.3	24.3	2.7	2.7	0.00	0.00	0.00	66.22 crd	1.32	37.22%
Coal	5.4	5.4	5.4	0.0	0.0	0.00	0.00	0.00			0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 41. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Ninilchik, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	99.0	97.0	96.0	92.1	73.3	175,816.73	439.54	163.81			23.05%
Fish	97.0	81.2	73.3	79.2	60.4	86,672.87	216.68	80.76			25.65%
Salmon	90.1	75.2	64.4	62.4	45.5	45,560.00	113.90	42.45	8,972.35	22.43	29.81%
Chum Salmon	7.9	4.0	3.0	5.0	2.0	2,363.56	5.91	2.20	437.70	1.09	122.60%
Coho Salmon	53.5	45.5	37.6	22.8	25.7	11,841.58	29.60	11.03	2,277.23	5.69	44.04%
Chinook Salmon	69.3	66.3	46.5	40.6	31.7	11,172.28	27.93	10.41	720.79	1.80	35.87%
Pink Salmon	19.8	17.8	14.9	6.9	5.9	2,195.64	5.49	2.05	914.85	2.29	65.01%
Sockeye Salmon	66.3	50.5	44.6	32.7	26.7	17,963.17	44.91	16.74	4,605.94	11.51	31.03%
Landlocked Salmon	2.0	2.0	2.0	0.0	1.0	23.76	0.06	0.02	15.84	0.04	120.68%
Unknown Salmon	2.0	0.0	0.0	2.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Non-Salmon Fish	92.1	64.4	62.4	55.4	48.5	41,112.87	102.78	38.31			29.07%
Herring	1.0	1.0	1.0	0.0	1.0	594.06	1.49	0.55	99.01 gal	0.25	171.53%
Herring Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Spawn on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Smelt	5.9	3.0	2.0	4.0	1.0	77.23	0.19	0.07	23.76 gal	0.06	120.68%
Eulachon	5.9	3.0	2.0	4.0	1.0	77.23	0.19	0.07	23.76 gal	0.06	120.68%
Unknown Smelt	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cod	8.9	5.9	5.9	4.0	1.0	2,261.39	5.65	2.11	706.68	1.77	102.76%
Pacific Cod	7.9	5.9	5.9	3.0	1.0	2,261.39	5.65	2.11	706.68	1.77	102.76%
Pacific Tom Cod	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Walleye Pollock	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Flounder	3.0	3.0	3.0	0.0	2.0	796.04	1.99	0.74	265.35	0.66	131.21%
Starry Flounder	2.0	2.0	2.0	0.0	2.0	689.11	1.72	0.64	229.70	0.57	149.52%
Unknown Flounder	1.0	1.0	1.0	0.0	0.0	106.93	0.27	0.10	35.64	0.09	171.53%
Greenling	9.9	7.9	6.9	3.0	4.0	455.45	1.14	0.42	170.30	0.43	81.05%
Lingcod	7.9	5.0	5.0	3.0	4.0	380.20	0.95	0.35	95.05	0.24	112.27%
Unknown Greenling	3.0	4.0	3.0	0.0	1.0	75.25	0.19	0.07	75.25	0.19	98.32%
Halibut	90.1	62.4	60.4	45.5	46.5	34,099.80	85.25	31.77	2,079.26	5.20	26.37%
Rockfish	13.9	8.9	8.9	5.9	3.0	524.75	1.31	0.49	257.43	0.64	66.74%
Black Rockfish	8.9	7.9	7.9	2.0	3.0	302.97	0.76	0.28	201.98	0.50	71.96%
Red Rockfish	5.9	2.0	2.0	4.0	0.0	221.78	0.55	0.21	55.45	0.14	121.93%
Unknown Rockfish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sablefish	6.9	3.0	3.0	4.0	2.0	994.46	2.49	0.93	320.79	0.80	112.54%

Table 41. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Ninilchik, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Skates	1.0	1.0	1.0	0.0	1.0	59.41	0.15	0.06	11.88	0.03	171.53%
Sole	2.0	2.0	2.0	0.0	1.0	237.62	0.59	0.22	237.62	0.59	145.49%
Unknown Sole	2.0	2.0	2.0	0.0	1.0	237.62	0.59	0.22	237.62	0.59	145.49%
Wolffish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Char	21.8	16.8	14.9	6.9	5.0	698.61	1.75	0.65	499.01	1.25	49.27%
Arctic Char	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dolly Varden	19.8	15.8	13.9	5.9	4.0	665.35	1.66	0.62	475.25	1.19	51.38%
Lake Trout	4.0	3.0	2.0	2.0	1.0	33.27	0.08	0.03	23.76	0.06	127.34%
Grayling	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Pike	1.0	1.0	1.0	1.0	1.0	59.41	0.15	0.06	19.80	0.05	171.53%
Unknown Pike	1.0	1.0	1.0	1.0	1.0	59.41	0.15	0.06	19.80	0.05	171.53%
Sheefish	1.0	1.0	1.0	1.0	1.0	21.78	0.05	0.02	3.96	0.01	171.53%
Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Trout	5.0	5.9	4.0	1.0	2.0	232.87	0.58	0.22	166.34	0.42	103.23%
Cutthroat Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Rainbow Trout	5.0	5.0	4.0	1.0	2.0	232.87	0.58	0.22	166.34	0.42	103.23%
Steelhead	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Land Mammals	63.4	50.5	33.7	48.5	35.6	71,090.50	177.73	66.24	851.49	2.13	65.45%
Large Land Mammals	63.4	49.5	32.7	48.5	34.7	70,473.66	176.18	65.66	281.19	0.70	38.47%
Bison	3.0	0.0	0.0	3.0	1.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Bear	5.0	6.9	3.0	2.0	1.0	689.11	1.72	0.64	11.88	0.03	98.04%
Brown Bear	0.0	2.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Caribou	18.8	7.9	7.9	11.9	6.9	13,663.37	34.16	12.73	91.09	0.23	65.24%
Deer	17.8	6.9	5.9	11.9	5.9	3,079.60	7.70	2.87	71.29	0.18	77.09%
Elk	5.9	1.0	1.0	5.0	1.0	891.09	2.23	0.83	3.96	0.01	171.53%
Goat	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Moose	56.4	46.5	20.8	40.6	26.7	51,326.73	128.32	47.82	95.05	0.24	36.83%
Dall Sheep	3.0	2.0	2.0	1.0	2.0	823.76	2.06	0.77	7.92	0.02	120.68%

Table 41. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Ninilchik, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Small Land Mammals	8.9	11.9	8.9	0.0	2.0	616.83	1.54	0.57	570.30	1.43	93.63%
Beaver	2.0	2.0	2.0	0.0	1.0	34.65	0.09	0.03	23.76	0.06	145.49%
Coyote	1.0	1.0	1.0	0.0	0.0	0.00	0.00	0.00	3.96	0.01	171.53%
Fox	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red Fox	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Hare	6.9	7.9	6.9	0.0	1.0	483.17	1.21	0.45	289.11	0.72	83.90%
Snowshoe Hare	6.9	7.9	6.9	0.0	1.0	483.17	1.21	0.45	289.11	0.72	83.90%
Land Otter	1.0	1.0	1.0	0.0	0.0	0.00	0.00	0.00	15.84	0.04	171.53%
Lynx	2.0	2.0	2.0	0.0	0.0	95.05	0.24	0.09	23.76	0.06	127.34%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marten	1.0	2.0	1.0	0.0	0.0	0.00	0.00	0.00	27.72	0.07	171.53%
Mink	1.0	2.0	1.0	0.0	0.0	0.00	0.00	0.00	39.60	0.10	171.53%
Muskrat	1.0	2.0	1.0	0.0	0.0	0.00	0.00	0.00	3.96	0.01	171.53%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Squirrel	2.0	2.0	2.0	0.0	0.0	3.96	0.01	0.00	47.52	0.12	145.49%
Parka Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tree Squirrel	2.0	2.0	2.0	0.0	0.0	3.96	0.01	0.00	47.52	0.12	145.49%
Weasel	1.0	2.0	1.0	0.0	0.0	0.00	0.00	0.00	95.05	0.24	171.53%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Small Land Mammals/Furbearers	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Mammals	2.0	0.0	0.0	2.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal (saltwater)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Steller Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whale	2.0	0.0	0.0	2.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Belukha	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bowhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whale	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Birds and Eggs	35.6	32.7	30.7	7.9	7.9	1,537.03	3.84	1.43	1,964.36	4.91	52.35%
Migratory Birds	5.9	4.0	3.0	3.0	1.0	480.79	1.20	0.45	455.45	1.14	145.17%
Ducks	4.0	4.0	3.0	1.0	1.0	328.71	0.82	0.31	384.16	0.96	143.68%
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gadwall	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goldeneye	1.0	1.0	1.0	0.0	0.0	63.37	0.16	0.06	79.21	0.20	171.53%
Unknown Goldeneye	1.0	1.0	1.0	0.0	0.0	63.37	0.16	0.06	79.21	0.20	171.53%

Table 41. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Ninilchik, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mallard	4.0	4.0	3.0	1.0	1.0	205.94	0.51	0.19	205.94	0.51	125.24%
Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red-Breasted Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Pintail	1.0	2.0	1.0	0.0	0.0	47.52	0.12	0.04	59.41	0.15	171.53%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Surf Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-winged Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Teal	1.0	2.0	1.0	0.0	0.0	11.88	0.03	0.01	39.60	0.10	171.53%
Green Winged Teal	1.0	2.0	1.0	0.0	0.0	11.88	0.03	0.01	39.60	0.10	171.53%
Wigeon	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
American Wigeon	0.0	1.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Ducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese	3.0	1.0	1.0	2.0	0.0	85.54	0.21	0.08	63.37	0.16	171.53%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Canada Geese	2.0	1.0	1.0	1.0	0.0	85.54	0.21	0.08	63.37	0.16	171.53%
Dusky Canada Geese	1.0	1.0	1.0	0.0	0.0	14.26	0.04	0.01	3.96	0.01	171.53%
Lesser Canada Geese	1.0	1.0	1.0	0.0	0.0	71.29	0.18	0.07	59.41	0.15	171.53%
Unknown Canada Geese	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-fronted Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese	1.0	0.0	0.0	1.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tundra Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Crane	2.0	1.0	1.0	1.0	0.0	66.53	0.17	0.06	7.92	0.02	171.53%
Sandhill Crane	2.0	1.0	1.0	1.0	0.0	66.53	0.17	0.06	7.92	0.02	171.53%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabirds & Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Double-Crested Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 41. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Ninilchik, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pelagic Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gulls	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Loon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffins	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Horned Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tufted Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Other Birds	32.7	31.7	29.7	5.0	6.9	1,056.24	2.64	0.98	1,508.91	3.77	38.91%
Upland Game Birds	32.7	31.7	29.7	5.0	6.9	1,056.24	2.64	0.98	1,508.91	3.77	38.91%
Grouse	31.7	30.7	28.7	5.0	5.9	873.27	2.18	0.81	1,247.52	3.12	40.01%
Ptarmigan	5.9	6.9	5.9	1.0	2.0	182.97	0.46	0.17	261.39	0.65	83.70%
Unknown Ptarmigan	5.9	6.9	5.9	1.0	2.0	182.97	0.46	0.17	261.39	0.65	83.70%
Bird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabird & Loon Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Seabird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Invertebrates	78.2	59.4	57.4	48.5	36.6	11,837.20	29.59	11.03			24.15%
Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Red Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Black Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Clams	66.3	57.4	55.4	25.7	32.7	10,343.18	25.86	9.64	3,447.73 gal	8.62	24.75%
Butter Clams	10.9	5.9	5.9	5.9	4.0	244.99	0.61	0.23	81.66 gal	0.20	81.94%
Horse Clams	3.0	3.0	3.0	0.0	0.0	11.22	0.03	0.01	3.74 gal	0.01	102.23%
Pacific Littleneck Clams	16.8	11.9	11.9	7.9	6.9	766.34	1.92	0.71	255.45 gal	0.64	68.20%
Pinkneck Clams	2.0	2.0	2.0	0.0	0.0	3.80	0.01	0.00	1.27 gal	0.00	124.47%

Table 41. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Ninilchik, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Razor Clams	63.4	55.4	53.5	16.8	28.7	9,316.83	23.29	8.68	3,105.61 gal	7.76	25.11%
Unknown Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Cockles	4.0	4.0	4.0	1.0	0.0	20.59	0.05	0.02	6.86 gal	0.02	109.21%
Unknown Cockles	4.0	4.0	4.0	1.0	0.0	20.59	0.05	0.02	6.86 gal	0.02	109.21%
Crabs	42.6	8.9	7.9	38.6	10.9	1,068.51	2.67	1.00	752.48	1.88	71.93%
Dungeness Crab	16.8	2.0	2.0	14.9	1.0	105.35	0.26	0.10	150.50	0.38	139.80%
King Crab	20.8	0.0	0.0	20.8	5.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown King Crab	20.8	0.0	0.0	20.8	5.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tanner Crab	23.8	7.9	6.9	18.8	7.9	963.17	2.41	0.90	601.98	1.50	83.47%
Tanner Crab, Bairdi	23.8	7.9	6.9	18.8	7.9	963.17	2.41	0.90	601.98	1.50	83.47%
Tanner Crab, Opillio	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Mussels	9.9	9.9	9.9	2.0	0.0	149.47	0.37	0.14	99.64 gal	0.25	80.71%
Unknown Mussels	9.9	9.9	9.9	2.0	0.0	149.47	0.37	0.14	99.64 gal	0.25	80.71%
Octopus	7.9	7.9	7.9	1.0	4.0	237.62	0.59	0.22	59.41	0.15	67.77%
Oyster	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Oyster	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scallops	4.0	0.0	0.0	4.0	1.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Scallops	4.0	0.0	0.0	4.0	1.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Cucumber	1.0	1.0	1.0	0.0	0.0	7.92	0.02	0.01	3.96 gal	0.01	171.53%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Shrimp	5.0	1.0	1.0	4.0	0.0	9.90	0.02	0.01	4.95 gal	0.01	171.53%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Whelk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Vegetation	83.2	82.2	82.2	33.7	40.6	4,679.13	11.70	4.36			30.91%
Berries	65.3	60.4	59.4	27.7	24.8	3,027.64	7.57	2.82	756.91 gal	1.89	30.79%
Plants/Greens/Mushrooms	21.8	19.8	19.8	4.0	7.9	1,168.32	2.92	1.09	292.08 gal	0.73	57.70%
Seaweed/Kelp	2.0	2.0	2.0	0.0	0.0	483.17	1.21	0.45	120.79 gal	0.30	168.72%
Unknown Seaweed	2.0	2.0	2.0	0.0	0.0	483.17	1.21	0.45	120.79 gal	0.30	168.72%
Wood	67.3	65.3	65.3	9.9	20.8	0.00	0.00	0.00	1,702.50 crd	4.26	20.44%
Coal	1.0	1.0	1.0	0.0	0.0	0.00	0.00	0.00			0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 42. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, North Fork Road, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	98.3	86.2	86.2	93.1	62.1	45,703.88	275.32	97.97			31.48%
Fish	96.6	70.7	62.1	75.9	46.6	26,682.07	160.74	57.19			28.80%
Salmon	77.6	60.3	50.0	48.3	39.7	13,997.52	84.32	30.00	2,427.03	14.62	33.27%
Chum Salmon	8.6	6.9	6.9	1.7	1.7	185.46	1.12	0.40	34.34	0.21	85.35%
Coho Salmon	46.6	43.1	39.7	12.1	29.3	5,328.03	32.10	11.42	1,024.62	6.17	38.56%
Chinook Salmon	60.3	51.7	39.7	29.3	22.4	4,258.76	25.66	9.13	274.76	1.66	35.73%
Pink Salmon	10.3	5.2	5.2	5.2	3.4	61.82	0.37	0.13	25.76	0.16	101.77%
Sockeye Salmon	53.4	36.2	31.0	32.8	19.0	4,163.45	25.08	8.92	1,067.55	6.43	49.06%
Landlocked Salmon	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Salmon	5.2	0.0	0.0	5.2	1.7	0.00	0.00	0.00	0.00	0.00	0.00%
Non-Salmon Fish	94.8	62.1	58.6	62.1	41.4	12,684.55	76.41	27.19			37.12%
Herring	1.7	1.7	1.7	0.0	0.0	34.34	0.21	0.07	5.72 gal	0.03	161.52%
Herring Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Sac Roe	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.00*	*0.00*	*0.00*	0.00 gal	0.00	0.00%
Herring Spawn on Kelp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Smelt	6.9	1.7	1.7	5.2	0.0	46.51	0.28	0.10	14.31 gal	0.09	161.52%
Eulachon	5.2	0.0	0.0	5.2	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Smelt	1.7	1.7	1.7	0.0	0.0	46.51	0.28	0.10	14.31 gal	0.09	161.52%
Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cod	10.3	3.4	3.4	6.9	0.0	100.74	0.61	0.22	31.48	0.19	113.69%
Pacific Cod	6.9	3.4	3.4	3.4	0.0	100.74	0.61	0.22	31.48	0.19	113.69%
Pacific Tom Cod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Walleye Pollock	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cod	3.4	0.0	0.0	3.4	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Flounder	1.7	1.7	1.7	0.0	0.0	17.17	0.10	0.04	5.72	0.03	161.52%
Starry Flounder	1.7	1.7	1.7	0.0	0.0	17.17	0.10	0.04	5.72	0.03	161.52%
Unknown Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Greenling	6.9	5.2	5.2	1.7	0.0	77.28	0.47	0.17	60.10	0.36	103.34%
Lingcod	3.4	1.7	1.7	1.7	0.0	22.90	0.14	0.05	5.72	0.03	161.52%
Unknown Greenling	3.4	3.4	3.4	0.0	0.0	54.38	0.33	0.12	54.38	0.33	113.37%
Halibut	87.9	55.2	51.7	50.0	37.9	11,360.70	68.44	24.35	692.73	4.17	39.70%
Rockfish	20.7	8.6	8.6	12.1	0.0	545.22	3.28	1.17	163.14	0.98	93.46%
Black Rockfish	6.9	5.2	5.2	1.7	0.0	64.40	0.39	0.14	42.93	0.26	115.53%
Red Rockfish	15.5	6.9	6.9	8.6	0.0	480.83	2.90	1.03	120.21	0.72	118.40%
Unknown Rockfish	3.4	0.0	0.0	3.4	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sablefish	8.6	1.7	1.7	6.9	0.0	35.49	0.21	0.08	11.45	0.07	161.52%

Table 42. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, North Fork Road, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Skates	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sole	5.2	3.4	3.4	1.7	0.0	17.17	0.10	0.04	17.17	0.10	119.54%
Unknown Sole	5.2	3.4	3.4	1.7	0.0	17.17	0.10	0.04	17.17	0.10	119.54%
Wolffish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Char	31.0	27.6	25.9	8.6	6.9	360.62	2.17	0.77	257.59	1.55	43.46%
Arctic Char	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dolly Varden	29.3	25.9	24.1	8.6	6.9	336.58	2.03	0.72	240.41	1.45	45.83%
Lake Trout	1.7	1.7	1.7	0.0	0.0	24.04	0.14	0.05	17.17	0.10	161.52%
Grayling	1.7	1.7	1.7	0.0	0.0	12.02	0.07	0.03	17.17	0.10	161.52%
Pike	1.7	1.7	1.7	1.7	1.7	17.17	0.10	0.04	5.72	0.03	161.52%
Unknown Pike	1.7	1.7	1.7	1.7	1.7	17.17	0.10	0.04	5.72	0.03	161.52%
Sheefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Trout	3.4	5.2	3.4	0.0	0.0	60.10	0.36	0.13	42.93	0.26	132.64%
Cutthroat Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Rainbow Trout	3.4	3.4	3.4	0.0	0.0	60.10	0.36	0.13	42.93	0.26	132.64%
Steelhead	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Land Mammals	58.6	43.1	20.7	48.3	17.2	14,603.99	87.98	31.30	729.83	4.40	127.53%
Large Land Mammals	58.6	41.4	15.5	48.3	15.5	14,412.23	86.82	30.89	97.31	0.59	73.94%
Bison	1.7	0.0	0.0	1.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Bear	5.2	3.4	1.7	3.4	1.7	166.00	1.00	0.36	2.86	0.02	161.52%
Brown Bear	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Caribou	19.0	8.6	6.9	12.1	6.9	4,293.10	25.86	9.20	28.62	0.17	86.64%
Deer	12.1	3.4	3.4	8.6	1.7	2,225.54	13.41	4.77	51.52	0.31	113.93%
Elk	1.7	0.0	0.0	1.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Moose	50.0	37.9	8.6	43.1	8.6	7,727.59	46.55	16.56	14.31	0.09	69.65%
Dall Sheep	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 42. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, North Fork Road, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Small Land Mammals	6.9	6.9	6.9	0.0	1.7	191.76	1.16	0.41	632.52	3.81	146.45%
Beaver	1.7	1.7	1.7	0.0	1.7	100.17	0.60	0.21	11.45	0.07	161.52%
Coyote	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Hare	5.2	5.2	5.2	0.0	0.0	91.59	0.55	0.20	45.79	0.28	124.55%
Snowshoe Hare	5.2	5.2	5.2	0.0	0.0	91.59	0.55	0.20	45.79	0.28	124.55%
Land Otter	1.7	1.7	1.7	0.0	0.0	0.00	0.00	0.00	2.86	0.02	161.52%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Muskrat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Squirrel	1.7	1.7	1.7	0.0	0.0	0.00	0.00	0.00	572.41	3.45	161.52%
Parka Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tree Squirrel	1.7	1.7	1.7	0.0	0.0	0.00	0.00	0.00	572.41	3.45	161.52%
Weasel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Small Land Mammals/Furbearers	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Mammals	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal (saltwater)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Steller Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Belukha	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bowhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Birds and Eggs	25.9	25.9	25.9	5.2	3.4	284.20	1.71	0.61	403.55	2.43	60.25%
Migratory Birds	1.7	3.4	1.7	0.0	0.0	5.72	0.03	0.01	5.72	0.03	161.52%
Ducks	1.7	3.4	1.7	0.0	0.0	5.72	0.03	0.01	5.72	0.03	161.52%
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goldeneye	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Goldeneye	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 42. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, North Fork Road, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mallard	1.7	3.4	1.7	0.0	0.0	5.72	0.03	0.01	5.72	0.03	161.52%
Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red-Breasted Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Pintail	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scaup	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scaup	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Surf Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-winged Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Teal	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Green Winged Teal	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wigeon	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
American Wigeon	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Ducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Canada Geese	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dusky Canada Geese	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lesser Canada Geese	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-fronted Geese	0.0	1.7	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tundra Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sandhill Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabirds & Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Double-Crested Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 42. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, North Fork Road, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pelagic Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gulls	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Loon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffins	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Horned Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tufted Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Other Birds	24.1	24.1	24.1	5.2	3.4	278.48	1.68	0.60	397.83	2.40	61.18%
Upland Game Birds	24.1	24.1	24.1	5.2	3.4	278.48	1.68	0.60	397.83	2.40	61.18%
Grouse	20.7	20.7	20.7	3.4	3.4	194.33	1.17	0.42	277.62	1.67	52.39%
Ptarmigan	6.9	5.2	5.2	1.7	0.0	84.14	0.51	0.18	120.21	0.72	105.50%
Unknown Ptarmigan	6.9	5.2	5.2	1.7	0.0	84.14	0.51	0.18	120.21	0.72	105.50%
Bird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabird & Loon Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Seabird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Invertebrates	67.2	48.3	48.3	41.4	22.4	2,541.16	15.31	5.45			48.63%
Chitons	1.7	0.0	0.0	1.7	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Red Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Black Chitons	1.7	0.0	0.0	1.7	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Clams	55.2	48.3	48.3	13.8	20.7	2,278.38	13.73	4.88	759.46 gal	4.58	52.69%
Butter Clams	8.6	8.6	8.6	0.0	1.7	111.96	0.67	0.24	37.32 gal	0.22	90.10%
Horse Clams	1.7	1.7	1.7	0.0	0.0	4.29	0.03	0.01	1.43 gal	0.01	161.52%
Pacific Littleneck Clams	24.1	17.2	17.2	10.3	10.3	504.44	3.04	1.08	168.15 gal	1.01	85.96%
Pinkneck Clams	5.2	3.4	3.4	1.7	0.0	89.98	0.54	0.19	29.99 gal	0.18	154.17%

Table 42. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, North Fork Road, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Razor Clams	44.8	39.7	39.7	6.9	10.3	1,567.70	9.44	3.36	522.57 gal	3.15	47.91%
Unknown Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Cockles	6.9	3.4	3.4	3.4	0.0	9.16	0.06	0.02	3.05 gal	0.02	116.81%
Unknown Cockles	6.9	3.4	3.4	3.4	0.0	9.16	0.06	0.02	3.05 gal	0.02	116.81%
Crabs	36.2	8.6	8.6	32.8	5.2	205.21	1.24	0.44	114.48	0.69	93.10%
Dungeness Crab	13.8	3.4	3.4	10.3	0.0	14.02	0.08	0.03	20.03	0.12	139.96%
King Crab	20.7	1.7	1.7	20.7	3.4	131.66	0.79	0.28	57.24	0.34	161.52%
Unknown King Crab	20.7	1.7	1.7	20.7	3.4	131.66	0.79	0.28	57.24	0.34	161.52%
Tanner Crab	12.1	5.2	5.2	10.3	3.4	59.53	0.36	0.13	37.21	0.22	104.93%
Tanner Crab, Bairdi	12.1	5.2	5.2	10.3	3.4	59.53	0.36	0.13	37.21	0.22	104.93%
Tanner Crab, Opillio	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Crab	1.7	0.0	0.0	1.7	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Mussels	6.9	5.2	5.2	1.7	1.7	32.20	0.19	0.07	21.47 gal	0.13	115.53%
Unknown Mussels	6.9	5.2	5.2	1.7	1.7	32.20	0.19	0.07	21.47 gal	0.13	115.53%
Octopus	5.2	1.7	1.7	3.4	0.0	11.45	0.07	0.02	2.86	0.02	161.52%
Oyster	3.4	0.0	0.0	3.4	1.7	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Oyster	3.4	0.0	0.0	3.4	1.7	0.00	0.00	0.00	0.00	0.00	0.00%
Scallops	3.4	0.0	0.0	3.4	1.7	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Scallops	3.4	0.0	0.0	3.4	1.7	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Shrimp	3.4	1.7	1.7	1.7	1.7	4.77	0.03	0.01	2.39 gal	0.01	161.52%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Whelk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Vegetation	79.3	77.6	77.6	25.9	29.3	1,592.46	9.59	3.41			35.09%
Berries	67.2	67.2	67.2	17.2	19.0	1,305.82	7.87	2.80	326.45 gal	1.97	32.99%
Plants/Greens/Mushrooms	22.4	24.1	22.4	5.2	5.2	263.74	1.59	0.57	65.93 gal	0.40	76.93%
Seaweed/Kelp	3.4	1.7	1.7	3.4	1.7	22.90	0.14	0.05	5.72 gal	0.03	161.52%
Unknown Seaweed	3.4	1.7	1.7	3.4	1.7	22.90	0.14	0.05	5.72 gal	0.03	161.52%
Wood	65.5	58.6	58.6	12.1	17.2	0.00	0.00	0.00	513.74 crd	3.09	26.80%
Coal	6.9	6.9	6.9	0.0	0.0	0.00	0.00	0.00			0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 43. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Voznesenka, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
All Resources	100.0	100.0	100.0	83.3	77.8	54,763.57	883.28	167.36			67.99%
Fish	100.0	100.0	94.4	66.7	72.2	41,320.93	666.47	126.28			63.29%
Salmon	100.0	100.0	94.4	38.9	72.2	25,177.51	406.09	76.94	5,056.27	81.55	55.37%
Chum Salmon	16.7	16.7	16.7	0.0	16.7	2,548.20	41.10	7.79	471.89	7.61	100.74%
Coho Salmon	72.2	66.7	66.7	16.7	44.4	9,940.67	160.33	30.38	1,911.67	30.83	62.05%
Chinook Salmon	66.7	66.7	55.6	27.8	44.4	3,523.67	56.83	10.77	227.33	3.67	71.73%
Pink Salmon	33.3	22.2	22.2	11.1	22.2	595.20	9.60	1.82	248.00	4.00	110.55%
Sockeye Salmon	77.8	83.3	77.8	11.1	61.1	8,569.78	138.22	26.19	2,197.38	35.44	83.40%
Unknown Salmon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Non-Salmon Fish	94.4	66.7	66.7	55.6	44.4	16,143.42	260.38	49.33			82.37%
Herring	11.1	5.6	5.6	5.6	5.6	330.67	5.33	1.01	55.11 gal	0.89	177.73%
Herring Roe	5.6	0.0	0.0	5.6	5.6	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Sac Roe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Herring Spawn on Kelp	5.6	0.0	0.0	5.6	5.6	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Smelt	50.0	27.8	27.8	22.2	27.8	1,231.39	19.86	3.76	378.89 gal	6.11	95.91%
Eulachon	44.4	27.8	27.8	16.7	27.8	1,231.39	19.86	3.76	378.89 gal	6.11	95.91%
Unknown Smelt	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Bass	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cod	22.2	11.1	11.1	11.1	11.1	2,738.33	44.17	8.37	855.73	13.80	160.85%
Pacific Cod	22.2	11.1	11.1	11.1	11.1	2,738.33	44.17	8.37	855.73	13.80	160.85%
Pacific Tom Cod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Walleye Pollock	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cod	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Eel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Starry Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Flounder	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Greenling	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lingcod	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Greenling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Halibut	77.8	55.6	55.6	27.8	33.3	5,845.22	94.28	17.86	356.42	5.75	60.97%
Rockfish	66.7	38.9	38.9	33.3	38.9	4,653.44	75.06	14.22	1,392.70	22.46	101.18%
Black Rockfish	11.1	11.1	11.1	5.6	11.1	396.11	6.39	1.21	264.07	4.26	154.93%
Red Rockfish	55.6	27.8	27.8	27.8	27.8	3,596.00	58.00	10.99	899.00	14.50	113.74%
Unknown Rockfish	5.6	5.6	5.6	0.0	5.6	661.33	10.67	2.02	229.63	3.70	177.73%
Sablefish	27.8	22.2	22.2	5.6	16.7	900.72	14.53	2.75	290.56	4.69	110.77%

Table 43. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Voznesenka, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Irish Lord	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sculpin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Shark	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Skates	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sole	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sole	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolffish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Char	22.2	16.7	16.7	5.6	0.0	154.31	2.49	0.47	110.22	1.78	140.59%
Arctic Char	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dolly Varden	22.2	16.7	16.7	5.6	0.0	154.31	2.49	0.47	110.22	1.78	140.59%
Lake Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Grayling	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Pike	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Pike	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sheefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Sturgeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Trout	11.1	16.7	11.1	5.6	5.6	289.33	4.67	0.88	206.67	3.33	149.33%
Cutthroat Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Rainbow Trout	11.1	16.7	11.1	5.6	5.6	289.33	4.67	0.88	206.67	3.33	149.33%
Steelhead	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Trout	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whitefish	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Land Mammals	50.0	38.9	33.3	38.9	33.3	10,530.70	169.85	32.18	117.11	1.89	96.49%
Large Land Mammals	50.0	38.9	33.3	38.9	33.3	10,516.92	169.63	32.14	82.67	1.33	81.36%
Bison	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Bear	5.6	0.0	0.0	5.6	5.6	0.00	0.00	0.00	0.00	0.00	0.00%
Brown Bear	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Caribou	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Deer	44.4	33.3	33.3	11.1	22.2	2,827.20	45.60	8.64	65.44	1.06	76.37%
Elk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goat	5.6	5.6	5.6	0.0	0.0	249.72	4.03	0.76	3.44	0.06	177.73%
Moose	44.4	33.3	11.1	33.3	16.7	7,440.00	120.00	22.74	13.78	0.22	121.92%
Dall Sheep	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 43. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Voznesenka, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Small Land Mammals	11.1	11.1	11.1	0.0	0.0	13.78	0.22	0.04	34.44	0.56	144.52%
Beaver	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Coyote	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red Fox	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Hare	11.1	11.1	11.1	0.0	0.0	13.78	0.22	0.04	13.78	0.22	121.92%
Snowshoe Hare	11.1	11.1	11.1	0.0	0.0	13.78	0.22	0.04	13.78	0.22	121.92%
Land Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lynx	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marmot	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marten	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mink	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Muskrat	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Porcupine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Parka Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tree Squirrel	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Weasel	5.6	5.6	5.6	0.0	0.0	0.00	0.00	0.00	20.67	0.33	177.73%
Wolf	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wolverine	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Small Land Mammals/Furbearers	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Mammals	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Harbor Seal (saltwater)	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sea Otter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Steller Sea Lion	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Belukha	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Bowhead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Whale	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Birds and Eggs	27.8	22.2	22.2	5.6	0.0	61.66	0.99	0.19	51.67	0.83	88.34%
Migratory Birds	11.1	11.1	11.1	0.0	0.0	39.96	0.64	0.12	20.67	0.33	129.32%
Ducks	5.6	5.6	5.6	0.0	0.0	6.89	0.11	0.02	6.89	0.11	177.73%
Bufflehead	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gadwall	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Goldeneye	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Goldeneye	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 43. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Voznesenka, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Harlequin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Mallard	5.6	5.6	5.6	0.0	0.0	6.89	0.11	0.02	6.89	0.11	177.73%
Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Red-Breasted Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Merganser	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Oldsquaw	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Pintail	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scaup	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Black Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Surf Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-winged Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Scoter	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Northern Shoveler	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Green Winged Teal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
American Wigeon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Ducks	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese	5.6	5.6	5.6	0.0	0.0	33.07	0.53	0.10	13.78	0.22	177.73%
Brant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Dusky Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Lesser Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Canada Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
White-fronted Geese	5.6	5.6	5.6	0.0	0.0	33.07	0.53	0.10	13.78	0.22	177.73%
Unknown Geese	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tundra Swan	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Sandhill Crane	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Shorebirds	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Snipe	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabirds & Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Cormorants	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Double-Crested Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%

Table 43. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Voznesenka, 1998

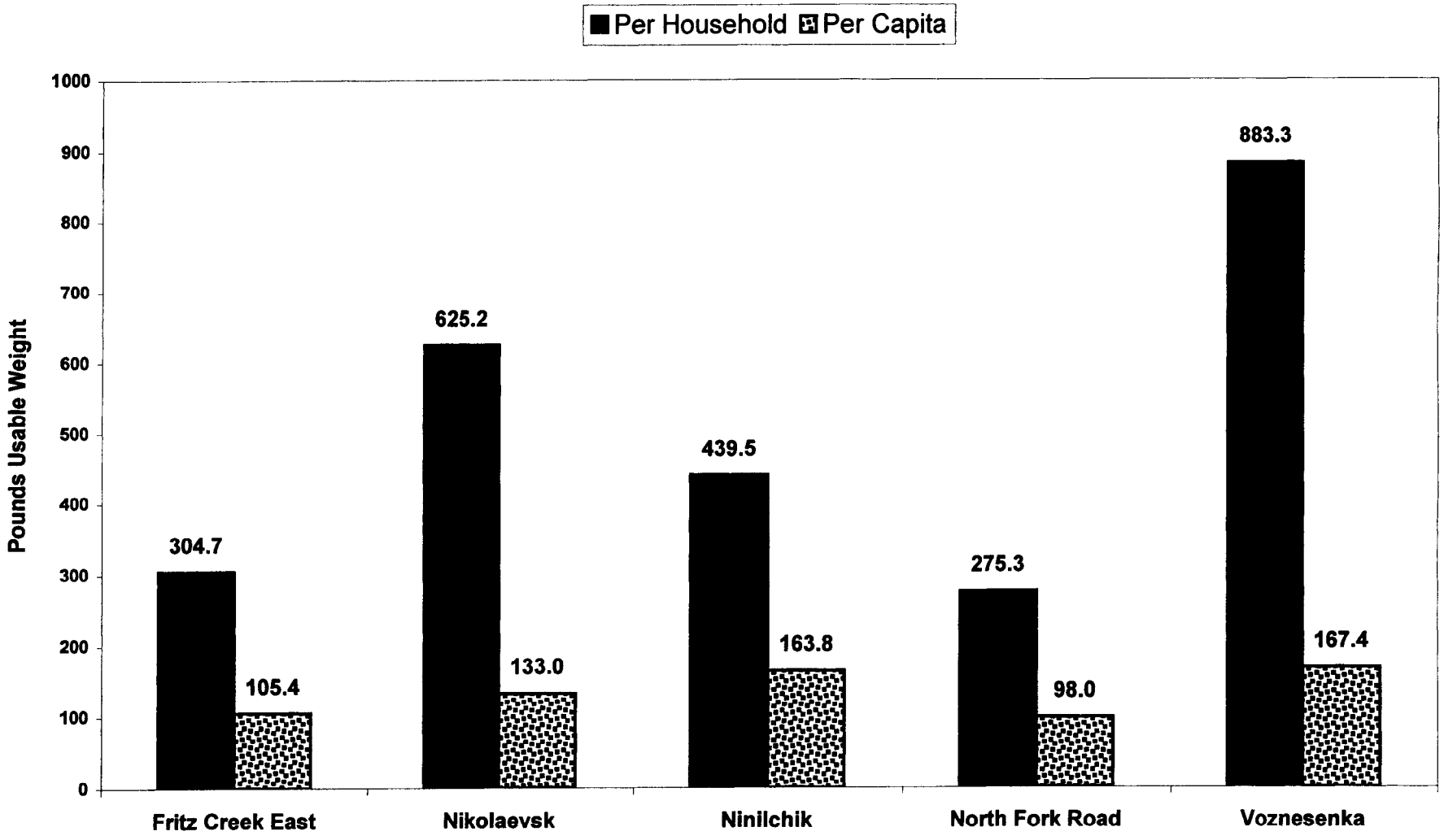
Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Pelagic Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Cormorant	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gulls	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Loons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Loon	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Common Murre	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffins	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Horned Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tufted Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Other Birds	16.7	11.1	11.1	5.6	0.0	21.70	0.35	0.07	31.00	0.50	129.32%
Upland Game Birds	16.7	11.1	11.1	5.6	0.0	21.70	0.35	0.07	31.00	0.50	129.32%
Grouse	11.1	5.6	5.6	5.6	0.0	7.23	0.12	0.02	10.33	0.17	177.73%
Ptarmigan	5.6	5.6	5.6	0.0	0.0	14.47	0.23	0.04	20.67	0.33	177.73%
Unknown Ptarmigan	5.6	5.6	5.6	0.0	0.0	14.47	0.23	0.04	20.67	0.33	177.73%
Bird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Duck Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Geese Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Seabird & Loon Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Gull Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Puffin Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tern Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Seabird Eggs	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Marine Invertebrates	11.1	11.1	11.1	5.6	5.6	905.89	14.61	2.77			175.60%
Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Red Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Black Chitons	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Butter Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Horse Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Pacific Littleneck Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Pinkneck Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%

Table 43. Estimated Harvest and Use of Fish, Mammal, Bird, and Plant Resources, Voznesenka, 1998

Resource Name	Percentage of Households					Pounds Harvested			Amount Harvested		95% Conf Limit (+/-)
	Use	Att	Harv	Recv	Give	Total	Mean HH	Percapita	Total	Mean HH	Harvest
Razor Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Clams	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Cockles	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Cockles	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Crabs	11.1	5.6	5.6	5.6	5.6	895.56	14.44	2.74	389.37	6.28	177.73%
Dungeness Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
King Crab	5.6	5.6	5.6	0.0	5.6	895.56	14.44	2.74	389.37	6.28	177.73%
Unknown King Crab	5.6	5.6	5.6	0.0	5.6	895.56	14.44	2.74	389.37	6.28	177.73%
Tanner Crab	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tanner Crab, Bairdi	5.6	0.0	0.0	5.6	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Tanner Crab, Opillio	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Tanner Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Crab	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Limpets	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Mussels	5.6	5.6	5.6	0.0	0.0	10.33	0.17	0.03	6.89 gal	0.11	177.73%
Unknown Mussels	5.6	5.6	5.6	0.0	0.0	10.33	0.17	0.03	6.89 gal	0.11	177.73%
Octopus	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Oyster	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Unknown Oyster	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00%
Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Scallops	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Unknown Sea Urchin	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Shrimp	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Snails	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Whelk	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00 gal	0.00	0.00%
Vegetation	72.2	77.8	72.2	33.3	33.3	1,944.39	31.36	5.94			85.04%
Berries	61.1	61.1	61.1	33.3	27.8	781.89	12.61	2.39	195.47 gal	3.15	77.44%
Plants/Greens/Mushrooms	38.9	38.9	33.3	5.6	16.7	680.28	10.97	2.08	170.07 gal	2.74	118.16%
Seaweed/Kelp	11.1	11.1	11.1	5.6	5.6	482.22	7.78	1.47	120.56 gal	1.94	123.32%
Unknown Seaweed	11.1	11.1	11.1	5.6	5.6	482.22	7.78	1.47	120.56 gal	1.94	123.32%
Wood	55.6	55.6	55.6	5.6	11.1	0.00	0.00	0.00	208.39 crd	3.36	51.11%
Coal	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00			0.00%

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Figure 22. Harvests of Wild Resources for Home Use, Pounds per Household and Per Capita, Study Areas, 1998



pounds per household In Voznesenka, to 625.2 pounds per household in Nikolaevsk, 439.5 pounds per household in Ninilchik, 304.7 pounds per household in Fritz Creek East, and 275.3 pounds per household in North Fork Road. As estimated in pounds per person, harvests were again highest in Voznesenka at 167.4 per person, followed closely by Ninilchik at 163.8 pounds per person, Nikolaevsk at 133.0 pounds per person, Fritz Creek East at 105.4 pounds per person, and North Fork Road at 98.0 pounds per person.

As illustrated in Figure 23, three categories of resources, salmon, other fish, and land mammals, were harvested in the largest quantities in each study community. As estimated in usable pounds, the highest salmon harvests for home use took place at Voznesenka (76.9 pounds per person) and Nikolaevsk (66.9 pounds per person), the largest harvests of fish other than salmon occurred at Voznesenka (49.3 pounds per person) and Ninilchik (38.3 pounds per person), and the largest harvests of land mammals (by far) were those by Ninilchik households (66.2 pounds per person).

As expressed by a percentage of the total harvest, salmon ranked first in all communities but Ninilchik; salmon were especially prominent in the harvests of Nikolaevsk (50.3 percent of the total harvest) and Voznesenka (46.0 percent) (Fig. 24). At 40.4 percent of the total harvest, land mammals ranked first at Ninilchik, followed by salmon (25.9 percent). Harvests of fish other than salmon were a significant part of the harvest in each community, ranging from a high of 29.5 percent of the total harvest at Voznesenka to 23.4 percent of the total at Ninilchik. In no community did birds, marine invertebrates, or wild plants make up more than 7.1 percent of the total harvest.

Table 39 through Table 43 give detailed study findings for each community on the estimated harvest quantities of each variety of wild resource in the 1998 study year. Generally, a small number of resources accounted for the bulk of the harvest in each study community. The five resources harvested in the largest quantities (as estimated in usable pounds) accounted for 73.3 percent of the total harvest in Ninilchik, 72.1 percent in North Fork Road, 64.6 percent in Voznesenka, 64.3 percent in Fritz Creek East, and 63.0 percent in Nikolaevsk (Table 45). In all communities, resources harvested in the largest quantities (as estimated in usable pounds) included halibut, moose, and coho salmon. Sockeye salmon ranked in the top five in all the study communities but North Fork Road, where sockeye ranked sixth.

Table 45. Contribution of Harvests of Top Five Resources to Total Harvest, Study Areas, 1998

Ninilchik			North Fork Road			Fritz Creek East			Nikolaevsk			Voznesenka		
	% of total	Cum %		% of total	Cum %		% of total	Cum %		% of total	Cum %		% of total	Cum %
Moose	29.2%		Halibut	24.9%		Halibut	23.5%		Sockeye	20.0%		Coho	18.2%	
Halibut	19.4%	48.6%	Moose	16.9%	41.8%	Moose	13.6%	37.1%	Halibut	13.5%	33.6%	Sockeye	15.6%	33.8%
Sockeye	10.2%	58.8%	Coho	11.7%	53.4%	Sockeye	10.8%	47.9%	Coho	13.1%	46.7%	Moose	13.6%	47.4%
Caribou	7.8%	66.6%	Caribou	9.4%	62.8%	Coho	9.3%	57.3%	Chinook	9.4%	56.0%	Halibut	10.7%	58.1%
Coho	6.7%	73.3%	Chinook	9.3%	72.1%	Deer	7.0%	64.3%	Moose	7.0%	63.0%	Red Rockfis	6.6%	64.6%

Figure 23. Harvests of Wild Resources for Home Use by Resource Category, Study Areas, 1998

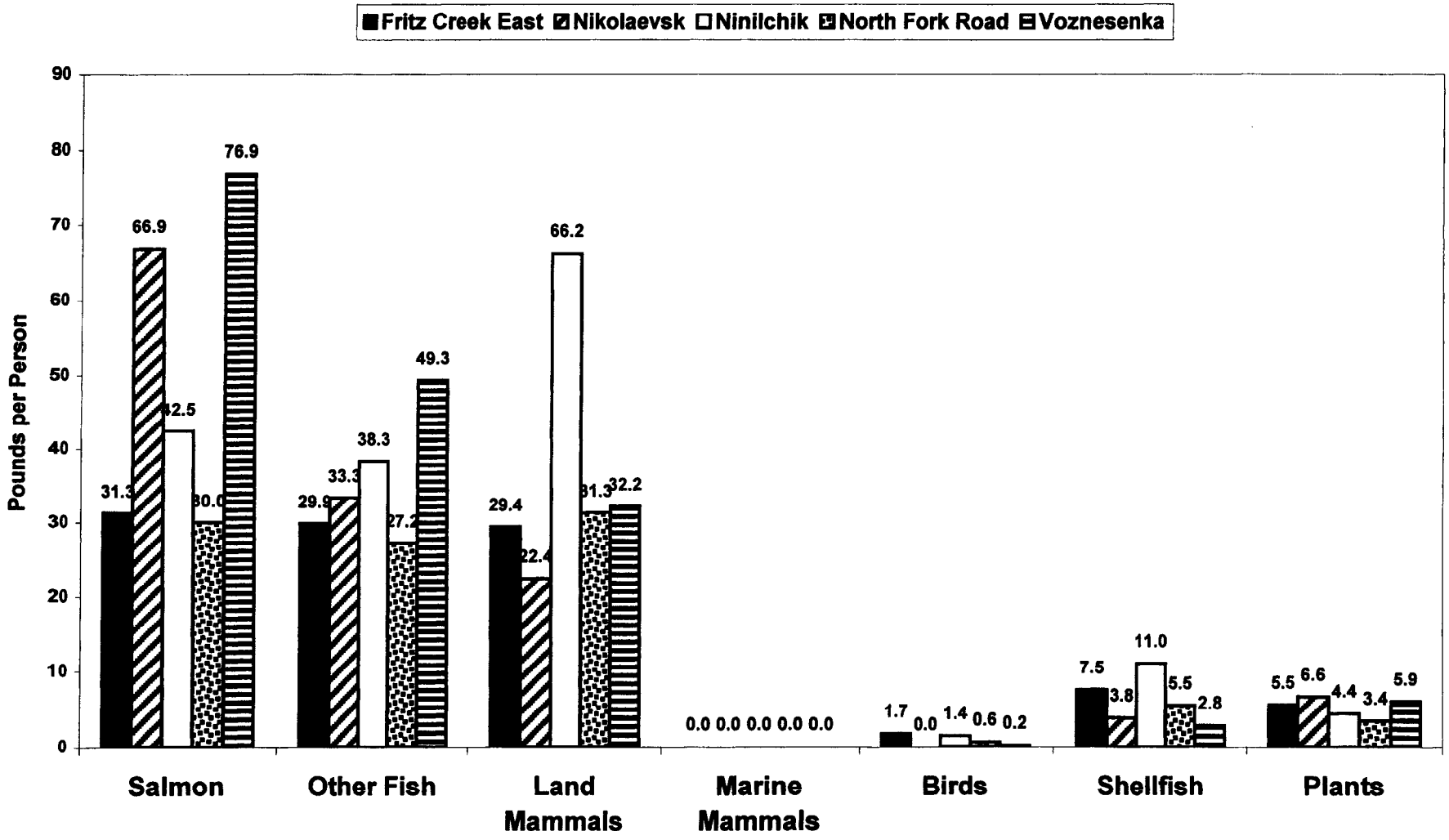
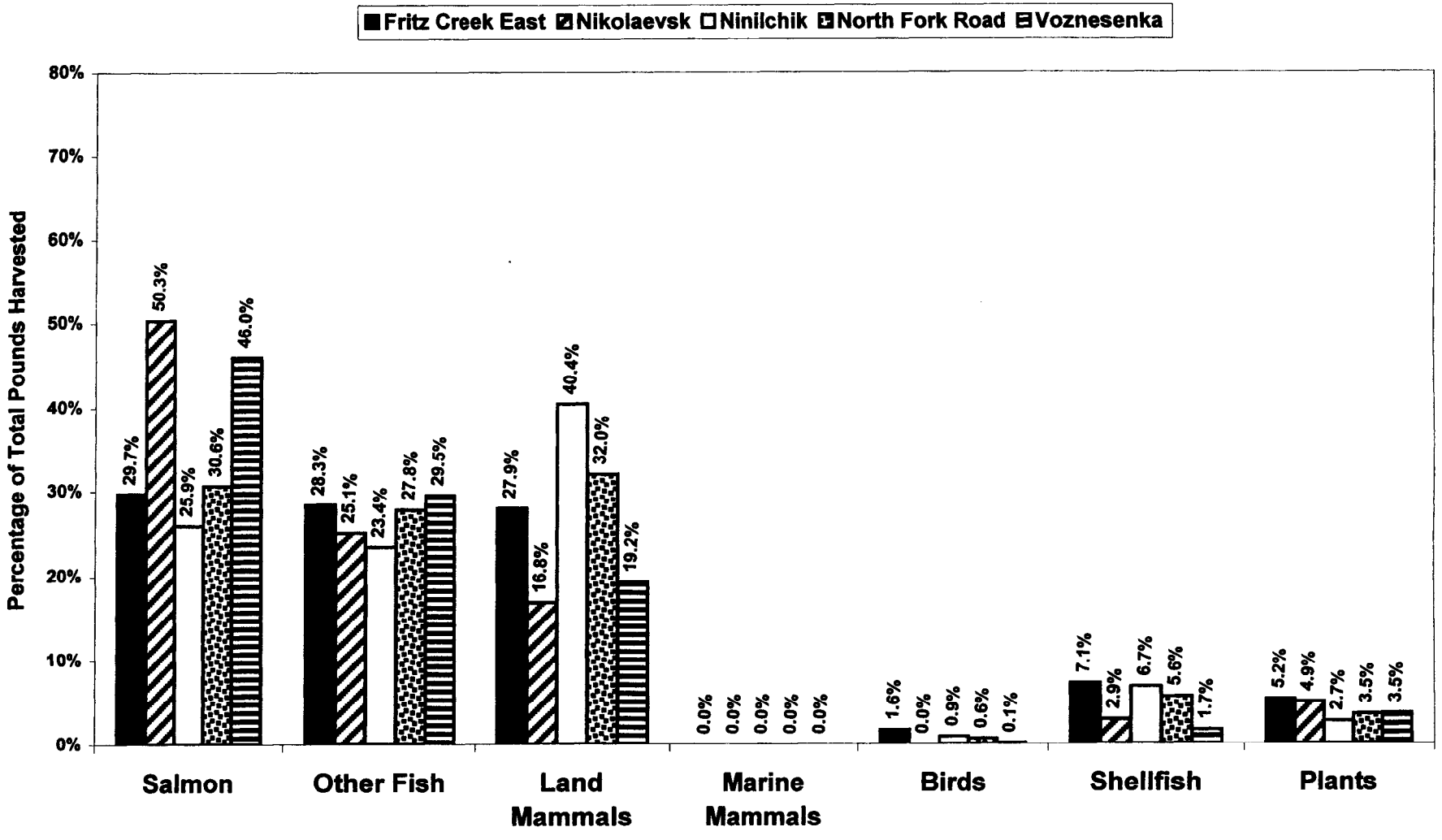


Figure 24. Composition of Harvests for Home Use by Resource Category, Study Areas, 1998



Households estimated the percentage of their use of meat, fish, and poultry in 1998 that derived from wild resources. As reported in Table 46, in all the study communities but Voznesenka, the largest percentage of households estimated that between 1 percent and 25 percent of their meat supply came from wild foods. In Voznesenka, an equal percentage estimated 1 to 25 percent and 26 to 50 percent. For the most part, harvests of resources (as estimated in pounds per person) increased along with households' estimates of the percentage of wild foods in their diets. For example, in Fritz Creek East, households which estimated that 1 to 25 percent of their meat supply derived from wild foods averaged a harvest of 43.8 pounds per person, while those estimating a range of 51 percent to 75 percent averaged a harvest of 100.4 pounds. It should be noted, however, that use includes resources that are harvested by a household as well as those received. This most likely accounts for cases, such as in Voznesenka, where households with high levels of use had relatively low harvests.

Table 46. Households' Estimates of the Percentage of Meat, Fish, and Poultry from Wild Resources, Study Areas, 1998

	Fritz Creek East		Nikolaevsk		Ninilchik		North Fork Road		Voznesenka	
	% of HHs	lbs/person	% of HHs	lbs/person	% of HHs	lbs/person	% of HHs	lbs/person	% of HHs	lbs/person
None	1.5%	3.9	0.0%		2.0%	3.6	5.2%	0.0	0.0%	
1% to 25%	43.1%	43.8	51.4%	78.2	46.5%	49.9	50.0%	26.7	38.9%	104.2
26% to 50%	18.5%	73.0	21.6%	157.4	19.8%	190.5	22.4%	160.1	38.9%	57.7
51% to 75%	13.8%	100.4	18.9%	221.6	16.8%	345.6	6.9%	53.4	5.6%	62.8
76% to 99%	21.5%	258.9	8.1%	186.6	14.9%	375.0	15.5%	295.8	16.7%	506.5
100%	1.5%	272.5	0.0%		0.0%		0.0%		0.0%	

COMMERCIAL FISHERIES AS A SOURCE OF RESOURCES FOR HOME USE

In each study community, some households removed resources from their commercial harvests for their own use or to share with other households. Study findings regarding the amount of resources removed from commercial harvests are presented in Table 47 through Table 51. As expressed in pounds usable weight and as a percentage of the total harvest for home use, commercial harvests were most significant as a source of resources for home use in Nikolaevsk and Voznesenka (Fig. 25). In Nikolaevsk, commercial removal contributed 56.0 pounds per person, for 42.1 percent of the community's total harvest. Removal from commercial harvest provided 51.7 percent of the salmon harvested at Nikolaevsk and 64.1 percent of the other fish. It was the most important source of chum salmon (95.8 percent of the total harvest), coho salmon (73.4 percent), pink salmon (84.6 percent), Pacific cod (100 percent), greenling (100 percent), halibut (67.7 percent), rockfish (98.5 percent), and sable fish (100 percent) (Table 48). At Voznesenka, commercial removal provided 78.0 pounds of resource per person for home use, 46.6 percent of the total community harvest (Fig. 24, Table 51). It provided 46.2 percent of the

Table 47. Estimated Amount of Resources Removed From Commercial Harvests, Fritz Creek East, 1998

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		1,712.86	5.32	3.75
Fish		1,386.78	5.23	3.03
Salmon	136.15	711.09	5.24	1.56
Chum Salmon	23.08	124.62	66.67	0.27
Chinook Salmon	11.54	178.85	5.62	0.39
Sockeye Salmon	73.85	288.00	5.83	0.63
Unknown Salmon	27.69	119.63	66.67	0.26
Non-Salmon Fish		675.69	5.22	1.48
Cod	13.85	44.31	11.03	0.10
Pacific Cod	13.85	44.31	13.64	0.10
Halibut	32.42	531.69	4.95	1.16
Rockfish	9.23	13.85	2.25	0.03
Black Rockfish	9.23	13.85	4.55	0.03
Sablefish	27.69	85.85	100.00	0.19
Marine Invertebrates		326.08	9.98	0.71
Crabs	141.77	326.08	18.37	0.71
King Crab	141.77	326.08	95.34	0.71
Unknown King Crab	141.77	326.08	95.34	0.71

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 48. Estimated Amount of Resources Removed From Commercial Harvests, Nikolaevsk, 1998

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		13,153.89	50.60	42.08
Fish		13,147.68	55.81	42.06
Salmon	1,625.68	8,124.73	51.67	25.99
Chum Salmon	337.84	1,824.32	95.79	5.84
Coho Salmon	578.38	3,007.57	73.41	9.62
Chinook Salmon	63.51	984.46	33.57	3.15
Pink Salmon	140.54	337.30	84.55	1.08
Sockeye Salmon	505.41	1,971.08	31.48	6.30
Non-Salmon Fish		5,022.95	64.11	16.07
Cod	40.54	129.73	100.00	0.41
Pacific Cod	40.54	129.73	100.00	0.41
Greenling	45.95	183.78	100.00	0.59
Lingcod	45.95	183.78	100.00	0.59
Halibut	174.77	2,866.22	67.74	9.17
Rockfish	574.32	1,578.76	98.49	5.05
Black Rockfish	283.78	425.68	95.45	1.36
Red Rockfish	282.43	1,129.73	100.00	3.61
Unknown Rockfish	8.11	23.35	85.71	0.07
Sablefish	85.31	264.46	100.00	0.85
Marine Invertebrates		6.22	0.70	0.02
Crabs	2.70	6.22	0.90	0.02
King Crab	2.70	6.22	100.00	0.02
Unknown King Crab	2.70	6.22	100.00	0.02

Table 49. Estimated Resources Removed From Commercial Harvest, Ninilchik, 1998

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		14,657.03	14.20	8.34
Fish		14,657.03	16.91	8.34
Salmon	2,140.67	10,106.53	22.18	5.75
Chum Salmon	310.96	1,679.21	71.05	0.96
Coho Salmon	340.59	1,771.09	14.96	1.01
Chinook Salmon	150.50	2,332.67	20.88	1.33
Pink Salmon	598.02	1,435.25	65.37	0.82
Sockeye Salmon	740.59	2,888.32	16.08	1.64
Non-Salmon Fish		4,550.50	11.07	2.59
Herring	99.01 gal	594.06	100.00	0.34
Cod	508.66	1,627.72	71.98	0.93
Pacific Cod	508.66	1,627.72	71.98	0.93
Flounder	35.64	106.93	13.43	0.06
Unknown Flounder	35.64	106.93	100.00	0.06
Greenling	59.41	237.62	52.17	0.14
Lingcod	59.41	237.62	62.50	0.14
Halibut	108.67	1,782.18	5.23	1.01
Rockfish	55.45	162.38	30.94	0.09
Black Rockfish	23.76	35.64	11.76	0.02
Red Rockfish	31.68	126.73	57.14	0.07
Sole	39.60	39.60	16.67	0.02
Unknown Sole	39.60	39.60	16.67	0.02

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 50. Estimated Resources Removed From Commercial Harvest, North Fork Road, 1998

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		274.33	0.89	0.60
Fish		274.33	1.03	0.60
Salmon	45.79	193.48	1.38	0.42
Coho Salmon	11.45	59.53	1.12	0.13
Sockeye Salmon	34.34	133.94	3.22	0.29
Non-Salmon Fish		80.85	0.64	0.18
Herring	5.72 gal	34.34	100.00	0.08
Smelt	14.31 gal	46.51	100.00	0.10
Unknown Smelt	14.31 gal	46.51	100.00	0.10

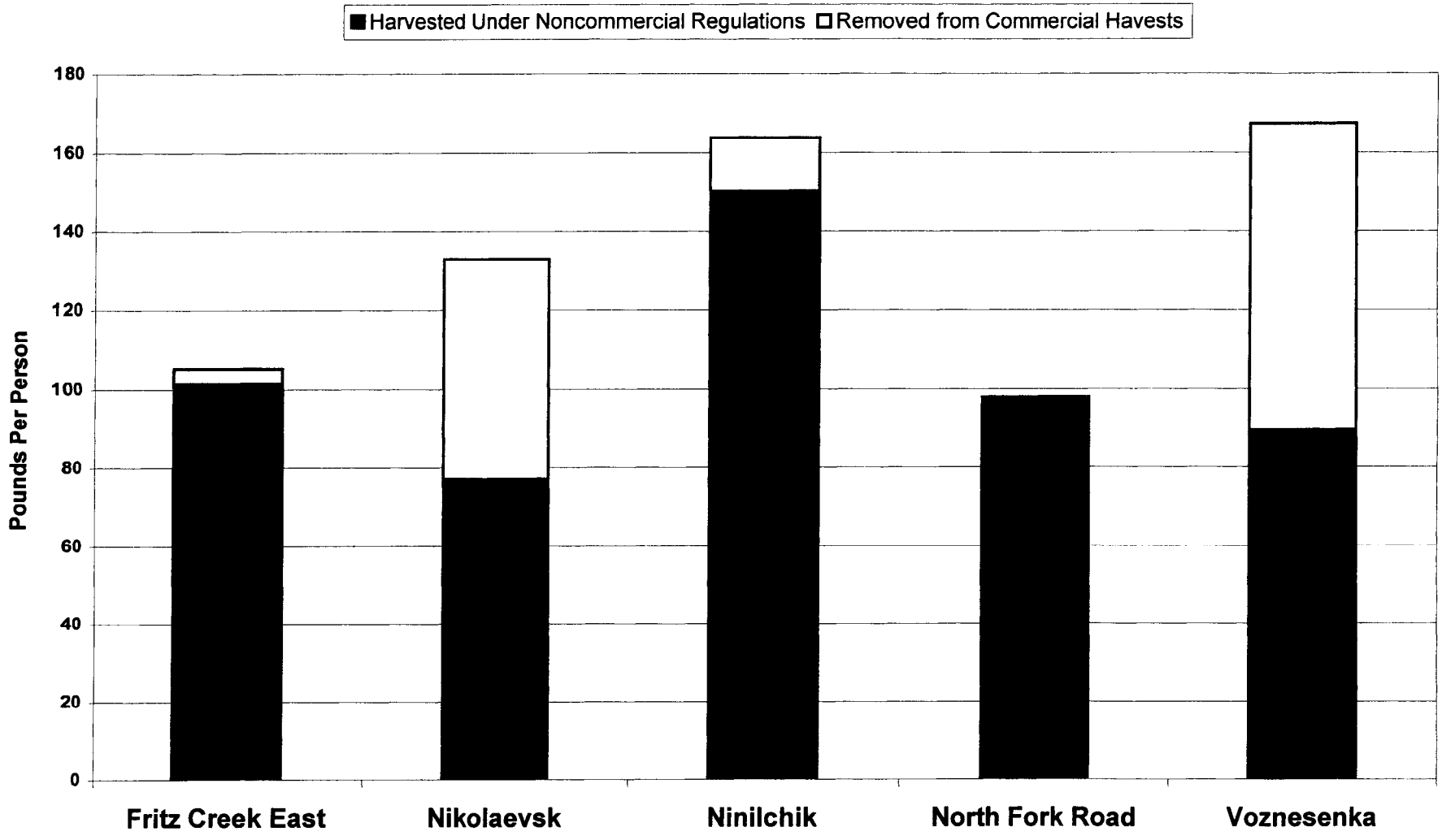
SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 51. Estimated Resources Removed From Commercial Harvest, Vozesenka, 1998

Resource	Removed From Catch		Percent of	
	Amount	Pounds	Species Harvest (lbs)	Community Harvest (lbs)
All Resources		25,521.27	57.78	46.60
Fish		24,625.71	59.60	44.97
Salmon	2,497.05	11,624.66	46.17	21.23
Chum Salmon	471.89	2,548.20	100.00	4.65
Coho Salmon	775.00	4,030.00	40.54	7.36
Chinook Salmon	37.89	587.28	16.67	1.07
Pink Salmon	179.11	429.87	72.22	0.78
Sockeye Salmon	1,033.16	4,029.31	47.02	7.36
Non-Salmon Fish		13,001.06	80.53	23.74
Herring	55.11 gal	330.67	100.00	0.60
Cod	683.51	2,187.22	79.87	3.99
Pacific Cod (gray)	683.51	2,187.22	79.87	3.99
Halibut	324.70	5,325.11	91.10	9.72
Rockfish	1,128.63	4,257.33	91.49	7.77
Red Rockfish	899.00	3,596.00	100.00	6.57
Unknown Rockfish	229.63	661.33	100.00	1.21
Sablefish	290.56	900.72	100.00	1.64
Marine Invertebrates		895.56	98.86	1.64
Crabs	389.37	895.56	100.00	1.64
King Crab	389.37	895.56	100.00	1.64
Unknown King Crab	389.37	895.56	100.00	1.64

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Figure 25. Harvests for Home Use Removed from Commercial Catches and from Other Sources, Study Areas, 1998



salmon harvest and 80.5 percent of the other fish. Commercial removal was the primary source of chum salmon (100 percent), pink salmon (72.2 percent), herring (100 percent), Pacific cod (79.9 percent), halibut (91.1 percent), rockfish (91.5 percent), and sablefish (100 percent) at Voznesenka.

At Ninilchik, removal from commercial fisheries provided 13.7 pounds of resources for home use per person, 8.3 percent of the community total (Table 49, Fig. 24). It provided 22.2 percent of the salmon harvest and11.1 percent of other fish, including most of the harvest of chum salmon (71.1 percent), pink salmon (65.4 percent), herring (100 percent), Pacific cod (72.0 percent), and lingcod (62.5 percent). Unlike at Nikolaevsk and Voznesenka, commercial harvests were not a significant source of halibut at Ninilchik (just 5.2 percent).

Commercial fisheries removal contributed 3.8 percent of the total harvest for home use at Fritz Creek East at 3.9 pounds per person, including 5.2 percent of the salmon, 5.2 percent of the other fish, and 10.0 percent of the marine invertebrates. Resources removed in the largest quantities including halibut (for 5.0 percent of the total) and king crab (95.3 percent of the total) (Table 47). At North Fork Road, commercial removal was relatively minor at 0.6 pounds per person and just 0.6 percent of the total harvest (Table 50).

LOCATIONS OF HUNTING, FISHING, AND GATHERING ACTIVITIES IN 1998

Households were asked to indicate the locations of their fishing activities in the 1998 study year within specific areas of the Kenai Peninsula and Cook Inlet. Figure 26 shows how Game Management Units 15 and 7 and the adjacent marine waters were divided into 11 areas for purposes of recording fishing and hunting data. Location data were collected for salmon (Table 52), other fish (Table 53), steelhead trout (Table 54), and marine invertebrates (Table 55). Areas fished outside the Kenai Peninsula and Cook Inlet were also recorded; these are reported for salmon (Table 56), other fish (Table 57), and marine invertebrates (Table 58). In 1998, no areas outside the Kenai Peninsula were used to fish for steelhead.

For land mammals, households were asked to indicate both areas hunted and areas of successful harvest in 1998. The same general areas were used to record data for hunting as were used for fishing locations. Location data were collected for moose (Table 59), caribou (Table 60), Dall sheep (Table 61), mountain goat (Table 62), black bear (Table 63), and brown bear (Table 64). Table 65, Table 66, and Table 67 report hunting and harvest areas outside the Kenai Peninsula game management units for moose, caribou, and brown bear respectively. No non-Kenai Peninsula areas were used to hunt Dall sheep, mountain goats, or black bear in 1998. Data presented in these tables are discussed in the sections on particular resource categories, below.

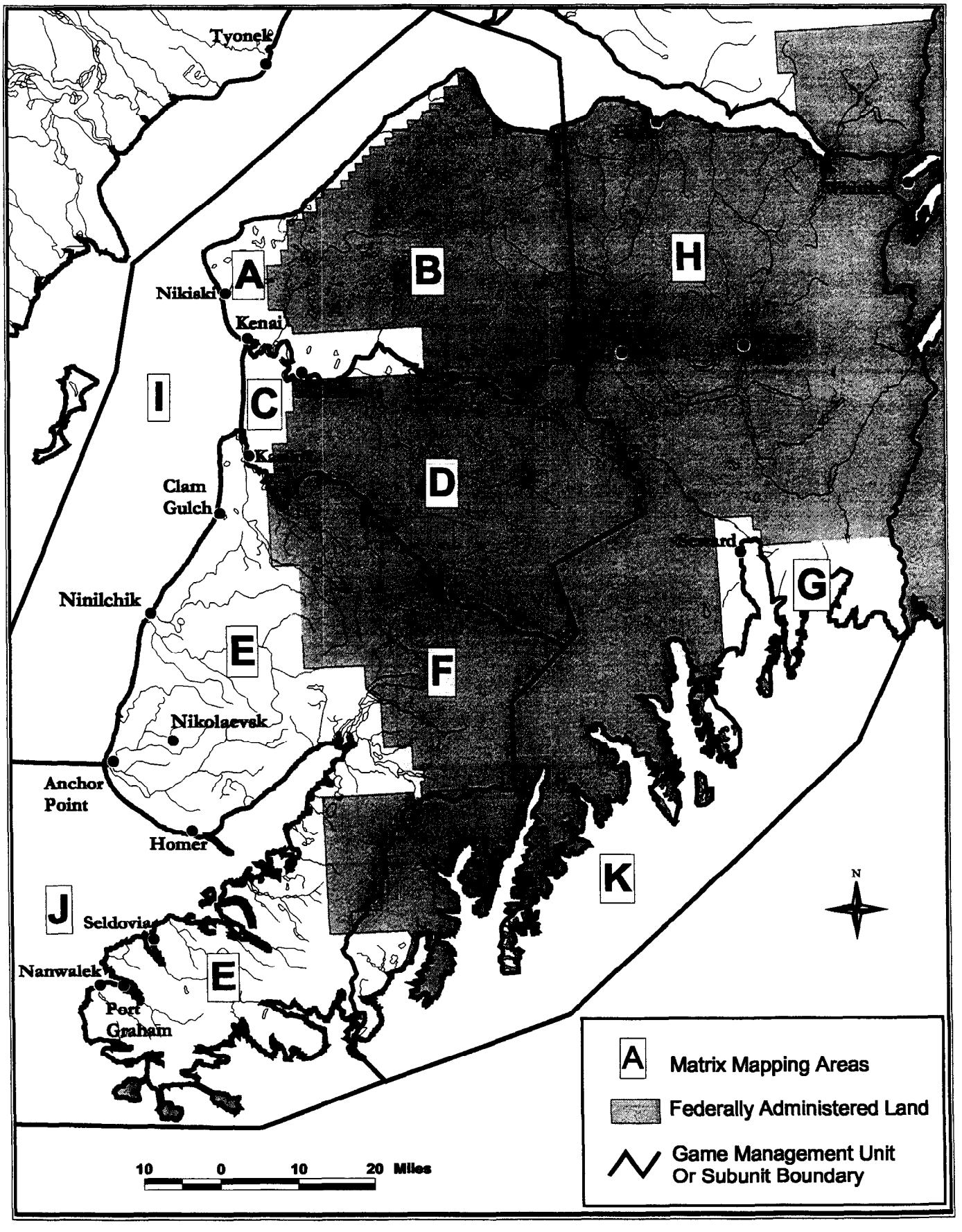


Figure 26. Location of matrix mapping areas for 1998 activities.

Table 52. Percentage of Households Using Various GMUs to Harvest Salmon, Study Areas, 1998.

Community	Total Sampled Households	Location of Reported Harvest											
		A	B	C	D	E	F	G	H	I	J	K	
		GMU 15A: non-Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non-Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non-Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	Upper Cook Inlet Area Marine Waters	Lower Cook Inlet Area Kenai Coast	Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	9.2%	0.0%	10.8%	0.0%	26.2%	0.0%	0.0%	0.0%	13.8%	52.3%	1.5%	6.2%
Nikolaevsk	37	32.4%	0.0%	16.2%	0.0%	43.2%	0.0%	0.0%	0.0%	2.7%	18.9%	0.0%	8.1%
Ninilchik	101	9.9%	2.0%	15.8%	3.0%	40.6%	0.0%	1.0%	2.0%	40.6%	5.0%	2.0%	2.0%
North Fork	58	10.3%	1.7%	10.3%	1.7%	41.4%	0.0%	0.0%	0.0%	6.9%	19.0%	1.7%	6.9%
Voznesenka	18	0.0%	0.0%	5.6%	0.0%	16.7%	0.0%	0.0%	0.0%	5.6%	61.1%	0.0%	22.2%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 53. Percentage of Households Using Various GMUs to Harvest Fish Other than Salmon, Study Areas, 1998.

Community	Total Sampled Households	Location of Reported Harvest											
		A	B	C	D	E	F	G	H	I	J	K	
		GMU 15A: non-Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non-Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non-Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	Upper Cook Inlet Area Marine Waters	Lower Cook Inlet Area Kenai Coast	Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	3.1%	1.5%	0.0%	0.0%	13.8%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	3.1%
Nikolaevsk	37	5.4%	0.0%	2.7%	0.0%	18.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.8%
Ninilchik	101	0.0%	0.0%	0.0%	1.0%	14.9%	2.0%	1.0%	1.0%	3.0%	0.0%	0.0%	3.0%
North Fork	58	1.7%	1.7%	0.0%	1.7%	20.7%	0.0%	0.0%	1.7%	0.0%	1.7%	0.0%	6.9%
Voznesenka	18	0.0%	0.0%	5.6%	5.6%	22.2%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	22.2%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 54. Percentage of Households Using Various GMUs to Harvest Steelhead Trout, Study Areas, 1998.

Community	Total Sampled Households	Location of Reported Harvest											
		A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area Kenai Coast	K Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nikolaevsk	37	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
North Fork	58	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Voznesenka	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 55. Percentage of Households Using Various GMUs to Harvest Marine Invertebrates, Study Areas, 1998.

Community	Total Sampled Households	Location of Reported Harvest											
		A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area Kenai Coast	K Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	0.0%	0.0%	0.0%	0.0%	33.8%	0.0%	0.0%	0.0%	3.1%	16.9%	0.0%	3.1%
Nikolaevsk	37	0.0%	0.0%	1.7%	1.7%	46.6%	0.0%	0.0%	0.0%	0.0%	6.9%	0.0%	3.4%
Ninilchik	101	0.0%	0.0%	0.0%	0.0%	54.5%	0.0%	0.0%	0.0%	4.0%	5.9%	0.0%	1.0%
North Fork	58	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Voznesenka	18	0.0%	0.0%	0.0%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	21.6%	0.0%	2.7%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 56. Percentage of Households Using GMUs Other Than 7 and 15 to Harvest Salmon, Study Areas, 1998.

Community	Total Sampled House-holds	Game Management Unit											
		3	6C	6D	7	8	9E	9Z[1]	10	13C	15	16B	22A
Fritz Creek	65	1.5%	0.0%	1.5%	0.0%	1.5%	0.0%	0.0%	1.5%	0.0%	0.0%	1.5%	1.5%
Nikolaevsk	37	0.0%	2.7%	2.7%	0.0%	0.0%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
North Fork	58	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	1.7%	0.0%	1.7%
Voznesenka	18	0.0%	0.0%	5.6%	0.0%	0.0%	11.1%	5.6%	11.1%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

[1] Z indicates location within the GMU subunit was not specified.

Table 57. Percentage of HouseholdsUsing GMUs Other Than 7 and 15 to Harvest Fish Other than Salmon, Study Areas, 1998.

Community	Total Sampled House-holds	Game Management Unit										
		3	6C	6D	8	9E	9Z[1]	10	13C	15	16B	22A
Fritz Creek	65	1.5%	0.0%	1.5%	1.5%	0.0%	0.0%	1.5%	0.0%	0.0%	1.5%	1.5%
Nikolaevsk	37	0.0%	2.7%	2.7%	0.0%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%
North Fork	58	0.0%	0.0%	1.7%	0.0%	0.0%	1.7%	0.0%	0.0%	1.7%	0.0%	1.7%
Voznesenka	18	0.0%	0.0%	5.6%	0.0%	11.1%	5.6%	11.1%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

[1] Z indicates location within the GMU subunit was not specified.

Table 58. Percentage of Households Using GMUs Other Than 7 and 15 to Harvest Marine Invertebrates, Study Areas, 1998.

Community	Total Sampled House-holds	Game Management Unit					
		1D	3	6D	8	9A	10
Fritz Creek	65	0.0%	1.5%	0.0%	1.5%	0.0%	0.0%
Nikolaevsk	37	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%
Ninilchik	101	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
North Fork	58	1.7%	0.0%	1.7%	0.0%	0.0%	0.0%
Voznesenka	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 59. Percentage of Households Using Various GMUs to Harvest Moose, Study Areas, 1998.

Community	Total Sampled Households	Activity	Location of Reported Harvest											
			A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area Kenai Coast	K Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	Hunt	1.5%	0.0%	0.0%	0.0%	18.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%
		Harvest	0.0%	0.0%	0.0%	0.0%	6.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nikaolaevsk	37	Hunt	0.0%	0.0%	0.0%	2.7%	32.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	Hunt	1.0%	0.0%	0.0%	1.0%	40.6%	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%
		Harvest	0.0%	0.0%	0.0%	1.0%	14.9%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%
North Fork	58	Hunt	1.7%	0.0%	0.0%	1.7%	27.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%
		Harvest	0.0%	0.0%	0.0%	0.0%	5.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%
Voznesenka	18	Hunt	0.0%	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 60. Percentage of Households Using Various GMUs to Harvest Caribou, Study Areas, 1998.

Community	Total Sampled Households	Activity	Location of Reported Harvest											
			A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area Kenai Coast	K Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%
Nikaolaevsk	37	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.8%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.1%
Ninilchik	101	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%
North Fork	58	Hunt	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.9%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.9%
Voznesenka	18	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 61. Percentage of Households Using Various GMUs to Harvest Dall Sheep, Study Areas, 1998.

Community	Total Sampled Households	Activity	Location of Reported Harvest											
			A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area Kenai Coast	K Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nikaolaevsk	37	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	Hunt	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
North Fork	58	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Voznesenka	18	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 62. Percentage of Households Using Various GMUs to Harvest Mountain Goat, Study Areas, 1998.

Community	Total Sampled Households	Activity	Location of Reported Harvest											
			A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area *Kenai* Coast	K Resurrection Bay / Outer *Kenai Coast*	Other
Fritz Creek	65	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nikaolaevsk	37	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	Hunt	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
North Fork	58	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Voznesenka	18	Hunt	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 63. Percentage of Households Using Various GMUs to Harvest Black Bear, Study Areas, 1998.

			Location of Reported Harvest											
			A	B	C	D	E	F	G	H	I	J	K	
Community	Total Sampled Households	Activity	GMU 15A: non-Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non-Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non-Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	Upper Cook Inlet Area Marine Waters	Lower Cook Inlet Area Kenai Coast	Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	Hunt	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%
		Harvest	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%
Nikaolaevsk	37	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	Hunt	0.0%	0.0%	0.0%	1.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
North Fork	58	Hunt	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
		Harvest	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Voznesenka	18	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 64. Percentage of Households Using Various GMUs to Harvest Brown Bear, Study Areas, 1998.

Community	Total Sampled Households	Activity	Location of Reported Harvest											
			A GMU 15A: non-Kenai Peninsula Wildlife Refuge	B GMU 15A: Kenai Peninsula Wildlife Refuge	C GMU 15B: non-Kenai Peninsula Wildlife Refuge	D GMU 15B: Kenai Peninsula Wildlife Refuge	E GMU 15C: non-Kenai Peninsula Wildlife Refuge	F GMU 15C: Kenai Peninsula Wildlife Refuge	G GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	H GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	I Upper Cook Inlet Area Marine Waters	J Lower Cook Inlet Area Kenai Coast	K Resurrection Bay / Outer Kenai Coast	Other
Fritz Creek	65	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nikaolaevsk	37	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	Hunt	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
North Fork	58	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Voznesenka	18	Hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

Table 65. Percentage of Households Using GMUs Other Than 7 and 15 to Hunt for or Harvest Moose, Study Areas, 1998.

Community	Total Sampled House-holds	Activity	Game Management Unit							
			6C	9	13C	14A	16A	20A	21D	21Z[1]
Fritz Creek	65	hunt	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nikolaevsk	37	hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	hunt	0.0%	0.0%	1.0%	0.0%	1.0%	1.0%	0.0%	1.0%
		harvest	0.0%	0.0%	1.0%	0.0%	0.0%	1.0%	0.0%	1.0%
North Fork	58	hunt	1.7%	0.0%	0.0%	1.7%	0.0%	0.0%	1.7%	0.0%
		harvest	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	1.7%	0.0%
Voznesenka	18	hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

[1] Z indicates location within the GMU subunit was not specified.

Table 66. Percentage of Households Using GMUs Other Than 7 and 15 to Hunt for or Harvest Caribou, Study Areas, 1998.

Community	Total Sampled House-holds	Activity	Game Management Unit										
			7	8 [2]	9B	9E	12	13E	13Z[1]	17B	17	19A	22A
Fritz Creek	65	hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.5%	0.0%	0.0%
		harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.5%	0.0%	0.0%
Nikolaevsk	37	hunt	2.7%	2.7%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		harvest	0.0%	2.7%	0.0%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ninilchik	101	hunt	0.0%	0.0%	4.0%	0.0%	1.0%	1.0%	0.0%	0.0%	0.0%	1.0%	0.0%
		harvest	0.0%	0.0%	4.0%	0.0%	1.0%	1.0%	0.0%	0.0%	0.0%	1.0%	0.0%
North Fork	58	hunt	0.0%	0.0%	1.7%	1.7%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	1.7%
		harvest	0.0%	0.0%	1.7%	1.7%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	1.7%
Voznesenka	18	hunt	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		harvest	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

[1] Z indicates location within the GMU subunit was not specified.

[2] There are no caribou herds in GMU 8 (Kodiak Island). The indicated harvest likely refers to feral reindeer.

Table 67. Percentage of Households Using GMUs Other Than 7 and 15 to Hunt for or Harvest Brown Bear, Study Areas, 1998.

Community	Total Sampled House-holds	Activity	Game Management Unit 13C
Fritz Creek	65	hunt	0.0%
		harvest	0.0%
Nikolaevsk	37	hunt	0.0%
		harvest	0.0%
Ninilchik	101	hunt	1.0%
		harvest	0.0%
North Fork	58	hunt	0.0%
		harvest	0.0%
Voznesenka	18	hunt	0.0%
		harvest	0.0%

Source: Alaska Department of Fish and Game, Division of Subsistence, Household Surveys, 1999.

SALMON

Salmon was a core resource used in each study community in 1998. At estimated in pounds usable weight, salmon ranked first among resource categories in Nikolaevsk (66.9 pounds per person, 50.3 percent of the total harvest), Voznesenka (76.9 pounds per person, 46.0 percent), North Fork Road (30.0 pounds per person, 30.6 percent), and Fritz Creek East (31.3 pounds per person, 29.7 percent). In Ninilchik, salmon ranked second to land mammals, at 42.5 pounds per person (25.9 percent of the total harvest) (Fig. 23, Fig. 24).

Few households in any study community fished for salmon in waters within the general boundaries of the Kenai National Wildlife Refuge or the Chugach National Forest (Table 52). Waters outside these federal unit boundaries in the northern, central, and southern Kenai Peninsula were fished by households from each community, except that no Voznesenka households fished the waters of GMU 15A. Households from each community also used the marine waters of upper and lower Cook Inlet for salmon fishing, but few fished the waters of the outer Kenai Peninsula Coast or Resurrection Bay. Only in Voznesenka did more than 10 percent of the sampled households fish for salmon in other parts of the state (Table 56). These were commercial fisheries from which households removed salmon for home use.

Table 68 through Table 72 report estimated salmon harvests by gear type and species for each study community; Table 73 through Table 77 report the percentage of the salmon harvest in each community by species and gear type.[1] Concerning gear type, two community patterns emerged (Fig. 27). In North Fork Road, Fritz Creek East, and Ninilchik, rod and reel harvests provided the largest number of salmon for home use, with personal use fisheries second. Although removal from commercial fisheries provided about 24 percent of the salmon for home use at Ninilchik, this was a relatively minor source of salmon at Fritz Creek East (5.0 percent) and North Fork Road (1.9 percent).

A second pattern characterized Nikolaevsk and Voznesenka, where commercial removal was the major source of salmon for home use, contributing 51.0 percent and 49.4 percent of the salmon, respectively (Fig. 27). At Nikolaevsk, personal use fisheries were also important (35.0 percent) and rod and reel harvests less so (14.0 percent). At Voznesenka, contributions by rod and reel harvests and personal use fisheries contributed about equally (26.5 percent and 24.1 percent respectively).

As estimated in numbers of fish, sockeye salmon were harvested in the largest quantities in each study community, ranging between 44.0 percent of the total salmon harvest at North Fork Road to 51.3 percent at Ninilchik. In each study community, coho ranked second, with a range of 24.7 percent of the salmon harvest at Nikolaevsk to 42.2 percent at North Fork Road (Fig. 28). Because of their large size,

[1] Fish harvested in non-commercial fisheries other than rod and reel fisheries are labeled "personal use" in these tables and figures and in the discussion that follows. In the household surveys, all harvest data were collected by gear type but not by location of the fishery. But, as noted, very few households participated in noncommerical fisheries in portions of the state outside the Kenai Peninsula and Cook Inlet. Thus a very large portion of the salmon harvest using noncommerical nets occurred under the personal use regulations in place for Kenai Peninsula/Cook Inlet waters, not under subsistence regulations in place outside the nonsubsistence area.

Table 68. Estimated Salmon Harvest by Gear Type, Fritz Creek East, 1998

		Personal Use Methods						Removed from Commercial Catch		Rod and Reel		Icefish		Any Method	
		Set Net		Dip Net		Personal Use Gear Any Method									
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	198.46	1.32	976.15	6.51	1,174.62	7.83	136.15	0.91	1,398.46	9.32	9.23	0.06	2,718.46	18.12
	pounds	910.15	6.07	3,768.92	25.13	4,679.08	31.19	711.09	4.74	8,163.74	54.42	22.38	0.15	13,576.29	90.51
Chum Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	23.08	0.15	11.54	0.08	0.00	0.00	34.62	0.23
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	124.62	0.83	62.31	0.42	0.00	0.00	186.92	1.25
Coho Salmon	numbers	101.54	0.68	0.00	0.00	101.54	0.68	0.00	0.00	717.69	4.78	2.31	0.02	821.54	5.48
	pounds	528.00	3.52	0.00	0.00	528.00	3.52	0.00	0.00	3,732.00	24.88	12.00	0.08	4,272.00	28.48
Chinook Salmon	numbers	6.92	0.05	0.00	0.00	6.92	0.05	11.54	0.08	186.92	1.25	0.00	0.00	205.38	1.37
	pounds	107.31	0.72	0.00	0.00	107.31	0.72	178.85	1.19	2,897.31	19.32	0.00	0.00	3,183.46	21.22
Pink Salmon	numbers	50.77	0.34	25.38	0.17	76.15	0.51	0.00	0.00	246.92	1.65	0.00	0.00	323.08	2.15
	pounds	121.85	0.81	60.92	0.41	182.77	1.22	0.00	0.00	592.62	3.95	0.00	0.00	775.38	5.17
Sockeye Salmon	numbers	39.23	0.26	950.77	6.34	990.00	6.60	73.85	0.49	203.08	1.35	0.00	0.00	1,266.92	8.45
	pounds	153.00	1.02	3,708.00	24.72	3,861.00	25.74	288.00	1.92	792.00	5.28	0.00	0.00	4,941.00	32.94
Landlocked Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.46	0.12	6.92	0.05	25.38	0.17
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.69	0.18	10.38	0.07	38.08	0.25
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	27.69	0.18	13.85	0.09	0.00	0.00	41.54	0.28
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	119.63	0.80	59.82	0.40	0.00	0.00	179.45	1.20

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 69. Estimated Salmon Harvest by Gear Type, Nikolaevsk, 1998

		Personal Use Methods						Removed from Commercial Catch		Rod and Reel		Icefish		Any Method	
		Set Net		Dip Net		Personal Use Gear Any Method									
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	85.14	1.70	1,029.73	20.59	1,114.86	22.30	1,625.68	32.51	406.76	8.14	40.54	0.81	3,187.84	63.76
	pounds	764.19	15.28	4,050.95	81.02	4,815.14	96.30	8,124.73	162.49	2,722.84	54.46	60.81	1.22	15,723.51	314.47
Chum Salmon	numbers	8.11	0.16	0.00	0.00	8.11	0.16	337.84	6.76	6.76	0.14	0.00	0.00	352.70	7.05
	pounds	43.78	0.88	0.00	0.00	43.78	0.88	1,824.32	36.49	36.49	0.73	0.00	0.00	1,904.59	38.09
Coho Salmon	numbers	16.22	0.32	14.86	0.30	31.08	0.62	578.38	11.57	178.38	3.57	0.00	0.00	787.84	15.76
	pounds	84.32	1.69	77.30	1.55	161.62	3.23	3,007.57	60.15	927.57	18.55	0.00	0.00	4,096.76	81.94
Chinook Salmon	numbers	36.49	0.73	1.35	0.03	37.84	0.76	63.51	1.27	87.84	1.76	0.00	0.00	189.19	3.78
	pounds	565.54	11.31	20.95	0.42	586.49	11.73	984.46	19.69	1,361.49	27.23	0.00	0.00	2,932.43	58.65
Pink Salmon	numbers	16.22	0.32	0.00	0.00	16.22	0.32	140.54	2.81	9.46	0.19	0.00	0.00	166.22	3.32
	pounds	38.92	0.78	0.00	0.00	38.92	0.78	337.30	6.75	22.70	0.45	0.00	0.00	398.92	7.98
Sockeye Salmon	numbers	8.11	0.16	1,013.51	20.27	1,021.62	20.43	505.41	10.11	78.38	1.57	0.00	0.00	1,605.41	32.11
	pounds	31.62	0.63	3,952.70	79.05	3,984.32	79.69	1,971.08	39.42	305.68	6.11	0.00	0.00	6,261.08	125.22
Landlocked Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.95	0.92	40.54	0.81	86.49	1.73
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.92	1.38	60.81	1.22	129.73	2.59
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 70. Estimated Salmon Harvest by Gear Type, Ninilchik, 1998

		Personal Use Methods								Removed from Commercial Catch		Rod and Reel		Icefish		Any Method	
		Set Net		Dip Net		Fish Wheel		Personal Use Gear Any Method									
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	1,552.48	3.88	1,568.32	3.92	198.02	0.50	3,318.81	8.30	2,140.67	5.35	3,504.95	8.76	7.92	0.02	8,972.35	22.43
	pounds	7,700.59	19.25	6,278.02	15.70	772.28	1.93	14,750.89	36.88	10,106.53	25.27	20,690.69	51.73	11.88	0.03	45,560.00	113.90
Chum Salmon	numbers	0.00	0.00	67.33	0.17	0.00	0.00	67.33	0.17	310.96	0.78	59.41	0.15	0.00	0.00	437.70	1.09
	pounds	0.00	0.00	363.56	0.91	0.00	0.00	363.56	0.91	1,679.21	4.20	320.79	0.80	0.00	0.00	2,363.56	5.91
Coho Salmon	numbers	198.02	0.50	7.92	0.02	0.00	0.00	205.94	0.51	340.59	0.85	1,730.69	4.33	0.00	0.00	2,277.23	5.69
	pounds	1,029.70	2.57	41.19	0.10	0.00	0.00	1,070.89	2.68	1,771.09	4.43	8,999.60	22.50	0.00	0.00	11,841.58	29.60
Chinook Salmon	numbers	122.77	0.31	7.92	0.02	0.00	0.00	130.69	0.33	150.50	0.38	439.60	1.10	0.00	0.00	720.79	1.80
	pounds	1,902.97	4.76	122.77	0.31	0.00	0.00	2,025.74	5.06	2,332.67	5.83	6,813.86	17.03	0.00	0.00	11,172.28	27.93
Pink Salmon	numbers	23.76	0.06	27.72	0.07	0.00	0.00	51.49	0.13	598.02	1.50	265.35	0.66	0.00	0.00	914.85	2.29
	pounds	57.03	0.14	66.53	0.17	0.00	0.00	123.56	0.31	1,435.25	3.59	636.83	1.59	0.00	0.00	2,195.64	5.49
Sockeye Salmon	numbers	1,207.92	3.02	1,457.43	3.64	198.02	0.50	2,863.37	7.16	740.59	1.85	1,001.98	2.50	0.00	0.00	4,605.94	11.51
	pounds	4,710.89	11.78	5,683.96	14.21	772.28	1.93	11,167.13	27.92	2,888.32	7.22	3,907.72	9.77	0.00	0.00	17,963.17	44.91
Landlocked Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.92	0.02	7.92	0.02	15.84	0.04
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.88	0.03	11.88	0.03	23.76	0.06
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 71. Estimated Salmon Harvest by Gear Type, North Fork Road, 1998

		Personal Use Methods						Removed from Commercial Catch		Rod and Reel		Any Method	
		Set Net		Dip Net		Personal Use Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	203.21	1.22	615.34	3.71	818.55	4.93	45.79	0.28	1,562.69	9.41	2,427.03	14.62
	pounds	1,091.02	6.57	2,437.05	14.68	3,528.07	21.25	193.48	1.17	10,275.97	61.90	13,997.52	84.32
Chum Salmon	numbers	8.59	0.05	0.00	0.00	8.59	0.05	0.00	0.00	25.76	0.16	34.34	0.21
	pounds	46.37	0.28	0.00	0.00	46.37	0.28	0.00	0.00	139.10	0.84	185.46	1.12
Coho Salmon	numbers	143.10	0.86	28.62	0.17	171.72	1.03	11.45	0.07	841.45	5.07	1,024.62	6.17
	pounds	744.14	4.48	148.83	0.90	892.97	5.38	59.53	0.36	4,375.53	26.36	5,328.03	32.10
Chinook Salmon	numbers	8.59	0.05	0.00	0.00	8.59	0.05	0.00	0.00	266.17	1.60	274.76	1.66
	pounds	133.09	0.80	0.00	0.00	133.09	0.80	0.00	0.00	4,125.67	24.85	4,258.76	25.66
Pink Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.76	0.16	25.76	0.16
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.82	0.37	61.82	0.37
Sockeye Salmon	numbers	42.93	0.26	586.72	3.53	629.66	3.79	34.34	0.21	403.55	2.43	1,067.55	6.43
	pounds	167.43	1.01	2,288.22	13.78	2,455.66	14.79	133.94	0.81	1,573.85	9.48	4,163.45	25.08
Landlocked Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 72. Estimated Salmon Harvest by Gear Type, Voznesenka, 1998

		Personal Use Methods								Removed from Commercial Catch		Rod and Reel		Any Method	
		Set Net		Floating Net		Dip Net		Personal Use Gear Any Method							
	Harvest Units	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Salmon	numbers	310.00	5.00	613.11	9.89	296.22	4.78	1,219.33	19.67	2,497.05	40.27	1,339.89	21.61	5,056.27	81.55
	pounds	1,352.29	21.81	2,511.00	40.50	1,195.22	19.28	5,058.51	81.59	11,624.66	187.49	8,494.34	137.01	25,177.51	406.09
Chum Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	471.89	7.61	0.00	0.00	471.89	7.61
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,548.20	41.10	0.00	0.00	2,548.20	41.10
Coho Salmon	numbers	110.22	1.78	0.00	0.00	0.00	0.00	110.22	1.78	775.00	12.50	1,026.44	16.56	1,911.67	30.83
	pounds	573.16	9.24	0.00	0.00	0.00	0.00	573.16	9.24	4,030.00	65.00	5,337.51	86.09	9,940.67	160.33
Chinook Salmon	numbers	0.00	0.00	10.33	0.17	3.44	0.06	13.78	0.22	37.89	0.61	175.67	2.83	227.33	3.67
	pounds	0.00	0.00	160.17	2.58	53.39	0.86	213.56	3.44	587.28	9.47	2,722.83	43.92	3,523.67	56.83
Pink Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	179.11	2.89	68.89	1.11	248.00	4.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	429.87	6.93	165.33	2.67	595.20	9.60
Sockeye Salmon	numbers	199.78	3.22	602.78	9.72	292.78	4.72	1,095.33	17.67	1,033.16	16.66	68.89	1.11	2,197.38	35.44
	pounds	779.13	12.57	2,350.83	37.92	1,141.83	18.42	4,271.80	68.90	4,029.31	64.99	268.67	4.33	8,569.78	138.22
Unknown Salmon	numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 73. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Fritz Creek East, 1998

Resource	Percent Base	Personal Use Methods: Set Net No.	Set Net Lbs.	Dip Net No.	Dip Net Lbs.	Personal Use Gear Any Method No.	Personal Use Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Ice Fish No.	Ice Fish Lbs.	Any Method No.	Any Method Lbs.
Salmon	geartype	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
	resource	7.30	6.70	35.91	27.76	43.21	34.47	5.01	5.24	51.44	60.13	0.34	0.16		
	total	7.30	6.70	35.91	27.76	43.21	34.47	5.01	5.24	51.44	60.13	0.34	0.16		
Chum Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	16.95	17.52	0.83	0.76	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	66.67	66.67	33.33	33.33	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.92	0.42	0.46	0.00	0.00	1.27	1.38
Coho Salmon	geartype	51.16	58.01	0.00	0.00	8.64	11.28	0.00	0.00	51.32	45.71	25.00	53.61		
	resource	12.36	12.36	0.00	0.00	12.36	12.36	0.00	0.00	87.36	87.36	0.28	0.28		
	total	3.74	3.89	0.00	0.00	3.74	3.89	0.00	0.00	26.40	27.49	0.08	0.09	30.22	31.47
Chinook Salmon	geartype	3.49	11.79	0.00	0.00	0.59	2.29	8.47	25.15	13.37	35.49	0.00	0.00		
	resource	3.37	3.37	0.00	0.00	3.37	3.37	5.62	5.62	91.01	91.01	0.00	0.00		
	total	0.25	0.79	0.00	0.00	0.25	0.79	0.42	1.32	6.88	21.34	0.00	0.00	7.56	23.45
Pink Salmon	geartype	25.58	13.39	2.60	1.62	6.48	3.91	0.00	0.00	17.66	7.26	0.00	0.00		
	resource	15.71	15.71	7.86	7.86	23.57	23.57	0.00	0.00	76.43	76.43	0.00	0.00		
	total	1.87	0.90	0.93	0.45	2.80	1.35	0.00	0.00	9.08	4.37	0.00	0.00	11.88	5.71
Sockeye Salmon	geartype	19.77	16.81	97.40	98.38	84.28	82.52	54.24	40.50	14.52	9.70	0.00	0.00		
	resource	3.10	3.10	75.05	75.05	78.14	78.14	5.83	5.83	16.03	16.03	0.00	0.00		
	total	1.44	1.13	34.97	27.31	36.42	28.44	2.72	2.12	7.47	5.83	0.00	0.00	46.60	36.39
Landlocked Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.34	75.00	46.39		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.73	72.73	27.27	27.27		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.20	0.25	0.08	0.93	0.28
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	20.34	16.82	0.99	0.73	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	66.67	66.67	33.33	33.33	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	1.02	0.88	0.51	0.44	0.00	0.00	1.53	1.32

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 74. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Nikolaevsk, 1998

Resource	Percent Base	Personal Use Methods: Set Net No.	Set Net Lbs.	Dip Net No.	Dip Net Lbs.	Personal Use Gear Any Method No.	Personal Use Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Ice Fish No.	Ice Fish Lbs.	Any Method No.	Any Method Lbs.
Salmon	geartype	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
	resource	2.67	4.86	32.30	25.76	34.97	30.62	51.00	51.67	12.76	17.32	1.27	0.39		
	total	2.67	4.86	32.30	25.76	34.97	30.62	51.00	51.67	12.76	17.32	1.27	0.39		
Chum Salmon	geartype	9.52	5.73	0.00	0.00	0.73	0.91	20.78	22.45	1.66	1.34	0.00	0.00		
	resource	2.30	2.30	0.00	0.00	2.30	2.30	95.79	95.79	1.92	1.92	0.00	0.00		
	total	0.25	0.28	0.00	0.00	0.25	0.28	10.60	11.60	0.21	0.23	0.00	0.00	11.06	12.11
Coho Salmon	geartype	19.05	11.03	1.44	1.91	2.79	3.36	35.58	37.02	43.85	34.07	0.00	0.00		
	resource	2.06	2.06	1.89	1.89	3.95	3.95	73.41	73.41	22.64	22.64	0.00	0.00		
	total	0.51	0.54	0.47	0.49	0.97	1.03	18.14	19.13	5.60	5.90	0.00	0.00	24.71	26.05
Chinook Salmon	geartype	42.86	74.01	0.13	0.52	3.39	12.18	3.91	12.12	21.59	50.00	0.00	0.00		
	resource	19.29	19.29	0.71	0.71	20.00	20.00	33.57	33.57	46.43	46.43	0.00	0.00		
	total	1.14	3.60	0.04	0.13	1.19	3.73	1.99	6.26	2.76	8.66	0.00	0.00	5.93	18.65
Pink Salmon	geartype	19.05	5.09	0.00	0.00	1.45	0.81	8.65	4.15	2.33	0.83	0.00	0.00		
	resource	9.76	9.76	0.00	0.00	9.76	9.76	84.55	84.55	5.69	5.69	0.00	0.00		
	total	0.51	0.25	0.00	0.00	0.51	0.25	4.41	2.15	0.30	0.14	0.00	0.00	5.21	2.54
Sockeye Salmon	geartype	9.52	4.14	98.43	97.57	91.64	82.75	31.09	24.26	19.27	11.23	0.00	0.00		
	resource	0.51	0.51	63.13	63.13	63.64	63.64	31.48	31.48	4.88	4.88	0.00	0.00		
	total	0.25	0.20	31.79	25.14	32.05	25.34	15.85	12.54	2.46	1.94	0.00	0.00	50.36	39.82
Landlocked Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.30	2.53	100.00	100.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.13	53.13	46.88	46.88		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	0.44	1.27	0.39	2.71	0.83
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 75. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Ninilchik, 1998

Resource	Percent Base	Personal Use Methods								Removed from Commercial Catch		Rod and Reel		Ice Fish		Any Method	
		Set Net		Dip Net		Fish Wheel		Personal Use Gear Any Method									
		No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	geartype	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
	resource	17.30	16.90	17.48	13.78	2.21	1.70	36.99	32.38	23.86	22.18	39.06	45.41	0.09	0.03		
	total	17.30	16.90	17.48	13.78	2.21	1.70	36.99	32.38	23.86	22.18	39.06	45.41	0.09	0.03		
Chum Salmon	geartype	0.00	0.00	4.29	5.79	0.00	0.00	2.03	2.46	14.53	16.62	1.69	1.55	0.00	0.00		
	resource	0.00	0.00	15.38	15.38	0.00	0.00	15.38	15.38	71.05	71.05	13.57	13.57	0.00	0.00		
	total	0.00	0.00	0.75	0.80	0.00	0.00	0.75	0.80	3.47	3.69	0.66	0.70	0.00	0.00	4.88	5.19
Coho Salmon	geartype	12.76	13.37	0.51	0.66	0.00	0.00	6.21	7.26	15.91	17.52	49.38	43.50	0.00	0.00		
	resource	8.70	8.70	0.35	0.35	0.00	0.00	9.04	9.04	14.96	14.96	76.00	76.00	0.00	0.00		
	total	2.21	2.26	0.09	0.09	0.00	0.00	2.30	2.35	3.80	3.89	19.29	19.75	0.00	0.00	25.38	25.99
Chinook Salmon	geartype	7.91	24.71	0.51	1.96	0.00	0.00	3.94	13.73	7.03	23.08	12.54	32.93	0.00	0.00		
	resource	17.03	17.03	1.10	1.10	0.00	0.00	18.13	18.13	20.88	20.88	60.99	60.99	0.00	0.00		
	total	1.37	4.18	0.09	0.27	0.00	0.00	1.46	4.45	1.68	5.12	4.90	14.96	0.00	0.00	8.03	24.52
Pink Salmon	geartype	1.53	0.74	1.77	1.06	0.00	0.00	1.55	0.84	27.94	14.20	7.57	3.08	0.00	0.00		
	resource	2.60	2.60	3.03	3.03	0.00	0.00	5.63	5.63	65.37	65.37	29.00	29.00	0.00	0.00		
	total	0.26	0.13	0.31	0.15	0.00	0.00	0.57	0.27	6.67	3.15	2.96	1.40	0.00	0.00	10.20	4.82
Sockeye Salmon	geartype	77.81	61.18	92.93	90.54	100.00	100.00	86.28	75.70	34.60	28.58	28.59	18.89	0.00	0.00		
	resource	26.23	26.23	31.64	31.64	4.30	4.30	62.17	62.17	16.08	16.08	21.75	21.75	0.00	0.00		
	total	13.46	10.34	16.24	12.48	2.21	1.70	31.91	24.51	8.25	6.34	11.17	8.58	0.00	0.00	51.33	39.43
Landlocked Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.06	100.00	100.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	50.00	50.00	50.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.03	0.09	0.03	0.18	0.05
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 76. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, North Fork Road, 1998

		Personal Use Methods											
		Set Net		Dip Net		Personal Use Gear Any Method		Removed from Commercial Catch		Rod and Reel		Any Method	
Resource	Percent Base	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
Salmon	geartype	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
	resource	8.37	7.79	25.35	17.41	33.73	25.20	1.89	1.38	64.39	73.41		
	total	8.37	7.79	25.35	17.41	33.73	25.20	1.89	1.38	64.39	73.41		
Chum Salmon	geartype	4.23	4.25	0.00	0.00	1.05	1.31	0.00	0.00	1.65	1.35		
	resource	25.00	25.00	0.00	0.00	25.00	25.00	0.00	0.00	75.00	75.00		
	total	0.35	0.33	0.00	0.00	0.35	0.33	0.00	0.00	1.06	0.99	1.42	1.32
Coho Salmon	geartype	70.42	68.21	4.65	6.11	20.98	25.31	25.00	30.77	53.85	42.58		
	resource	13.97	13.97	2.79	2.79	16.76	16.76	1.12	1.12	82.12	82.12		
	total	5.90	5.32	1.18	1.06	7.08	6.38	0.47	0.43	34.67	31.26	42.22	38.06
Chinook Salmon	geartype	4.23	12.20	0.00	0.00	1.05	3.77	0.00	0.00	17.03	40.15		
	resource	3.13	3.13	0.00	0.00	3.13	3.13	0.00	0.00	96.88	96.88		
	total	0.35	0.95	0.00	0.00	0.35	0.95	0.00	0.00	10.97	29.47	11.32	30.43
Pink Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.60		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	0.44	1.06	0.44
Sockeye Salmon	geartype	21.13	15.35	95.35	93.89	76.92	69.60	75.00	69.23	25.82	15.32		
	resource	4.02	4.02	54.96	54.96	58.98	58.98	3.22	3.22	37.80	37.80		
	total	1.77	1.20	24.17	16.35	25.94	17.54	1.42	0.96	16.63	11.24	43.99	29.74
Landlocked Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 77. Estimated Percentages of Salmon Harvest By Resource, Gear Type, and Salmon Total Harvest, Voznesenka, 1998

Resource	Percent Base	Personal Use Methods: Set Net No.	Set Net Lbs.	Floating Net No.	Floating Net Lbs.	Dip Net No.	Dip Net Lbs.	Personal Use Gear Any Method No.	Personal Use Gear Any Method Lbs.	Removed from Commercial Catch No.	Removed from Commercial Catch Lbs.	Rod and Reel No.	Rod and Reel Lbs.	Any Method No.	Any Method Lbs.
Salmon	geartype	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
	resource	6.13	5.37	12.13	9.97	5.86	4.75	24.12	20.09	49.39	46.17	26.50	33.74		
	total	6.13	5.37	12.13	9.97	5.86	4.75	24.12	20.09	49.39	46.17	26.50	33.74		
Chum Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.90	21.92	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33	10.12	0.00	0.00	9.33	10.12
Coho Salmon	geartype	35.56	42.38	0.00	0.00	0.00	0.00	9.04	11.33	31.04	34.67	76.61	62.84		
	resource	5.77	5.77	0.00	0.00	0.00	0.00	5.77	5.77	40.54	40.54	53.69	53.69		
	total	2.18	2.28	0.00	0.00	0.00	0.00	2.18	2.28	15.33	16.01	20.30	21.20	37.81	39.48
Chinook Salmon	geartype	0.00	0.00	1.69	6.38	1.16	4.47	1.13	4.22	1.52	5.05	13.11	32.05		
	resource	0.00	0.00	4.55	4.55	1.52	1.52	6.06	6.06	16.67	16.67	77.27	77.27		
	total	0.00	0.00	0.20	0.64	0.07	0.21	0.27	0.85	0.75	2.33	3.47	10.81	4.50	14.00
Pink Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.17	3.70	5.14	1.95		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.22	72.22	27.78	27.78		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.54	1.71	1.36	0.66	4.90	2.36
Sockeye Salmon	geartype	64.44	57.62	98.31	93.62	98.84	95.53	89.83	84.45	41.38	34.66	5.14	3.16		
	resource	9.09	9.09	27.43	27.43	13.32	13.32	49.85	49.85	47.02	47.02	3.14	3.14		
	total	3.95	3.09	11.92	9.34	5.79	4.54	21.66	16.97	20.43	16.00	1.36	1.07	43.46	34.04
Unknown Salmon	geartype	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	resource	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Figure 27. Percentage of Salmon Harvests for Home Use by Gear Type, Study Areas, 1998

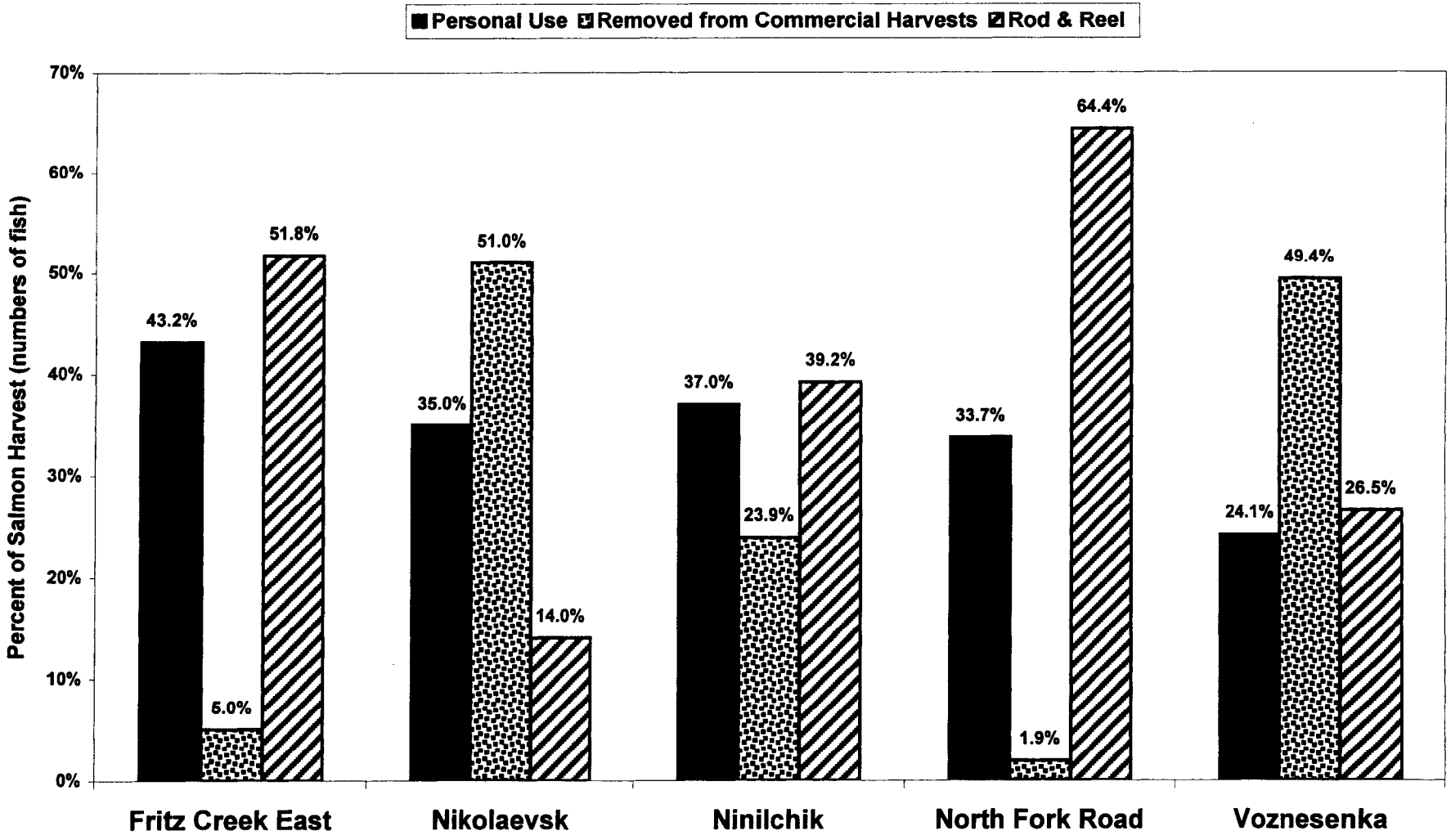
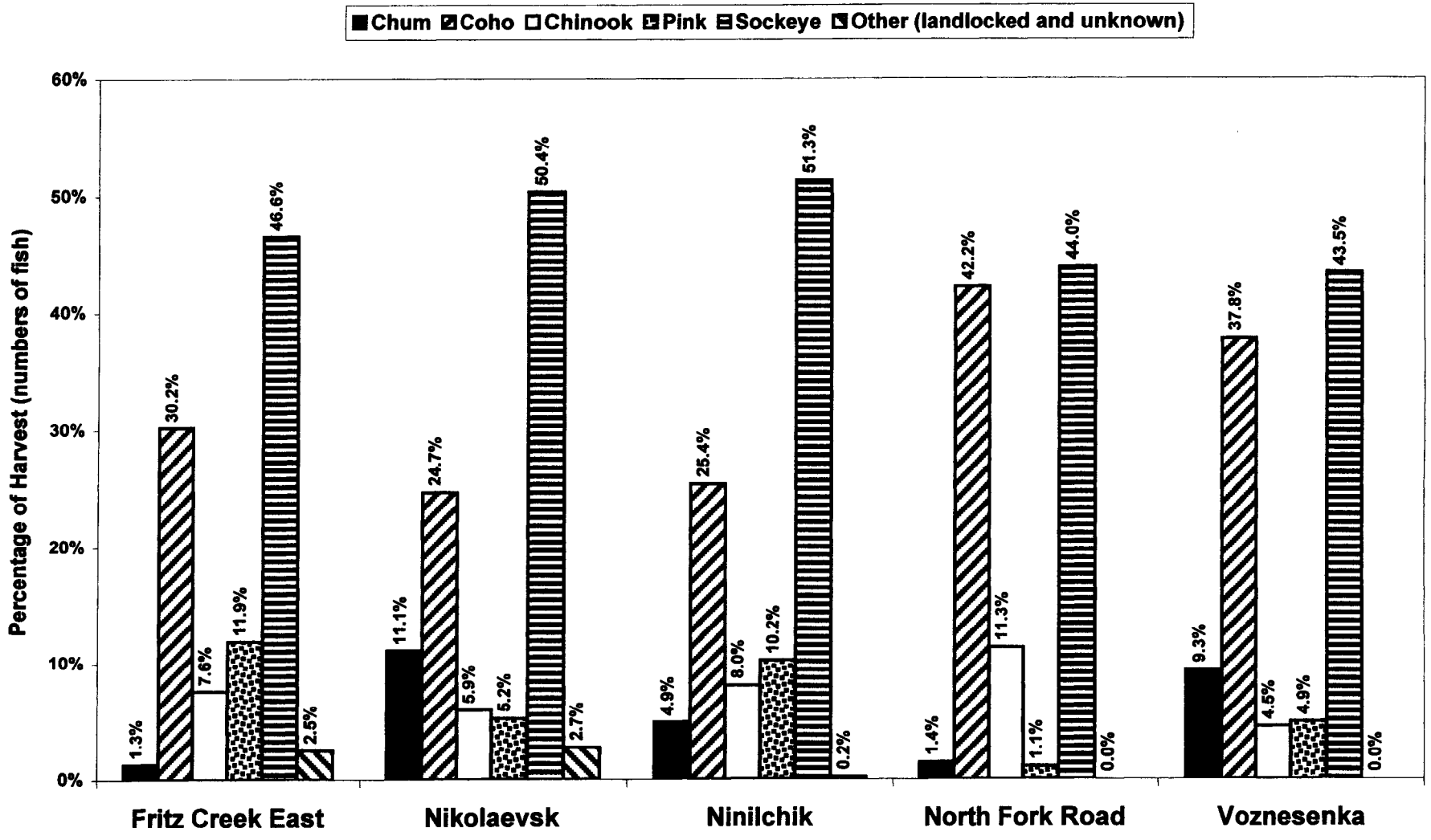


Figure 28. Percentage of Number of Salmon Harvested for Home Use by Species, Study Areas, 1998



chinook salmon, while not ranking high in numbers of fish, contributed significantly to community harvests in terms of usable pounds, from 14.0 percent at Voznesenka to 30.4 percent at North Fork Road (Fig. 29). Harvests of chum and pink salmon were relatively low in each community.

Table 78 through Table 82 report the percentage of households in each study community that harvested salmon by geartype. At least half or more of the households in each study community harvested salmon. About half the households in each community harvested salmon with rod and reel, ranging from 43.2 percent in Nikolaevsk to 52.3 percent in Fritz Creek East. There was a range of involvement in personal use fisheries, ranging from a high of 54.1 percent of the households in Nikolaevsk, to 33.9 percent in Fritz Creek East, 33.3 percent in Voznesenka, 24.8 percent in Ninilchik, and 15.5 percent in North Fork Road. The majority of households in Nikolaevsk (56.8 percent) and Voznesenka (55.6 percent) removed salmon for home use from commercial catches. A much of lower percentage of households did so in the other three communities.

Personal use dipnet fisheries were important sources of salmon for home use in each study community (Table 83). Sockeye salmon were the species most frequently taken with dip nets. In three communities, Fritz Creek East, Nikolaevsk, and North Fork Road, dipnet harvests accounted for over half the sockeye taken for home use, as well as a quarter or more of all salmon harvested. Expressed as a percentage of the total pounds of all resources harvested in a community, salmon harvests with dipnets were most significant at Fritz Creek East (7.0 percent) and least at Voznesenka (0.9 percent).

Table 83. Percent of Salmon Harvested by Dipnet for Home Use, Study Areas, 1998

	Chum		Coho		Chinook		Pink		Sockeye		All Salmon		Percent of All Resources
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Fritz Creek East	0	0.0%	0	0.0%	0	0.0%	25	7.9%	951	75.1%	976	35.9%	7.0%
Nikolaevsk	0	0.0%	15	1.9%	1	0.7%	0	0.0%	1,014	63.1%	1,030	32.3%	5.4%
Ninilchik	67	15.4%	8	0.4%	8	1.1%	28	1.0%	1,457	31.6%	1,568	17.5%	3.1%
North Fork Road	0	0.0%	29	2.8%	0	0.0%	0	0.0%	587	55.0%	615	25.4%	5.3%
Voznesenka	0	0.0%	0	0.0%	3	1.5%	0	0.0%	293	27.4%	296	5.9%	0.9%

Since 1994, the Ninilchik Traditional Council has conducted an educational salmon set net fishery on behalf of its members under the terms of an educational fishing permit issued by the Alaska Department of Fish and Game. The fishery takes place in Cook Inlet near the village site. Table 84 reports the harvests in this fishery for the period 1994 through 1998. In 1998, both the Ninilchik Traditional Council and the Ninilchik Native Descendants conducted educational fisheries. The total harvest for these two fisheries was 1,046 salmon, including 119 kings, 645 sockeye, 205 cohos, and 77 pinks.

Figure 29. Percentage of Pounds of Salmon Harvested for Home Use by Species, Study Areas, 1998

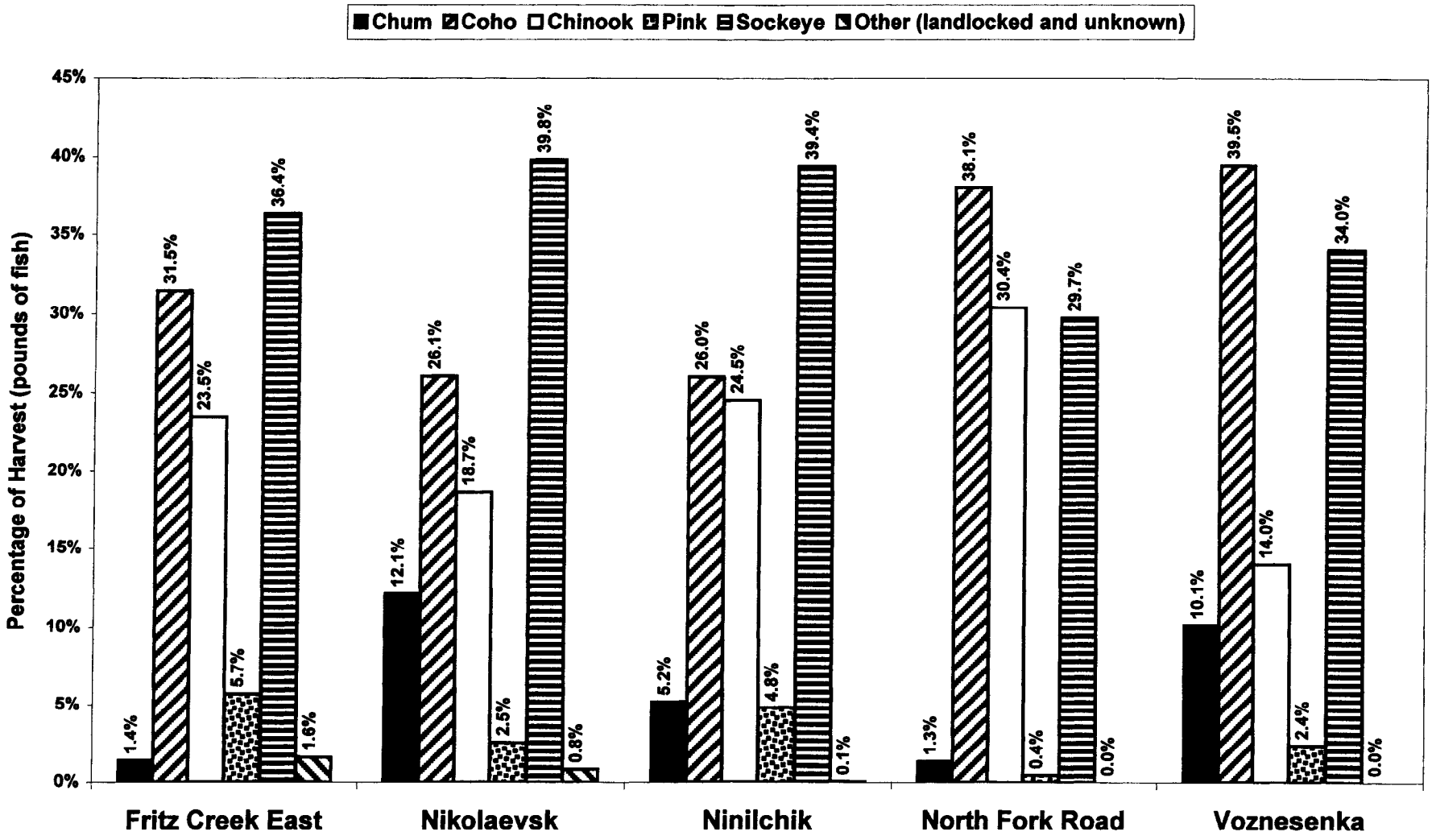


Table 78. Percentage of Households Harvesting Salmon by Gear Type and Species, Fritz Creek East, 1998

Resource	Personal Use Methods			Removed from Commercial Catch	Rod and Reel	Icefish	Any Method
	Set Net	Dip Net	Any Personal Use Gear				
Salmon	7.69	29.23	33.85	6.15	52.31	3.08	67.69
Chum Salmon	0.00	0.00	0.00	1.54	3.08	0.00	4.62
Coho Salmon	6.15	0.00	6.15	0.00	40.00	1.54	44.62
Chinook Salmon	3.08	0.00	3.08	3.08	30.77	0.00	33.85
Pink Salmon	3.08	3.08	6.15	0.00	10.77	0.00	15.38
Sockeye Salmon	3.08	27.69	29.23	4.62	10.77	0.00	40.00
Landlocked Salmon	0.00	0.00	0.00	0.00	1.54	1.54	3.08
Unknown Salmon	0.00	0.00	0.00	1.54	1.54	0.00	3.08

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 79. Percentage of Households Harvesting Salmon by Gear Type and Species, Nikolaevsk, 1998

Resource	Personal Use Methods			Removed from Commercial Catch	Rod and Reel	Icefish	Any Method
	Set Net	Dip Net	Any Personal Use Gear				
Salmon	2.70	51.35	54.05	56.76	43.24	2.70	81.08
Chum Salmon	2.70	0.00	2.70	10.81	2.70	0.00	13.51
Coho Salmon	2.70	5.41	8.11	40.54	21.62	0.00	64.86
Chinook Salmon	2.70	2.70	5.41	40.54	35.14	0.00	64.86
Pink Salmon	2.70	0.00	2.70	13.51	8.11	0.00	21.62
Sockeye Salmon	2.70	51.35	54.05	40.54	8.11	0.00	75.68
Landlocked Salmon	0.00	0.00	0.00	0.00	5.41	2.70	8.11
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 80. Percentage of Households Harvesting Salmon by Gear Type and Species, Ninilchik, 1998

Resource	Personal Use Methods			Removed from Commercial Catch	Rod and Reel	Icefish	Any Method
	Set Net	Dip Net	Any Personal Use Gear				
Salmon	14.85	9.90	24.75	9.90	50.50	0.99	64.36
Chum Salmon	0.00	1.98	1.98	1.98	0.99	0.00	2.97
Coho Salmon	6.93	0.99	7.92	5.94	25.74	0.00	37.62
Chinook Salmon	6.93	0.99	7.92	6.93	38.61	0.00	46.53
Pink Salmon	2.97	1.98	4.95	5.94	4.95	0.00	14.85
Sockeye Salmon	14.85	8.91	24.75	4.95	19.80	0.00	44.55
Landlocked Salmon	0.00	0.00	0.00	0.00	0.99	0.99	1.98
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 81. Percentage of Households Harvesting Salmon by Gear Type and Species, North Fork Road, 1998

Resource	Personal Use Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Set Net	Floating Net	Dip Net	Any Personal Use Gear			
Salmon	1.72	0.00	13.79	15.52	3.45	46.55	50.00
Chum Salmon	1.72	0.00	0.00	1.72	0.00	5.17	6.90
Coho Salmon	1.72	0.00	1.72	3.45	1.72	36.21	39.66
Chinook Salmon	1.72	0.00	0.00	1.72	0.00	37.93	39.66
Pink Salmon	0.00	0.00	0.00	0.00	0.00	5.17	5.17
Sockeye Salmon	1.72	0.00	13.79	15.52	3.45	20.69	31.03
Landlocked Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 82. Percentage of Households Harvesting Salmon by Gear Type and Species, Voznesenka, 1998

Resource	Personal Use Methods				Removed from Commercial Catch	Rod and Reel	Any Method
	Set Net	Floating Net	Dip Net	Any Personal Use Gear			
Salmon	16.67	11.11	16.67	33.33	55.56	44.44	94.44
Chum Salmon	0.00	0.00	0.00	0.00	16.67	0.00	16.67
Coho Salmon	11.11	0.00	0.00	11.11	33.33	38.89	66.67
Chinook Salmon	0.00	5.56	5.56	11.11	27.78	27.78	55.56
Pink Salmon	0.00	0.00	0.00	0.00	16.67	5.56	22.22
Sockeye Salmon	5.56	5.56	16.67	27.78	50.00	11.11	77.78
Unknown Salmon	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 84. Harvests of Salmon in the Ninilchik Traditional Council Educational Fishery, 1994 - 1998

Year	Number of Salmon Harvested				
	Chinook	Sockeye	Coho	Pink	Total
1994	7	162	119	16	304
1995	77	229	85	23	414
1996	101	910	56	8	1,075
1997	94	474	99	55	722
1998 [1]	119	645	205	77	1,046

[1] Two educational fisheries received permits in 1998; one operated by the Ninilchik Traditional Council and one by the Ninilchik Native Descendants.

Source: Nelson et al. 1999:228; Szarzi 1999

The educational fishery permit issued by ADF&G to the Ninilchik Traditional Council requires an annual report that evaluates the educational program's achievement of its goals. The following excerpts from the 1998 report (Ninilchik Traditional Council 1998) provide insights not only about the program itself but also about the values associated with fishing and sharing by the Alaska Native enclave within the larger contemporary Ninilchik community.

> We had two basic goals for the success of our 1998 Educational Fisheries Program; one was that the Elders of our Tribe not only received fish that were caught, but also that they were actively involved in our program. We feel that we were successful in achieving this goal.
>
> Our other main goal was that as many families as possible be able to use the Educational net; we didn't want just a few families using it time after time until our quotas were met. Again, we feel that we were successful in accomplishing this also.
>
> We began the Educational Fishery season the 23rd of May 1998 when the Kings began to appear. Our quota was cut in half this year [note: this was due to a second permit being issued to the Ninilchik Native Descendants], so due to the small amount of 50 Kings, most of the harvest was given to our Elders. We did this because there is not enough fish to distribute among the entire tribe. In the past when we had 100 Kings we also distributed among the Elderly and Disabled in our tribe. We have a group of designed [sic; i.e. designated] "Fish Monitors" who volunteer their experience and time, but who also believe in the principle that the fish caught should be shared with the Elderly. The fish monitors showed others in the Tribe how to set the net and pull it. Our group of fish monitors are mainly Elders, they would distribute the fish among our Elderly and Disabled. This has proved to be a successful way to share the Kings among the elders of our Tribe. Every year we work to improve this system. . .
>
> Our Educational Fishing permit was used every day for the month of July, until we were closed on July 28, 1998 due to an Emergency Close order from Alaska Dept. of Fish and Game. We were allowed to fish again on August 3, 1998, just in time for the Sacred Circle Camp to use the permit. A week is set aside every year for the young people that

attend the camp. Volunteers help camp workers set the net, and the campers spend the day on the beach learning about traditional ways to catch and cook fish as well as playing games. The young people enjoy this yearly event and they are proud to take fish home to their families.

We feel again that our goal of ensuring that the Educational Fishery permit was used by many and not just a few, more than passed our expectations. We tried to include all or our tribal members in this program. If they were out of the area we kept them up to date with articles in our Newsletter, and if they were in our area but couldn't fish the net our "Fish Monitors" either helped them fish by showing them how to set and pull the net or made sure, in the case of the Elderly or handicapped, that they received fish from those using the net. . . .

OTHER FISH

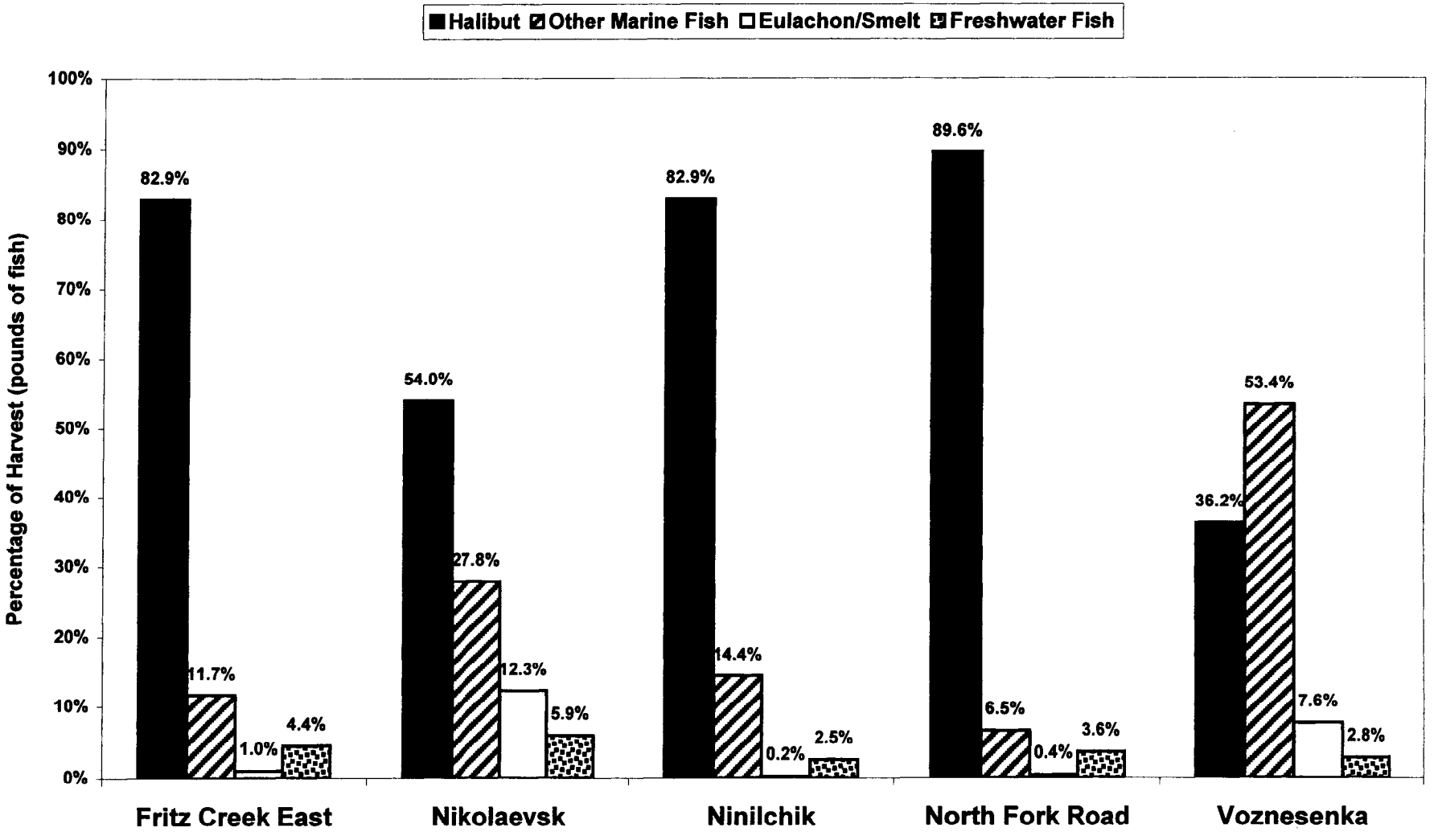
Use of fish other than salmon was widespread in the study communities in 1998. Over 90 percent of the households in each study community used nonsalmon fish (Fig. 20). These fish also made up a relatively large portion of the total wild resource harvest by weight, ranging from a high of 29.5 percent in Voznesenka, to 28.3 percent in Fritz Creek East, 27.8 percent in North Fork Road, 25.1 percent in Nikolaevsk, and 23.4 percent in Ninilchik (Fig. 24). As estimated in usable pounds per person, harvests of fish other than salmon were highest at Voznesenka at 49.3 pounds per person, followed by Ninilchik (38.3 pounds per person), Nikolaevsk (33.3 pounds per person), Fritz Creek East (29.9 pounds per person), and North Fork Road (27.2 pounds per person) (Fig. 23).

Most of the fishing effort for fish other than salmon by study community residents took place outside the boundaries of Kenai Peninsula federal conservation units and within the lower Kenai Peninsula of GMU 15C (Table 53). Few households fished for steelhead and those that did so used waters outside federal unit boundaries in GMU 15C (Table 54).

By far, halibut was the nonsalmon fish used by the most households and in the largest quantities in each study community. At Fritz Creek East, an average of 24.8 pounds per person of halibut was harvested for 82.9 percent of the take of nonsalmon fish. At Nikolaevsk, the harvest of 18.0 pounds per person of halibut was 54.0 percent of all fish other than salmon. With a harvest of 31.8 pounds per person, halibut represented 82.9 percent of the other fish harvest at Ninilchik. North Fork Road households averaged a halibut harvest of 24.4 pounds per person, 89.6 percent of all nonsalmon fish. At Voznesenka, the average harvest of 17.9 pounds per person of halibut was 36.2 percent of fish other than salmon (Fig. 30; Table 39 - Table 43).

In Voznesenka and Nikolaevsk, other marine fish in addition to halibut were used frequently. These included rockfish (used by 66.7 percent of the households at Voznesenka and 56.8 percent at Nikolaevsk), sablefish (35.1 percent at Nikolaevsk, 27.8 percent at Voznesenka), and Pacific cod (22.2 percent at Voznesenka, 16.2 percent at Nikolaevsk). Most of these fish were removed from commercial catches for home use, as was most of the halibut used in Voznesenka and Nikolaevsk (Table 48, Table 51).

Figure 30. Percentage of Pounds of Fish Other Than Salmon Harvested for Home Use by Category, Study Areas, 1998



In Nikolaevsk and Voznesenka, eulachon were a frequently used species, 59.5 percent of the households at Nikolaevsk and 44.4 percent at Voznesenka. About 10.8 percent of the households in Fritz Creek East, 5.9 percent in Ninilchik, and 5.2 percent at North Fork Road used these fish. Of freshwater fish, Dolly Varden appeared most frequently among species used or harvested: 16.9 percent of households in Fritz Creek East, 18.9 percent at Nikolaevsk, 19.8 percent at Ninilchik, 29.3 percent at North Fork Road, and 22.2 percent at Voznesenka (Table 39 through Table 43).

Regarding harvest methods for obtaining fish other than salmon, there were two patterns (Fig. 31; Table 85 through Table 94). Most of the these fish in Nikolaevsk and Voznesenka were removed for home use from commercial harvests (64.1 percent and 80.5 percent, respectively), including most of the halibut, rockfish, sablefish, and cod (Table 91, Table 94), In the other communities, commercial removal supplied much less of the total non-salmon fish, 11.1 percent at Ninilchik, 5.2 percent at Fritz Creek East, and 0.6 percent at North Fork Road (Table 90, Table 92, Table 93). In these communities, rod and reel harvests were by far the most significant source of nonsalmon fish.

Table 95 through Table 99 report the percentage of households in each study community harvesting fish other than salmon by gear type. Rod and reel fishing was engaged in by over half the Fritz Creek East, Ninilchik, and North Fork Road households, while the majority of households in Nikolaevsk and Voznesenka removed fish from their commercial harvests. For the most part, personal use gear was only used for smelt, most notably by Nikolaevsk and Voznesenka households. In the Cook Inlet Area, smelt may be harvested with gillnets or dipnets for personal use.

MARINE INVERTEBRATES

In the 1998 study year, marine invertebrates were used by the majority of households in North Fork Road (67.2 percent), Fritz Creek East (76.9 percent), and Ninilchik (78.2 percent) (Fig. 20). As estimated in usable pounds, marine invertebrate harvests in these communities were 11.0 pounds per person in Ninilchik (6.7 percent of the total harvest), 7.5 pounds per person in Fritz Creek East (7.1 percent), and 5.5 pounds per person in North Fork Road (5.6 percent) (Fig. 23, Fig. 24). Marine invertebrates used by the most households included razor clams, littleneck clams, butter clams, Dungeness king crab, Tanner crab, and mussels.

A much lower percentage of households used marine invertebrates in Nikolaevsk (29.7 percent) and Voznesenka (11.1 percent) (Fig. 20). The majority of families in these communities are Old Believers, among whom there is a religious proscription against using shellfish.

For the most part, harvest effort for marine invertebrates in 1998 occurred along the shores of the Kenai Peninsula in GMU 15C and the marine waters of lower Cook Inlet (Table 55).

Figure 31. Percentage of Harvests of Fish Other Than Salmon for Home Use by Gear Type, Study Areas, 1998

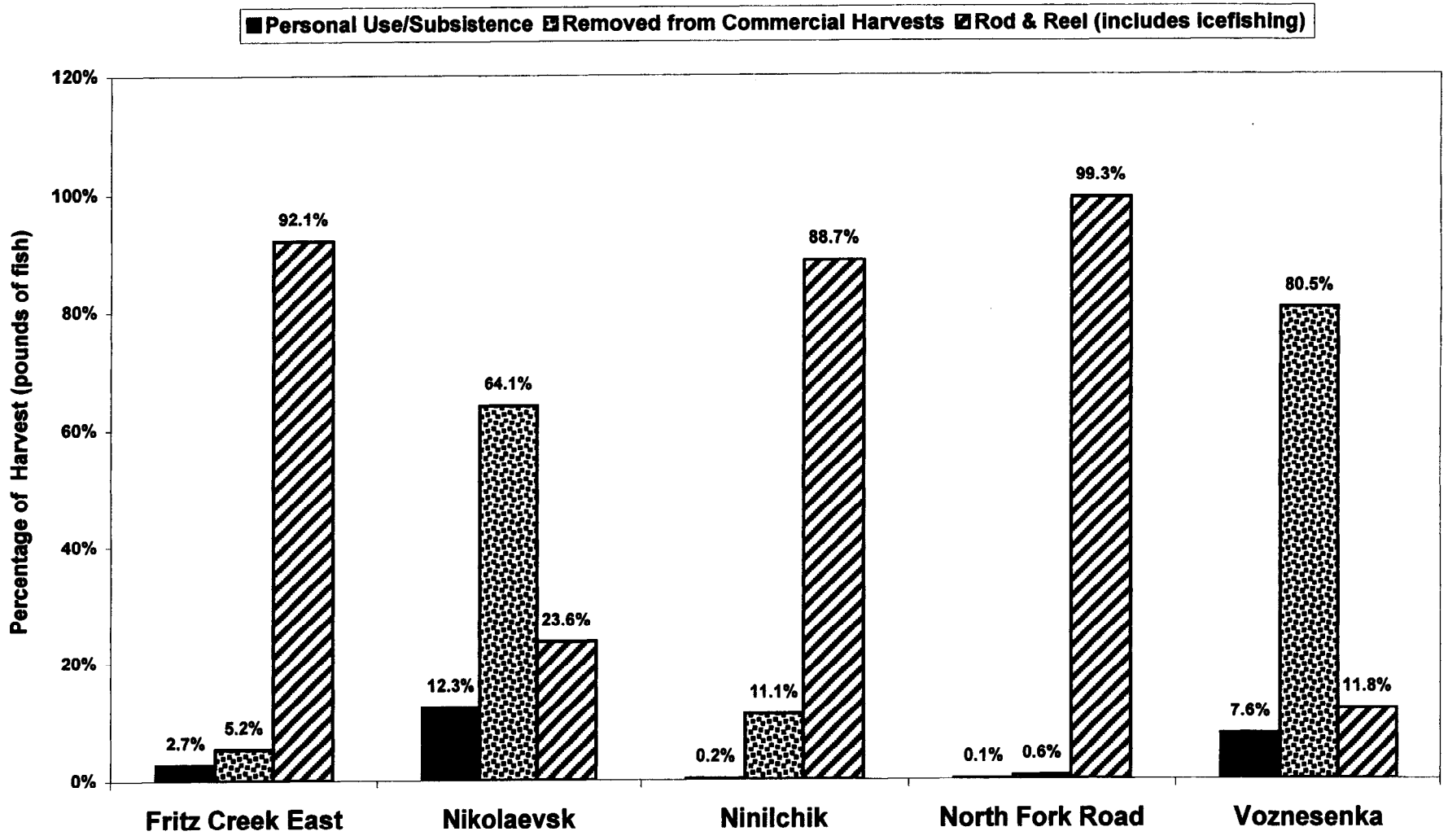


Table 85. Estimated Harvest of Fish Other Than Salmon By Gear Type, Fritz Creek East, 1998

	Harvest Units	Personal Use Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	342.98	2.29	675.69	4.50	11,934.37	79.56	0.00	0.00	12,953.04	86.35
Herring	pounds	0.00	0.00	0.00	0.00	27.69	0.18	0.00	0.00	27.69	0.18
Herring Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eulachon	pounds	131.25	0.88	0.00	0.00	0.00	0.00	0.00	0.00	131.25	0.88
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sea Bass	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod	pounds	0.00	0.00	44.31	0.30	280.62	1.87	0.00	0.00	324.92	2.17
Pacific Tom Cod	pounds	0.00	0.00	0.00	0.00	6.92	0.05	0.00	0.00	6.92	0.05
Walleye Pollock	pounds	0.00	0.00	0.00	0.00	54.92	0.37	0.00	0.00	54.92	0.37
Unknown Cod	pounds	0.00	0.00	0.00	0.00	14.77	0.10	0.00	0.00	14.77	0.10
Eel	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Starry Flounder	pounds	207.69	1.38	0.00	0.00	48.46	0.32	0.00	0.00	256.15	1.71
Unknown Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	pounds	0.00	0.00	0.00	0.00	55.38	0.37	0.00	0.00	55.38	0.37
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	36.92	0.25	0.00	0.00	36.92	0.25
Halibut	pounds	0.00	0.00	531.69	3.54	10,208.77	68.06	0.00	0.00	10,740.46	71.60
Black Rockfish	pounds	0.00	0.00	13.85	0.09	290.77	1.94	0.00	0.00	304.62	2.03
Red Rockfish	pounds	0.00	0.00	0.00	0.00	230.77	1.54	0.00	0.00	230.77	1.54
Unknown Rockfish	pounds	0.00	0.00	0.00	0.00	79.75	0.53	0.00	0.00	79.75	0.53
Sablefish	pounds	0.00	0.00	85.85	0.57	0.00	0.00	0.00	0.00	85.85	0.57
Unknown Irish Lord	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	pounds	0.00	0.00	0.00	0.00	20.77	0.14	0.00	0.00	20.77	0.14
Skates	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	pounds	0.00	0.00	0.00	0.00	9.23	0.06	0.00	0.00	9.23	0.06
Wolffish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	pounds	0.00	0.00	0.00	0.00	19.38	0.13	0.00	0.00	19.38	0.13
Dolly Varden	pounds	0.00	0.00	0.00	0.00	381.23	2.54	0.00	0.00	381.23	2.54
Lake Trout	pounds	0.00	0.00	0.00	0.00	32.31	0.22	0.00	0.00	32.31	0.22
Grayling	pounds	0.00	0.00	0.00	0.00	9.69	0.06	0.00	0.00	9.69	0.06
Unknown Pike	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sheefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	106.62	0.71	0.00	0.00	106.62	0.71
Steelhead	pounds	0.00	0.00	0.00	0.00	6.46	0.04	0.00	0.00	6.46	0.04
Unknown Trout	pounds	0.00	0.00	0.00	0.00	12.92	0.09	0.00	0.00	12.92	0.09
Unknown Whitefish	pounds	4.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	4.04	0.03

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 86. Estimated Harvest of Fish Other Than Salmon By Gear Type, Nikolaevsk, 1998

	Harvest Units	Personal Use Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	964.02	19.28	5,022.95	100.46	1,753.08	35.06	94.59	1.89	7,834.64	156.69
Herring	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eulachon	pounds	788.34	15.77	0.00	0.00	0.00	0.00	0.00	0.00	788.34	15.77
Unknown Smelt	pounds	175.68	3.51	0.00	0.00	0.00	0.00	0.00	0.00	175.68	3.51
Sea Bass	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod	pounds	0.00	0.00	129.73	2.59	0.00	0.00	0.00	0.00	129.73	2.59
Pacific Tom Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eel	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Starry Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	pounds	0.00	0.00	183.78	3.68	0.00	0.00	0.00	0.00	183.78	3.68
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	pounds	0.00	0.00	2,866.22	57.32	1,364.86	27.30	0.00	0.00	4,231.08	84.62
Black Rockfish	pounds	0.00	0.00	425.68	8.51	20.27	0.41	0.00	0.00	445.95	8.92
Red Rockfish	pounds	0.00	0.00	1,129.73	22.59	0.00	0.00	0.00	0.00	1,129.73	22.59
Unknown Rockfish	pounds	0.00	0.00	23.35	0.47	3.89	0.08	0.00	0.00	27.24	0.54
Sablefish	pounds	0.00	0.00	264.46	5.29	0.00	0.00	0.00	0.00	264.46	5.29
Unknown Irish Lord	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skates	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolffish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	0.00	0.00	0.00	0.00	181.62	3.63	0.00	0.00	181.62	3.63
Lake Trout	pounds	0.00	0.00	0.00	0.00	70.00	1.40	94.59	1.89	164.59	3.29
Grayling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Pike	pounds	0.00	0.00	0.00	0.00	40.54	0.81	0.00	0.00	40.54	0.81
Sheefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	24.59	0.49	0.00	0.00	24.59	0.49
Steelhead	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Trout	pounds	0.00	0.00	0.00	0.00	47.30	0.95	0.00	0.00	47.30	0.95
Unknown Whitefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 87. Estimated Harvest of Fish Other Than Salmon By Gear Type, Ninilchik, 1998

	Harvest Units	Personal Use Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
.	pounds	77.23	0.19	4,550.50	11.38	36,352.08	90.88	133.07	0.33	41,112.87	102.78
Herring	pounds	0.00	0.00	594.06	1.49	0.00	0.00	0.00	0.00	594.06	1.49
Herring Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eulachon	pounds	77.23	0.19	0.00	0.00	0.00	0.00	0.00	0.00	77.23	0.19
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sea Bass	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod	pounds	0.00	0.00	1,627.72	4.07	633.66	1.58	0.00	0.00	2,261.39	5.65
Pacific Tom Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eel	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Starry Flounder	pounds	0.00	0.00	0.00	0.00	689.11	1.72	0.00	0.00	689.11	1.72
Unknown Flounder	pounds	0.00	0.00	106.93	0.27	0.00	0.00	0.00	0.00	106.93	0.27
Lingcod	pounds	0.00	0.00	237.62	0.59	142.57	0.36	0.00	0.00	380.20	0.95
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	75.25	0.19	0.00	0.00	75.25	0.19
Halibut	pounds	0.00	0.00	1,782.18	4.46	32,317.62	80.79	0.00	0.00	34,099.80	85.25
Black Rockfish	pounds	0.00	0.00	35.64	0.09	267.33	0.67	0.00	0.00	302.97	0.76
Red Rockfish	pounds	0.00	0.00	126.73	0.32	95.05	0.24	0.00	0.00	221.78	0.55
Unknown Rockfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sablefish	pounds	0.00	0.00	0.00	0.00	994.46	2.49	0.00	0.00	994.46	2.49
Unknown Irish Lord	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skates	pounds	0.00	0.00	0.00	0.00	59.41	0.15	0.00	0.00	59.41	0.15
Unknown Sole	pounds	0.00	0.00	39.60	0.10	198.02	0.50	0.00	0.00	237.62	0.59
Wolffish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	0.00	0.00	0.00	0.00	665.35	1.66	0.00	0.00	665.35	1.66
Lake Trout	pounds	0.00	0.00	0.00	0.00	33.27	0.08	0.00	0.00	33.27	0.08
Grayling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Pike	pounds	0.00	0.00	0.00	0.00	59.41	0.15	0.00	0.00	59.41	0.15
Sheefish	pounds	0.00	0.00	0.00	0.00	21.78	0.05	0.00	0.00	21.78	0.05
Unknown Sturgeon	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	99.80	0.25	133.07	0.33	232.87	0.58
Steelhead	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Whitefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 88. Estimated Harvest of Fish Other Than Salmon By Gear Type, North Fork Road, 1998

	Harvest Units	Personal Use Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	12.02	0.07	80.85	0.49	12,543.59	75.56	48.08	0.29	12,684.55	76.41
Herring	pounds	0.00	0.00	34.34	0.21	0.00	0.00	0.00	0.00	34.34	0.21
Herring Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eulachon	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Smelt	pounds	0.00	0.00	46.51	0.28	0.00	0.00	0.00	0.00	46.51	0.28
Sea Bass	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod	pounds	0.00	0.00	0.00	0.00	100.74	0.61	0.00	0.00	100.74	0.61
Pacific Tom Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eel	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Starry Flounder	pounds	0.00	0.00	0.00	0.00	17.17	0.10	0.00	0.00	17.17	0.10
Unknown Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	pounds	0.00	0.00	0.00	0.00	22.90	0.14	0.00	0.00	22.90	0.14
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	54.38	0.33	0.00	0.00	54.38	0.33
Halibut	pounds	0.00	0.00	0.00	0.00	11,360.70	68.44	0.00	0.00	11,360.70	68.44
Black Rockfish	pounds	0.00	0.00	0.00	0.00	64.40	0.39	0.00	0.00	64.40	0.39
Red Rockfish	pounds	0.00	0.00	0.00	0.00	480.83	2.90	0.00	0.00	480.83	2.90
Unknown Rockfish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sablefish	pounds	0.00	0.00	0.00	0.00	35.49	0.21	0.00	0.00	35.49	0.21
Unknown Irish Lord	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skates	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	pounds	0.00	0.00	0.00	0.00	17.17	0.10	0.00	0.00	17.17	0.10
Wolffish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	12.02	0.07	0.00	0.00	324.56	1.96	0.00	0.00	336.58	2.03
Lake Trout	pounds	0.00	0.00	0.00	0.00	24.04	0.14	0.00	0.00	24.04	0.14
Grayling	pounds	0.00	0.00	0.00	0.00	12.02	0.07	0.00	0.00	12.02	0.07
Unknown Pike	pounds	0.00	0.00	0.00	0.00	17.17	0.10	0.00	0.00	17.17	0.10
Sheefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	12.02	0.07	48.08	0.29	60.10	0.36
Steelhead	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Whitefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 89. Estimated Harvest of Fish Other Than Salmon By Gear Type, Vozesenka, 1998

	Harvest Units	Personal Use Gear		Removed From Commercial Catch		Rod and Reel		Ice Fishing		Any Method	
		Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean	Total	HH Mean
Non-Salmon Fish	pounds	1,231.39	19.86	13,001.06	209.69	1,910.98	30.82	0.00	0.00	16,143.42	260.38
Herring	pounds	0.00	0.00	330.67	5.33	0.00	0.00	0.00	0.00	330.67	5.33
Herring Sac Roe	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eulachon	pounds	1,231.39	19.86	0.00	0.00	0.00	0.00	0.00	0.00	1,231.39	19.86
Unknown Smelt	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sea Bass	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pacific Cod	pounds	0.00	0.00	2,187.22	35.28	551.11	8.89	0.00	0.00	2,738.33	44.17
Pacific Tom Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Cod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eel	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Starry Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lingcod	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Halibut	pounds	0.00	0.00	5,325.11	85.89	520.11	8.39	0.00	0.00	5,845.22	94.28
Black Rockfish	pounds	0.00	0.00	0.00	0.00	396.11	6.39	0.00	0.00	396.11	6.39
Red Rockfish	pounds	0.00	0.00	3,596.00	58.00	0.00	0.00	0.00	0.00	3,596.00	58.00
Unknown Rockfish	pounds	0.00	0.00	661.33	10.67	0.00	0.00	0.00	0.00	661.33	10.67
Sablefish	pounds	0.00	0.00	900.72	14.53	0.00	0.00	0.00	0.00	900.72	14.53
Unknown Irish Lord	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Shark	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skates	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sole	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wolffish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arctic Char	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dolly Varden	pounds	0.00	0.00	0.00	0.00	154.31	2.49	0.00	0.00	154.31	2.49
Lake Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayling	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Pike	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sheefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	pounds	0.00	0.00	0.00	0.00	289.33	4.67	0.00	0.00	289.33	4.67
Steelhead	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Trout	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unknown Whitefish	pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 90. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Fritz Creek East, 1998

Resource	Percent Base	Personal Use Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	2.65	5.22	92.14	0.00
Herring	resource	0.00	0.00	100.00	0.00
Herring Sac Roe	resource	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	resource	0.00	0.00	0.00	0.00
Eulachon	resource	100.00	0.00	0.00	0.00
Unknown Smelt	resource	0.00	0.00	0.00	0.00
Sea Bass	resource	0.00	0.00	0.00	0.00
Pacific Cod	resource	0.00	13.64	86.36	0.00
Pacific Tom Cod	resource	0.00	0.00	100.00	0.00
Walleye Pollock	resource	0.00	0.00	100.00	0.00
Unknown Cod	resource	0.00	0.00	100.00	0.00
Eel	resource	0.00	0.00	0.00	0.00
Starry Flounder	resource	81.08	0.00	18.92	0.00
Unknown Flounder	resource	0.00	0.00	0.00	0.00
Lingcod	resource	0.00	0.00	100.00	0.00
Unknown Greenling	resource	0.00	0.00	100.00	0.00
Halibut	resource	0.00	4.95	95.05	0.00
Black Rockfish	resource	0.00	4.55	95.45	0.00
Red Rockfish	resource	0.00	0.00	100.00	0.00
Unknown Rockfish	resource	0.00	0.00	100.00	0.00
Sablefish	resource	0.00	100.00	0.00	0.00
Unknown Irish Lord	resource	0.00	0.00	0.00	0.00
Unknown Sculpin	resource	0.00	0.00	0.00	0.00
Unknown Shark	resource	0.00	0.00	100.00	0.00
Skates	resource	0.00	0.00	0.00	0.00
Unknown Sole	resource	0.00	0.00	100.00	0.00
Wolffish	resource	0.00	0.00	0.00	0.00
Arctic Char	resource	0.00	0.00	100.00	0.00
Dolly Varden	resource	0.00	0.00	100.00	0.00
Lake Trout	resource	0.00	0.00	100.00	0.00
Grayling	resource	0.00	0.00	100.00	0.00
Unknown Pike	resource	0.00	0.00	0.00	0.00
Sheefish	resource	0.00	0.00	0.00	0.00
Unknown Sturgeon	resource	0.00	0.00	0.00	0.00
Cutthroat Trout	resource	0.00	0.00	0.00	0.00
Rainbow Trout	resource	0.00	0.00	100.00	0.00
Steelhead	resource	0.00	0.00	100.00	0.00
Unknown Trout	resource	0.00	0.00	100.00	0.00
Unknown Whitefish	resource	100.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 91. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Nikolaevsk, 1998

Resource	Percent Base	Personal Use Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	12.30	64.11	22.38	1.21
Herring	resource	0.00	0.00	0.00	0.00
Herring Sac Roe	resource	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	resource	0.00	0.00	0.00	0.00
Eulachon	resource	100.00	0.00	0.00	0.00
Unknown Smelt	resource	100.00	0.00	0.00	0.00
Sea Bass	resource	0.00	0.00	0.00	0.00
Pacific Cod	resource	0.00	100.00	0.00	0.00
Pacific Tom Cod	resource	0.00	0.00	0.00	0.00
Walleye Pollock	resource	0.00	0.00	0.00	0.00
Unknown Cod	resource	0.00	0.00	0.00	0.00
Eel	resource	0.00	0.00	0.00	0.00
Starry Flounder	resource	0.00	0.00	0.00	0.00
Unknown Flounder	resource	0.00	0.00	0.00	0.00
Lingcod	resource	0.00	100.00	0.00	0.00
Unknown Greenling	resource	0.00	0.00	0.00	0.00
Halibut	resource	0.00	67.74	32.26	0.00
Black Rockfish	resource	0.00	95.45	4.55	0.00
Red Rockfish	resource	0.00	100.00	0.00	0.00
Unknown Rockfish	resource	0.00	85.71	14.29	0.00
Sablefish	resource	0.00	100.00	0.00	0.00
Unknown Irish Lord	resource	0.00	0.00	0.00	0.00
Unknown Sculpin	resource	0.00	0.00	0.00	0.00
Unknown Shark	resource	0.00	0.00	0.00	0.00
Skates	resource	0.00	0.00	0.00	0.00
Unknown Sole	resource	0.00	0.00	0.00	0.00
Wolffish	resource	0.00	0.00	0.00	0.00
Arctic Char	resource	0.00	0.00	0.00	0.00
Dolly Varden	resource	0.00	0.00	100.00	0.00
Lake Trout	resource	0.00	0.00	42.53	57.47
Grayling	resource	0.00	0.00	0.00	0.00
Unknown Pike	resource	0.00	0.00	100.00	0.00
Sheefish	resource	0.00	0.00	0.00	0.00
Unknown Sturgeon	resource	0.00	0.00	0.00	0.00
Cutthroat Trout	resource	0.00	0.00	0.00	0.00
Rainbow Trout	resource	0.00	0.00	100.00	0.00
Steelhead	resource	0.00	0.00	0.00	0.00
Unknown Trout	resource	0.00	0.00	100.00	0.00
Unknown Whitefish	resource	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 92. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Ninilchik, 1998

Resource	Percent Base	Personal Use Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	0.19	11.07	88.42	0.32
Herring	resource	0.00	100.00	0.00	0.00
Herring Sac Roe	resource	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	resource	0.00	0.00	0.00	0.00
Eulachon	resource	100.00	0.00	0.00	0.00
Unknown Smelt	resource	0.00	0.00	0.00	0.00
Sea Bass	resource	0.00	0.00	0.00	0.00
Pacific Cod	resource	0.00	71.98	28.02	0.00
Pacific Tom Cod	resource	0.00	0.00	0.00	0.00
Walleye Pollock	resource	0.00	0.00	0.00	0.00
Unknown Cod	resource	0.00	0.00	0.00	0.00
Eel	resource	0.00	0.00	0.00	0.00
Starry Flounder	resource	0.00	0.00	100.00	0.00
Unknown Flounder	resource	0.00	100.00	0.00	0.00
Lingcod	resource	0.00	62.50	37.50	0.00
Unknown Greenling	resource	0.00	0.00	100.00	0.00
Halibut	resource	0.00	5.23	94.77	0.00
Black Rockfish	resource	0.00	11.76	88.24	0.00
Red Rockfish	resource	0.00	57.14	42.86	0.00
Unknown Rockfish	resource	0.00	0.00	0.00	0.00
Sablefish	resource	0.00	0.00	100.00	0.00
Unknown Irish Lord	resource	0.00	0.00	0.00	0.00
Unknown Sculpin	resource	0.00	0.00	0.00	0.00
Unknown Shark	resource	0.00	0.00	0.00	0.00
Skates	resource	0.00	0.00	100.00	0.00
Unknown Sole	resource	0.00	16.67	83.33	0.00
Wolffish	resource	0.00	0.00	0.00	0.00
Arctic Char	resource	0.00	0.00	0.00	0.00
Dolly Varden	resource	0.00	0.00	100.00	0.00
Lake Trout	resource	0.00	0.00	100.00	0.00
Grayling	resource	0.00	0.00	0.00	0.00
Unknown Pike	resource	0.00	0.00	100.00	0.00
Sheefish	resource	0.00	0.00	100.00	0.00
Unknown Sturgeon	resource	0.00	0.00	0.00	0.00
Cutthroat Trout	resource	0.00	0.00	0.00	0.00
Rainbow Trout	resource	0.00	0.00	42.86	57.14
Steelhead	resource	0.00	0.00	0.00	0.00
Unknown Trout	resource	0.00	0.00	0.00	0.00
Unknown Whitefish	resource	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 93. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, North Fork Road, 1998

Resource	Percent Base	Personal Use Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	0.09	0.64	98.89	0.38
Herring	resource	0.00	100.00	0.00	0.00
Herring Sac Roe	resource	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	resource	0.00	0.00	0.00	0.00
Eulachon	resource	0.00	0.00	0.00	0.00
Unknown Smelt	resource	0.00	100.00	0.00	0.00
Sea Bass	resource	0.00	0.00	0.00	0.00
Pacific Cod	resource	0.00	0.00	100.00	0.00
Pacific Tom Cod	resource	0.00	0.00	0.00	0.00
Walleye Pollock	resource	0.00	0.00	0.00	0.00
Unknown Cod	resource	0.00	0.00	0.00	0.00
Eel	resource	0.00	0.00	0.00	0.00
Starry Flounder	resource	0.00	0.00	100.00	0.00
Unknown Flounder	resource	0.00	0.00	0.00	0.00
Lingcod	resource	0.00	0.00	100.00	0.00
Unknown Greenling	resource	0.00	0.00	100.00	0.00
Halibut	resource	0.00	0.00	100.00	0.00
Black Rockfish	resource	0.00	0.00	100.00	0.00
Red Rockfish	resource	0.00	0.00	100.00	0.00
Unknown Rockfish	resource	0.00	0.00	0.00	0.00
Sablefish	resource	0.00	0.00	100.00	0.00
Unknown Irish Lord	resource	0.00	0.00	0.00	0.00
Unknown Sculpin	resource	0.00	0.00	0.00	0.00
Unknown Shark	resource	0.00	0.00	0.00	0.00
Skates	resource	0.00	0.00	0.00	0.00
Unknown Sole	resource	0.00	0.00	100.00	0.00
Wolffish	resource	0.00	0.00	0.00	0.00
Arctic Char	resource	0.00	0.00	0.00	0.00
Dolly Varden	resource	3.57	0.00	96.43	0.00
Lake Trout	resource	0.00	0.00	100.00	0.00
Grayling	resource	0.00	0.00	100.00	0.00
Unknown Pike	resource	0.00	0.00	100.00	0.00
Sheefish	resource	0.00	0.00	0.00	0.00
Unknown Sturgeon	resource	0.00	0.00	0.00	0.00
Cutthroat Trout	resource	0.00	0.00	0.00	0.00
Rainbow Trout	resource	0.00	0.00	20.00	80.00
Steelhead	resource	0.00	0.00	0.00	0.00
Unknown Trout	resource	0.00	0.00	0.00	0.00
Unknown Whitefish	resource	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 94. Estimated Percentages of Fish Other Than Salmon Harvested By Gear Type, Voznesenka, 1998

Resource	Percent Base	Personal Use Gear Lbs.	Removed from Commercial Catch Lbs.	Rod and Reel Lbs.	Ice Fishing Lbs.
Non-Salmon Fish	resource	7.63	80.53	11.84	0.00
Herring	resource	0.00	100.00	0.00	0.00
Herring Sac Roe	resource	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	resource	0.00	0.00	0.00	0.00
Eulachon	resource	100.00	0.00	0.00	0.00
Unknown Smelt	resource	0.00	0.00	0.00	0.00
Sea Bass	resource	0.00	0.00	0.00	0.00
Pacific Cod	resource	0.00	79.87	20.13	0.00
Pacific Tom Cod	resource	0.00	0.00	0.00	0.00
Walleye Pollock	resource	0.00	0.00	0.00	0.00
Unknown Cod	resource	0.00	0.00	0.00	0.00
Eel	resource	0.00	0.00	0.00	0.00
Starry Flounder	resource	0.00	0.00	0.00	0.00
Unknown Flounder	resource	0.00	0.00	0.00	0.00
Lingcod	resource	0.00	0.00	0.00	0.00
Unknown Greenling	resource	0.00	0.00	0.00	0.00
Halibut	resource	0.00	91.10	8.90	0.00
Black Rockfish	resource	0.00	0.00	100.00	0.00
Red Rockfish	resource	0.00	100.00	0.00	0.00
Unknown Rockfish	resource	0.00	100.00	0.00	0.00
Sablefish	resource	0.00	100.00	0.00	0.00
Unknown Irish Lord	resource	0.00	0.00	0.00	0.00
Unknown Sculpin	resource	0.00	0.00	0.00	0.00
Unknown Shark	resource	0.00	0.00	0.00	0.00
Skates	resource	0.00	0.00	0.00	0.00
Unknown Sole	resource	0.00	0.00	0.00	0.00
Wolffish	resource	0.00	0.00	0.00	0.00
Arctic Char	resource	0.00	0.00	0.00	0.00
Dolly Varden	resource	0.00	0.00	100.00	0.00
Lake Trout	resource	0.00	0.00	0.00	0.00
Grayling	resource	0.00	0.00	0.00	0.00
Unknown Pike	resource	0.00	0.00	0.00	0.00
Sheefish	resource	0.00	0.00	0.00	0.00
Unknown Sturgeon	resource	0.00	0.00	0.00	0.00
Cutthroat Trout	resource	0.00	0.00	0.00	0.00
Rainbow Trout	resource	0.00	0.00	100.00	0.00
Steelhead	resource	0.00	0.00	0.00	0.00
Unknown Trout	resource	0.00	0.00	0.00	0.00
Unknown Whitefish	resource	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 95. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Fritz Creek East, 1998

Resource	Personal Use Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	7.69	6.15	55.38	0.00	58.46
Herring	0.00	0.00	1.54	0.00	1.54
Herring Sac Roe	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	0.00	0.00	0.00	0.00	0.00
Eulachon	4.62	0.00	0.00	0.00	4.62
Unknown Smelt	0.00	0.00	0.00	0.00	0.00
Sea Bass	0.00	0.00	0.00	0.00	0.00
Pacific Cod	0.00	1.54	9.23	0.00	10.77
Pacific Tom Cod	0.00	0.00	1.54	0.00	1.54
Walleye Pollock	0.00	0.00	4.62	0.00	4.62
Unknown Cod	0.00	0.00	1.54	0.00	1.54
Eel	0.00	0.00	0.00	0.00	0.00
Starry Flounder	3.08	0.00	3.08	0.00	6.15
Unknown Flounder	0.00	0.00	0.00	0.00	0.00
Lingcod	0.00	0.00	1.54	0.00	1.54
Unknown Greenling	0.00	0.00	4.62	0.00	4.62
Halibut	0.00	6.15	49.23	0.00	52.31
Black Rockfish	0.00	3.08	9.23	0.00	12.31
Red Rockfish	0.00	0.00	3.08	0.00	3.08
Unknown Rockfish	0.00	0.00	1.54	0.00	1.54
Sablefish	0.00	1.54	0.00	0.00	1.54
Unknown Irish Lord	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	0.00	0.00	0.00	0.00	0.00
Unknown Shark	0.00	0.00	1.54	0.00	1.54
Skates	0.00	0.00	0.00	0.00	0.00
Unknown Sole	0.00	0.00	1.54	0.00	1.54
Wolffish	0.00	0.00	0.00	0.00	0.00
Arctic Char	0.00	0.00	1.54	0.00	1.54
Dolly Varden	0.00	0.00	13.85	0.00	13.85
Lake Trout	0.00	0.00	1.54	0.00	1.54
Grayling	0.00	0.00	1.54	0.00	1.54
Unknown Pike	0.00	0.00	0.00	0.00	0.00
Sheefish	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	0.00	0.00	6.15	0.00	6.15
Steelhead	0.00	0.00	1.54	0.00	1.54
Unknown Trout	0.00	0.00	1.54	0.00	1.54
Unknown Whitefish	1.54	0.00	0.00	0.00	1.54

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 96. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Nikolaevsk, 1998

Resource	Personal Use Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	48.65	51.35	45.95	2.70	78.38
Herring	0.00	0.00	0.00	0.00	0.00
Herring Sac Roe	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	0.00	0.00	0.00	0.00	0.00
Eulachon	43.24	0.00	0.00	0.00	43.24
Unknown Smelt	5.41	0.00	0.00	0.00	5.41
Sea Bass	0.00	0.00	0.00	0.00	0.00
Pacific Cod (gray)	0.00	5.41	0.00	0.00	5.41
Pacific Tom Cod	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	0.00	0.00	0.00	0.00	0.00
Unknown Cod	0.00	0.00	0.00	0.00	0.00
Eel	0.00	0.00	0.00	0.00	0.00
Starry Flounder	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	0.00	0.00	0.00	0.00	0.00
Lingcod	0.00	8.11	0.00	0.00	8.11
Unknown Greenling	0.00	0.00	0.00	0.00	0.00
Halibut	0.00	35.14	29.73	0.00	56.76
Black Rockfish	0.00	10.81	2.70	0.00	13.51
Red Rockfish	0.00	35.14	0.00	0.00	35.14
Unknown Rockfish	0.00	2.70	2.70	0.00	5.41
Sablefish	0.00	21.62	0.00	0.00	21.62
Unknown Irish Lord	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	0.00	0.00	0.00	0.00	0.00
Unknown Shark	0.00	0.00	0.00	0.00	0.00
Skates	0.00	0.00	0.00	0.00	0.00
Unknown Sole	0.00	0.00	0.00	0.00	0.00
Wolffish	0.00	0.00	0.00	0.00	0.00
Arctic Char	0.00	0.00	0.00	0.00	0.00
Dolly Varden	0.00	0.00	16.22	0.00	16.22
Lake Trout	0.00	0.00	5.41	2.70	8.11
Grayling	0.00	0.00	0.00	0.00	0.00
Unknown Pike	0.00	0.00	2.70	0.00	2.70
Sheefish	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	0.00	0.00	8.11	0.00	8.11
Steelhead	0.00	0.00	0.00	0.00	0.00
Unknown Trout	0.00	0.00	5.41	0.00	5.41
Unknown Whitefish	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 97. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Ninilchik, 1998

Resource	Personal Use Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	1.98	1.98	61.39	1.98	62.38
Herring	0.00	0.99	0.00	0.00	0.99
Herring Sac Roe	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	0.00	0.00	0.00	0.00	0.00
Eulachon	1.98	0.00	0.00	0.00	1.98
Unknown Smelt	0.00	0.00	0.00	0.00	0.00
Sea Bass	0.00	0.00	0.00	0.00	0.00
Pacific Cod	0.00	1.98	3.96	0.00	5.94
Pacific Tom Cod	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	0.00	0.00	0.00	0.00	0.00
Unknown Cod	0.00	0.00	0.00	0.00	0.00
Eel	0.00	0.00	0.00	0.00	0.00
Starry Flounder	0.00	0.00	1.98	0.00	1.98
Unknown Flounder	0.00	0.99	0.00	0.00	0.99
Lingcod	0.00	0.99	3.96	0.00	4.95
Unknown Greenling	0.00	0.00	2.97	0.00	2.97
Halibut	0.00	0.99	59.41	0.00	60.40
Black Rockfish	0.00	0.99	6.93	0.00	7.92
Red Rockfish	0.00	0.99	0.99	0.00	1.98
Unknown Rockfish	0.00	0.00	0.00	0.00	0.00
Sablefish	0.00	0.00	2.97	0.00	2.97
Unknown Irish Lord	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	0.00	0.00	0.00	0.00	0.00
Unknown Shark	0.00	0.00	0.00	0.00	0.00
Skates	0.00	0.00	0.99	0.00	0.99
Unknown Sole	0.00	0.99	0.99	0.00	1.98
Wolffish	0.00	0.00	0.00	0.00	0.00
Arctic Char	0.00	0.00	0.00	0.00	0.00
Dolly Varden	0.00	0.00	13.86	0.00	13.86
Lake Trout	0.00	0.00	1.98	0.00	1.98
Grayling	0.00	0.00	0.00	0.00	0.00
Unknown Pike	0.00	0.00	0.99	0.00	0.99
Sheefish	0.00	0.00	0.99	0.00	0.99
Unknown Sturgeon	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	0.00	0.00	1.98	1.98	3.96
Steelhead	0.00	0.00	0.00	0.00	0.00
Unknown Trout	0.00	0.00	0.00	0.00	0.00
Unknown Whitefish	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 98. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, North Fork Road, 1998

Resource	Personal Use Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	1.72	1.72	56.90	1.72	58.62
Herring	0.00	1.72	0.00	0.00	1.72
Herring Sac Roe	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	0.00	0.00	0.00	0.00	0.00
Eulachon	0.00	0.00	0.00	0.00	0.00
Unknown Smelt	0.00	1.72	0.00	0.00	1.72
Sea Bass	0.00	0.00	0.00	0.00	0.00
Pacific Cod	0.00	0.00	3.45	0.00	3.45
Pacific Tom Cod	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	0.00	0.00	0.00	0.00	0.00
Unknown Cod	0.00	0.00	0.00	0.00	0.00
Eel	0.00	0.00	0.00	0.00	0.00
Starry Flounder	0.00	0.00	1.72	0.00	1.72
Unknown Flounder	0.00	0.00	0.00	0.00	0.00
Lingcod	0.00	0.00	1.72	0.00	1.72
Unknown Greenling	0.00	0.00	3.45	0.00	3.45
Halibut	0.00	0.00	51.72	0.00	51.72
Black Rockfish	0.00	0.00	5.17	0.00	5.17
Red Rockfish	0.00	0.00	6.90	0.00	6.90
Unknown Rockfish	0.00	0.00	0.00	0.00	0.00
Sablefish	0.00	0.00	1.72	0.00	1.72
Unknown Irish Lord	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	0.00	0.00	0.00	0.00	0.00
Unknown Shark	0.00	0.00	0.00	0.00	0.00
Skates	0.00	0.00	0.00	0.00	0.00
Unknown Sole	0.00	0.00	3.45	0.00	3.45
Wolffish	0.00	0.00	0.00	0.00	0.00
Arctic Char	0.00	0.00	0.00	0.00	0.00
Dolly Varden	1.72	0.00	22.41	0.00	24.14
Lake Trout	0.00	0.00	1.72	0.00	1.72
Grayling	0.00	0.00	1.72	0.00	1.72
Unknown Pike	0.00	0.00	1.72	0.00	1.72
Sheefish	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	0.00	0.00	1.72	1.72	3.45
Steelhead	0.00	0.00	0.00	0.00	0.00
Unknown Trout	0.00	0.00	0.00	0.00	0.00
Unknown Whitefish	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

Table 99. Percentage of Households Harvesting Fish Other Than Salmon by Gear Type and Species, Voznesenka, 1998

Resource	Personal Use Gear	Removed from Commercial Catch	Rod and Reel	Ice Fishing	Any Method
Non-Salmon Fish	27.78	55.56	33.33	0.00	66.67
Herring	0.00	5.56	0.00	0.00	5.56
Herring Sac Roe	0.00	0.00	0.00	0.00	0.00
Herring Spawn on Kelp	0.00	0.00	0.00	0.00	0.00
Eulachon	27.78	0.00	0.00	0.00	27.78
Unknown Smelt	0.00	0.00	0.00	0.00	0.00
Sea Bass	0.00	0.00	0.00	0.00	0.00
Pacific Cod	0.00	11.11	5.56	0.00	11.11
Pacific Tom Cod	0.00	0.00	0.00	0.00	0.00
Walleye Pollock	0.00	0.00	0.00	0.00	0.00
Unknown Cod	0.00	0.00	0.00	0.00	0.00
Eel	0.00	0.00	0.00	0.00	0.00
Starry Flounder	0.00	0.00	0.00	0.00	0.00
Unknown Flounder	0.00	0.00	0.00	0.00	0.00
Lingcod	0.00	0.00	0.00	0.00	0.00
Unknown Greenling	0.00	0.00	0.00	0.00	0.00
Halibut	0.00	55.56	11.11	0.00	55.56
Black Rockfish	0.00	0.00	11.11	0.00	11.11
Red Rockfish	0.00	27.78	0.00	0.00	27.78
Unknown Rockfish	0.00	5.56	0.00	0.00	5.56
Sablefish	0.00	22.22	0.00	0.00	22.22
Unknown Irish Lord	0.00	0.00	0.00	0.00	0.00
Unknown Sculpin	0.00	0.00	0.00	0.00	0.00
Unknown Shark	0.00	0.00	0.00	0.00	0.00
Skates	0.00	0.00	0.00	0.00	0.00
Unknown Sole	0.00	0.00	0.00	0.00	0.00
Wolffish	0.00	0.00	0.00	0.00	0.00
Arctic Char	0.00	0.00	0.00	0.00	0.00
Dolly Varden	0.00	0.00	16.67	0.00	16.67
Lake Trout	0.00	0.00	0.00	0.00	0.00
Grayling	0.00	0.00	0.00	0.00	0.00
Unknown Pike	0.00	0.00	0.00	0.00	0.00
Sheefish	0.00	0.00	0.00	0.00	0.00
Unknown Sturgeon	0.00	0.00	0.00	0.00	0.00
Cutthroat Trout	0.00	0.00	0.00	0.00	0.00
Rainbow Trout	0.00	0.00	11.11	0.00	11.11
Steelhead	0.00	0.00	0.00	0.00	0.00
Unknown Trout	0.00	0.00	0.00	0.00	0.00
Unknown Whitefish	0.00	0.00	0.00	0.00	0.00

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Household Survey, 1999

LAND MAMMALS

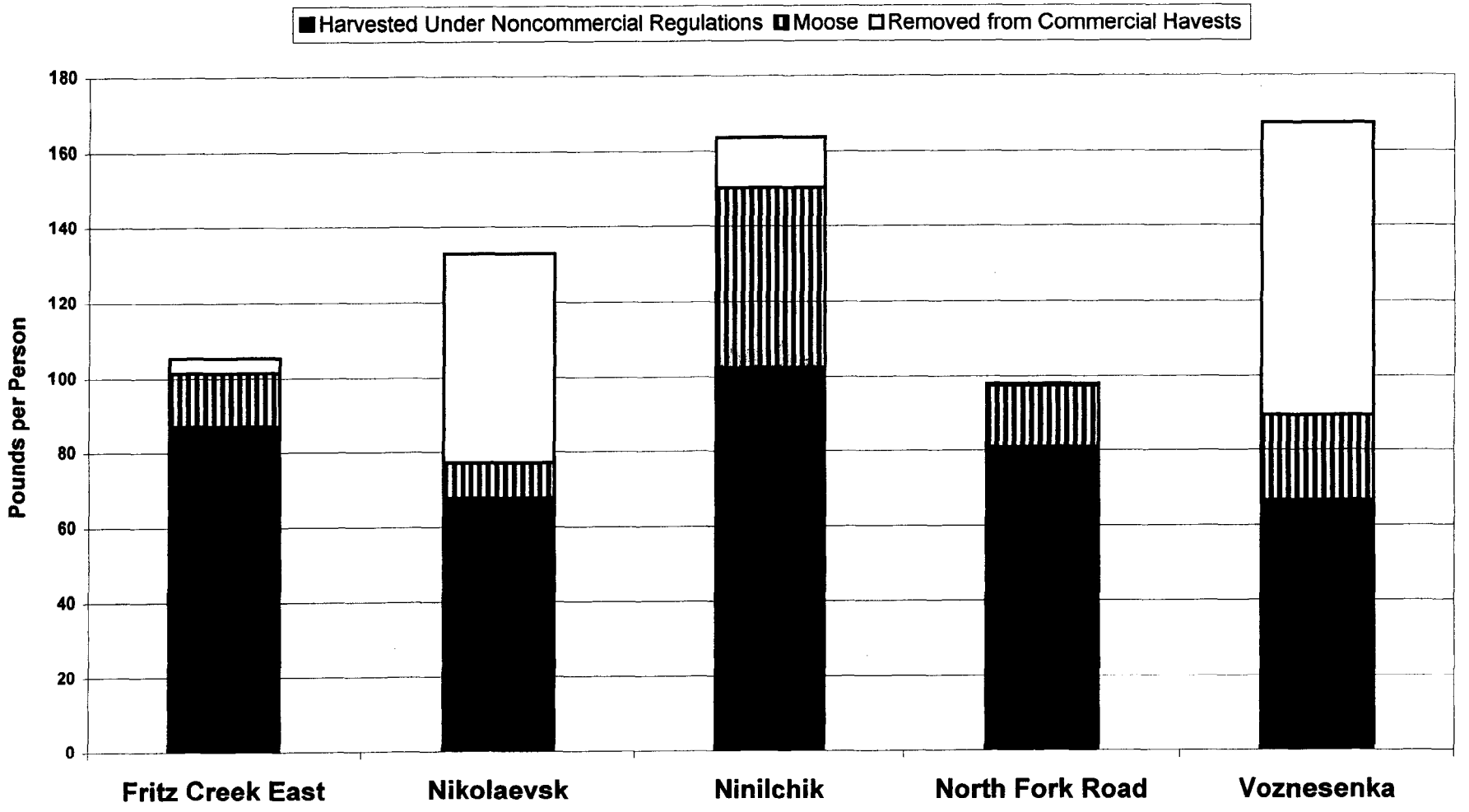
General Use Pattern

Overall, the land mammal category ranked fourth or fifth in terms of household participation in the study communities in 1998. In each community, half or more of the households used at least one kind of land mammal, from a high of 64.6 percent in Fritz Creek East, to 63.4 percent in Ninilchik, 58.6 percent in North Fork Road, 56.8 percent in Nikolaevsk, and 50.0 percent in Voznesenka (Fig. 20). In terms of harvest quantities, land mammals ranked first, by far, at Ninilchik, with a harvest of 66.2 pounds per person, 40.4 percent of the total resources harvested (Fig. 23, Fig. 24). Land mammal harvests totaled 32.2 pounds per person at Voznesenka (19.2 percent of the total harvest), 31.3 pounds per person at North Fork Road (32.0 percent), 29.4 pounds per person at Fritz Creek (27.9 percent), and 22.4 pounds per person at Nikolaevsk (16.8 percent). Households which hunted land mammals represented 50.5 percent of all households at Ninilchik (the most of any study community), 30.8 percent at Fritz Creek East, 45.9 percent at Nikolaevsk, 43.1 percent at North Fork Road, and 38.9 percent at Voznesenka (Table 39 through Table 43).

Moose

Moose was by far the most frequently used land mammal in the study communities. In the 1998 study year, moose was used by 53.8 percent of the households in Fritz Creek East, 35.1 percent at Nikolaevsk, 56.4 percent at Ninilchik, 50.0 percent at North Fork Road, and 44.4 percent at Voznesenka. In Ninilchik, 46.5 percent of the households hunted moose and of these, 44.7 percent were successful. Participation and success rates were lower in the other four study areas. In Fritz Creek East, 21.5 percent of the households hunted moose and of these, 28.8 percent were successful. In Nikolaevsk, 35.1 percent of the households hunted moose and of these, 15.4 percent were successful. In North Fork Road, 37.9 percent of the households hunted moose and of these, 22.7 percent were successful. In Voznesenka, 33.3 percent of the households hunted moose and of these, 33.3 percent were successful. Based on survey results, moose harvests in 1998 totaled 12 (+/- 78%) by Fritz Creek East households, 4 (+/- 76%) by Nikolaevsk, 95 (+/- 36.8%) by Ninilchik, 14 (+/- 70%) by North Fork Road, and 14 (+/-123%) by Voznesenka. Expressed as number of moose per person, harvests were highest at Ninilchik at 0.089 moose/person (more than double the rate of any of the other study areas), followed by Voznesenka (0.042 moose/person), North Fork Road (0.031moose/person), Fritz Creek East (0.027 moose/person), and Nikolaevsk (0.017 moose/person). The relatively high harvests of moose at Ninilchik compared to the other study communities accounted for a considerable portion of the difference in total harvests between Ninilchik on the one hand, and Nikolaevsk, Fritz Creek East, and North Fork Road on the other (Fig. 32).

Figure 32. Contributions of Resources Removed from Commercial Harvests, Moose Harvests, and Other Harvests to Total Harvest for Home Use, Study Areas, 1998



Most study community hunters hunted and harvested moose on the Kenai Peninsula (Table 59, Fig. 33). Virtually all of this hunting activity took place in GMU 15C in lands outside the general boundary of the Kenai Peninsula National Wildlife Refuge. In 1998, no interviewed households hunted moose on federal lands in GMU 15A and very few hunted on non-federal lands in that subunit. Hunting moose in GMU 15B by study community residents was also very uncommon. No interviewed moose hunters used GMU 7. As shown in Table 65, interviewed households reported some limited moose hunting activity in seven other GMUs.

Limited comparisons can be made between survey data and ADF&G harvest ticket and permit records regarding estimated moose harvests in 1998. Table 100 reports the total reported moose harvests for Kenai Peninsula communities in 1998 and the location of the harvest. Consistent with the survey data, most of the reported moose harvest of residents of the general study area (defined as Ninilchik, Anchor Point, and Homer regardless of rural/non-rural status) were harvested in GMU 15C (74.8 percent), with very few taken in GMU 15A (1.6 percent) or GMU 15B (1.2 percent).

Regarding harvest levels, only limited comparisons can be made for Ninilchik. Harvests reported on returned ADF&G harvest tickets and federal registration permits in 1998 for hunters listing Ninilchik as their place of residence totaled 53 moose (50 from harvest tickets, 3 from federal permits). Several qualifications must be noted in comparing this estimate with the survey results. In its harvest data files, ADF&G does not expand this reported number to compensate for any underreporting by hunters who pick up harvest tickets but fail to return them after taking a moose. On the other hand, area management biologists adjust the annual mortality estimate to account for any unreported and "illegal" harvests, such as any moose taken by hunters without licenses or animals killed but not reported that are not in conformance with the spike/fork or 50 inch antler bag limit. For 1992/93 (the last year of published data for these estimates), ADF&G assumed an unreported harvest of 20 percent for GMU 15 overall and 14 percent for GMU 15C (Hicks 1995:161,171,182). Using these assumptions, the reported harvest of 53 moose for Ninilchik for 1998 could be expanded to between 62 (using the GMU 15C assumptions) to 66 moose (using the assumptions for GMU 15 overall), or an average adjusted total of about 64 moose.

Another qualification concerns potential differences in the definition of Ninilchik in the harvest ticket database compared with the surveyed population. The harvest ticket data are based on the place of residence of the hunter as listed on the harvest ticket. As noted in Chapter One, the Ninilchik sampling area extended to just south of Clam Gulch and just north of Anchor Point (based on the federal definitions of rural and non-rural places). It is possible that some of the survey population's moose harvest is included as Clam Gulch or Anchor Point harvests in the harvest ticket database. However, this is likely to have been a very small portion of the sample population, in that no interviewed households in the Ninilchik sample gave a Clam Gulch or Anchor Point mailing address when filling out a form requesting the results of this project.

The reported total of moose for Ninilchik hunters based on returned harvest tickets and permits of 53 animals compares to the survey estimate of 95 +/-36.8%, giving a range of 60 to 130 moose. These

Figure 33. Location of Moose Hunting, Study Areas, 1998

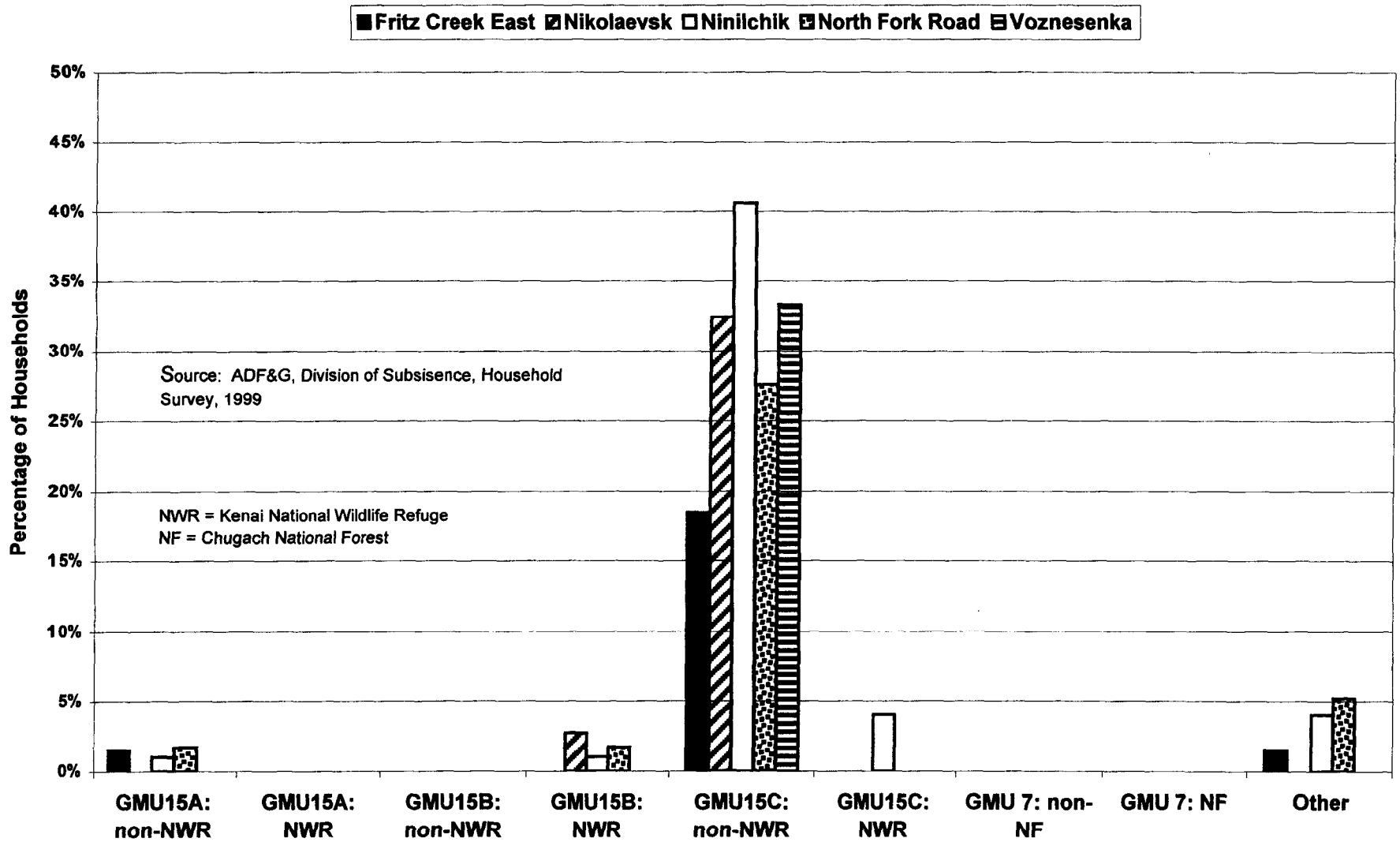


Table 100. Location of Moose Harvests, Harvest Ticket and Permit Data, Kenai Peninsula Communities, 1998

COMMUNITY	Total Moose Harvest	Percentage of Total Harvest Taken In:						
		GMU 7	GMU 15A	GMU 15B	GMU 15C	GMU 15Z	GMU 15 Total	Other
ANCHOR POINT	56	1.8%	0.0%	0.0%	78.6%	0.0%	78.6%	19.6%
FRITZ CREEK	5	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
HOMER	131	0.8%	2.3%	0.8%	69.5%	0.0%	72.5%	26.7%
NIKOLAEVSK	1	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
NINILCHIK	53	0.0%	1.9%	3.8%	81.1%	0.0%	86.8%	13.2%
Subtotal, "Study Communities"	246	0.8%	1.6%	1.2%	74.8%	0.0%	77.6%	21.5%
COOPER LANDING	8	75.0%	12.5%	0.0%	0.0%	0.0%	12.5%	12.5%
HOPE	2	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%
MOOSE PASS	7	57.1%	0.0%	0.0%	0.0%	0.0%	0.0%	42.9%
SEWARD	31	35.5%	3.2%	0.0%	6.5%	0.0%	9.7%	54.8%
Subtotal, GMU 7 Communities	48	45.8%	4.2%	0.0%	4.2%	0.0%	8.3%	45.8%
CLAM GULCH	15	0.0%	0.0%	0.0%	93.3%	0.0%	93.3%	6.7%
KASILOF	53	0.0%	9.4%	30.2%	37.7%	0.0%	77.4%	22.6%
KENAI	148	1.4%	54.7%	8.1%	10.1%	0.0%	73.0%	25.7%
NANWALEK	1	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
NIKISKI	62	0.0%	69.4%	3.2%	4.8%	3.2%	80.6%	19.4%
PORT GRAHAM	1	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
SELDOVIA	13	7.7%	7.7%	0.0%	23.1%	0.0%	30.8%	61.5%
SOLDOTNA	192	1.6%	42.2%	15.6%	12.0%	0.5%	70.3%	28.1%
STERLING	52	3.8%	59.6%	7.7%	5.8%	0.0%	73.1%	23.1%
Subtotal, Other GMU 15 Communities	537	1.5%	45.1%	11.9%	15.5%	0.6%	73.0%	25.5%
TOTAL	831	3.9%	29.8%	8.1%	32.4%	0.4%	70.6%	25.5%

Source: ADF&G 2000

estimates can be examined within the context of reported harvests for other Kenai Peninsula communities in 1998 and over the last 10 years (1989 through 1998). As measured by harvest ticket reports in number of moose harvested per person, the average for Ninilchik of 0.041 in 1998 was higher than any other Kenai Peninsula community and is more than double the area average of 0.017 moose/person (Fig. 34). Thus the survey results for Ninilchik indicating a relatively high moose harvest in 1998 are not inconsistent with the harvest ticket data.

The survey estimate for Ninilchik of 95 moose harvested in 1998 is higher than any estimate for Ninilchik based on harvest tickets over the last ten years (Fig. 35). In that data set, the highest reported harvest was 61 moose in 1996. However, the lower limit of the survey estimate of 60 moose is similar to harvest ticket estimates for 1996 (61), 1997 (58), and 1998 (53), especially if these are adjusted by 15 percent to 20 percent to account for unreported harvests.

The only previous survey estimate for Ninilchik of 23 moose in 1982 is not entirely comparable with the 1998 estimate because a smaller sampling area was used (see "Limitations" section in Chapter One).[2] More directly comparable are estimates of moose harvests per person (Fig. 36). Again, the 1998 survey data estimate of about 0.09 moose/person is the highest on record for Ninilchik, with the next highest the 1996 reported harvest of about 0.06 moose/person. The 1982 survey resulted in an estimate of about 0.035 moose harvested per person.

Overall, survey and harvest ticket data suggest that moose harvests have increased at Ninilchik since the 1980s and early 1990s and that, on average, Ninilchik residents harvest more moose per person than other Kenai Peninsula communities. Given the relatively high estimate of 95 moose from the household surveys compared to harvest ticket estimates, even when these are adjusted for unreported moose and when the potential effects of the differences in Ninilchik area boundaries are taken into account, it is possible that the survey oversampled successful moose hunters. If so, a better estimate of moose harvests for Ninilchik in 1998 might be a number toward the lower end of the confidence range, such as 60 moose. Such an adjustment would remove about 17.6 pounds per person from the community's estimated harvest, resulting in an estimated total of 146.2 pounds per person.

Caribou

Caribou are relatively scarce on the Kenai Peninsula. They consist of four small herds that are the result of reintroduction programs.[3] Hunting of these herds is restricted through permit systems. Several more abundant caribou populations are available to study community residents. In GMU 13, the

[2] A survey of a non-random sample of 26 Ninilchik households was conducted by the Ninilchik Traditional Council in 1994 (Ninilchik Traditional Council 1994), but harvest data for a single study year were not collected. Because of this and other methodological differences, the results of this 1994 survey are not comparable with those of Division of Subsistence studies conducted in Ninilchik pertaining to 1982 or 1998 (USFWS 1994).

[3] The herds are: the Kenai Mountains Herd in the northern portion of GMU 7; the Kenai Lowlands Herd in a portion of GMU 15a; the Killey River Herd in the eastern portion of GMU 15B; and the Fox River Herd near the head of Kachemak Bay in GMU 15C.

Figure 34. Moose Harvest per Person, Kenai Peninsula Communities, 1998

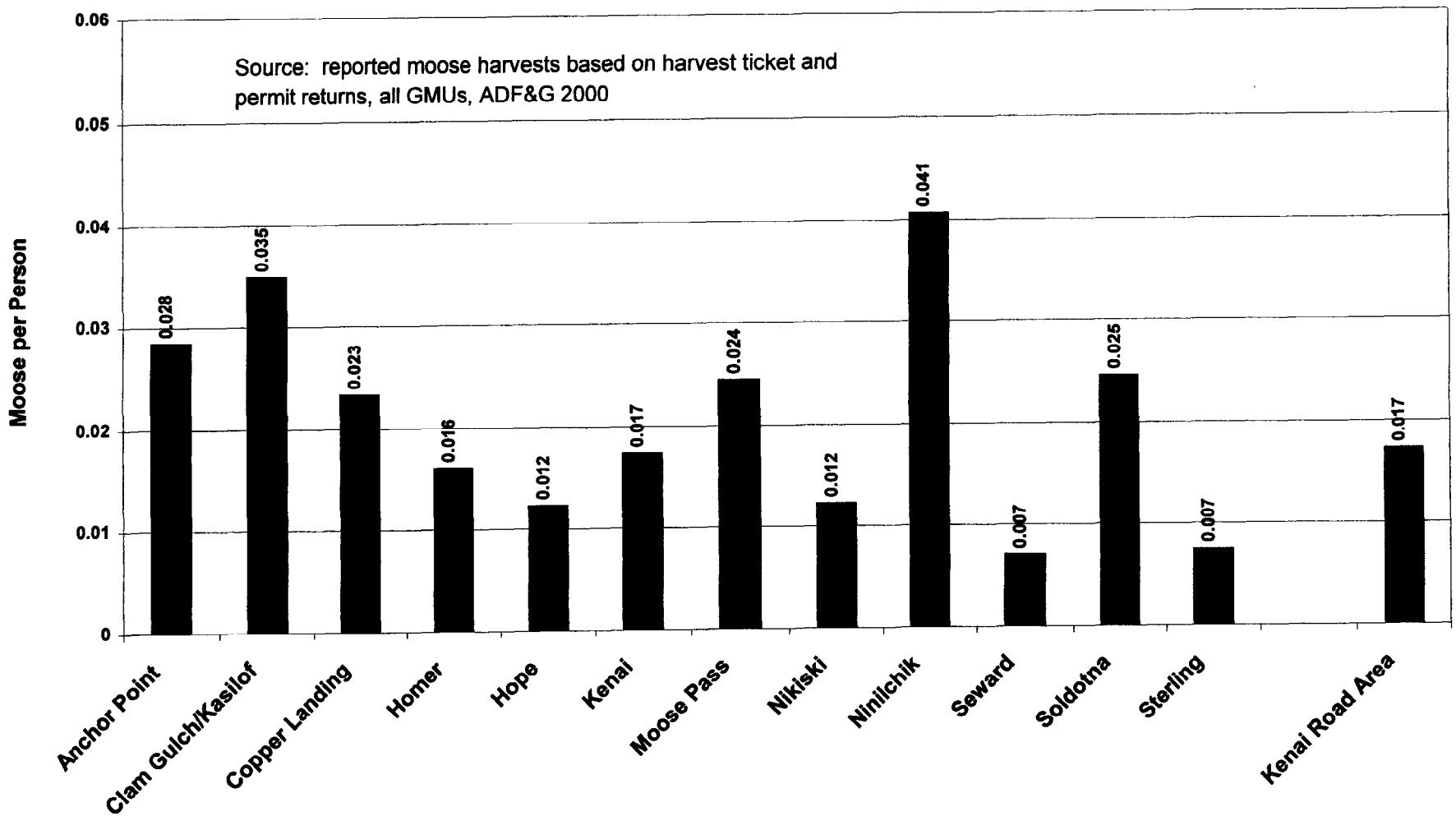


Figure 35. Nunilchik: Number of Moose Harvested, 1982 - 1998

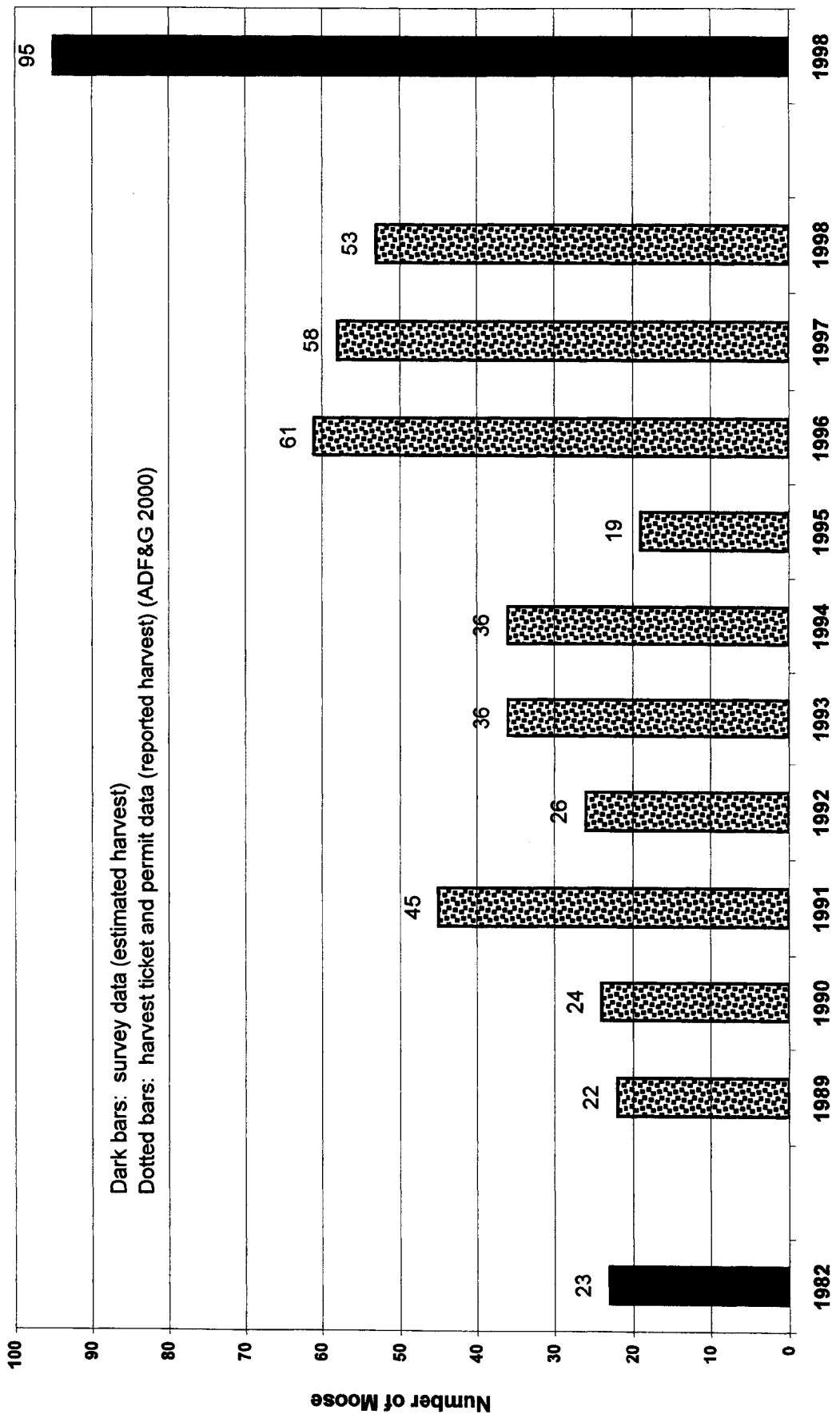
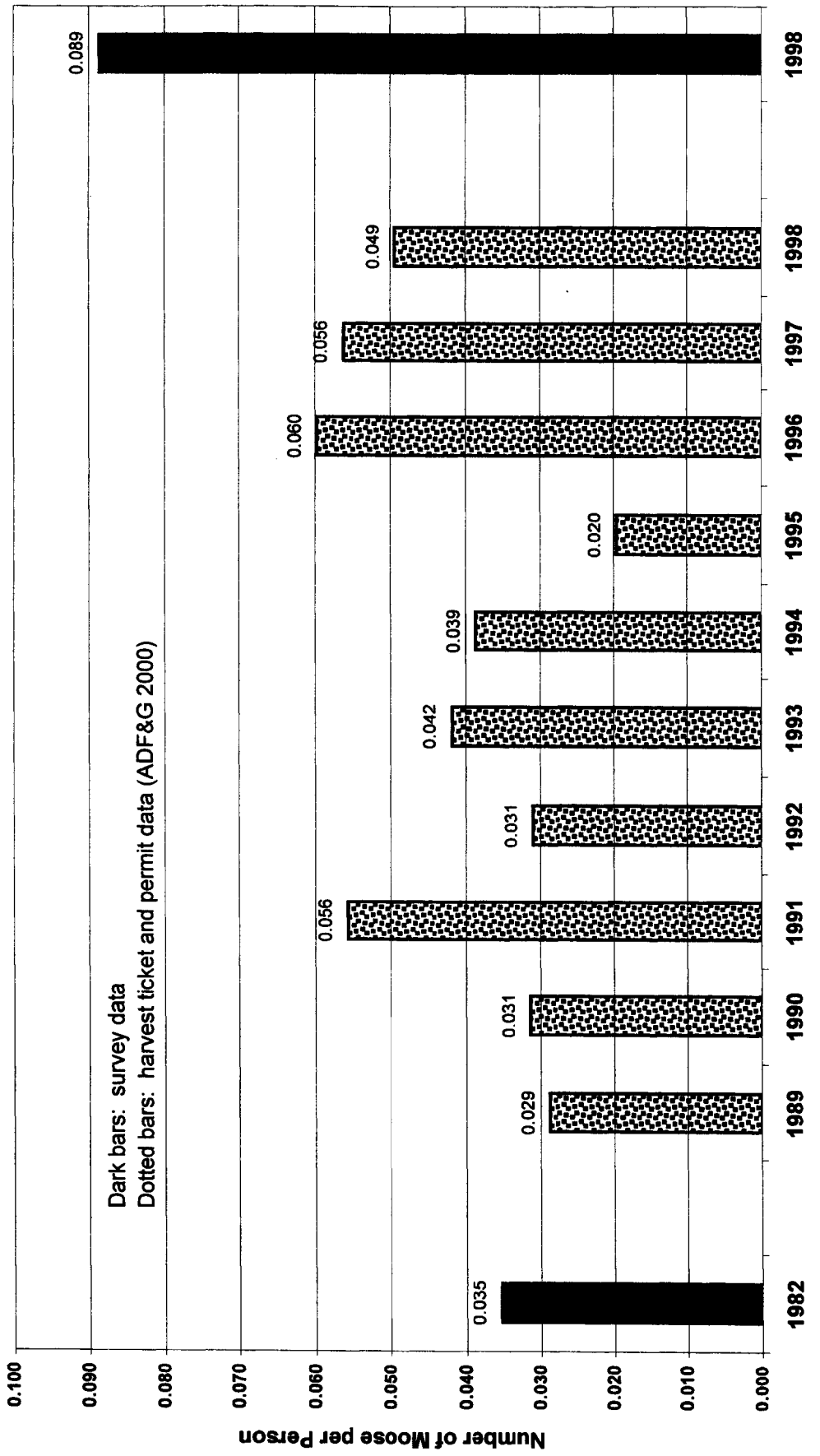


Figure 36. Ninilchik: Number of Moose Harvested per Person, 1982 - 1998



Nelchina Herd is accessible along the road system. The abundant Mulchatna Herd in GMUs 9B, 17, and 19 is accessible by air.

Of land mammals, caribou generally ranked third in terms of use after moose and deer in study communities. Caribou were used by 12.3 percent of the households in Fritz Creek East, 24.3 percent in Nikolaevsk, 18.8 percent in Ninilchik, 19.0 percent in North Fork Road, and 5.6 percent in Voznesenka. Estimated harvests were 16 caribou by Fritz Creek East, 14 by Nikolaevsk, 91 by Ninilchik, and 29 by North Fork Road. No interviewed households in Voznesenka hunted caribou in 1998 (Table 39 through Table 43).

According to the survey results, only in North Fork Road were there any sampled households that hunted caribou on the Kenai Peninsula in 1998 (Table 60). As shown in Table 66, most of the caribou hunting activity by sampled households in 1998 took place in GMU 9, GMU 17 and GMU 13, focusing on the Mulchatna and Nelchina herds. This finding is consistent with ADF&G permit and harvest ticket records, which show that most of the caribou harvests by Kenai Peninsula residents took place in GMUs 9 and 17 (Mulchatna Herd) and 13 (Nelchina Herd) (Table 101). As shown in Figure 37, reported caribou harvests by residents of communities generally within the study area totaled 159, with 54 percent of these from the Mulchatna Herd, 19 percent from the Nelchina Herd, 16 percent from other herds, and 4 percent from Kenai Peninsula herds.[4]

Deer

There is no deer population on the Kenai Peninsula, but deer are abundant on Kodiak Island and in Prince William Sound, with long seasons and generous bag limits. It is therefore not surprising that use of deer was not uncommon among study community households: 23.1 percent of Fritz Creek households used deer, as did 29.7 percent of the Nikolaevsk households, 17.8 percent of Ninilchik, 12.1 percent of North Fork Road, and 44.4 percent of Voznesenka. Estimated harvests of deer were 74 by Fritz Creek East, 24 by Nikolaevsk, 71 by Ninilchik, 52 by North Fork Road, and 65 by Voznesenka (Table 39 through Table 43).

Other Game and Furbearers

Use of other large and small game resources was uncommon in the study communities in 1998. Generally, less than 10 percent of the households in any study community (and usually quite a bit less) used black bear, goat, sheep, or any small game such as hare or porcupine. Involvement in trapping was low and furbearer harvests were small. Harvests included small numbers of fox, coyote, muskrat, beaver, land otter, lynx, marten, mink, squirrel, and weasel (Table 39 through Table 43).

[4] ADF&G caribou harvest summaries prior to 1998 are limited largely to permit records; little effort was made to compile harvest ticket data. For 1998/99, harvest ticket data were compiled. Even so, harvest estimates for herds not on a permit system, such as the Mulchatna Herd, should be considered minimums.

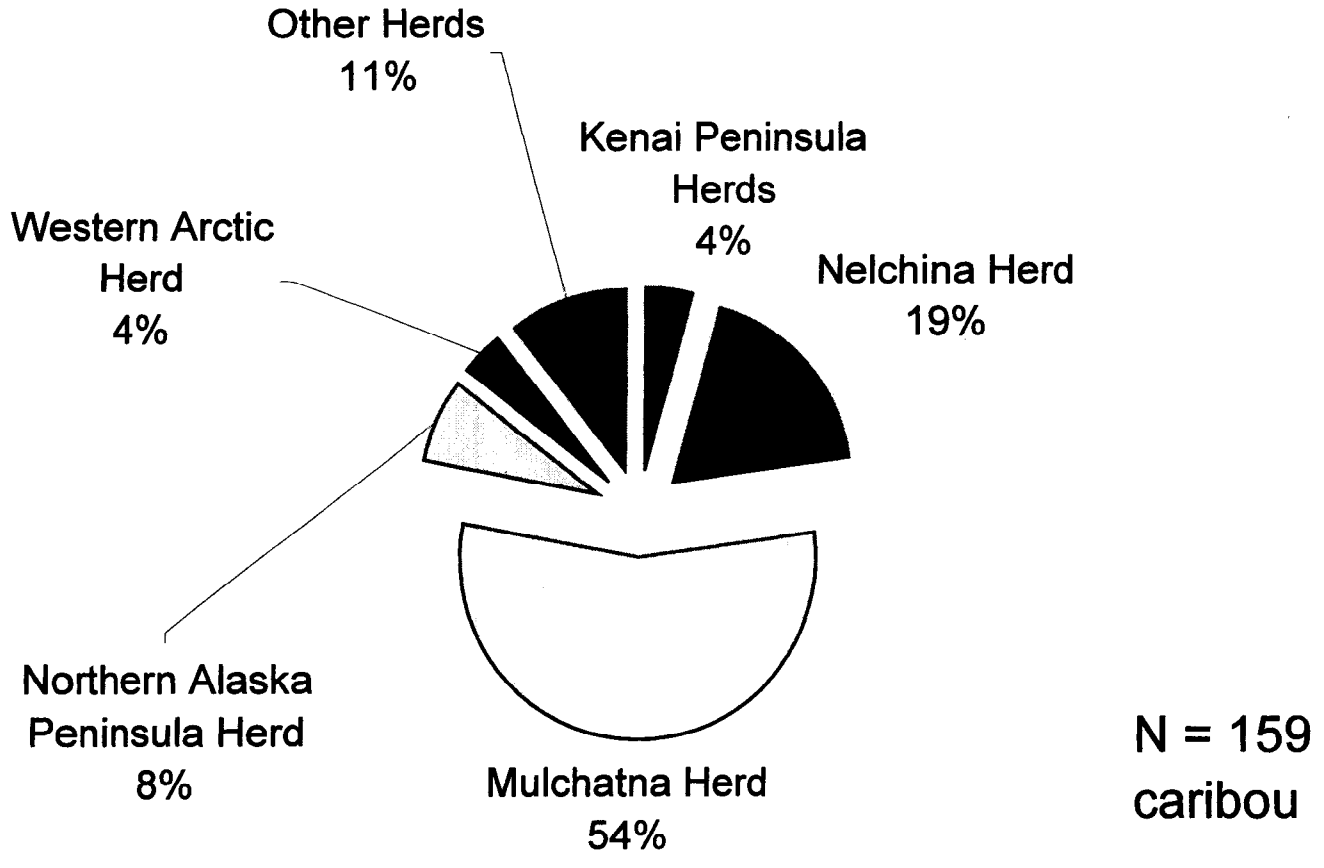
Table 101. Location of Caribou Harvests, Harvest Ticket and Permit Data, Kenai Peninsula Communities, 1998

COMMUNITY	Number of Caribou by Game Management Unit																
	7	9	10	12	13	15A	15B	15C	15	17	18	19	20	23	25	26	TOTAL
ANCHOR POINT	0	12	0	2	11	0	0	1	1	3	0	1	0	0	2	0	32
FRITZ CREEK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOMER	1	38	5	2	16	0	2	2	4	31	2	7	0	3	0	0	109
NIKOLAEVSK	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
NINILCHIK	0	4	0	2	3	0	0	0	0	0	0	3	0	3	2	0	17
Subtotal, "Study Communities"	1	55	5	6	30	0	2	3	5	34	2	11	0	6	4	0	159
COOPER LANDING	0	5	0	2	3	0	0	0	0	0	0	0	0	0	0	0	10
HOPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MOOSE PASS	3	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	8
SEWARD	0	13	0	6	6	0	0	0	0	6	0	0	1	0	0	0	32
Subtotal, GMU 7 Communities	3	18	0	8	10	0	0	0	0	10	0	0	1	0	0	0	50
CLAM GULCH	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	5
ENGLISH BAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HALIBUT COVE	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
KASILOF	0	15	0	0	5	0	4	0	4	17	0	2	0	4	0	0	47
KENAI	3	67	0	2	9	0	1	1	2	50	0	4	0	8	6	3	154
NIKISKI	0	22	0	2	2	0	0	0	0	23	0	4	0	0	0	0	53
PORT GRAHAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SELDOVIA	0	6	0	0	2	0	0	0	0	2	0	0	0	0	0	0	10
SOLDOTNA	5	70	0	7	21	0	10	0	10	75	0	22	3	31	0	5	249
STERLING	0	30	0	0	11	0	2	0	2	23	0	17	0	0	0	0	83
Subtotak, Other GMU 15 Communities	8	211	0	11	50	0	17	1	18	193	0	51	3	43	6	8	602
Total	12	284	5	25	90	0	19	4	23	237	2	62	4	49	10	8	811

Note: excludes five caribou harvested by Soldotna in unknown GMU

Source: ADF&G 2000

Figure 37. Reported Caribou Harvests by Herd, 1998, Communities of the General Study Area



The limited hunting activity among sampled households for Dall sheep in 1998 took place within the outer boundaries of the Kenai Peninsula NWR in GMU 15B (Table 61). For mountain goat, the only hunting was in GMU 15C outside the federal unit boundaries (Table 62). The small amount of hunting for black bear occurred within the outer boundaries of the Kenai NWR in GMU 15B and on non-federal lands in GMU 15C (Table 63). Only in Ninilchik were there any brown bear hunters; this activity occurred within the refuge boundaries in GMU 15B and off the Kenai Peninsula (Table 64).

MARINE MAMMALS

Under the provisions of the federal Marine Mammal Protection Act, only Alaska Natives may take marine mammals for subsistence purposes. As discussed in Chapter Two, the Alaska Native population of the study communities was small, with most Alaska Native households living in Ninilchik (9.6 percent of the total population). No sampled households in any of the study communities harvested marine mammals in 1998. In Ninilchik, 2.0 percent of the households received gifts of whale meat or blubber. In Fritz Creek East, 3.1 percent of the households used marine mammals, including seal (1.5 percent) and whale (3.1 percent). In no other community did any households use marine mammals (Table 39 through Table 43).

In a separate Division of Subsistence study, interviews have been conducted annually with Alaska Native households in Kenai Peninsula road-connected communities about their harvests of harbor seals and sea lions in for the period 1993 through 1998. For 1998 for the Homer area, harvest estimates were 23 harbor seals and no sea lions by approximately 11 hunting households. Estimated harbor seal harvests have ranged between 0 (in 1995) to 41 (in 1997) in Homer; no sea lion harvests have been recorded. In the general Kenai area, an estimated 13 harbor seals and no sea lions were harvested in 1998 by an estimated 10 hunting households. In the Kenai area, estimated harbor seal harvests have ranged between 13 (in 1998) and 35 (in 1997); in 1996, two sea lions were harvested, but none were taken in any other study year. In this study, no seal or sea lion hunters were identified in the general Ninilchik area (Wolfe and Hutchinson-Scarbrough 1999).

BIRDS

Use of birds ranged from a high of 35.6 percent of the households in Ninilchik, to 27.8 percent in Voznesenka, 25.9 percent in North Fork Road, 21.5 percent in Fritz Creek East, and 5.4 percent in Nikolaevsk (Fig. 20). Birds were taken in relatively low quantities, with a high of 1.7 pounds per person in Fritz Creek East (1.6 percent of the total harvest), to 1.4 pounds per person in Ninilchik (0.9 percent), 0.6 pounds per person in North Fork Road (0.6 percent), 0.2 pounds per person in Voznesenka (0.1 percent), and less than 0.1 pound per person in Nikolaevsk (less than 0.1 percent) (Fig. 23, Fig. 24).

Generally, grouse was the type of bird used by the most households and taken in the largest numbers, followed by ptarmigan, ducks, and geese. There was no use of wild bird eggs in any community.

WILD PLANTS

Most households in the study communities used wild plants, including 84.6 percent in Fritz Creek East, 83.2 percent in Ninilchik, 79.3 percent in North Fork Road, 72.2 percent at Voznesenka, and 70.3 percent at Nikolaevsk (Fig. 20). Harvests of wild plants ranged from 6.6 pounds per person at Nikolaevsk, to 5.9 pounds per person at Voznesenka, 5.5 pounds per person at Fritz Creek East, 4.4 pounds per person at Ninilchik, and 3.4 pounds per person at North Fork Road (Fig. 23). Wild plants made up between 2.7 percent (at Ninilchik) and 5.2 percent (at Fritz Creek East) of total community harvests in 1998 (Fig. 24). Data on specific kinds of wild plants were not collected. Generally, berries were used by the most households, followed by other plants such as mushrooms and "greens."

HOUSEHOLD-LEVEL PATTERNS OF HARVEST AND USE

In most Alaska communities, a subset of households accounts for the majority of the wild resource harvest. A "rule of thumb" is the "30/70 rule" -- that, typically, 30 percent of a community's households harvest 70 percent or more of the wild foods (Wolfe 1987).

Large differences in household-level harvests occurred in each of the study communities. In Fritz Creek East, about 26.0 percent of the households took 70.8 percent of the harvest (Fig. 38). In Nikolaevsk, 70.6 percent of the harvest was taken by 35.1 percent of the households (Fig.39). In Ninilchik, 24.8 percent of the households accounted for 70.5 percent of the take of wild foods (Fig. 40). In North Fork Road, the top 20.7 percent of the households produced 70.4 percent of the community's total harvest (Fig. 41). Finally, in Voznesenka, 22.2 percent of the households harvested 73.4 percent of the community total (Fig. 42).

Table 102 reports the percentage of each community's total harvest taken by four percentiles of households. By this measure, in North Fork Road area, the harvest was concentrated in the smallest percentage of households; the top 25 percent took 78.8 percent of the total harvest and averaged a harvest of 237.5 pounds per person, while the lowest two quarters accounted for just 3.2 percent of the total and averaged harvests of 0.3 pounds per person and 12.0 pounds per person, respectively. The patterns in Fritz Creek East, Ninilchik, and Voznesenka were similar to that of North Fork Road. There was evidence of specialization in Nikolaevsk as well, although the distribution of harvests among households there was slightly more even: the top quarter of households harvested 60.2 percent of the total while the bottom half took 12.9 percent.

In rural Alaska, harvests by high producing households are distributed widely throughout the community, so that the range of resources used, and likely the amount of resources consumed in

Figure 38. Distribution of Harvests by Percentage of Households, Fritz Creek East, 1998

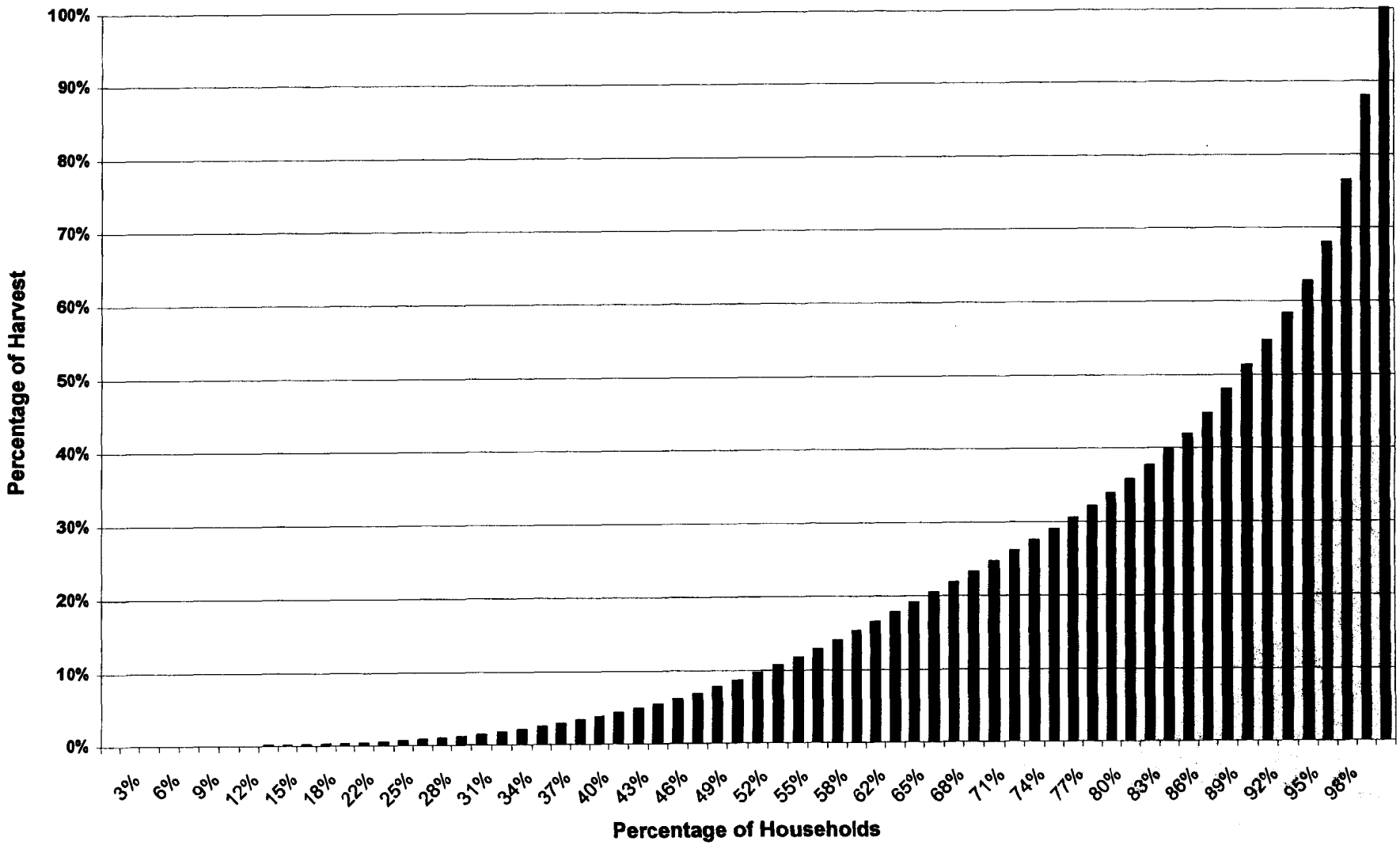


Figure 39. Distribution of Harvests by Percentage of Households, Nikolaevsk, 1998

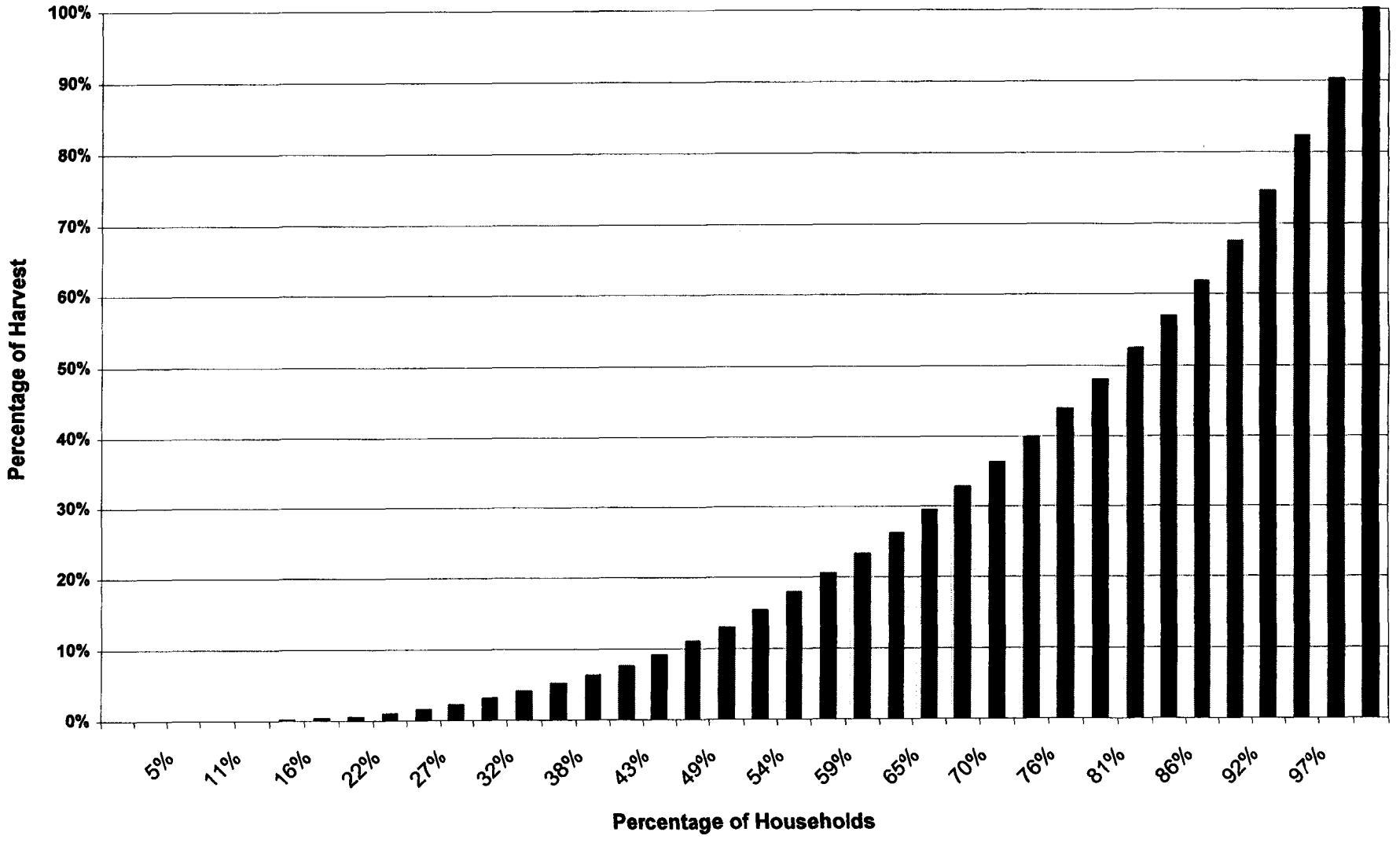


Figure 40. Distribution of Harvests by Percentage of Households, Ninilchik, 1998

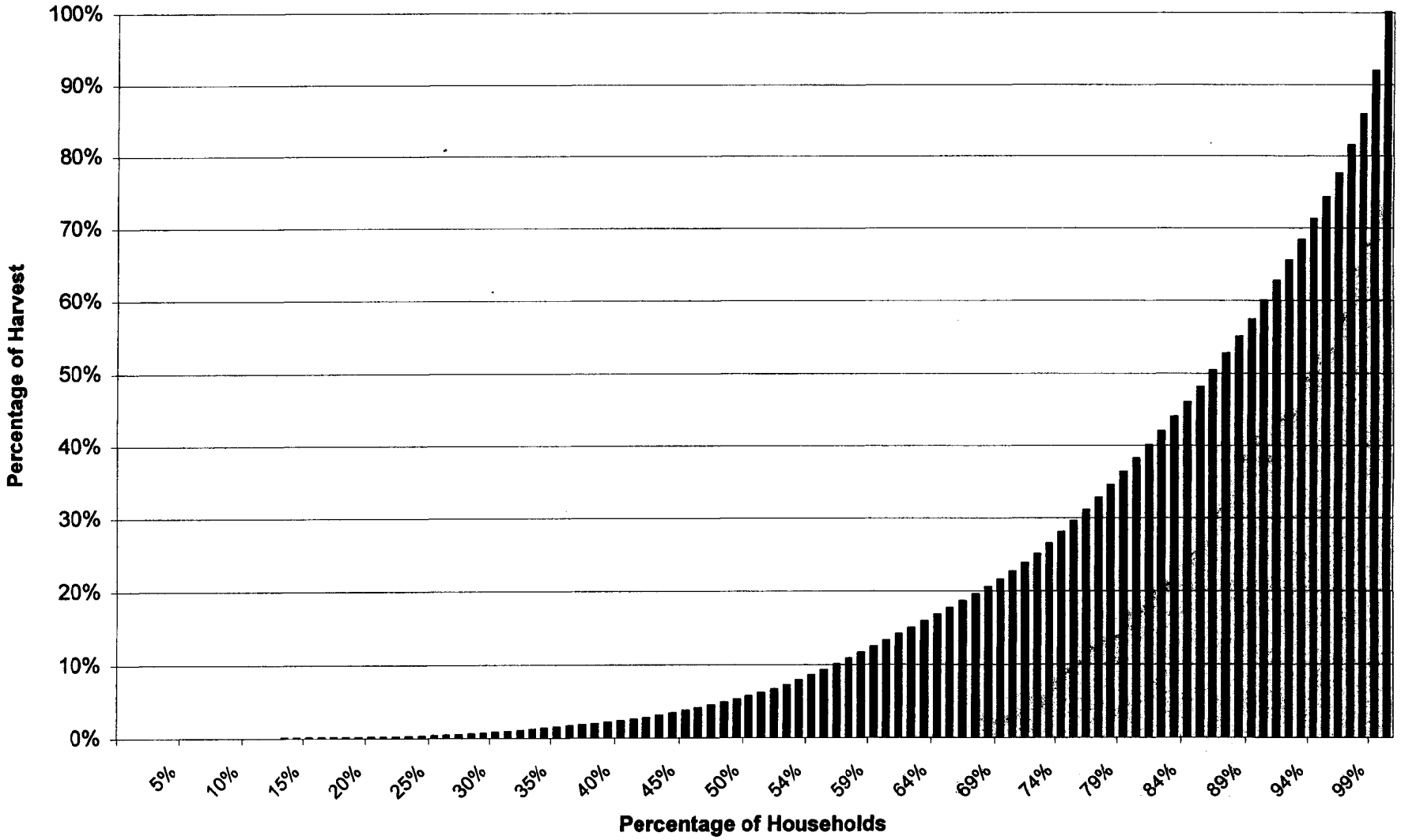


Figure 41. Distribution of Harvests by Percentage of Households, North Fork Road, 1998

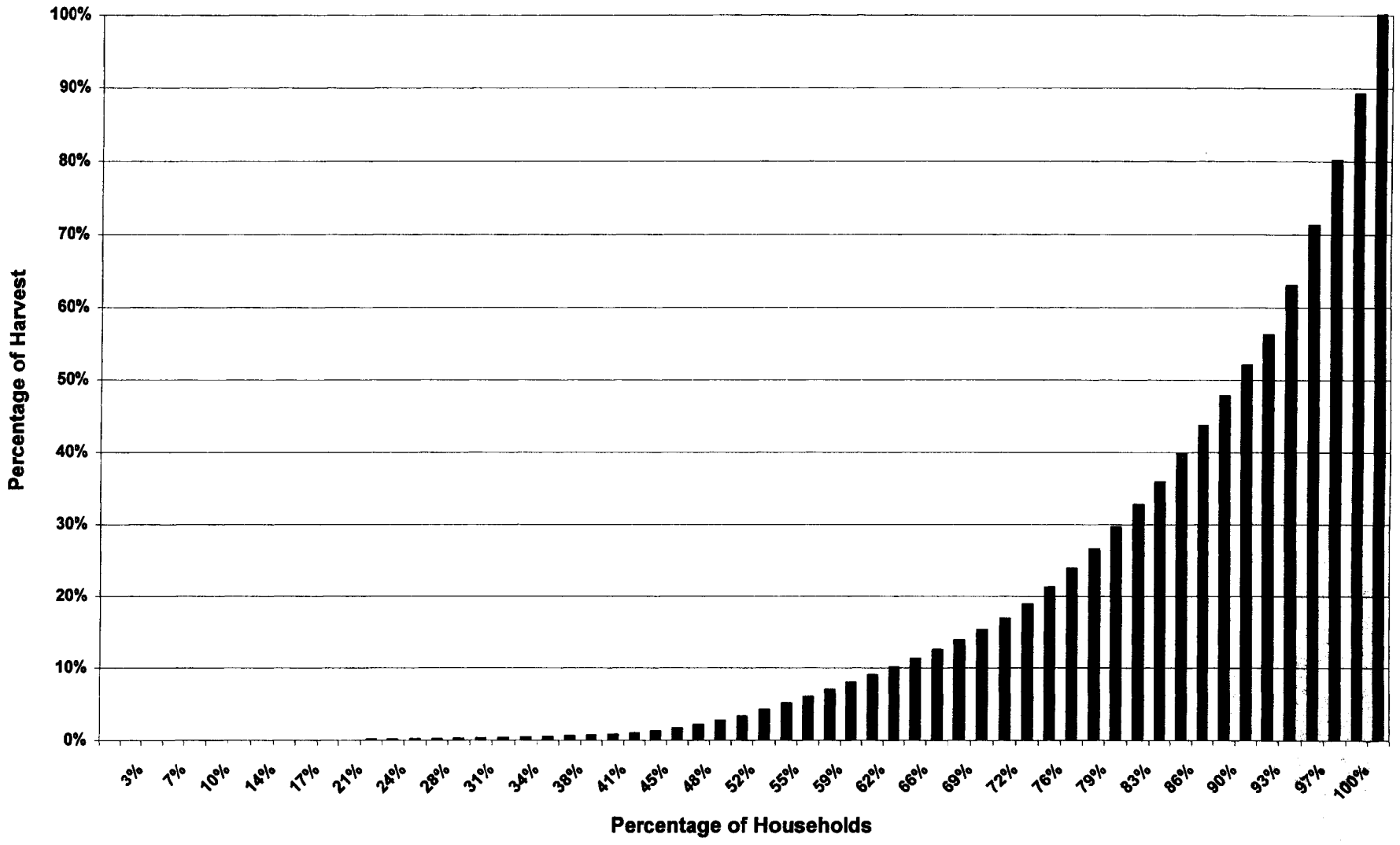


Figure 42. Distribution of Harvests by Percentage of Households, Voznesenka, 1998

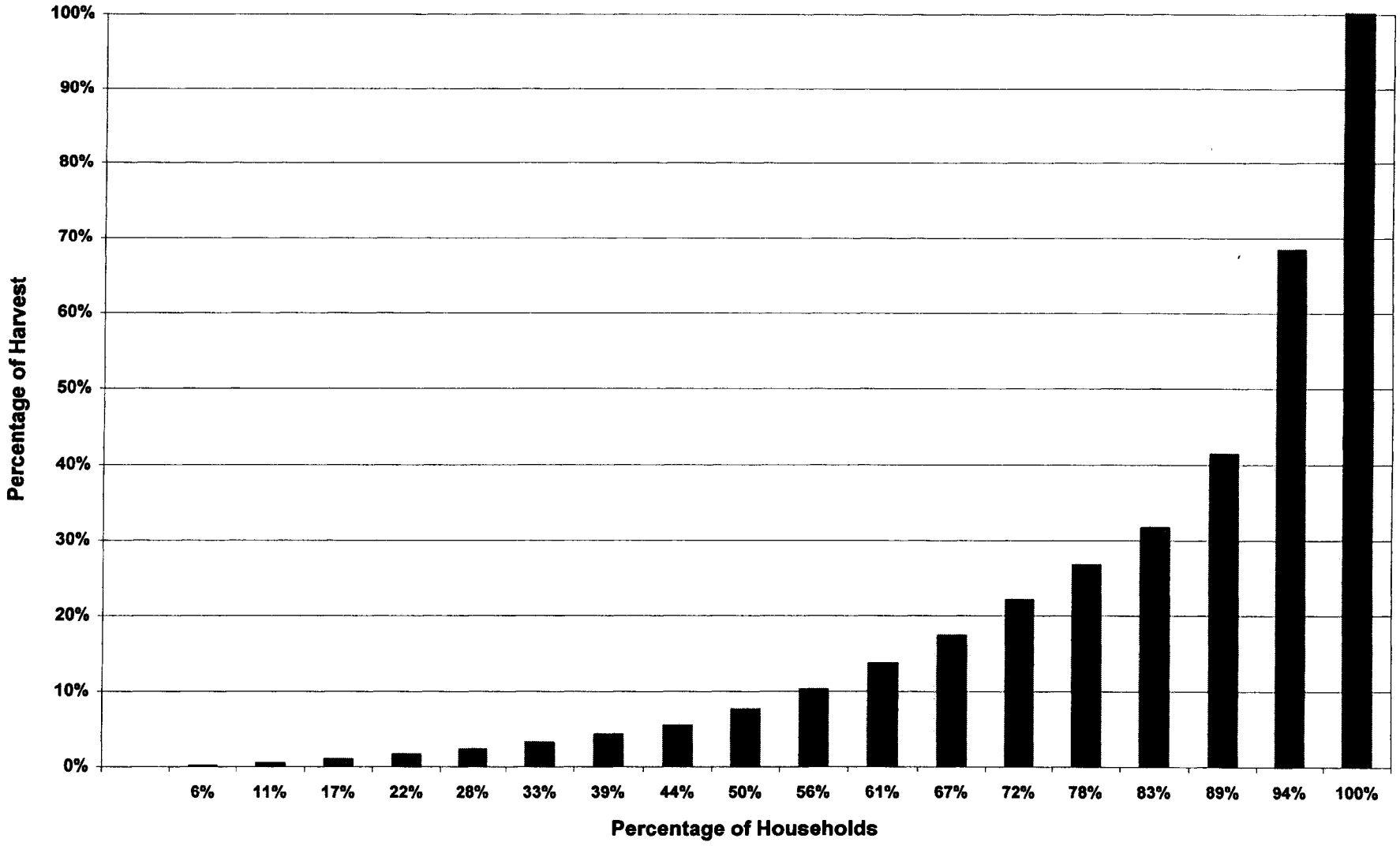


Table 102. Community Harvests, Per Capita Harvests, Average Number of Resources Used and Received per Household, by Percentile

	Percentage of Community Harvest				Per Capita Harvest				Average Number of Resources Used				Average Number of Resources Receive			
	Lowest Quarter	Second Quarter	Third Quarter	Top Quarter	Lowest Quarter	Second Quarter	Third Quarter	Top Quarter	Lowest Quarter	Second Quarter	Third Quarter	Top Quarter	Lowest Quarter	Second Quarter	Third Quarter	Top Quarter
Fritz Creek East	0.7%	7.8%	22.0%	69.5%	2.9	43.3	83.6	250.3	5.0	8.7	10.9	15.4	3.8	5.1	4.4	5.4
Nikolaevsk	1.4%	11.5%	26.9%	60.2%	10.7	75.8	107.3	273.2	4.9	9.4	10.0	12.0	3.3	4.1	2.7	2.2
Ninilchik	0.3%	5.8%	23.4%	70.5%	2.2	36.7	140.4	435.0	4.9	6.9	10.0	14.8	3.7	3.8	4.1	4.8
North Fork Road	0.1%	3.1%	18.0%	78.8%	0.3	12.0	92.4	237.5	3.2	6.2	10.3	13.1	2.8	4.0	4.2	3.9
Voznesenka	1.5%	6.0%	14.4%	78.1%	12.3	43.7	95.2	413.9	4.4	8.2	8.5	13.4	2.0	5.3	1.5	3.1

households, varies less than harvest quantities at the household level (Wolfe 1987). In the Kenai Peninsula study communities, there existed substantial differences among the four percentiles of households regarding the range of resources used (Table 102). Generally, households in the upper quarter used about three to four times as many kinds of resources as did the bottom quarter, and about twice as many as the second quarter. There was a slightly more even distribution of the number of resources used among households in Nikolaevsk (the upper quarter used a little more than twice as many kinds of resources as did the lower quarter), and the lower quarter received on average one more kind of wild food than did the highest harvesters, suggesting that sharing networks linked a slightly larger percentage of the households than in the other study areas. In each study area but Nikolaevsk, the highest harvesting households (top quarter) received on average more kinds of wild foods than did the lowest harvesting households (bottom quarter), which suggests that extensive sharing networks do not link many high harvesters with low harvests. In sum, these findings suggest that within each community, there are important differences among households regarding harvest and use patterns. Most low-producing households are not regularly provided with a range of wild foods from those in the community who harvest them in substantial quantities.

FACTORS ASSOCIATED WITH HOUSEHOLDS' HARVESTS AND USES

Table 103, Table 104, and Table 105 examine several household characteristics to learn if any may account for differences in harvest quantities among households. In all of the study communities, households that were involved in commercial fishing harvested larger quantities of resources than other households (Table 103). This is not a surprising finding, given the major contribution of resources removed from commercial harvests to the total community harvests in Voznesenka, Nikolaevsk, and Ninilchik (see discussion, above). In addition to having direct access to resources through their commercial catches, commercial fishing households also have the equipment and cash income to support non-commercial resource harvest activities. Only in Nikolaevsk were differences in per capita harvest quantities between commercial fishing households and other households statistically significant.

Only in Ninilchik and North Fork Road were there any interviewed households with Alaska Native household heads (Table 104). There was only one such household in the North Fork Road area and 15 (14.9 percent of all interviewed households) in Ninilchik. At Ninilchik, Alaska Native households had slightly higher per capita harvests of wild foods (183.1 pounds per person) than did other households (160.8 pounds per person) (Table 106). Because of the average smaller size of Ninilchik's Alaska Native households, average household harvests of the two groups were virtually identical: 451.7 pounds per household for Alaska Native households, and 437.4 pounds per household for other households. Differences in harvest quantities between Alaska Native and other households in Ninilchik were not statistically significant (Table 104).

Table 103. Wild Resource Harvests by Commercial Fishing Households and Other Households, Study Areas, 1998

	Commercial Fishing Households				Other Households				
	Number of		Mean HH Per Capita Harvests (lbs)		Number of		Mean HH Per Capita Harvests (lbs)		
	HHs	People	Mean	Range	HHs	People	Mean	Range	Sig.
Fritz Creek East	9	29	137.4	3.9 to 602.2	56	159	128.5	0.0 to 2261.6	0.933
Nikolaevsk	24	131	164.2	6.8 to 441.5	13	43	72.7	0.0 to 186.1	***0.024***
Ninilchik	18	72	258.3	0.0 to 908.2	83	199	168.6	0.0 to 966.8	0.151
North Fork Road	5	22	150.1	23.5 to 354.0	53	141	113.9	0.0 to 1452.2	0.725
Voznesenka	14	74	206.0	8.9 to 631.2	4	21	39.9	0.8 to 91.8	0.167

Table 104. Wild Resource Harvests by Alaska Native Households and Other Households, Study Areas, 1998

	Alaska Native Households				Other Households				
	Number of		Mean HH Per Capita Harvests (lbs)		Number of		Mean HH Per Capita Harvests (lbs)		
	HHs	People	Mean	Range	HHs	People	Mean	Range	Sig.
Fritz Creek East	*								
Nikolaevsk	*								
Ninilchik	15	37	230.1	0.0 to 540.0	86	234	176.7	0.0 to 966.8	0.428
North Fork Road	1	3	207.7	207.7	57	160	115.5	0.0 to 1452.2	0.677
Voznesenka	*								

* no households with Alaska Native head in the sample

Table 105. Wild Resource Harvests by Retired Households and Other Households, Study Areas, 1998

	Retired Households				Other Households				
	Number of		Mean HH Per Capita Harvests (lbs)		Number of		Mean HH Per Capita Harvests (lbs)		
	HHs	People	Mean	Range	HHs	People	Mean	Range	Sig.
Fritz Creek East	13	30	95.8	2.0 to 333.4	52	158	138.2	0.0 to 2261.6	0.646
Nikolaevsk	8	19	35.4	0.0 to 137.5	29	155	158.7	0.0 to 441.5	***0.008***
Ninilchik	30	62	164.5	0.0 to 966.8	71	209	193.1	0.0 to 908.2	0.586
North Fork Road	13	28	25.2	0.0 to 124.7	45	135	143.6	0.0 to 1452.2	0.083
Voznesenka	*								

* no households with retirement income

Table 106. Comparison of Resource Use Patterns of Alaska Native and Other Households, Ninilchik, 1998

	Alaska Native Households	Other Households
Number of Households Interviewed	15	86
Estimated Total Number of Households	59	341
Population of Sampled Households	37	234
Estimated Total Population[1]	146	927
Average Household Size	2.47	2.72
Average Length of Residency (years)	40.7	14.7
Mean Household Harvest (usable lbs)	451.7	437.4
Community Per Capita Harvest (usable lbs)[2]	183.1	160.8
Percentage of Harvest Composed of:		
Salmon	35.2%	24.2%
Other Fish	11.2%	25.6%
Land Mammals	40.5%	40.4%
Marine Mammals	0.0%	0.0%
Birds and Eggs	0.3%	1.0%
Marine Invertebrates	9.4%	6.3%
Plants	3.5%	2.5%
Average Number of Resources per HH:		
Used	10.47	9.03
Attempted to Harvest	7.33	7.23
Harvested	5.93	6.31
Received	5.87	3.84
Gave Away	4.33	3.15
Percentage of Meat, Fish, Poultry from Wild Foods (percent of HHs)		
None	0.0%	2.3%
1% to 25%	46.7%	46.5%
26% to 50%	20.0%	19.8%
51 % to 75%	26.7%	15.1%
76 % to 99%	6.7%	16.3%
Percent of Households engaged in Commercial Fishing	20.0%	17.4%
Percent of Households Retired	20.0%	31.4%
Average Household Income	$57,594	$49,437
Average Annual Food Purchase	$7,272	$4,941
Percent of Income Spent on Food Purchases	12.6%	10.0%

[1] Population of "Native households" includes non-Native members of these households. A "Native household" was defined as one in which either household head was Alaska Native. The estimated Alaska Native population of Ninilchik was 103 (Table 8).

[2] "Community per capita harvest" (total pounds divided by population) differs from "mean household per capita harvest" (the mean of per capita harvest of each household) used for statistical tests reported in Tables 103 to 105.

Table 106 provides more comparisons between the Alaska Native and other population at Ninilchik. For both groups, as for the community overall (see above), land mammals were the largest category of wild foods harvested, providing 40.5 percent of the total harvest for Alaska Native households and 40.4 percent of other households. A difference in harvest composition occurred among the two groups regarding fish. Alaska Native households harvested a higher proportion of salmon, 35.2 percent of the harvest, compared to other households, at 24.2 percent of the harvest. Conversely, the relative contribution of other fish (which among both groups consisted largely of halibut) was lower for Alaska Natives, at 11.1 percent, than non-natives, at 25.6 percent of the total harvest. Also, Alaska Native households' harvests had a slightly larger percentage of marine invertebrates (9.4 percent) than those of other households (6.3 percent). The contributions of birds and plants to the harvests of the two groups were about the same. The higher relative importance of salmon to Ninilchik Alaska Native households may reflect involvement in the educational fishery administered by Alaska Native organizations in Ninilchik, which produced about 1,046 salmon for tribal members in 1998 (see Table 84). It is also important to note the several traditional ways in which salmon and some other wild resources are preserved and prepared by Ninilchik's Alaska Native population. As one survey respondent explained,

> We have traditional ways of processing. None of the salmon goes to waste. We eat the meat, eggs, heads. We salt, can, dry smoke, and process the fish. For moose, we use the nose for head cheese. For fish we dry the salmon tail for four to five days in the sun. We smoke fish for three days. Canned salmon makes a good sandwich spread. *Balik* is smoked salmon, no sugar, just salted and dry-smoked.

On average, Alaska Native households in Ninilchik used 10.5 kinds of wild foods in 1998, slightly higher than other households, with an average of 9.0 kinds. On the other hand, non-Native households had a slightly higher average number of resources harvested, 6.3 kinds, compared to 5.9 kinds for Native households. Alaska Native households had a slightly higher averages for resources received and given away (5.9 kinds and 4.3 kinds, respectively) than did other households (3.8 kinds and 3.2 kinds, respectively). This is likely, also, connected to the educational fishery as well as kinship relationships and traditions of sharing among the Native community (Table 106). None of these differences was statistically significant, however.

In Ninilchik there were few differences over all between Alaska Native and other households regarding their estimates of the contribution of wild foods to their overall meat/fish/poultry supply. In both groups, just under half said that wild foods contributed between 1 percent to 25 percent. Also in both groups, just over 30 percent said that wild foods contributed over half of their meat, fish, and poultry. A larger percentage of non-Native households were in the highest category of 76 percent to 99 percent (16.3 percent of households) than among Native households (6.7 percent) (Table 106).

Both subsets of Ninilchik households, Alaska Native households and other households, had about the same percentage involved in commercial fishing, but there was a higher percentage of retired households among the non-Native group. Alaska Native households had higher average household

monetary incomes in 1998 than did non-Native households, and spent a higher percentage of this income on purchasing food (Table 106).

Table 105 compares harvests of retired households and other households in each study community. (Recall that as defined in Chapter Two, "retired" households are those with pension and/or social security income, and may also hold jobs.) There were two patterns. (Note that sampled households in Voznesenka had no households with any retirement income.) In Ninilchik and Fritz Creek East, there was no substantial, or statistically significant differences between retired households and other households. As a group, the harvest patterns of retired households helped define the overall community profiles, rather than deviate from them. As a group, retired households had several important characteristics that are important to wild resource harvesting: time, income, and interest. It should also be noted (as discussed in Chapter Two), that retired households in Ninilchik made up a notable portion of total households and retirement income was also a substantial portion of the total income in the community.

In contrast, in North Fork Road and Nikolaevsk, retired households had substantially lower harvests than other households. The difference was significant at Nikolaevsk. This is not surprising for Nikolaevsk, where most households engage in commercial fishing and where removal from commercial harvests provides a large portion of the community's wild resources for home use. Why retired households in North Fork Road should harvest fewer resources than their counterparts in Ninilchik and Fritz Creek East is not readily apparent. One potential explanation is differences in income. Retired households in the North Fork Road area had an average income of $28,017, compared to $58,916 for other households in that area. Retired households in North Fork Road may lack the financial means to engage in such activities as halibut fishing and moose hunting.

The relationship between the length of residency in the study community and household harvest levels was examined for Ninilchik, Fritz Creek East, and North Fork Road. (Because of the unique histories and social organization of Nikolaevsk and Voznesenka, this analysis was not performed for these two study areas.) Length of residency for the household was defined as the greater for either household head. If harvests of wild foods increase with length of residency in a community, this suggests that after households arrive in the community, they gradually become involved in local patterns of resource harvest and use.

Among Ninilchik households, there was a weak positive relationship ($r = .268$, Sig. = .007) between length of residency and pounds per person harvested in 1998. Length of residency accounts for only a small portion, about 7.2 percent, of the between household variability in per capita harvests at Ninilchik. Another approach examined differences among household per capita harvests for three groupings based on length of residency: 1 to 9 years, 10 to 19 years, and more than 20 years. The results are reported in Table 107. The differences in the mean per capita harvests for the three households groupings are just barely not significant ($F = 3,010$, 2 df; SIG = 0.054). This is consistent with the finding of a very weak positive relationship between residency and per capita household harvests at

Ninilchik found with the linear regression model. These findings suggest a weak acculturative process in Ninilchik -- the longer a household has lived on the Kenai Peninsula, the more wild foods the household harvests. However, this is not a particularly important factor in explaining differences among households in wild food harvest levels. Indeed, mitigating any acculturative process in connection with wild food harvests is the strong interest in hunting and, particularly, fishing which many newcomers likely bring with them when they move to the Kenai Peninsula for jobs or to retire (see Chapter Four).

Table 107. Length of Residency and Levels of Wild Resource Harvests

	Mean Household per Capita Harvest, lbs				
Community	1 to 9 years	10 to 19 years	20 or more years	F	Sig.
Fritz Creek East	81.3	245.0	107.3	1.854, 2 df	0.165
Ninilchik	123.0	166.0	255.1	3.010, 2 df	0.054
North Fork Road	80.5	136.1	130.9	.366, 2 df	0.695

Among Fritz Creek (r = .106, sig. = .401) and North Fork Road (r = .150, sig. = 0.262) households, no significant relationship was found between length of residency and household per capita harvests. At Fritz Creek, the differences between the mean harvests of three household groupings were not significant (F = 1.854, 2 df; sig. = .165). This was also the case at North Fork Road (F = 0.366, 2 df; sig. = 0.695) (Table 107). This is consistent with the finding of no significant relationship found with the linear regression model. These tests suggest that length of residency is unrelated to a household's per capita harvest for households in the Fritz Creek East and North Fork Road areas.

CHAPTER FOUR: DISCUSSION AND CONCLUSIONS

INTRODUCTION

A study conducted by the Division of Subsistence in 1982 and 1983 explored how patterns of wild resource use fit into various types of socioeconomic systems in Alaska (Wolfe and Ellanna 1983). It concluded that the Kenai Peninsula roaded area, including Ninilchik, Homer, and Kenai, had an industrial-capital economic system. This contrasted with the economic system of communities such as Nondalton, Tyonek, Dot Lake, and the Yukon River Delta, which have mixed subsistence-cash economies (Wolfe 1983). The report also concluded that the role of wild resource uses in Kenai Peninsula communities contrasted with regional centers, another type of community in Alaska. A regional center "provides service and trade functions for adjacent remote areas of Alaska [and regional centers are] commercial, transportation, and governmental "hubs" for a network of smaller communities" (Wolfe 1983:268; see also Wolfe et al. 1986). The legislative history of the Alaska National Interest Lands Conservation Act (ANILCA) names five regional centers – Barrow, Bethel, Dillingham, Kotzebue, and Nome – as examples of rural places whose residents should qualify to engage in customary and traditional subsistence uses of fish and wildlife under the federal law (Wolfe et al. 1986:3).

The contrasts between these types of socioeconomic systems were based on a range of criteria, which can serve as the basis for comparisons of the findings for the study communities in 1998 with those of the previous study year of 1982 and with other Alaska communities. The conclusions about the role of wild resource harvests in the Kenai Peninsula communities in 1982 were based on the following findings:

- Relatively low wild food harvest levels
- Harvests supplementing the food supply
- Hunting and fishing commonly conducted as a recreational activity (breaks from work)
- Hunting and fishing engaged in by a small subset of the population
- An unstable seasonal round of harvest activities from year to year
- A relatively narrow range of species used
- Distribution of most goods and services through markets
- A relatively stable cash base to the local economy
- A relatively diverse cash sector in the local economy.

The analysis of types of socioeconomic systems in 1983 formed the basis of the development of the Alaska Joint Board of Fisheries and Game's procedure for identifying rural and non-rural places as this distinction pertains to subsistence hunting and fishing in Alaska, which was first applied in 1986. The analytic approach with slight modifications was adopted into the 1992 Alaska Subsistence Statute (AS 16.05.258) as the procedure for identifying nonsubsistence areas. "Rural areas" were areas with mixed,

subsistence-cash socioeconomic systems, where procurement and use of wild foods were principal features of the local economy, culture, and way of life. "Non-rural areas" were areas with industrial-capital socioeconomic systems where the harvest and use of wild foods by families were not principal features of the local economy, culture, and way of life (see also Chapter One). In November 1992, the Joint Board applied these criteria to communities and areas throughout the state. It determined that most of the Kenai Peninsula Borough (with the exception of the communities of Seldovia, Nanwalek, Port Graham, and Tyonek) is an area "where dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life" (Board Findings No. 92-25-JB).[1]

This final chapter in this report takes another look at the socioeconomic information underlying these analyses, beginning with comparing survey findings for Ninilchik and Fritz Creek East in 1998 with the results of the 1982 study for Ninilchik and Homer. The chapter then compares the study communities with other Kenai Peninsula communities, both on and off the road system.

As noted in the "limitations" section of Chapter One, the 1998 study communities of Ninilchik and Fritz Creek East had different boundaries from the Ninilchik and Homer study areas of the Division of Subsistence comprehensive survey pertaining to 1982. In the case of Ninilchik, the 1998 study included the area along the Sterling Highway from just south of Clam Gulch to just north of Anchor Point, including, but not entirely limited to, the Ninilchik and Happy Valley census designated places (CDP). The 1982 study only included the Ninilchik census area, which does not include Happy Valley or the area along the Sterling Highway from the Ninilchik CDP boundary, approximately at MP 128, to MP 121. In 1982, surveys were done in Homer City, Kachemak, Diamond Ridge, and all of the Fritz Creek CDP. In 1998, only a portion of the Fritz Creek CDP was studied. While there are these differences, it is instructive to compare the results of the 1998 study with those of sixteen years before and explore reasons for differences and similarities between the survey findings that cannot be accounted for simply by changes in the study area boundaries.

NINILCHIK: COMPARISONS OF 1982 AND 1998

Demography and Cash Economy

As discussed in Chapter Two, the population of the Ninilchik area has grown steadily and rapidly since 1960, and especially since 1980. The best estimate for the study area is an increase of 215 percent from 1980 to 1998 (see Chapter Two, Fig. 9). Most of this increase is the result of people moving into the area. Most of Ninilchik's current households (55.5 percent) were not living in Ninilchik at the time of the 1982 survey; therefore, most of the population surveyed in 1998 is a different set of people from

[1] In 1988, the United States Court of Appeals, Ninth Circuit, in the case *Kenaitze Indian Tribe v. State of Alaska*, reversed a ruling by the federal District Court in Anchorage and found that the definition of "rural area" found in the 1986 Alaska Subsistence Statute (AS16.05.940(25)) was in violation of ANILCA. The appellate court ruled that a "rural" definition should be based on its "commonly understood" meaning as a "sparsely populated" area. In 1990, the Federal Subsistence Board adopted a "rural determination process" based on population size, among other factors (50 CFR 100.__ and 36 CFR 242.__).

those interviewed in 1982. As shown in Figure 43, about 24.8 percent of Ninilchik's households in 1998 had lived in the community for five years of less, compared to 8.7 percent in 1982. The average length of residency in the community for household heads dropped from 20.6 years in 1982 to 16.6 years in 1998 (Table 108). In comparison, in 1998 the average length of residency for household heads in Nanwalek and Port Graham, two Alaska Native communities at the southern tip of the Kenai Peninsula, was 33.9 years and 35.3 years, respectively (Fall et al. 1999:22) (see also Table 111 below).

According to the US Census, the Alaska Native population of the Ninilchik CDP grew from 58 people (17.0 percent of the population) in 1980 to 89 people (19.5 percent) in 1990 (Bureau of the Census 1984:31, AK Dept. of Labor 1991). Census data for 1980 do not report information for the Happy Valley CDP. For 1990, the combined Alaska Native population of the Ninilchik and Happy Valley CDPs was 108 people (14.1 percent). Household survey results for 1998 estimated an Alaska Native population of 103 for the entire study year (9.6 percent). This suggests that the Alaska Native population of the "Ninilchik rural area" has been stable since 1990, and virtually all of the population growth has been in the non-Native segment.

Pertaining to 1982, the previous study (Georgette 1983:174; cf. Reed 1985:70) concluded that:

> Most employment opportunities in the Ninilchik area are restricted to commercial fishing, the school, a handful of government positions, and about twenty small family businesses. Residents regard commercial fishing as the primary economic base for the community.

Comparing Georgette's summary for 1982 with the 1998 survey data illustrates the development and diversification of Ninilchik's economy. In 1998, the Ninilchik study area population held about 218 jobs in service industries (25.9 percent), 147 in manufacturing (17.5 percent), 119 in retail trade (14.2 percent), 103 in commercial fishing (12.3 percent), and 91 in construction (10.9 percent), among others (Table 19). About seven percent of households had jobs in the sport fishing industry. In 1982, employed adults worked an average of 7.6 months; this average increased to 8.9 months in 1998. Year-round employment increased from 25.0 percent of household heads to 43.4 percent of employed adults. Adjusting for inflation, per capita income grew 7.6 percent, from $17,344 in 1982 to $18,664 in 1998 (Table 108). In short, Ninilchik has benefited, along with the rest of the road-connected portion of the Kenai Peninsula Borough, in the "phenomenal" growth in the magnitude and variety of the tourism industry, as well as the stability or more modest growth in other sectors of the economy, such as commercial fishing, oil and gas, timber, construction, and public employment (Fried and Windisch-Cole 1999:4-9).

In comparison to 1982, the overall role of commercial fishing in the local economy had declined in Ninilchik in 1998, although it was still significant: 42.0 percent of Ninilchik households in 1982 derived employment in commercial fishing, compared to 20.5 percent in 1998 (Table 108). The relative decline is not the result of fewer households involved in commercial fishing, but rather more newcomers being involved in other economic pursuits as the population grew through in-migration and the economy

Figure 43. Length of Residency of Household Heads, Ninilchik, 1982 and 1998

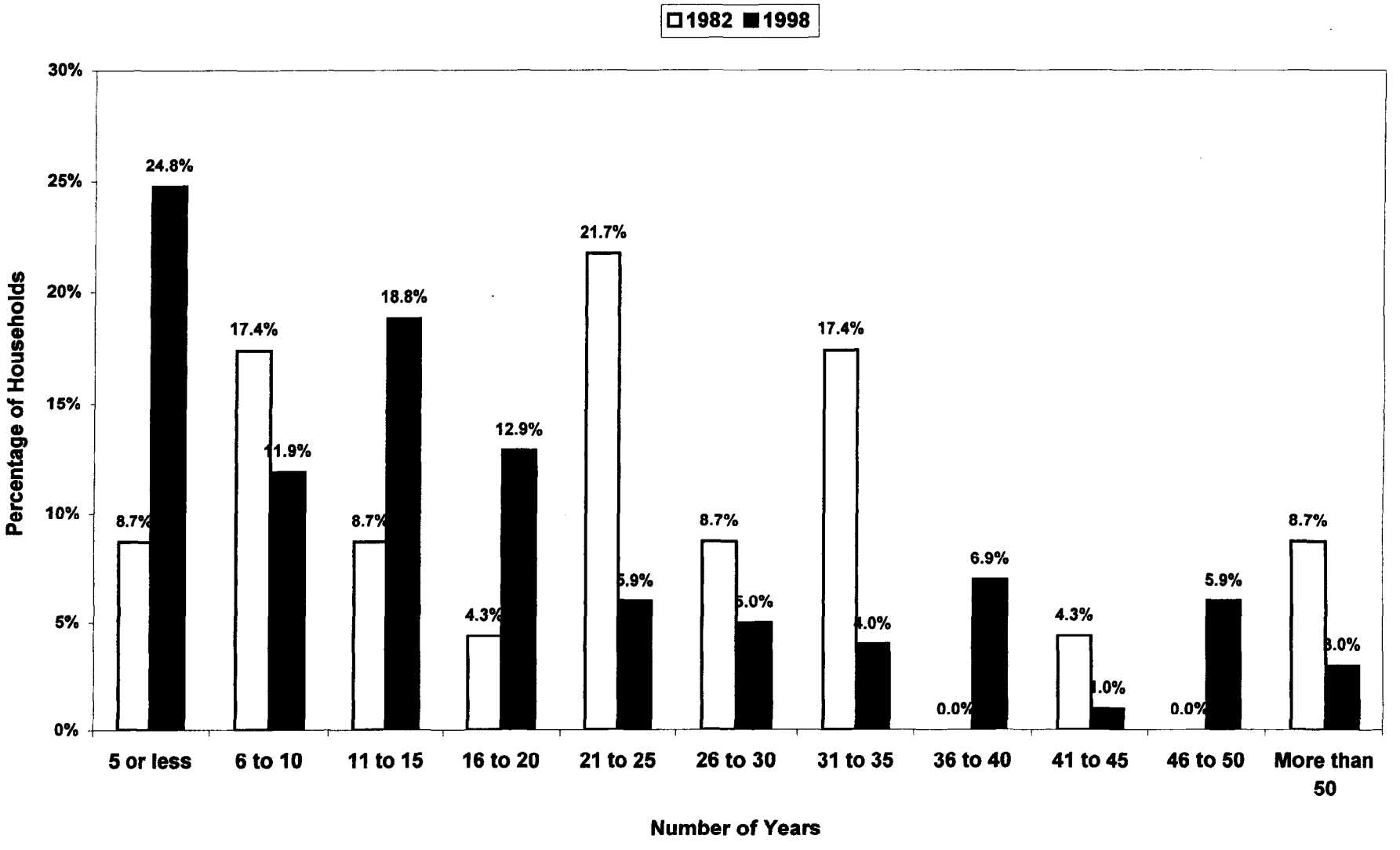


Table 108. Selected Economic and Demographic Data, Ninilchik[1]

	Survey Data		Census Data				
	Ninilchik Study Area[2]		Ninilchik CDP			Happy Valley CDP	
	1982	1998	1980	1990	1998	1990	1998
Estimated population	651	1,073	341	456	675	309	400
Average household size	3.00	2.68	2.91	2.46		2.62	
Percent Alaska Native		9.6%	17.0%	14.1%		6.1%	
% of HHs with Alaska Native Head	14.0%	14.9%					
Average length of residency, HH head	20.6 years	16.6 years					
% of HH Heads Born Local	9.8%	10.5%					
Average number of months employed	7.64	8.88					
% employed year-round[3]	25.0%	43.4%					
% of HHs with commercial fishing employment	42.0%	20.5%					
% with retired household head	13.0%	29.7%					
Average HH income[4]	$34,500	$50,078	$21,382				
Median HH income[4]			$19,500	$31,518		$16,250	
Per Capita Income[4]	$11,500	$18,664	$5,954	$15,118		$10,691	

[1] Blank cells indicate source does not provide the data for the particular characteristic.

[2] The study area for 1982 was equivilent to the Ninilchik Census Area. For 1998, the study area included the Ninilchik CDP, Happy Valley CDP, and a small portion to the north bordering Clam Glutch (see Chapter One).

[3] Household heads for 1982

[4] Not adjusted for inflation.

Sources: Reed 1985, Scott et al. 1999, AK Department of Labor 1991, 1999; Bureau of the Census 1980, 1992

diversified. An even more important change was the substantial increase in the percentage of retired households in the community, from 13 percent in 1982 to around 30 percent in 1998.

In an overview of some of the key features of Ninilchik's employment patterns in 1982, Reed (1985:71) noted:

> In 1982, 21 percent of Ninilchik households contained at least one member who was non-locally employed, and 13 percent had members employed in the oil and gas industry. Few Ninilchik residents, however, commuted to daily employment in either Kenai-Soldotna or Homer. Reasons included that the daily drive was too long, residents' vehicles were not always adequate, road conditions were too dangerous, and the wage potential was not sufficient to compensate for the expense of commuting.

The role of "nonlocal" employment among Ninilchik households in 1998 appears to have grown. About 52 percent of the jobs held by Ninilchik residents in 1998 were in Ninilchik, while 33.2 percent were located in portions of the Kenai Peninsula, such as Kenai, Anchor Point, Soldotna, and Homer, that were classified as "non-rural" by the Federal Subsistence Board. Another 10.9 percent were located off the Kenai Peninsula (see Table 22). The importance of employment in the oil and gas industry appeared similar in both study years: in 1998, 9.6 percent of the Ninilchik households worked in mining industries, producing 11.1 percent of the community's income (about twice that of commercial fishing) (Table 19).

Economic and demographic trends at Ninilchik that began with the completion of the Sterling Highway in 1950 and accelerated with diversification the economy into oil and gas and tourism, have continued into the late 1990s. In the last two decades, tourism related to sport fishing and other outdoor recreation has played an increasing role in Ninilchik's local economy. The community has also grown as result of its increasing popularity as a place for retirement (cf. Fried and Windisch-Cole 1999:11). There are relatively more newcomers and a smaller percentage of Alaska Natives in the population than 20 years ago. Although a seasonal element remains in the local economy, wage employment is relatively available and reliable, even more so than it was in 1982. Cash incomes in 1998 have increased in real dollars over those estimated for 16 years earlier.

Patterns of Wild Resource Use

Perhaps the most notable difference between the study findings for Ninilchik in 1982 and Ninilchik in 1998 is the much higher wild food harvest levels in the most recent study year. As estimated in pounds per person, the estimated harvest of 163.8 pounds per person was 101 percent higher (that is, more than double) than the 76.7 pounds per person estimated for 1982. At first glance, this change may appear at odds with the findings on economic and demographic trends just reviewed. Why would harvests for home use in a community rise if the population swells with newcomers and both cash income and employment opportunities increase?

Some clues are revealed by examining changes at the resource category level. Estimated harvests of salmon jumped from 18.2 pounds per person in 1982 to 42.5 pounds per person in 1998 (Fig.

44), a 133.6 percent increase (Fig. 45). Salmon as a percentage of the total harvest at Ninilchik was about the same in 1982 (24 percent) and 1998 (26 percent) (Fig. 46). Regarding specific types of salmon, the most dramatic increase was in sockeye harvests, from 2.6 pounds per person in 1982 to 16.7 pounds per person in 1998, a jump in ranking from 8 to 3 among specific resources (Fig. 47). Per capita harvests of coho, chinook, and chum salmon also increased notably.

An important change took place in methods used to procure salmon for home use at Ninilchik between the two study years (Fig. 48). In 1982, removal from commercial catches was the primary source, at 53.9 percent of all salmon (as measured in numbers of fish); this dropped to 23.9 percent in 1998. Conversely, rod and reel harvests moved from last place among gear types at 10.9 percent of all salmon in 1982 to first place at 39.2 percent in 1998. While there was just a slight increase in the percentage of salmon taken under personal use regulations (dip nets and set gillnets), from 35.2 percent in 1982 to 37.0 percent in 1998, the number of salmon per person harvested with this gear type almost tripled, from 1.2 fish in 1982 to 3.1 fish in 1998 (Fig. 49). Rod and reel harvested salmon jumped seven-fold from 0.4 fish per person to 3.3 fish per person. The average number removed from commercial harvests stayed about the same,1.9 fish in 1982 and 2.0 fish in 1998.

These changes in salmon harvests by gear type reflect changes in participation in these fisheries (Fig. 50). The percentage of households in Ninilchik harvesting salmon with rod and reel rose from 33.3 percent in 1982 to 50.5 percent in 1998; harvesting with personal use methods rose from 16.7 percent of households in 1982 to 24.8 percent in 1998. Conversely, there was a drop in the percentage of households removing salmon from commercial catches for home use: from 33.3 percent in 1982 to 9.9 percent in 1998.

Four factors likely account for the increased salmon harvest for home use at Ninilchik and the shift in methods used to procure salmon. The first factor is regulatory. Describing the fluctuating regulatory system for noncommercial salmon fishing in Cook Inlet in the late 1970s and early 1980s, Georgette (1983:186-187) noted:

> Regulatory changes over the past several years have contributed to inconsistent harvest patterns by Ninilchik households. Only 58.3 percent of Ninilchik households have used the same primary method for procuring salmon over the last three years. Regulations relating to areas, seasons, and methods have changed and become more restrictive during the last decade. Thus, access to resources has varied from year to year. This has encouraged changing, and rather opportunistic approaches towards harvesting wild foods. This is illustrated by techniques for acquiring salmon: as conditions change a household may trade for it, buy it, or harvest it themselves.

Since the early 1980s, the personal use dipnet fisheries in the Kenai and Kasilof rivers have emerged to become fairly reliable for obtaining salmon for home use. In the early years of these dipnet fisheries, fishing only opened after fixed escapement goals were met. As a result of low escapements, the Kenai dipnet fishery did not open in 1981, 1984 through 1986, and 1990; the Kasilof River fishery did not occur in 1989 or 1990. Beginning in 1996, the Board of Fisheries dropped the escapement level

Figure 44. Ninilchik Harvests by Resource Category, 1982 and 1998

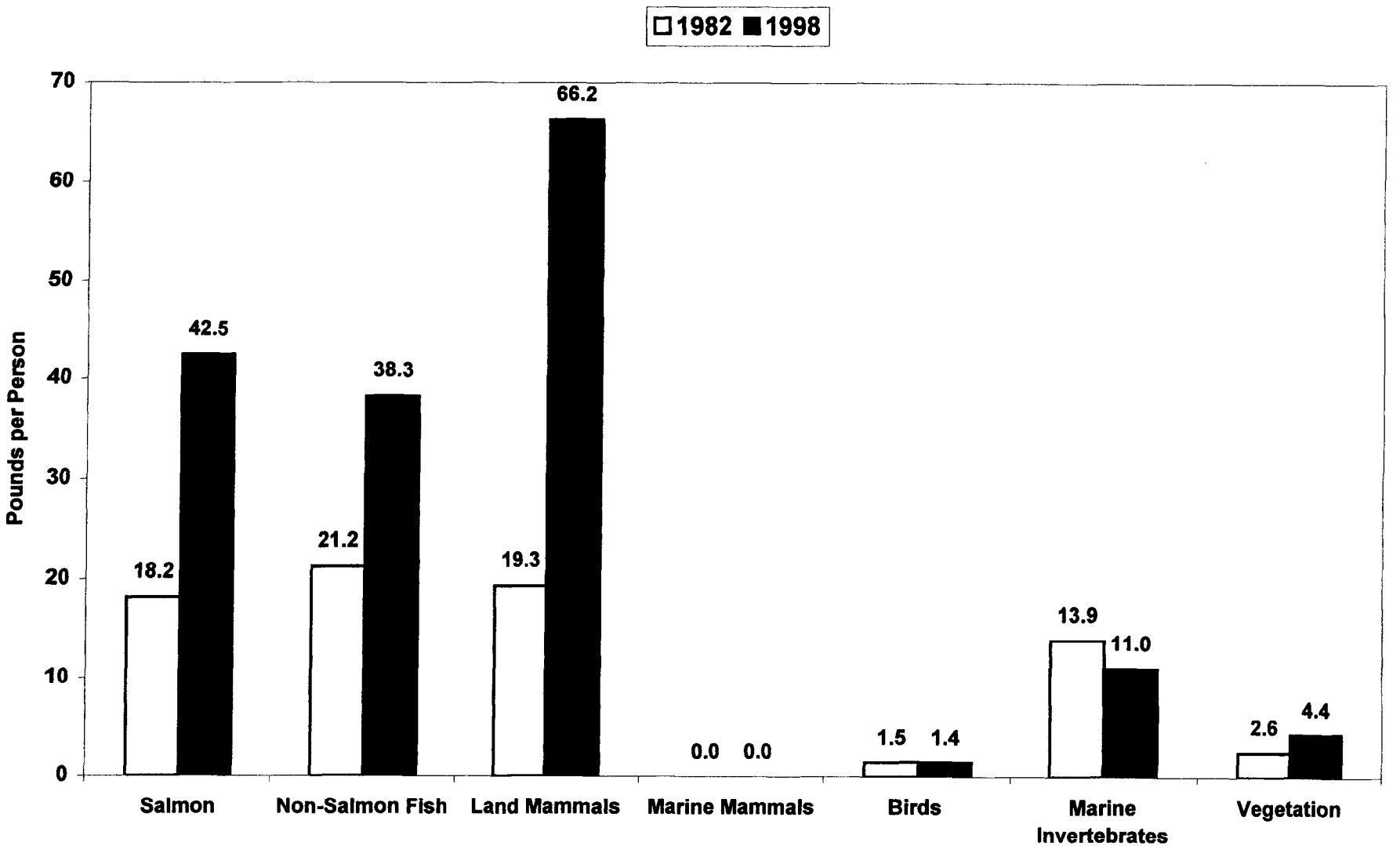


Figure 45. Changes in Harvests of Resource Categories, Ninilchik 1982 & 1998 and Homer 1982/Fritz Creek East 1998

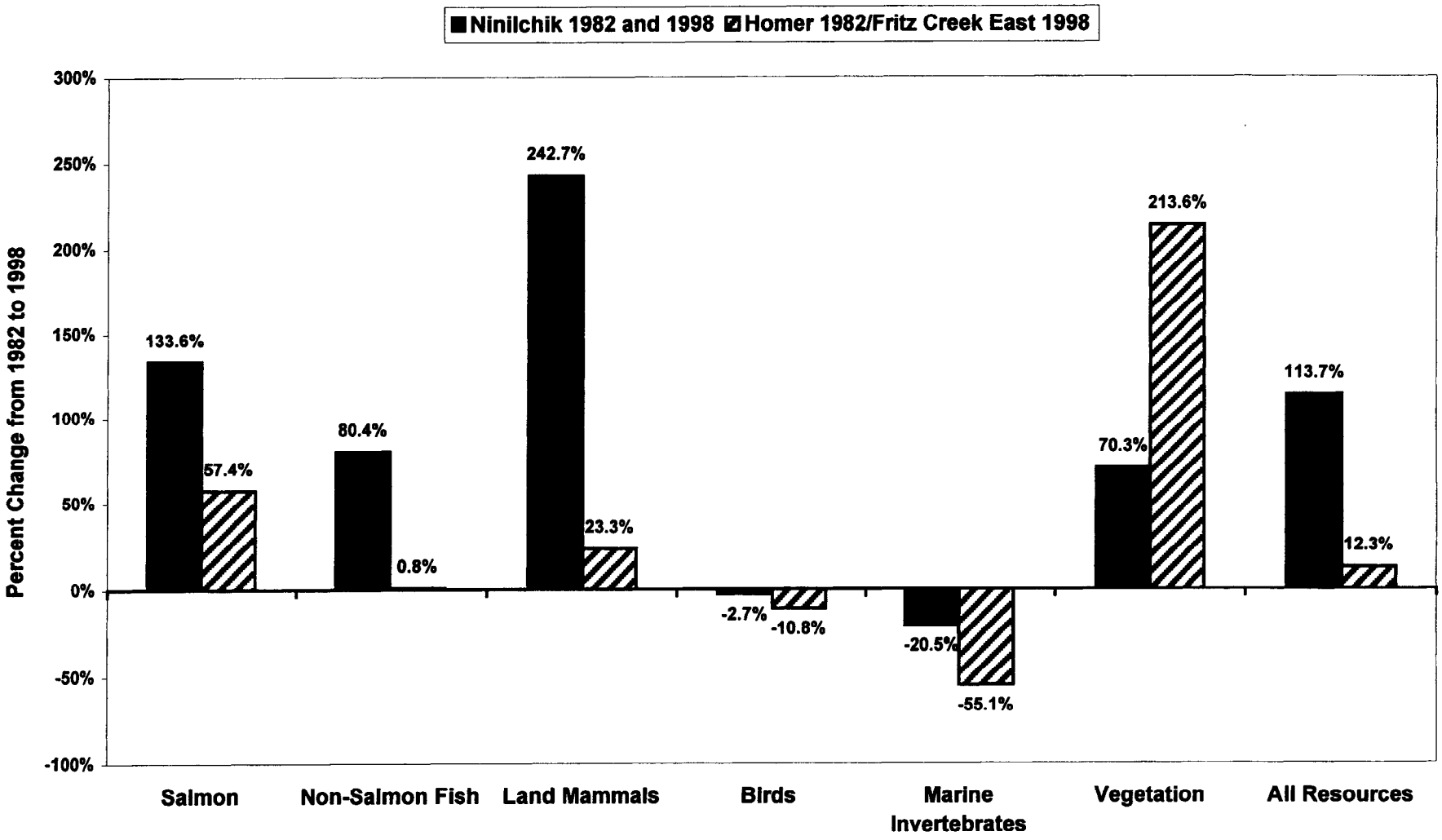


Figure 46 . Composition of Harvest, Ninilchik, 1982 and 1998

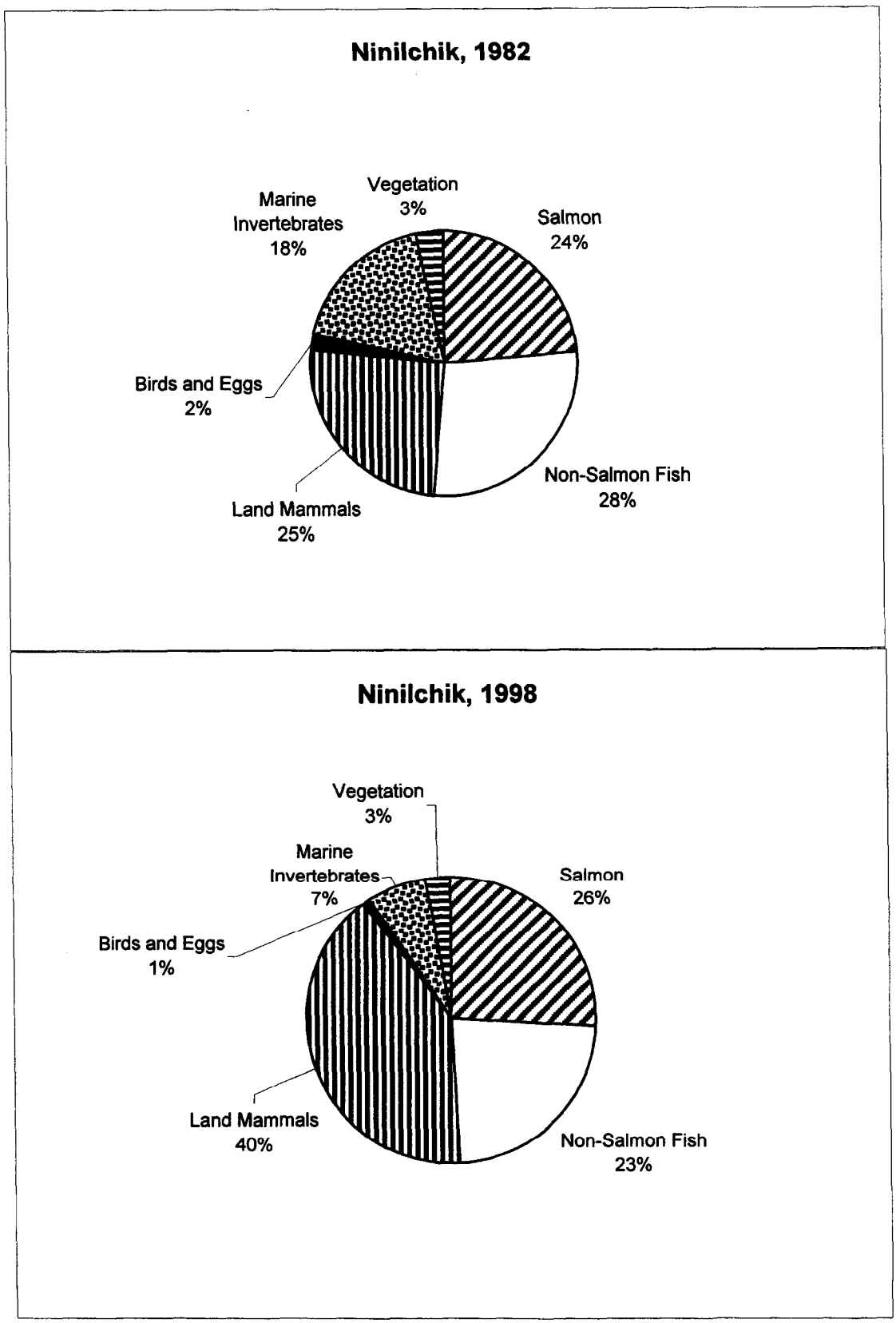


Figure 47. Changes in Harvests of Top Ten Resources, 1982 Compared with 1998, Ninilchik

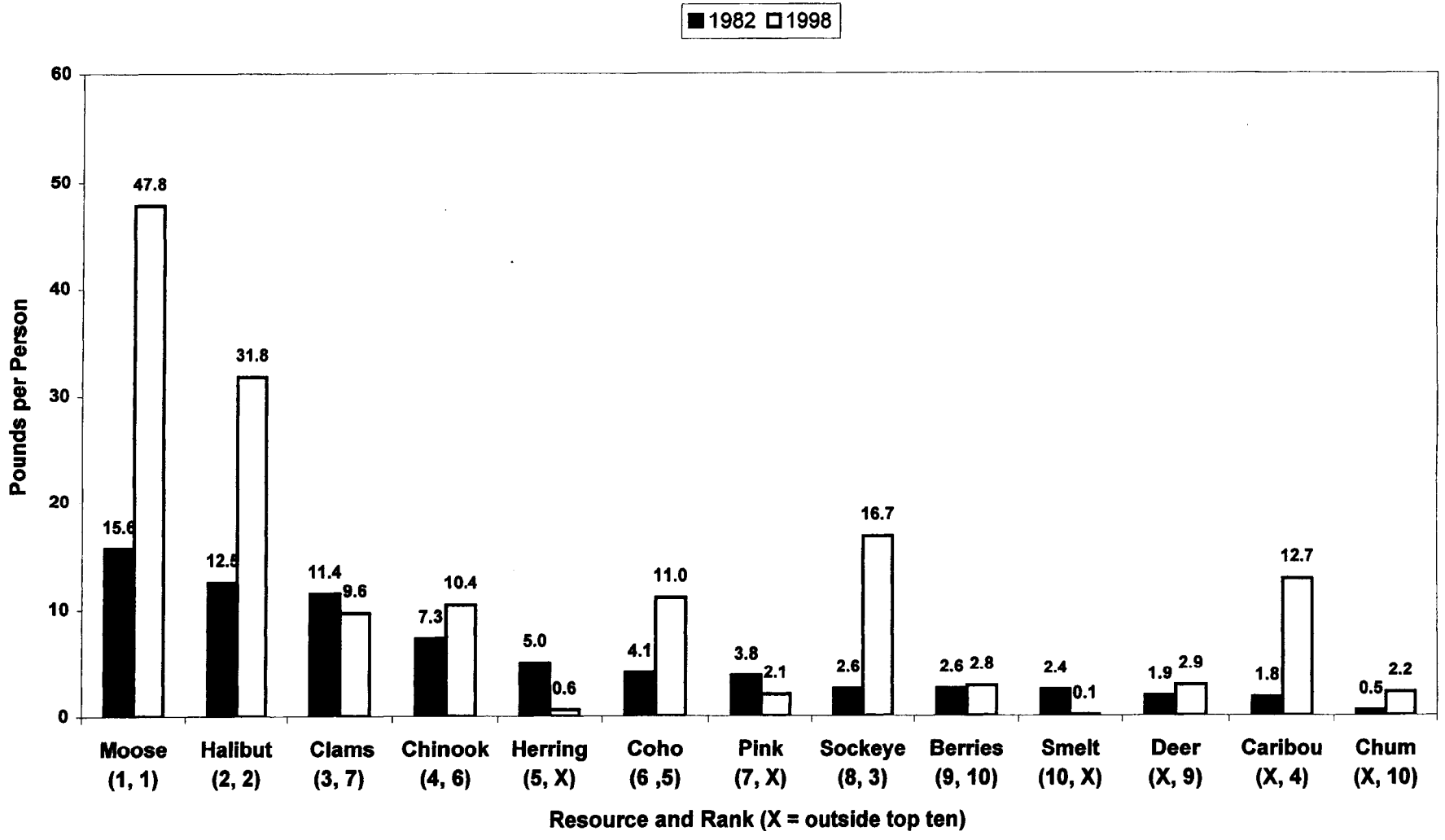


Figure 48. Percentage of Number of Salmon Harvested for Home Use by Gear Type, 1982 and 1998

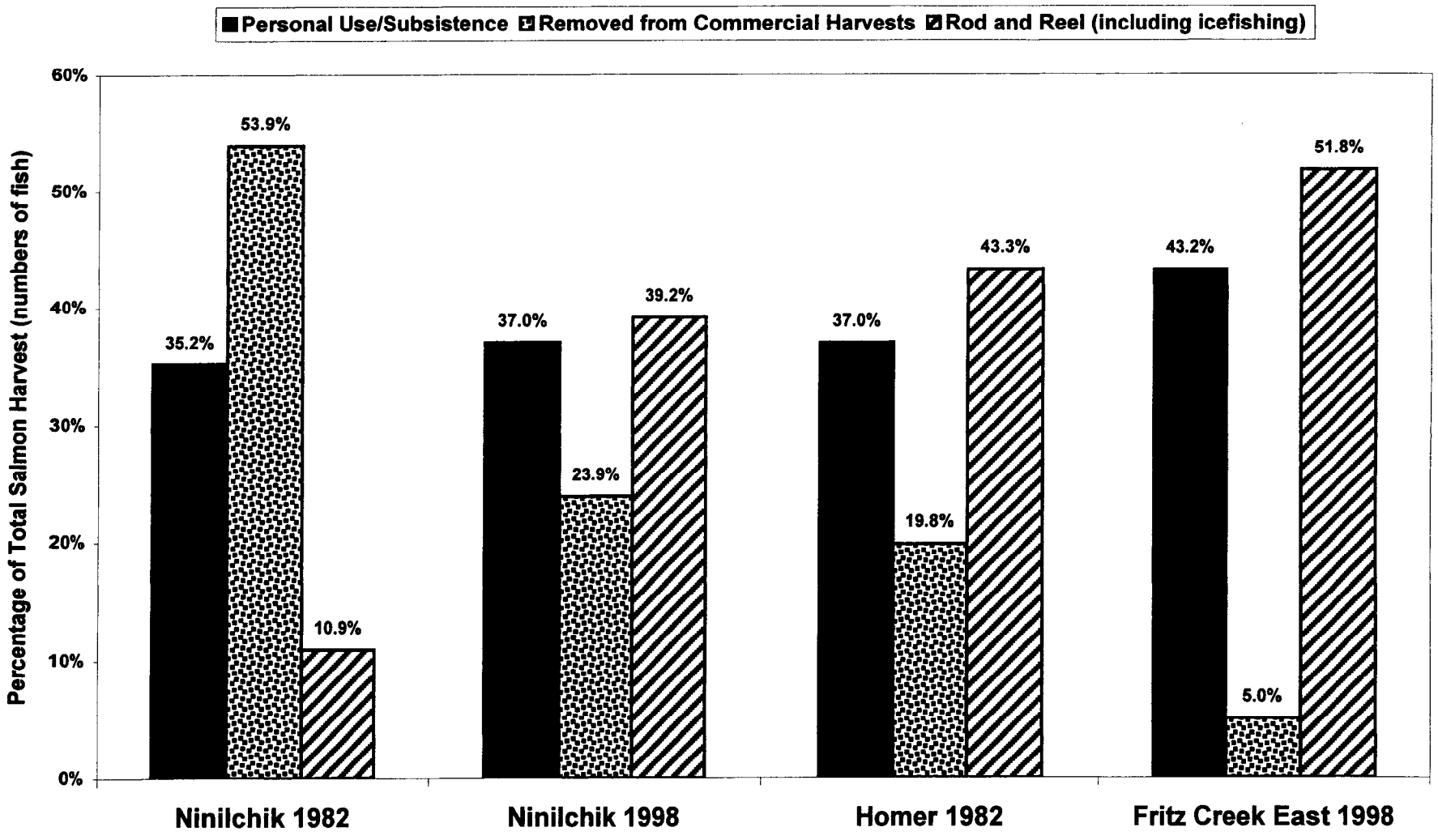


Figure 49. Number of Salmon per Person Harvested for Home Use by Gear Type, 1982 and 1998

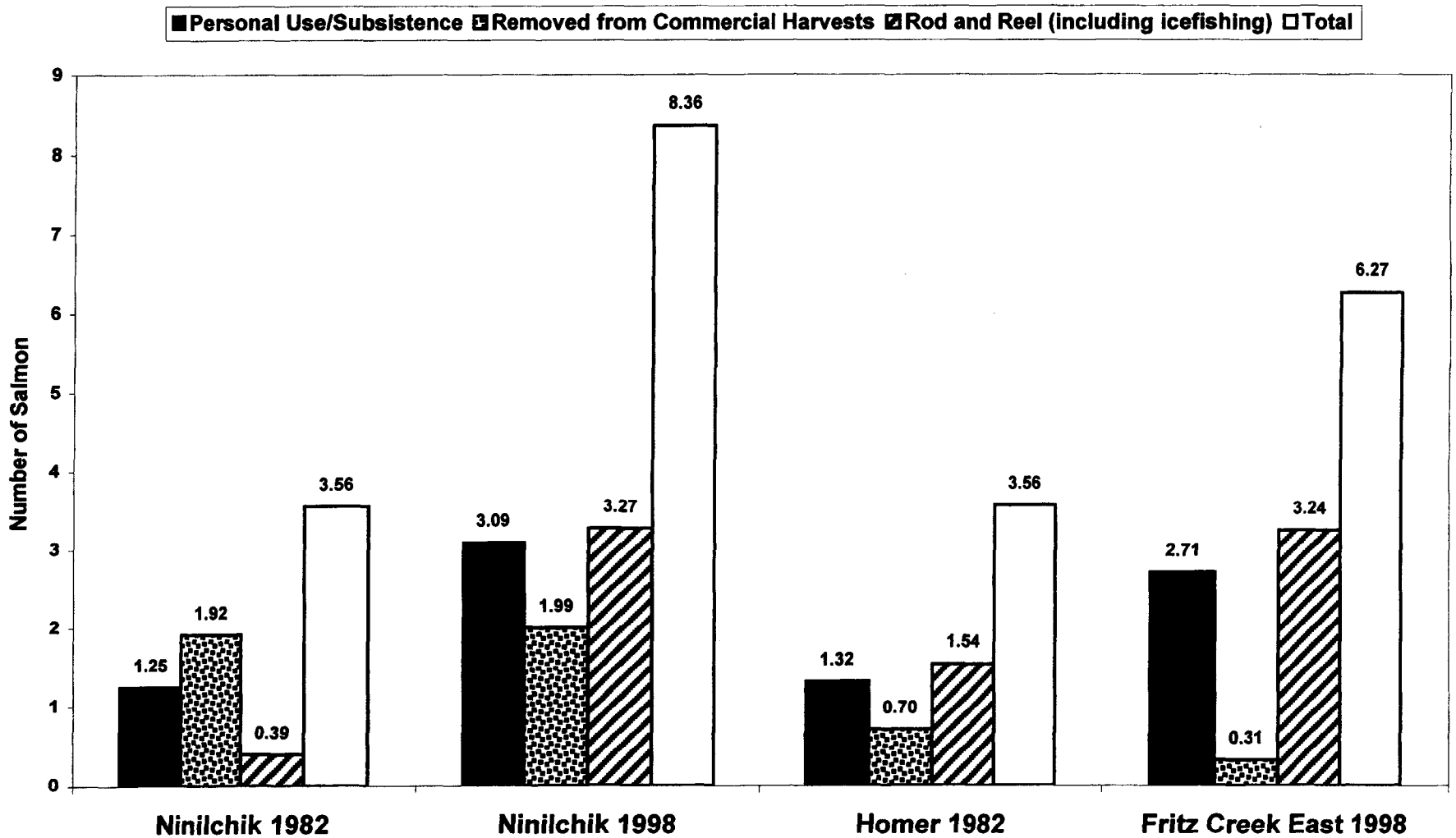
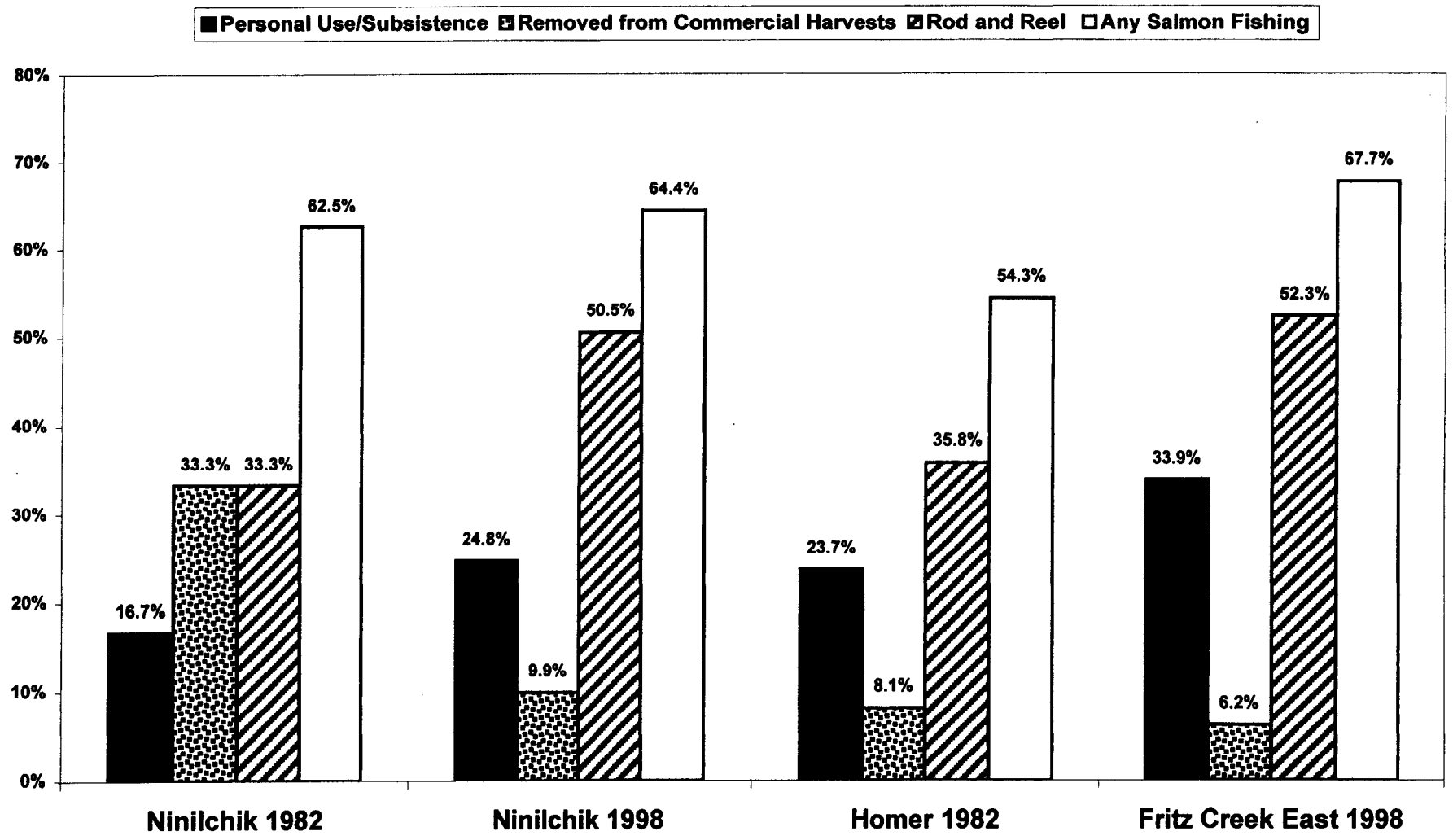


Figure 50. Percentage of Households Harvesting Salmon for Home Use by Gear Type, 1982 and 1998



requirements for opening the dipnet fisheries and established fixed opening and closing dates (July 10 through August 5) during which fishing is open 24 hours a day, seven days a week (Nelson et al. 1999:146-158). As noted by the ADF&G sport fish area biologist, "Opening the fisher[ies] by date rather than at a given sonar count has given the fisher[ies] a measure of predictability which heretofore was lacking" (Nelson et al. 1999:151). The set net fishery at the mouth of the Kasilof River also has become a stable opportunity for personal use salmon harvests. In 1983 (the first year for which comprehensive data are available), a total of 27,532 salmon were harvested in the three personal use fisheries; in 1998, this total was 160,163 salmon (Ruesch and Fox 1999:37; Nelson et al. 1999:148,155). It should also be noted that these three fisheries target sockeye salmon and take place when commercial fishermen are preparing for their season or already fishing. Prior to 1980, commercial fishermen were accustomed to fishing "for subsistence" for coho salmon with noncommercial setnets later in the summer or fall (Braund 1982).

The second factor is demographic. After describing wild resource harvest and use patterns at Ninilchik in the early 1980s, Georgette (1983:183-184) concluded that:

> Ninilchik's expanding population accounts for an increasing diversity of values, beliefs, and resource harvest and use patterns among its residents. At one time Ninilchik residents were largely a homogeneous group with similar hunting, fishing, and employment patterns. Over the last twenty years, however, people have moved into Ninilchik in increasing numbers, attracted by its accessibility, small-town qualities, and mild climate. With their different backgrounds, skills, and attitudes, the influx of new residents has made Ninilchik a heterogeneous community. Today there are Ninilchik residents who have used salmon as a dietary staple all their lives . . . , others who perceive hunting and fishing as highly-valued recreational activities . . . , others who hunt and fish as an "economical" alternative to store-bought groceries but do not consider such activities to be recreational . . . , and some who do not use wild resources at all . . . .

The trend noted by Georgette continued into 1998. Most current Ninilchik households (55.5 percent) have arrived in the community since the early 1980s (within the last 15 years). Most household heads (83.1 percent) were born outside of Alaska and have moved to the area (Table 10). They are not commercial fishermen. They have jobs in services or retail trades or other sectors, and they have moderate incomes, or are retired. They have the money, time, and interest to engage in rod and reel and personal use fisheries and moose hunts.

The third factor, related to demographic change, has to do with perceptions and values concerning methods of procuring salmon. Research pertaining to the early 1980s found that long-term Ninilchik families at that time did not participate extensively in personal use dip net or recreational rod and reel fisheries. In 1982, dipnetting was new, and long-term residents, accustomed to fishing with set gill nets in commercial fisheries and former subsistence fisheries, had little interest in such an "inefficient" activity:

> One Ninilchik fisherman took red salmon with a dip net in the personal use fishery which was opened at the mouth of the Kasilof River in June 1982. That this fishery was not

> more widely exploited is explained by its non-traditional nature (it replaced a long-standing subsistence set net fishery) and relative inefficiency (low quantities of fish per hour of fishing effort) (Reed 1985:78).

Similarly, In the view of many Ninilchik residents in the early 1980s, and again especially for long-term residents, rod and reel fishing did not make for efficient use of their time, nor was it part of their training or experience:

> For many people, especially those accustomed to fishing with nets, rod and reel fishing is not an efficient way to get salmon. Some Ninilchik residents said they have never learned to fish successfully for salmon with a rod and reel; others said there are years when despite frequent salmon fishing efforts they 'just do not seem able to catch a fish.' Still others said that fishing with a rod and reel for the 30 or more salmon they use annually consumes too much of their time (Georgette1983:185).

In contrast to a prevailing view in the community in the early 1980s that dipnetting and rod and reel fishing were inefficient and just not worth the time, people surveyed in Ninilchik in 1998 evidently participate widely in these activities. Local dipnet fisheries appear to be productive sources for procuring sockeye salmon (see Table 70 and Table 75). Rod and reel fisheries result in several salmon to take home after a day's fishing and are the major source of coho and chinook salmon (as well as halibut). Although this change in community participation especially relates to newcomers, it appears that more long-term residents have joined the dip net and rod and feel fishery, and utilize the personal use set net fishery, as these fisheries have become a reliable and viable way to obtain salmon for home use.

The fourth factor is economic. As noted in the section on demography and economy above, as Ninilchik's economy has diversified, commercial fishermen make up a smaller proportion of the population. Far fewer people can depend on removal of fish from commercial fisheries as a source of salmon. This expanding economy, much of it related to recreational activities and tourism, brings jobs, income, and a group of people with an interest in rod and reel and dipnet fishing, the time to do engage in these activities, and the money to support them.

Like salmon harvests, harvests of nonsalmon fish by Ninilchik residents also increased between 1982 and 1998, especially for halibut. Estimated harvests of non-salmon fish rose 80.4 percent, from 21.2 pounds per person in 1982 to 38.3 per person in 1998 (Fig. 44, Fig. 45). Nonsalmon fish provided 28 percent of the total harvest at Ninilchik in 1982 and 23 percent in 1998 (Fig. 46). All of this increased harvest was provided by halibut, estimated harvests of which rose from 12.5 pounds per person in 1982 to 31.8 pounds per person in 1998 (second to moose among all resources) (Fig. 47). Harvests of other kinds of non-salmon fish, such as herring and smelt, declined. The non-salmon fish harvest at Ninilchik became far more specialized: halibut represented 58.7 percent of the other fish harvest in 1982, and 82.9 percent in 1998.

The same reasons which explain increases in salmon harvests at Ninilchik likely account for the increase in harvests of halibut as well. Particularly important is the increasing popularity of local recreational halibut fisheries, including high levels of participation among newcomers to the community.

Overall, the number of halibut harvested by recreational fishers in Cook Inlet grew from 39,532 in 1982 to 192,666 in 1996 (Vincent-Lang 1998:17). In 1996, fishers utilizing the services of charter operators accounted for 58 percent of the recreational halibut harvest in Cook Inlet. The rapidly growing charter fleet operating out of Ninilchik at Deep Creek, where improved boat launching facilities have been developed, accounts for most of the increase in recreational halibut harvests between the earlier survey study year of 1982 and the recent study year of 1998 (Vincent-Lang 1998:21). The charters provide opportunity to households without boats to fish for halibut.

Lending support to this hypothesis is the shift in methods used to obtain halibut for home use in Ninilchik. In 1982, most halibut (55.7 percent) was removed from commercial catches for home use and the remainder taken with rod and reel. The latter provided 5.5 pounds per person of halibut. In 1998, just 5.2 percent of the halibut harvest by Ninilchik residents for home use was removed from commercial catches; rod and reel provided 94.8 percent, a per capita harvest of 30.1 pounds per person. As a consequence, the percentage of the harvest of fish other than salmon provided by commercial removal dropped from 61.0 percent in 1982 to 35.7 percent in 1998, with a corresponding increase in non-commercial methods, from 39.0 percent to 64.3 percent (Fig. 51). While commercial removal provided about the same amount of non-salmon fish in pounds per person in 1998 as in 1982 (13.7 pounds and 13.0 pounds, respectively), the harvest with non-commercial methods tripled from 8.3 pounds per person in 1982 to 24.7 pounds per person in 1998 (Fig. 52).

In 1982, Ninilchik households commonly complained about the difficulties of harvesting moose because of local moose scarcities and increased competition with non-Peninsula hunters (Georgette 1983:180, 186). In 1982, only 23 moose (a rate of 0.035 moose/person) were harvested in Ninilchik according to household surveys (Fig. 34, Fig. 35). Some interviewed hunters had not been successful for years (Georgette 1983:180). By contrast, Ninilchik households were particularly successful in harvesting moose in 1998. This largely accounts for the 243 percent increase in harvests of land mammals in the community when 1998 is compared with 1982 (Fig. 45). Per capita harvests of land mammals jumped from 19.3 pounds per person (25 percent of the total harvest) to 66.2 pounds per person (40 percent of the total harvest) (Fig. 44, Fig. 46). Per capita moose harvests rose about threefold, from about 15.6 pounds per person in 1982 to 47.8 pounds per person in 1998 (Fig. 47).

Longer seasons may account for much of this increased success. In 1982, moose hunters in GMU 15C (where the vast majority of moose hunting by Ninilchik residents takes place; see Chapter Three) were limited to a 20-day season from September 1 through September 20 (ADF&G 1982:5). In 1998, there was a 32-day state season, from August 20 through September 20.[2] Local hunters tend to benefit from the flexibility of longer seasons compared with non-local hunters. The bag limit was one bull in 1982, while in 1998 hunters were limited to a bull for a spike or fork or 50-inch antlers or antlers with three or more brow tines on at least one side. Antler restrictions may be a factor reducing success rates

[2] The federal subsistence moose hunting season for GMU 15C was even longer, August 10 to September 20 (Federal Subsistence Board 1998:86), although as discussed in Chapter Three, few Ninilchik residents hunted moose on federal lands in 1998 (see Table 59).

Figure 51. Percentage of Pounds of Fish Other Than Salmon Harvested for Home Use by Gear Type, 1982 and 1998

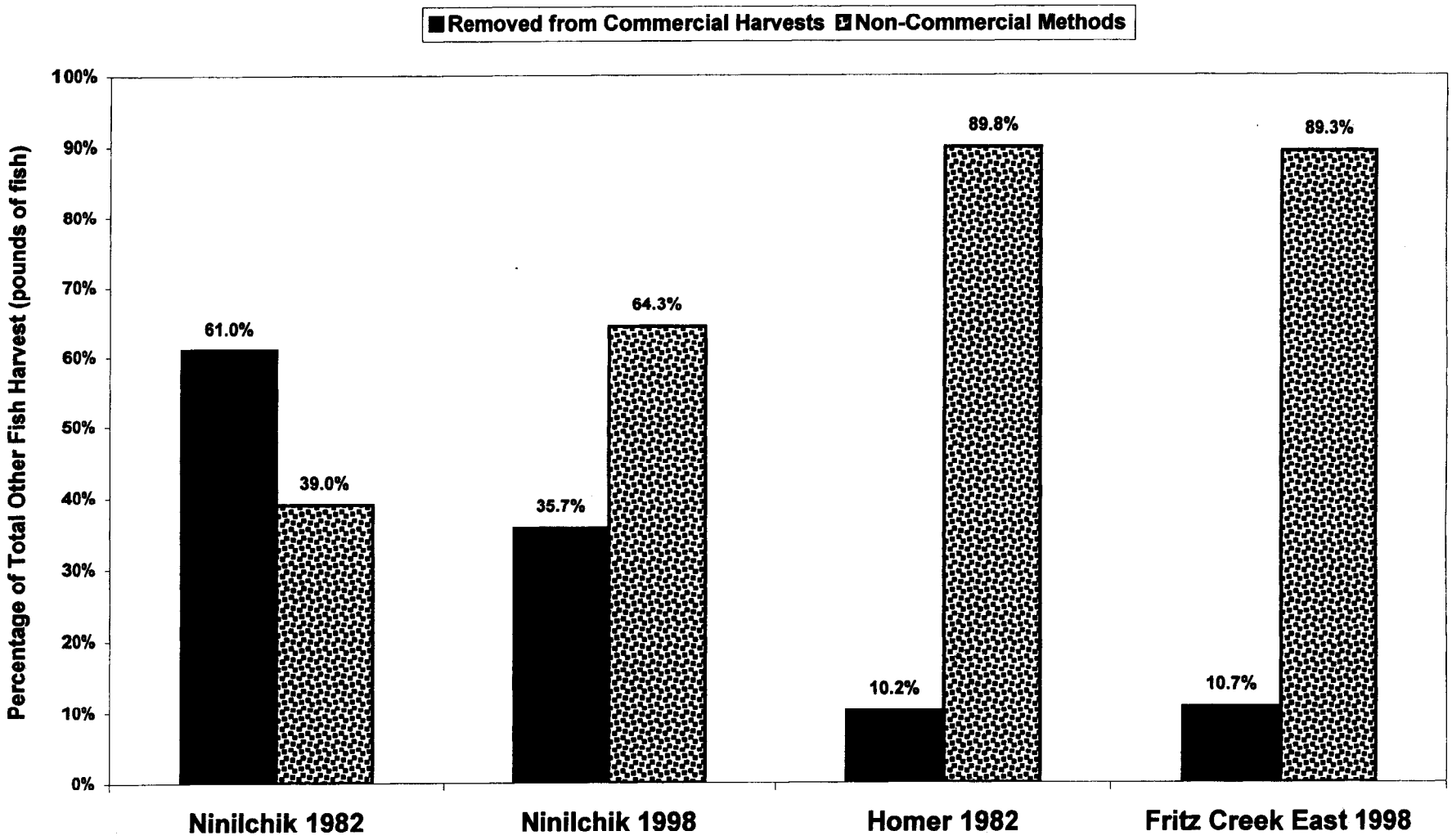
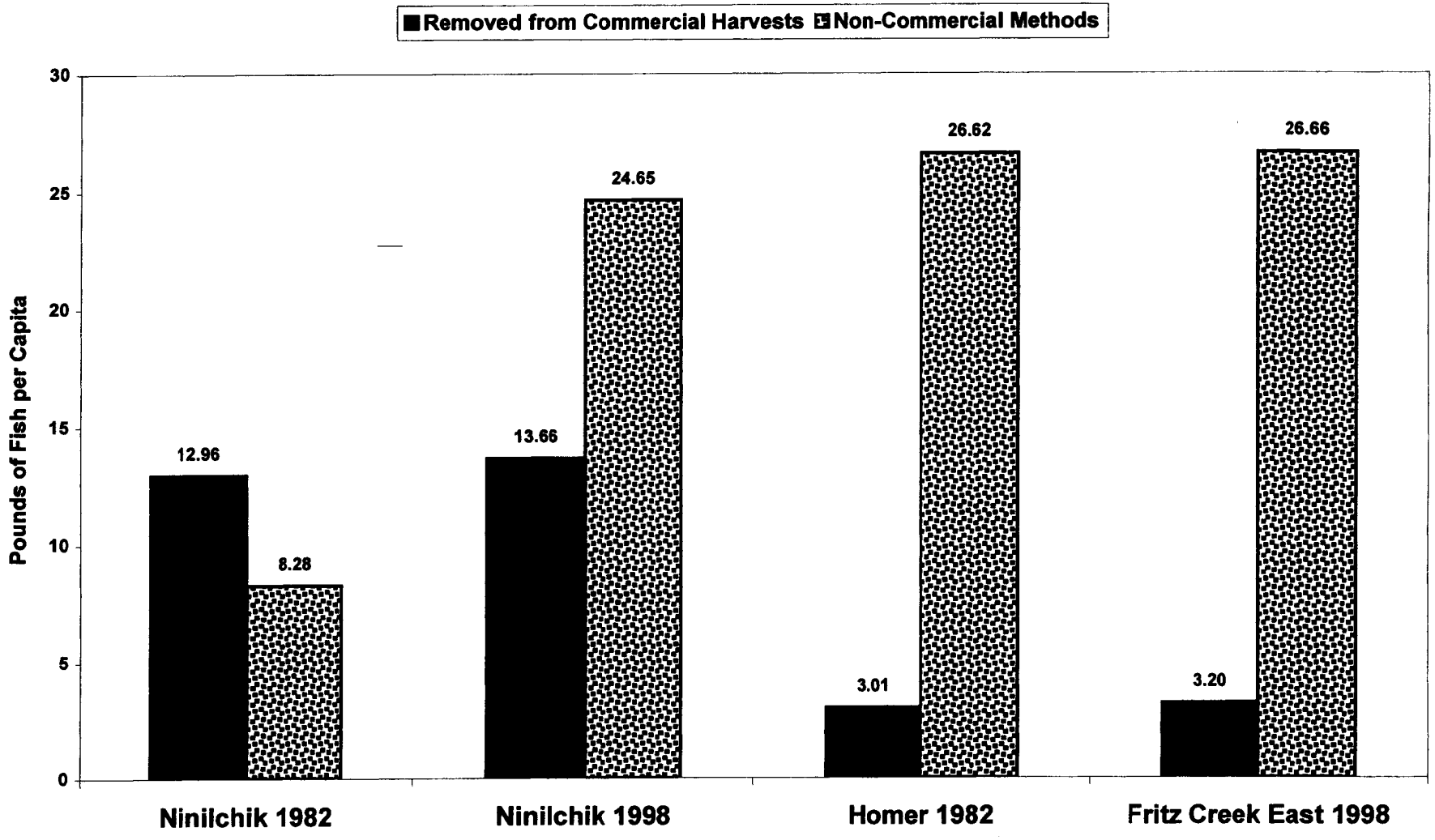


Figure 52. Pounds of Fish Other than Salmon per Person Harvested for Home Use by Gear Type, 1982 and 1998



despite the long season. However, ADF&G data suggest that this regulation, implemented in 1987, has, over time, resulted in about the same number harvestable bulls but with a longer season (ADF&G 1998). Increases in cash income and growth in the retired population provide more money and time to support hunting, other factors that may account for the large harvest of moose in Ninilchik in 1998.

Like moose, caribou harvests by Ninilchik residents also increased, from 1.8 pounds per person in 1982 to 12.7 pounds per person in 1998 (Fig. 46). Caribou ranked fourth among species in terms of pounds harvested in 1998. This increase most likely relates to the growth in the Mulchatna Herd in GMUs 9 and 17, providing a harvest of up to five animals for people with the time and money to fly to this area. Despite its overall rank, caribou was not particularly widely used in Ninilchik in 1998 (by 18.8 percent of households), nor was it extensively shared (11.9 percent of households received caribou).

It should also be noted that the location of caribou hunting in nonlocal GMUs was an exception to the general pattern at Ninilchik of most resource harvests taking place on the Kenai Peninsula and adjacent marine waters. In other words, increased overall harvests of wild resources at Ninilchik are not accounted for by traveling great distances to harvest resources such as caribou; people generally have taken advantage of fishing and hunting activities opportunities on the Peninsula.

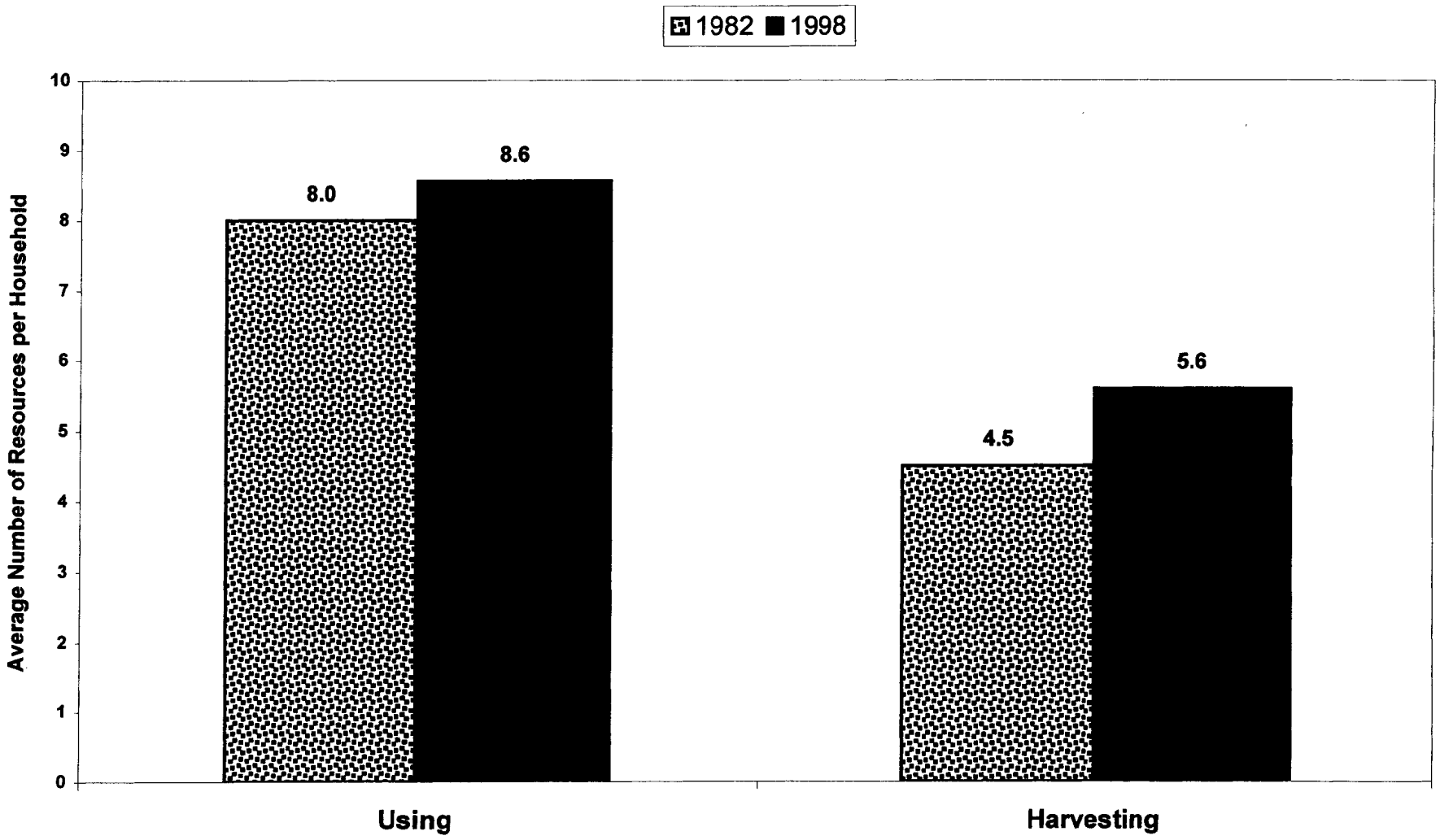
A change that does not account for the higher harvest levels in Ninilchik in 1998 compared to 1982 is the assumption of management of subsistence on federal lands by the Federal Subsistence Board in 1990. As noted in Chapter Three, the only advantages Ninilchik residents gained from the federal program in the study year were moose seasons that opened two days earlier than the state season in GMU 15A and ten days earlier in GMU 15B and 15C. However, as shown in Table 59 in Chapter Three, few Ninilchik residents hunted moose on federal lands in 1998. This is probably due to the remoteness of these lands in GMU 15B and 15C, and the distance needed to travel to federal lands in 15A. Further, in 1998, Ninilchik residents harvested only one moose with a federal registration permit before the state season opened, out of a total reported harvest in all GMUs of 53 moose. "Federal early season" moose harvests by Ninilchik residents numbered 3 in 1996 (out of a total harvest of 61) and 2 in 1997 (out of a total of 58) (ADF&G 2000).

The educational fisheries run in 1998 also do not account for higher overall harvest levels in Ninilchik. The educational fisheries administered by the Ninilchik Traditional Council and the Ninilchik Native Descendants were an important source of salmon and supported traditional values and practices. However, the approximately 1,000 salmon harvested in these fisheries in 1998 cannot account for the much higher salmon harvests by Ninilchik residents in 1998 compared to 1982.

While per capita harvests have increased, there was little difference in the average range of resources used or harvested in Ninilchik in 1982 and 1998 (Fig. 53). Ninilchik households on average used 8.0 kinds of wild resources in 1982, and 8.6 kinds in 1998.[3] On average, households in Ninilchik

[3] A slightly less detailed list of resources was used to collect the 1982 data than in 1998. For example, categories such as "ducks," "geese," and "crab" were used rather than the specific kinds of duck, goose, or crab listed on the survey administered for 1998. However, the lists for the most frequently used resource types, such salmon, most other fish, and game were the same for both study years.

Figure 53. Average Number of Kinds of Resources Used and Harvested per Household, Ninilchik, 1982 and 1998



harvested 4.5 kinds of wild resources in 1982 and 5.6 in 1998. This shows that the increase in community harvests is the result of harvesting more of a small set of locally available resources, rather than adding additional resources to the harvest mix.

Table 109 compares the percentage of households in Ninilchik in 1982 and in 1998 that used and harvested each type of wild resource. There were increases in the percentage using and harvesting a few key resources, such as sockeye salmon, halibut, and moose. But there were also drops, such as fewer households using pink salmon, chum salmon, hooligan, and clams. Overall, these data are consistent with other findings that harvests have increased in Ninilchik as a result of a focus on a narrow range of key species – sockeye salmon, chinook salmon, halibut, and moose.

In summary, a combination of demographic, economic, regulatory, and sociocultural factors appear related to an increase in wild resource harvests in Ninilchik in 1998 compared to the early 1980s. Overall, while larger harvests on average were taken in 1998, the role of wild resources in the community's economy and way of life does not appear to have changed between 1982 and 1998. Certain trends in resource patterns identified in 1982 have continued. For example, as noted above, Georgette (1983:183-184) commented on the increasing diversity of Ninilchik's population in terms of values, backgrounds, and resource use patterns. Similarly, Reed (1985:96), in commenting on the findings of the 1982/83 study, noted that

> It is apparent that long-term Ninilchik residents approach the harvest of local resources differently than the more recent Ninilchik residents. For many long-term residents . . . , resource harvesting was an important household economic strategy, which, whatever the methods used to acquire fish and game, contributed importantly to their household's economic welfare. For newcomers, . . . resource harvesting was more of a recreational activity, though resources were also seen as a food source which might be turned to in case of hard economic times. Indeed, one case [household] expressed the belief that resource harvesting was not economical. A substantial segment of the population also exhibited little interest in harvesting wild foods.
>
> These differences between segments of Ninilchik's population contributed to the general lack of a community-wide pattern of resource use and beliefs or values associated with resource use. Hence for some households, resource utilization was a tradition and production was family based, especially in commercial beach fishing families . . . For others, it was productive recreation or an economical use of leisure time. When resources become difficult to obtain because of expensive equipment, increased distance, or greater competition, most Ninilchik residents choose other social and economic pursuits.

By 1998, the long-term resident segment of Ninilchik's population had decreased as a percentage of the community's households compared to 1982. Newcomers arrive to find more personal use and general hunting regulations favorable to harvesting fish and game for home use, and more charter and recreational services to support harvesting. Many newcomers arrive with interests in harvesting wild foods to supplement their diets. Many also arrive with the money and time to invest in recreational and personal use hunting and fishing. These points especially apply to many retired households.

Table 109. Percentage of Households Using and Harvesting Resources, Ninilchik and Homer, 1982 and 1998

	Ninilchik[1]				Homer/Frtiz Creek East[2]			
	Using		Harvesting		Using		Harvesting	
	1982	1998	1982	1998	1982	1998	1982	1998
Any Fish	95.8%	97.0%	66.7%	73.3%	97.1%	96.9%	67.1%	75.4%
Any Salmon	91.7%	90.1%	62.5%	64.4%	86.7%	93.8%	54.3%	67.7%
King Salmon	58.4%	69.3%	41.7%	46.5%	49.7%	56.9%	31.8%	33.8%
Sockeye Salmon	45.8%	66.3%	37.5%	44.6%	39.4%	61.5%	19.7%	40.0%
Silver Salmon	54.2%	53.5%	33.3%	37.6%	63.6%	64.6%	37.0%	44.6%
Pink Salmon	29.2%	19.8%	25.0%	14.9%	24.9%	16.9%	18.5%	15.4%
Chum Salmon	16.7%	7.9%	12.5%	3.0%	7.0%	4.6%	6.4%	4.6%
Any Other Fish	83.3%	92.1%	50.0%	62.4%	92.5%	90.8%	59.0%	58.5%
Halibut	70.9%	90.1%	41.7%	60.4%	85.5%	87.7%	46.2%	52.3%
Other bottomfish	12.5%		4.2%		14.4%		12.7%	
Hooligan	20.8%	5.9%	12.5%	2.0%	4.6%	10.8%	2.9%	4.6%
Herring	4.2%	1.0%	4.2%	1.0%	5.2%	6.2%	2.9%	1.5%
Steelhead	20.8%	0.0%	20.8%	0.0%	6.9%	15.0%	5.8%	1.5%
"Trout"	12.5%		12.5%		28.3%		25.4%	
Grayling	0.0%	1.0%	0.0%	1.0%	5.2%	1.5%	5.2%	1.5%
Whitefish	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	1.5%
Burbot	0.0%		0.0%				0.0%	
Tomcod	0.0%	1.0%	0.0%	0.0%		1.5%	0.0%	1.5%
Other fish	0.0%		0.0%				0.0%	
Any Marine Invertebrate	91.7%	78.2%	83.3%	57.4%	87.9%	76.9%	48.6%	52.3%
Crab	33.3%	42.6%	8.3%	7.9%	65.3%	52.3%	20.2%	18.5%
Shrimp	20.9%	5.0%	4.2%	1.0%	44.5%	1.5%	9.8%	0.0%
Clams	83.3%	66.3%	83.3%	55.4%	46.9%	50.8%	40.5%	41.5%
Mussels	4.2%	9.9%	4.2%	9.9%	8.1%	23.1%	8.1%	18.5%
Other intertidal animals	0.0%		0.0%				4.1%	
Any Land Mammal		63.4%	25.0%	33.7%		64.6%	28.3%	15.4%
Moose		56.4%	8.3%	20.8%		53.8%	12.7%	6.2%
Caribou		18.8%	8.3%	7.9%		12.3%	4.6%	4.6%
Deer		17.8%	4.2%	5.9%		23.1%	9.8%	7.7%
Elk		5.9%	0.0%	1.0%		6.2%	0.6%	1.5%
Goat		0.0%	0.0%	0.0%		1.5%	1.7%	0.0%
Sheep		3.0%	0.0%	2.0%		0.0%	0.0%	0.0%
Black bear		5.0%	0.0%	3.0%		6.2%	1.2%	4.6%
Hare		6.9%	8.3%	6.9%		1.5%	11.6%	0.0%
Porcupine		0.0%	0.0%	0.0%		1.5%	0.0%	0.0%
Furbearers			0.0%				0.6%	
Any Marine Mammal		2.0%	0.0%	0.0%		3.1%	0.6%	0.0%
Seal		0.0%	0.0%	0.0%		1.5%	0.6%	0.0%
Other marine mammal		2.0%	0.0%	0.0%		3.1%	0.0%	0.0%
Any Bird		35.6%	33.3%	30.7%		21.5%	22.0%	16.9%
Spruce grouse		31.7%	33.3%	28.7%		12.3%	15.0%	9.2%
Ptarmigan		5.9%	0.0%	5.9%		9.2%	3.5%	9.2%
Ducks		4.0%	0.0%	3.0%		7.7%	8.7%	6.2%
Geese		3.0%	0.0%	1.0%		6.2%	4.1%	3.1%
Any Wild Plant	54.2%	83.2%	37.5%	82.2%	50.8%	84.6%	43.9%	84.6%
Berries	54.2%	65.3%	37.5%	59.4%	41.6%	75.4%	35.8%	70.8%
Mushrooms	0.0%		0.0%		21.4%		21.4%	
Kelp &seaweed	0.0%	2.0%	0.0%	2.0%	6.3%	4.6%	4.6%	4.6%
Other plants	0.0%	21.8%	0.0%	19.8%		46.2%		43.1%
Any Willd Resource		99.0%	91.7%	96.0%		100.0%	85.6%	93.8%

[1] For 1982, equals the Ninilchik census area; for 1998, equals Ninilchik and Happy Valley census areas, plus an area to the north to Clam Gulch. See Chapter One.

[2] For 1982, equals Homer, Kachemak, Diamond Ridge, and Fritz Creek. For 1998, equals a portion of the Fritz Creek census area east of McNeil Canyon, except Voznesenka.

Notes: blank cells indicate data unavailable. Sources: Scott et al. 1999; this study

As discussed in Chapter Three, by 1998 there was not much difference anymore between long-term residents and more recent arrivals in Ninilchik in terms of harvest levels, range of resources uses, or level of involvement in harvesting activities. Distinctions noted by Georgette (1983) and Reed (1985) in the early 1980s based on length of residence may have diminished or disappeared due to changes in rules governing hunting and fishing, and economic diversification. Lending support to this observation is the decline in importance of removal of resources from commercial fisheries for home use in Ninilchik, from 21.3 pounds per person in 1982 and 27.8 percent of the harvest to 13.7 pounds per person in 1998 and 8.3 percent of the harvest (Fig. 54). Nevertheless, the community remains heterogeneous in terms of resource uses, with a small segment of the population producing most of the wild foods. Reasons for differences among households are complex and these differences are not readily explained by length of residency, ethnicity, or occupation.

FRITZ CREEK EAST: COMPARISONS WITH HOMER IN 1982

Demography and Cash Economy

As discussed in Chapter Two, the population of the general Homer area has risen markedly over the last several decades. The combined Fritz Creek and Fox River CDPs grew 503 percent from 1980 to 1998. Consequently, the majority of the Fritz Creek East study population in 1998 was not living there during the previous survey period in 1982; 66.2 percent of the households surveyed for 1998 had lived in the community for 15 years or less. About 55.4 percent of the households had lived in the community for 10 years or less, and only 18.5 percent had lived there over 20 years (Fig. 55). The Alaska Native population was relatively low: about 0.5 percent in Fritz Creek East in 1998 and 3.5 percent in the entire Fritz Creek CDP in 1990 (Table 9). As in Ninilchik, retired households made up a much larger percentage of the total population in 1998 (20.0 percent of all households) than in 1982 (12.2 percent) (Table 110).

Comparisons with the overall Homer area in 1982 suggest that the relative role of commercial fishing in the local economy has declined as the economy has diversified between 1982 and 1998. For example, 21.3 percent of sampled Homer households earned money in commercial fisheries in 1982, compared to 9.7 percent in Fritz Creek in 1998. The local economy still has a strong seasonal dimension primarily linked to employment in the summer tourism industry. Cash incomes have increased in real dollars by 14.7 percent since 1982. For 1989, US Census data suggest that cash incomes in Fritz Creek ($18,698 per capita) and Homer ($19,182 per capita) were slightly above the state average ($17,610 per capita (Table 110).

Figure 54. Percentage of Total Harvest for Home Use Removed from Commercial Catches, Ninilchik 1982 and 1998, Homer 1982, and Fritz Creek East 1998

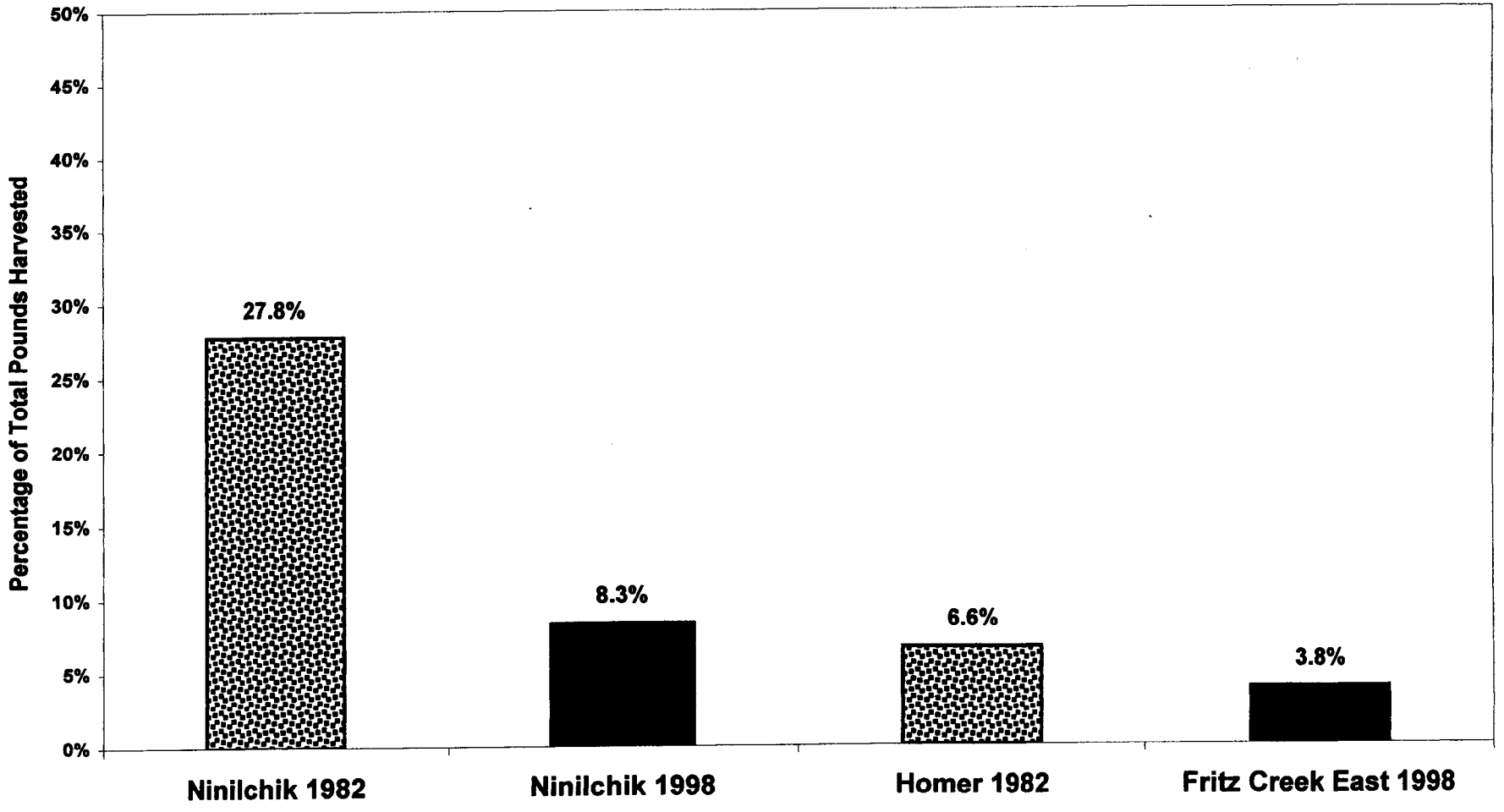


Figure 55. Length of Residency of Household Heads, Homer 1982 and Fritz Creek East 1998

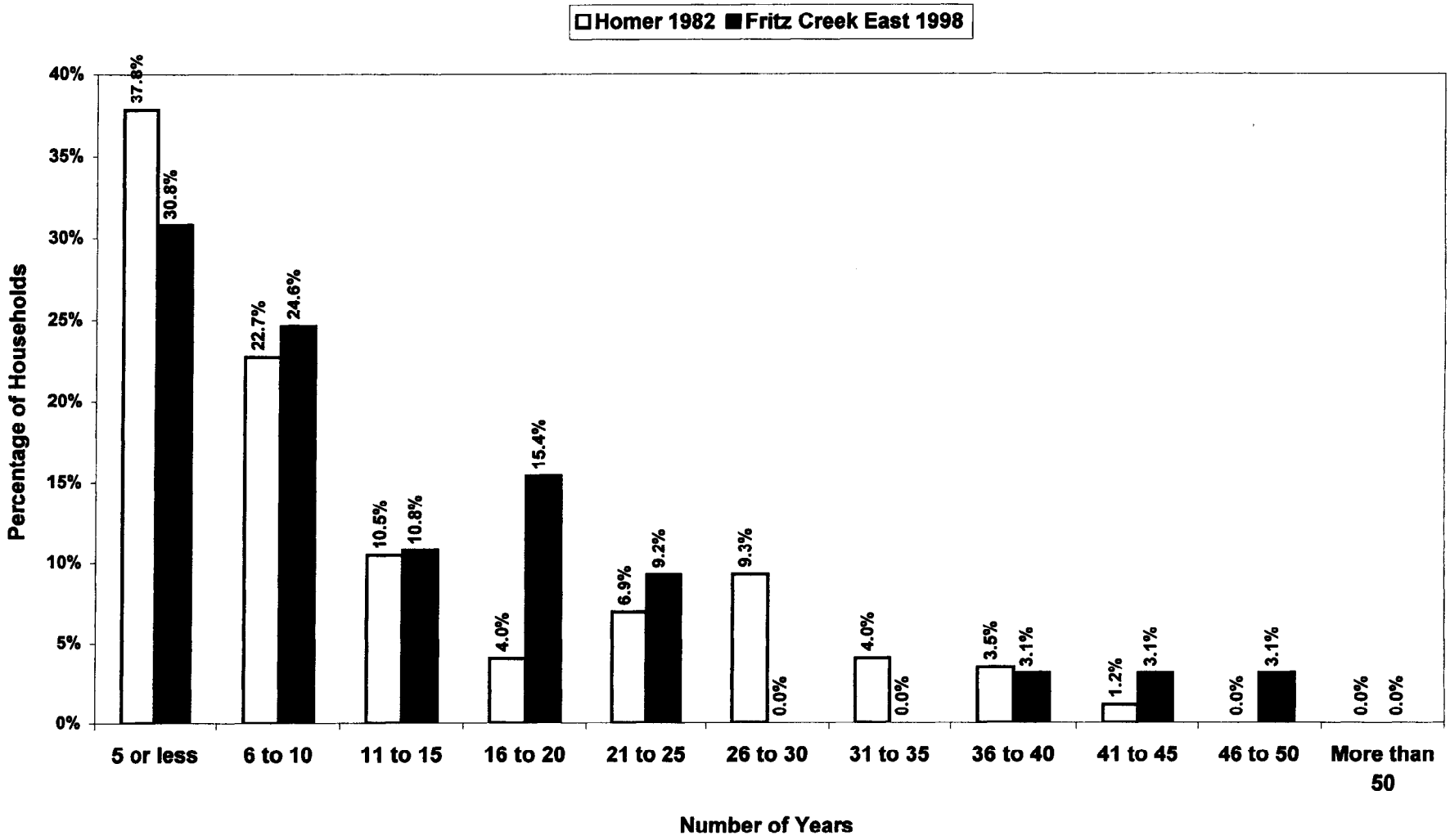


Table 110. Selected Economic and Demographic Data, Homer and Fritz Creek[1]

	Survey Data		Homer: Census Data			Fritz Creek: Census Data		
	Homer 1982[2]	Fritz Creek East 1998	1980	1990	1998	1980	1990	1998
Estimated population	5,633	434	2,209	3,660	4,155	404	1,426	1,998
Average household size	2.98	2.89	2.72	2.59		2.91	2.90	
Percent Alaska Native		0.5%	3.0%	3.6%		0.0%	3.4%	
% of HHs with Alaska Native Head	3.4%	0.0%						
Average length of residency, HH head	12.32	12.79						
% of HH Heads born local	1.3%	7.0%						
Average number of months employed	9.73	8.6						
% employed year-round[2]		42.9%						
% of HHs with commercial fishing employment	21.3%	9.7%						
% with retired household head	12.2%	20.0%						
Average HH income[4]	$29,964	$50,328	$26,975			$28,516		
Median HH income[4]			$21,843	$36,652		$26,667	$45,143	
Per Capita Income[4]	$10,055	$17,400	$9,952	$19,182		$11,406	$18,698	

[1] Blank cells indicate source does not provide the data for the particular characteristic.

[2] Homer study area included Homer city, Kachemak city, Fritz Creek, and Diamond Ridge.

[3] Household heads for 1982

[4] Not adjusted for inflation.

Sources: Reed 1985, Scott et al. 1999, AK Department of Labor 1991, 1999; Bureau of the Census 1980, 1992

Patterns of Wild Resource Use

The pattern of wild resource uses in Fritz Creek East in 1998 resembled that of the general Homer area in 1982. As estimated in usable pounds, harvests totaled 93.8 pounds per person in Homer in 1982 and 105.4 pounds per person in Fritz Creek East in 1998. The average range of resources harvested and used was also similar in the two study years. In 1982, Homer households on average used 8.8 kinds of wild foods and harvested 5.0 kinds. In 1998, Fritz Creek East households used 9.4 kinds and harvested 6.1 (Fig. 56).

At the resource category level, two differences between Homer in 1982 and Fritz Creek East in 1998 stand out. First, harvests of marine invertebrates declined from 16.8 pounds per person in 1982 to 7.5 pounds per person in 1998 (Fig. 57). On the other hand, salmon harvests increased from 19.9 pounds per person in 1982 to 31.3 pounds per person in 1998. The harvest in 1998 also had slightly higher harvests of land mammals and wild plants compared to 1982, while harvests of non-salmon fish and birds remained about the same. Expressed as a percentage of the total harvest, marine invertebrates declined from 18 percent in 1982 to 7 percent in 1998. There was a corresponding increase in the contribution of salmon, from 21 percent in 1982 to 30 percent in 1998 (Fig. 58).

Declining harvests of marine invertebrates can be tied to declines in crab and shrimp stocks and consequent closures or restrictions on harvests in both commercial and noncommercial fisheries. Comparisons of these resources between the two study years bear this out (Fig. 59). Crab harvests dropped from 7.6 pounds per person and a ranking of 3 among types of resource to 4.1 pounds per person and a ranking of 8. Shrimp ranked seventh among all resources in 1982 with a harvest of 4.0 pounds per person; there were no harvests of shrimp by sampled households in 1998. Clams have declined slightly, from 4.3 pounds to 3.1 pounds per person between 1982 and 1998. In contrast, there was an increase in harvests of sockeye salmon from 2.9 pounds per person in 1982 (ranking ninth) to 11.4 pounds per person in 1998 (ranking third). Coho harvests increased from 6.9 pounds per person to 9.4 pounds per person. Harvests of chinook held steady, as did halibut, which retained its number one rank among species overall.

Although not as marked as at Ninilchik, there were some changes in the contribution of various harvest methods to salmon harvests in Fritz Creek East in 1998 compared to Homer in 1982. The percentage of salmon taken with rod and reel increased from 43.3 percent of all salmon to 51.8 percent (Fig. 48). Personal use methods accounted for 43.2 percent of the salmon harvest in 1998, up from 37.0 percent in 1982. Correspondingly, salmon removed from commercial harvests dropped from 19.8 percent of all salmon in 1982 to 5.0 percent in 1998. The number of salmon per person taken with rod and reel doubled, from 1.5 in 1982 to 3.2 in 1998, as did the number taken in personal use net fisheries, from 1.3 fish in 1982 to 2.7 fish in 1998. The average number of salmon per person removed from commercial fisheries for home use dropped from 0.7 in 1982 to 0.3 in 1998 (Fig. 49).

Figure 56. Average Number of Kinds of Resources Used and Harvested per Household, Homer Area 1982 and Fritz Creek East 1998

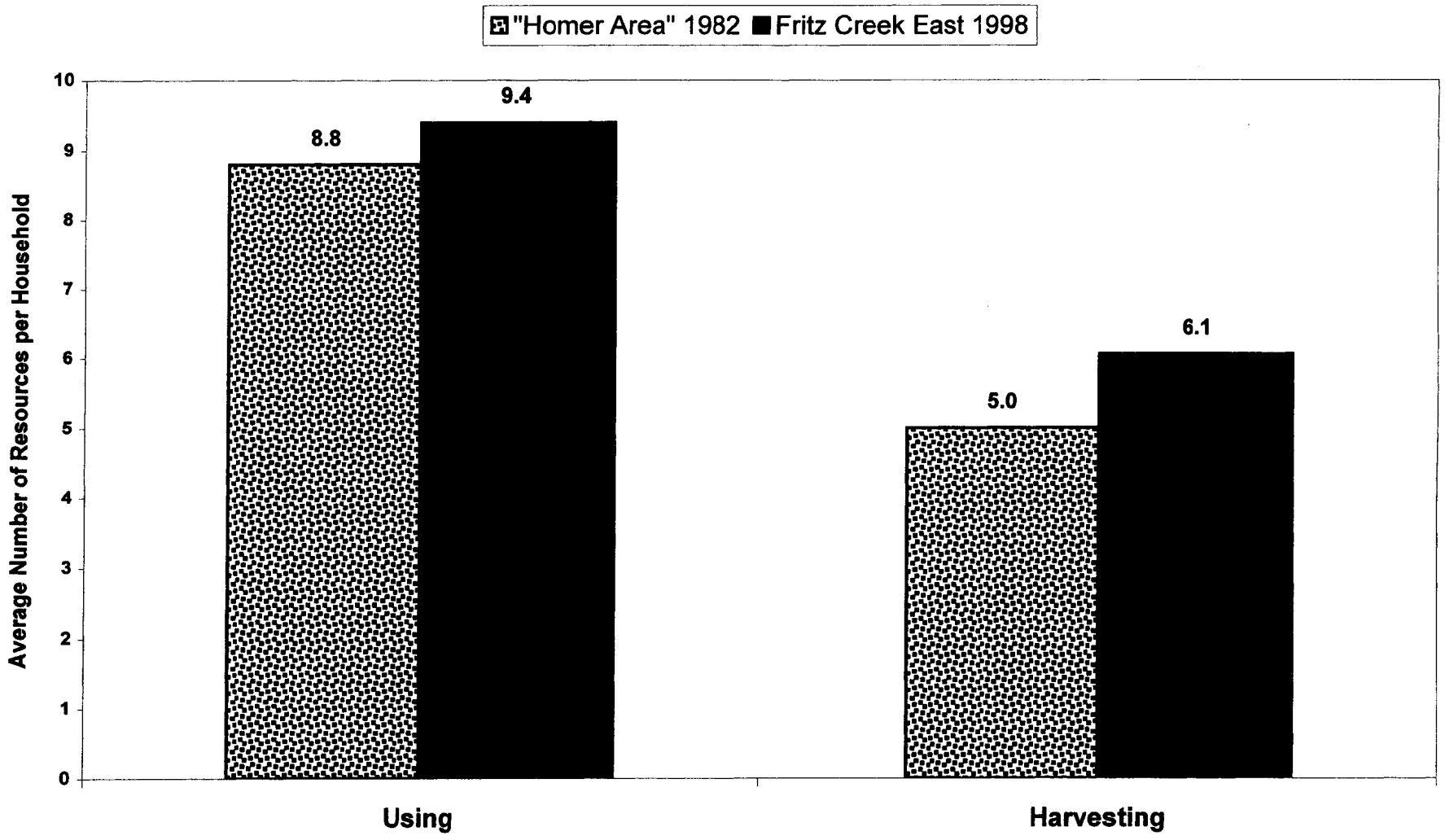


Figure 57. Harvests by Category, Homer 1982 and Fritz Creek East 1998

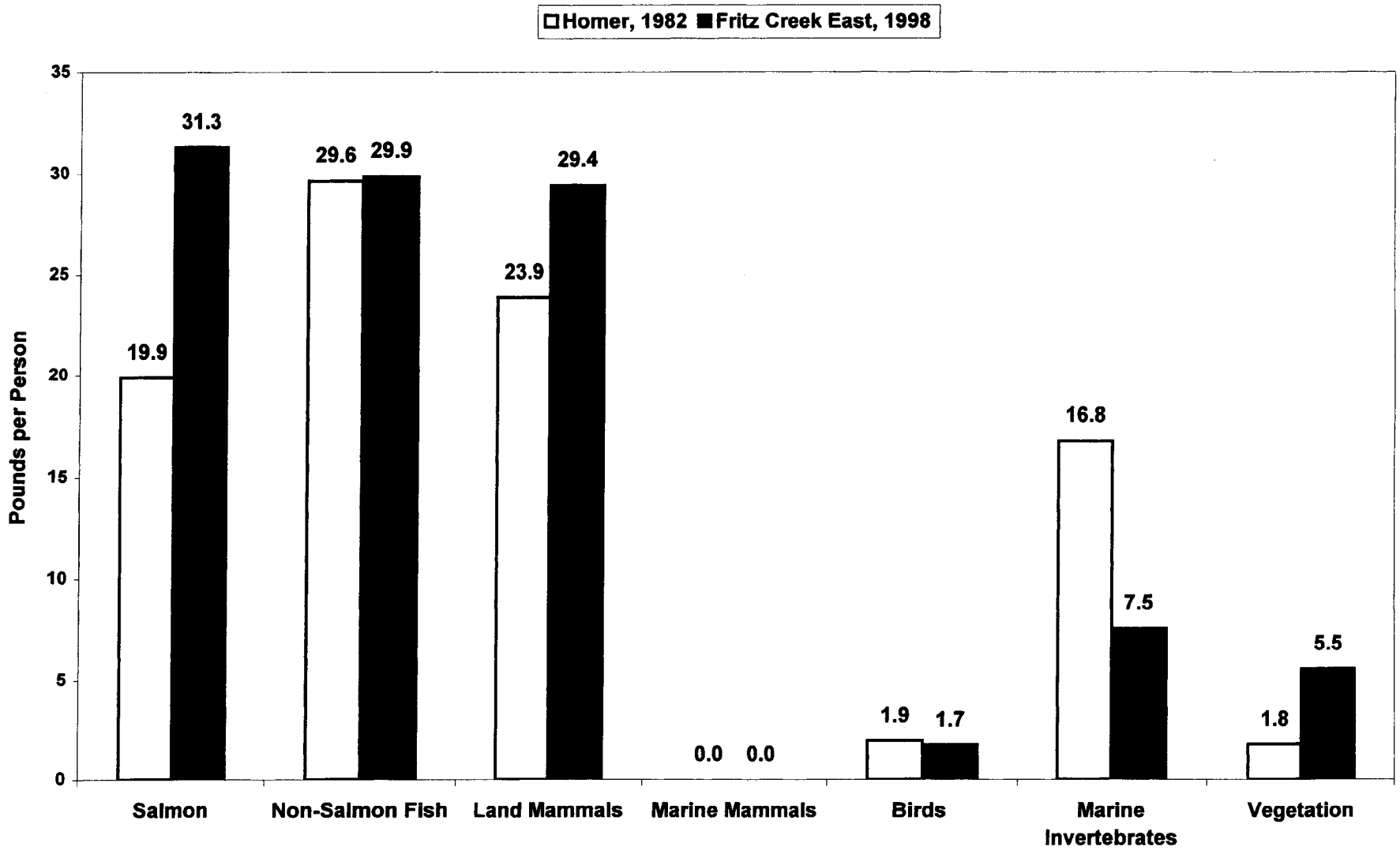


Figure 58. Composition of Harvests, Homer, 1982 and Fritz Creek East, 1998

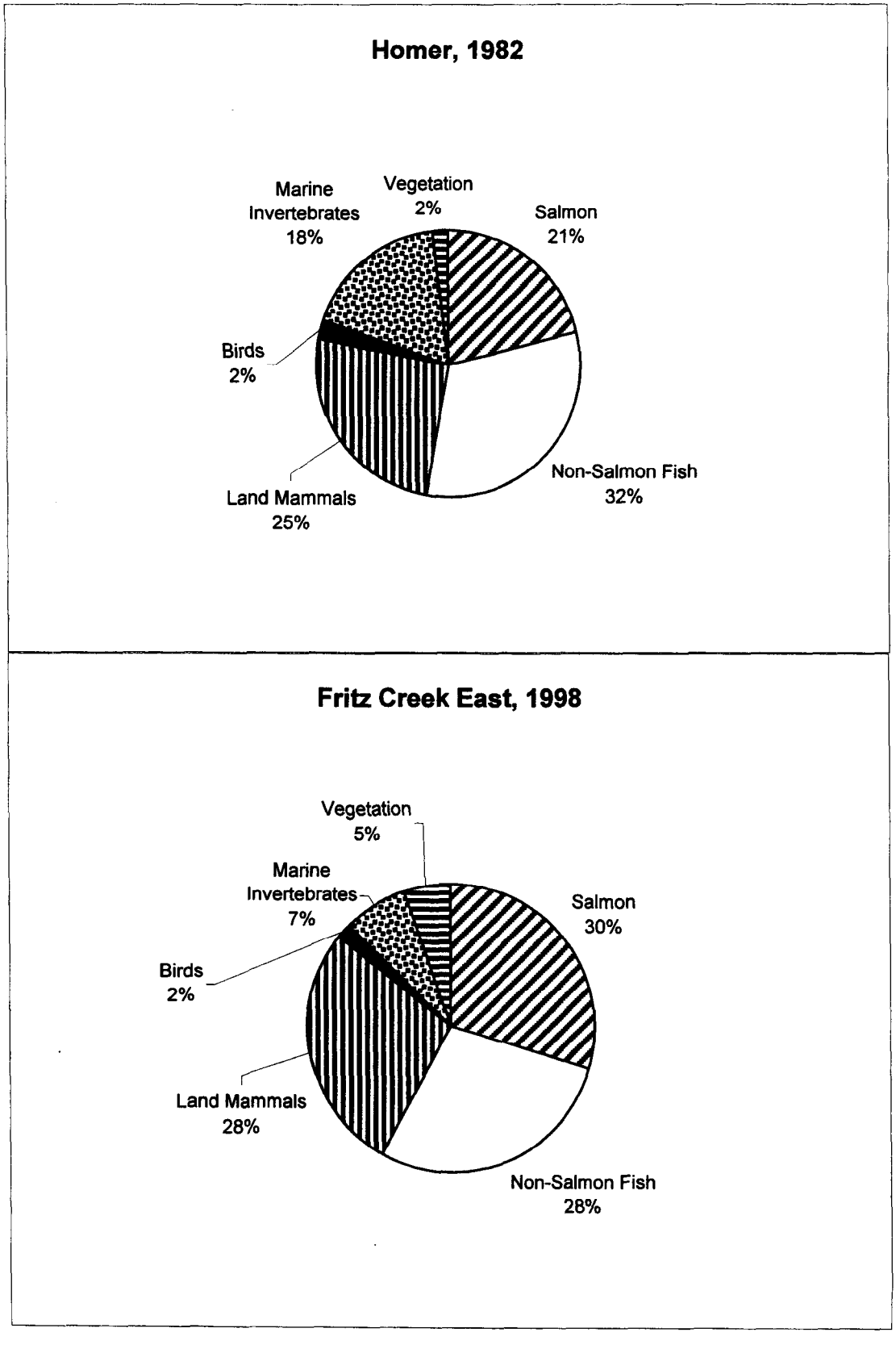
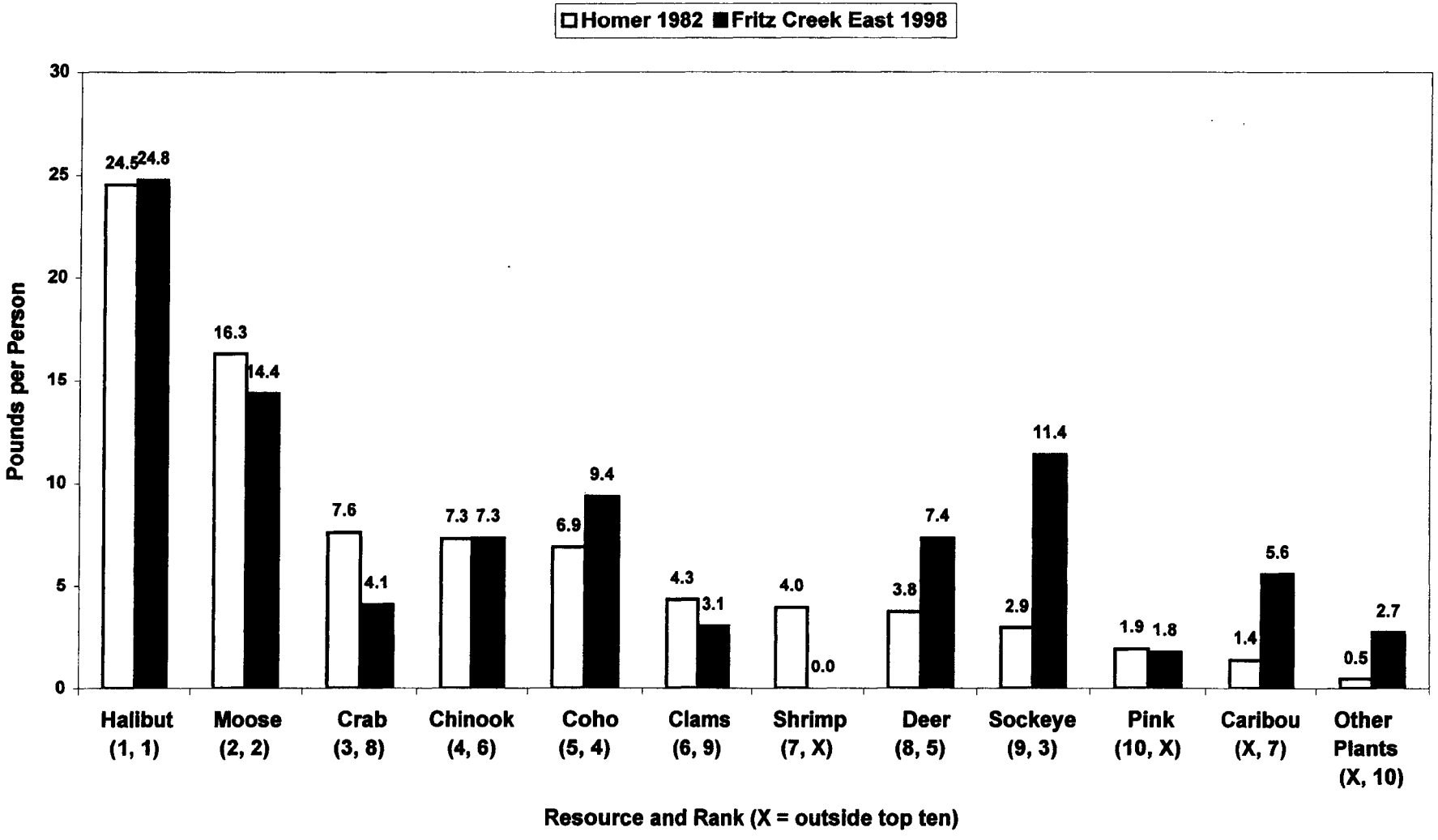


Figure 59. Top Ten Resources by Weight, Homer 1982 and Fritz Creek East 1998



The increase in salmon harvests in the Homer area is likely related to the same factors as in Ninilchik: expanded opportunity through personal use fisheries and the arrival of new families who participate in personal use and rod and reel fisheries. For example, regulatory changes likely account for the increased sockeye harvest, most of which (75.1 percent; see Table 75) occurred in personal use dip net fisheries, regulations for which have stabilized since the early 1980s. While the personal use set net fishery for coho salmon in Kachemak Bay has a long history, this fishery accounted for just 12.4 percent of the coho harvest among Fritz Creek East households, with rod and reel fishing providing 87.4 percent of the coho. The higher participation in dipnet and rod and reel fisheries in comparison with set net fisheries is evidence of the kinds of experience, interests, and values, which characterize most of the Homer area's population.

As shown in Figure 50, participation in rod and reel fisheries was higher in Fritz Creek East in 1998 compared to the Homer area in 1982. In 1982, 54.3 percent of Homer households harvested salmon with rod and reel, compared to 67.7 percent in Fritz Creek East in 1998. Participation in personal use fisheries also grew, from 23.7 percent of household in 1982 to 33.9 percent in 1998. On the other hand, a smaller percentage of households in 1998 (6.2 percent) removed salmon from commercial harvests for home use than had in 1982 (8.1 percent).

In contrast with Ninilchik, there was little change in how households in Fritz Creek East in 1998 obtained fish other than salmon for home use in 1998 compared to Homer area households in 1982. In both years, about 90 percent of the overall harvest of non-salmon fish was taken with non-commercial methods, mostly rod and reel (Fig. 51). Harvests in pounds per person by gear type were also very similar in both study years (Fig. 52). In both years, rod and reel harvests accounted for the large majority of the halibut harvest, 80.3 percent in 1982 and 95.1 percent in 1998. The difference with Ninilchik may be because the recreational halibut fishery out of Homer was developed earlier than the fishery in central Cook Inlet out of Ninilchik (see Vincent-Lang 1998:21), thus the 1998 survey does not document a period of development at Homer but does at Ninilchik.

In summarizing patterns of resource harvest and use in the Homer area in 1982 Reed (1983:155) concluded that:

> Like the previous case [Ninilchik], Homer manifests a heterogeneous population, making generalizations about resource uses across households difficult. Many households do not fish and hunt. Households that do fish and hunt display variable seasonal rounds or harvest activities. Most fishing and hunting reported for this case is scheduled around wage employment. . . There are a few target species -- silver salmon, halibut, and clams. Other resources include berries, mussels, trout, moose, and greens. Fishing and hunting are perceived to be "family activities," inculcating expressed values of independence, self-sufficiency, country living, and freedom in combined economic options (such as gardens, livestock, fishing, self-employment). In comparison with Nondalton, Yukon Delta, and Dot Lake, low volumes of resource are harvested within the family and distribution and exchange appear to be less extensive. . . Although fishing and hunting for local use cannot be said to be the central focus of the economy of the community, it is an aspect of a perceived country-like way of life valued highly by many Homer residents.

Evidence from the present study suggests that these general conclusions about the role of wild resource harvest and uses in the general Homer area, including the area of Fritz Creek East, remain valid in 1998. The period since 1982 has seen a continuation of a trend -- the arrival in the community of many new families with no ties to commercial fishing and who are accustomed to harvesting resources for home use in recreational fisheries and regulated hunts.

COMPARISONS WITH OTHER KENAI PENINSULA COMMUNITIES

Table 111 presents demographic and economic information for Kenai Peninsula communities from Division of Subsistence household surveys. Surveyed areas display a range of population sizes, from over 6,000 people in Kenai to the small communities of Hope, Nanwalek, and Port Graham, all with under 200 people. Nanwalek and Port Graham are largely Alaska Native communities (over 80 percent of the population is Alaska Native). In all other communities, Alaska Natives are a minority. Alaska Native enclaves, many of whom are Dena'ina Athabaskan (including Kenaitze), reside in Seldovia, Ninilchik, and Kenai. As shown in Figure 60, most areas of the Kenai Peninsula have grown substantially. The general area of the study communities (see discussion in Chapter Two), grew far more rapidly than the Borough overall (432 percent increase and 93 percent increase, respectively), while the combined population of the three small communities off the road system (Seldovia, Nanwalek, and Port Graham) were virtually unchanged (increase of only 1.8 percent).

As shown in Figure 61, the average number of months employed for employed adults in the study communities in 1998 was about in the mid range of all surveyed Kenai Peninsula Borough communities, lower than that of Kenai and higher than Nanwalek and Port Graham. A seasonal employment pattern is indicated in the percentage of employed adults who worked year-round (Fig. 62). Only in Kenai were the majority of employed adults working year-round. Voznesenka and Nikolaevsk had very low levels of year-round employment, in the same range as Nanwalek, while the other three study communities were similar to Seldovia, Port Graham, Hope, and Cooper Landing.

According to household survey results, per capita monetary incomes in Ninilchik, Fritz Creek East, and North Fork Road were generally in the same range as those of Kenai, at the high end of the scale for the Kenai Peninsula Borough (Fig. 63). Per capita cash incomes at Nikolaevsk and Voznesenka were relatively low, due in part to their high average household size. All of the study communities had higher per capita incomes than those estimated for Nanwalek and Port Graham in 1991, 1992, and 1993. US Census data for 1989 indicated a wide range of per capita monetary income among Kenai Peninsula communities (see Table 9). For the Borough overall, the per capita income of $18,173 for 1989 was slightly higher than the state average of $17,610, and generally in the same range as such population centers as Juneau ($19,920), Anchorage ($19,620), Ketchikan ($18,789), and the Fairbanks North Star Borough ($15,914). These averages were higher than those of many more remote areas of the state (e.g., Bethel Census Area, $8,833 per capita; Dillingham Census Area, $12,782), and similar to the

Table111. Selected Demographic and Economnic Characteristics, Kenai Peninsula Borough Communities

Community	Study Year	Household Survey Data[1]					
		Population	% Alaska Native	Average Length of Residency in Community, Household Heads	Per Capita Income[2]	Average Months Employed	Percent Employed Year-Round
Cooper Landing	1990	258	0.6%	13.2 yrs	$14,780	8.6	46.0%
Fritz Creek East	**1998**	**434**	**0.5%**	**12.8 yrs**	**$17,400**	**8.6**	**42.9%**
Homer	1982	5,633		11.8 yrs	$10,070	9.7	
Hope	1990	152	4.0%	15.0 yrs	$13,679	9.0	49.1%
Kenai	1982	6,123		10.3 yrs	$10,843	11.3	
Kenai	1991	6,796	6.0%	14.8 yrs	$15,665	9.8	60.4%
Kenai	1992	6,642	8.7%	12.3 yrs	$19,542	10.5	64.3%
Kenai	1993	6,372	4.2%	13.0 yrs	$19,642	10.3	65.7%
Nanwalek	1991	161	90.4%	26.4 yrs	$7,279	7.0	12.5%
Nanwalek	1992	170	89.5%	30.2 yrs	$5,404	6.4	19.4%
Nanwalek	1993	141	88.9%	25.6 yrs	$7,787	7.4	26.8%
Nikolaevsk	**1998**	**235**	**0.0%**	**17.9 yrs**	**$11,140**	**6.8**	**12.7%**
Ninilchik	1982	651		20.6 yrs	$11,500	7.6	
Ninilchik	**1998**	**1,073**	**9.6%**	**16.6 yrs**	**$18,664**	**8.9**	**43.4%**
North Fork Road	**1998**	**467**	**1.8%**	**14.5 yrs**	**$18,138**	**9.0**	**39.3%**
Port Graham	1991	161	83.8%	32.4 yrs	$8,758	8.1	38.5%
Port Graham	1992	167	92.8%	32.5 yrs	$8,798	8.1	32.9%
Port Graham	1993	175	89.7%	30.5 yrs	$9,810	8.0	37.1%
Seldovia	1982	600		15.3 yrs	$6,968	8.8	
Seldovia	1991	341	23.7%	17.8 yrs	$14,637	8.7	40.0%
Seldovia	1992	375	34.3%	20.2 yrs	$13,477	8.6	39.2%
Seldovia	1993	431	32.8%	19.7 yrs	$17,502	8.9	45.3%
Voznesenka	**1998**	**327**	**0.0%**	**11.7 yrs**	**$10,160**	**8.2**	**10.0%**

[1] See Table 9 for data from the 1990 US Census on population size, ethnicity, and income. Blank cells indicate data unavailable.

[2] Not adjusted for inflation.

Source: Scott et al. 1999, Seitz et al. 1994, Fall and Utermohle 1995, Reed 1985, and this study

Figure 60. Change in Population, 1980 to 1998, Selected Kenai Peninsula Borough Areas

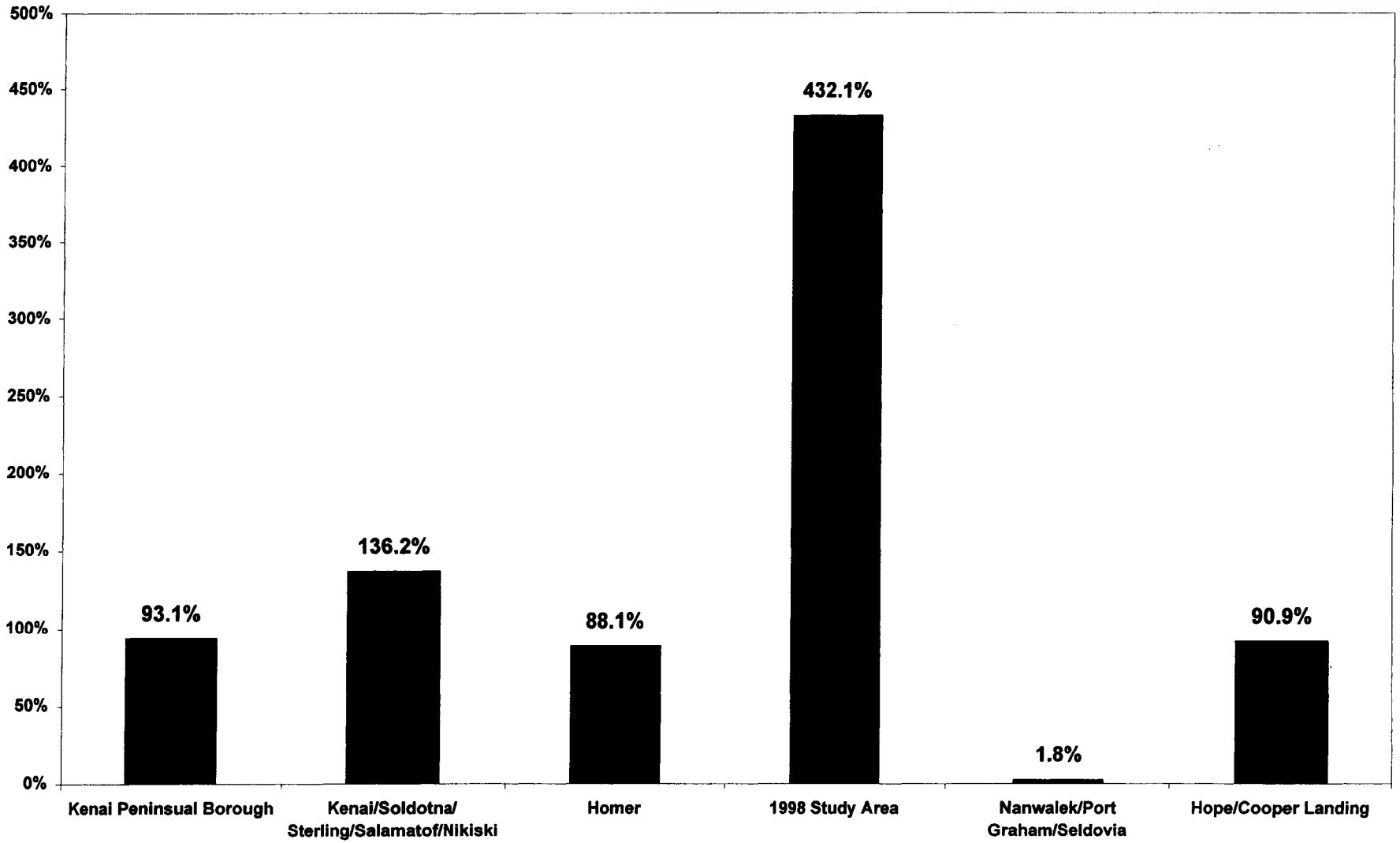


Figure 61. Average Number of Months Employed, Employed Adults, Kenai Peninsula Borough Communities

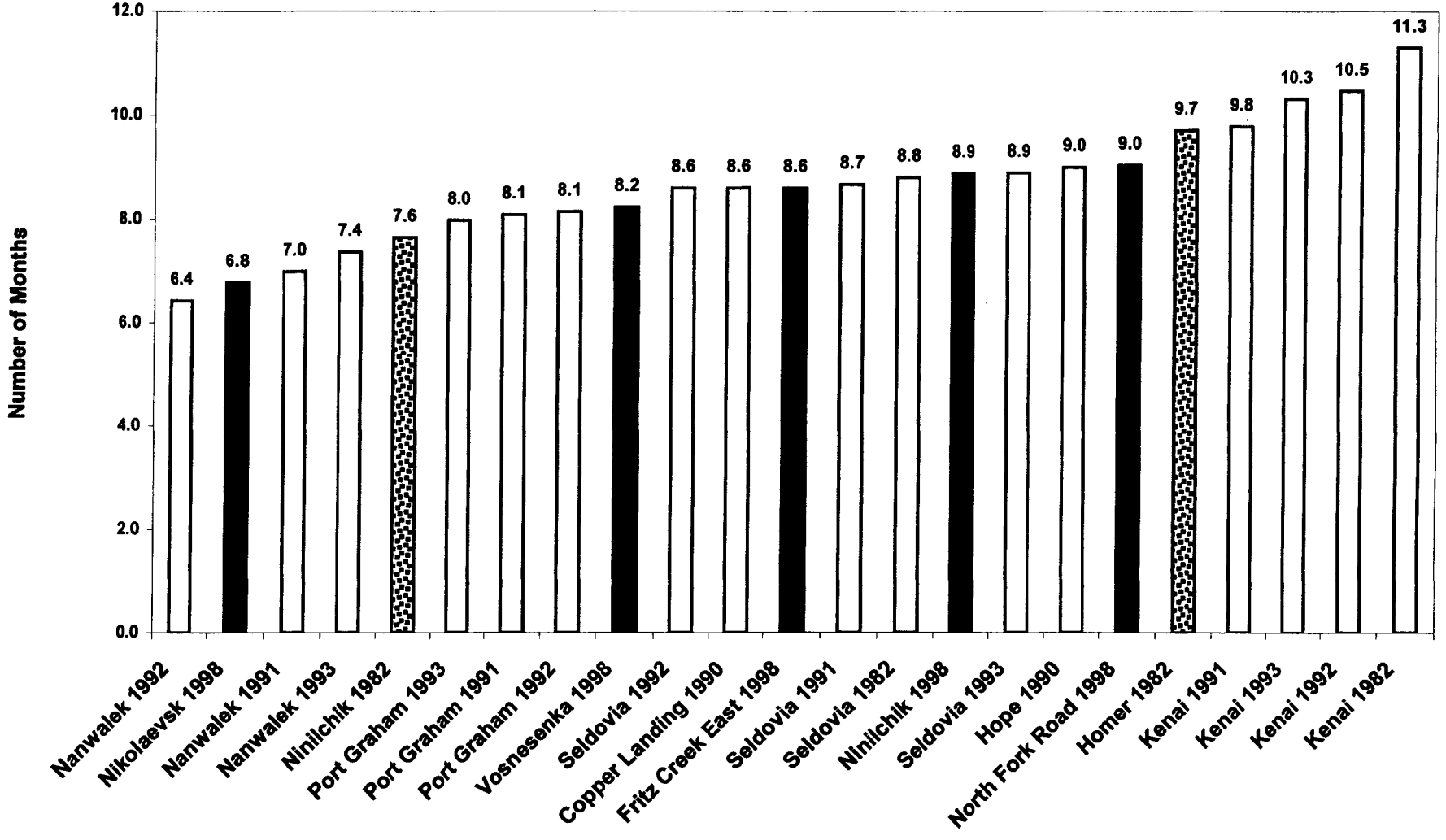


Figure 62. Percentage of Employed Adults Employed Year-Round, Kenai Peninsula Borough Communities

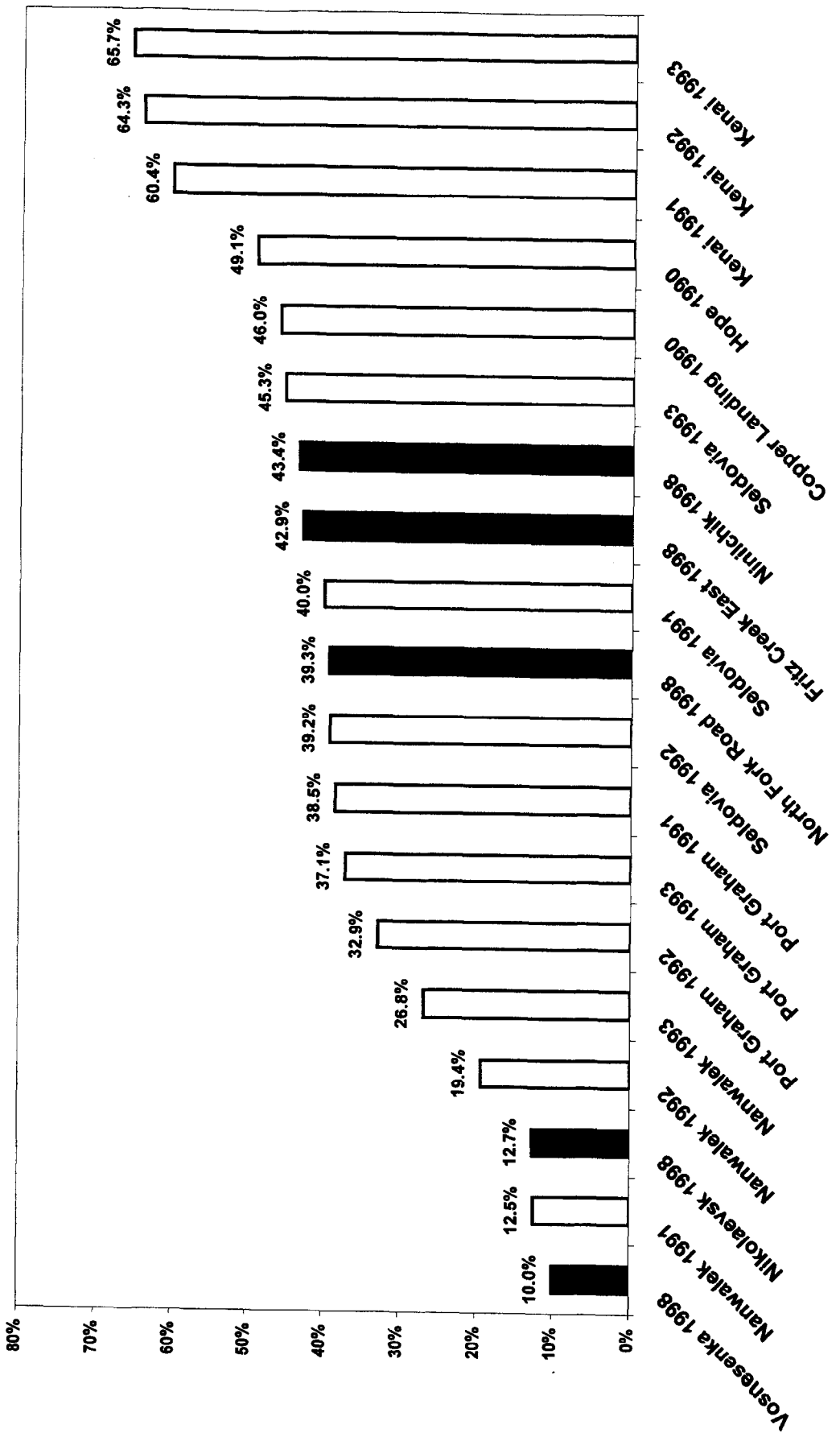
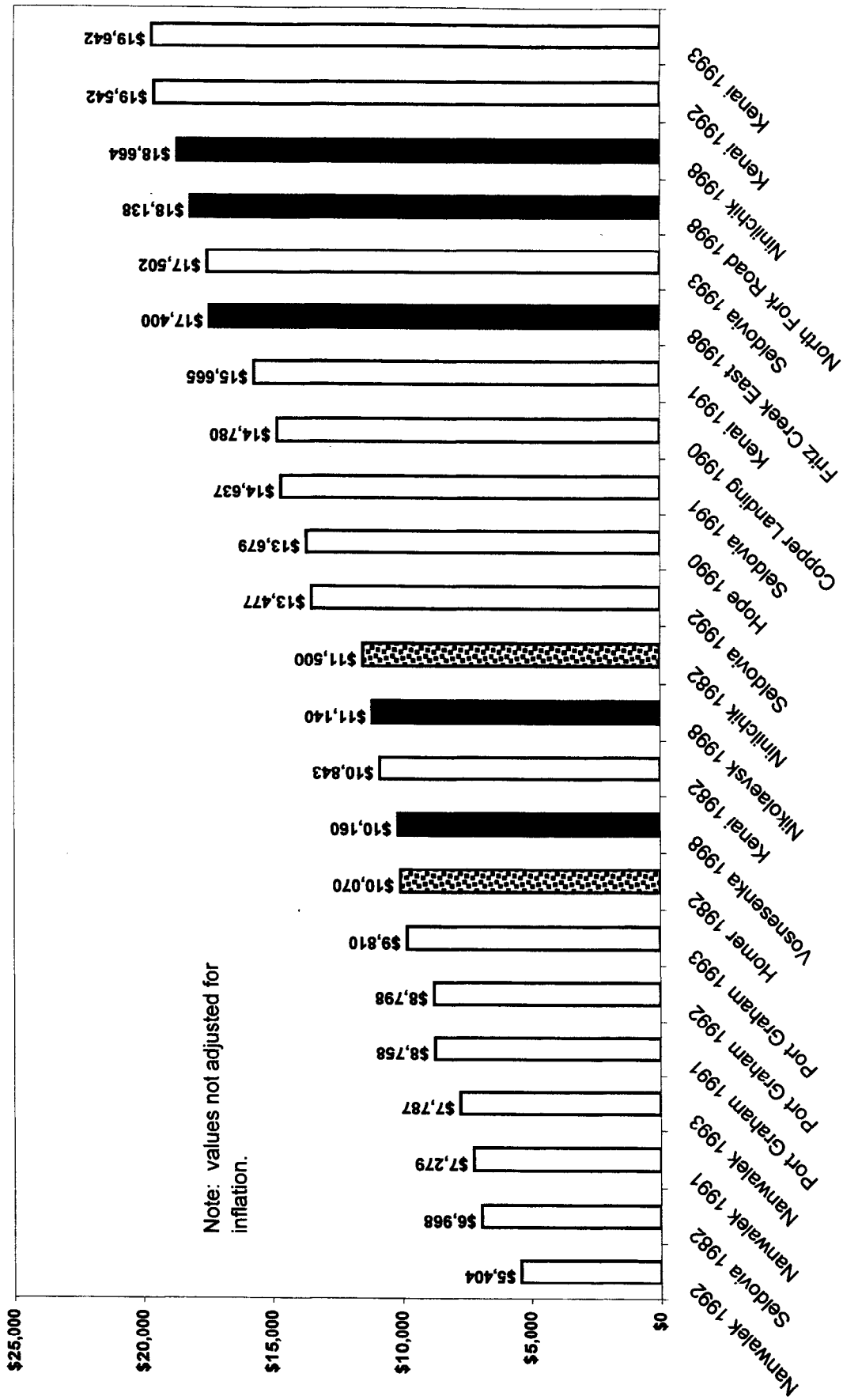


Figure 63. Per Capita Cash Incomes, Kenai Peninsula Borough Communities



averages in some others (e.g., Aleutians East Borough, $17,242; Bristol Bay Borough, $19,123) (Bureau of the Census 1992:48-50). Estimates for 1997 placed the Kenai Peninsula Borough per capita income ($23,143) near the state's average ($24,969) (Boucher 1999b:20).

In summary, although a seasonal element remains in the local economy of the road-connected area of the Kenai Peninsula, employment is relatively available and reliable (Fried and Windisch-Cole 1999). Consequently, cash incomes are about the same as the average for the state, near those of more populous areas, and generally higher than those of remote areas off the road system.

Table 112 reports levels of participation in resource activities, estimated harvest levels, and ranges of resources used, harvested, and sharing per household per each Kenai Peninsula Borough communities for which at least one year of comprehensive survey data are available. In every community, a very large majority of households, most often 100 percent, used at least one wild resource in the study year. A large majority, generally 80 to 90 percent or more, harvested wild foods.

Differences between communities appear in harvest levels as estimated in pounds per household and per capita (Table 112, Fig. 64). Harvest levels by residents of North Fork Road and Fritz Creek East in 1998 were essentially the same as recorded in Homer in 1982 (between 94 pounds to 105 pounds per capita) and for in Cooper Landing and Hope in 1990 (92 pounds and 111 pounds per person, respectively) (Fig. 64). Harvest levels in Ninilchik (164 pounds per person) and Voznesenka (167 pounds per person) were in the range recorded for Seldovia in 1992 and 1993 (between 145 pounds and 184 pounds per person). Harvest levels were lower than those of the two small, Alaska Native communities of Nanwalek and Port Graham (ranging from 212 pounds to 305 pounds per person), which are off the road system.

Table 113 reports the results of comparative T-tests for equality of means for seven Kenai Peninsula populations for per capita harvest levels. For this comparison, two pairs of very similar communities were grouped to equalize sample sizes of populations. These are Nikolaevsk/Voznesenka and Nanwalek/Port Graham. Where harvest data for multiple years were available, the most recent year was chosen for this comparison. The following conventions are used in the table:

1. It includes the actual significance value as well as the t statistic;
2. It lists populations in ascending order of total wild food harvests;
3. When a test is not significant, it uses the convention ns = .504, etc, and is not in a bold font;
4. When a test is significant, it uses the convention sig = .017, etc, and is in a bold font; and
5. It refers to the groupings as "populations" rather than "communities".

As shown in Figure 65, there is a clinal continuum in per capita wild food harvests across populations on the Kenai Peninsula, from a low in Kenai (84.6 lbs.) to a high in Nanwalek/Port Graham (253.6 lbs.), with other populations falling between. A population's harvest level is not significantly different from the harvest levels of immediate neighboring population(s) on the continuum, while a population's harvest level is significantly different from the harvest levels of populations farther up or

Table 112. Participation in Resource Actitivites, Estimated Harvests, and Average Number of Resources Used, Harvested, and Shared, Kenai Peninsula Borough Communities

Community	Study Year	Percentage of Households (Any Resource):					Estimated Havest (lbs):		Average Number of Kinds of Resources per Household:				
		Use	Attempt	Harvest	Receive	Give	Per Household	Per Capita	Use	Attempt	Harvest	Receive	Give
Cooper Landing	1990	100.0	93.5	93.5	80.9	71.7	238.0	91.5	8.3	6.4	5.9	3.4	2.1
Fritz Creek East	**1998**	**100.0**	**93.9**	**93.9**	**93.9**	**84.6**	**304.7**	**105.4**	**9.4**	**6.8**	**6.1**	**4.7**	**3.1**
Homer	1982			85.6			294.0	93.8					
Hope	1990	100.0	93.9	93.9	90.3	73.8	262.2	110.7	9.1	7.2	6.4	3.8	2.8
Kenai	1982			80.5			125.2	37.9					
Kenai	1991	98.0	87.0	81.0	84.0	66.0	237.0	74.5	6.2	5.2	4.2	2.7	1.8
Kenai	1992	94.6	89.2	83.8	78.4	73.0	229.6	73.9	6.7	5.7	4.7	2.7	2.5
Kenai	1993	98.0	89.1	86.1	81.2	62.4	234.9	83.8	7.1	5.4	4.5	3.2	2.3
Nanwalek	1987	97.0	93.9	93.9	93.9	93.9	1,078.3	284.7	25.0	18.0	17.2	15.1	10.9
Nanwalek	1989	100.0	100.0	100.0	100.0	93.9	538.0	140.9	13.7	10.5	9.9	6.9	7.2
Nanwalek	1990	100.0	100.0	100.0	100.0	97.1	813.1	181.3	22.4	15.4	14.8	13.1	8.9
Nanwalek	1991	100.0	100.0	100.0	100.0	100.0	1,017.5	258.8	21.2	14.9	14.0	12.8	9.9
Nanwalek	1992	100.0	100.0	100.0	100.0	93.8	1,159.7	279.0	22.9	17.7	16.1	14.1	12.3
Nanwalek	1993	100.0	100.0	100.0	100.0	97.0	1,164.0	304.9	22.7	16.8	15.6	13.5	12.9
Nanwalek	1998	100.0	100.0	100.0	100.0	89.7	1,120.9	253.9	21.5	16.0	15.6	14.3	11.6
Nikolaevsk	**1998**	**100.0**	**89.2**	**89.2**	**78.4**	**73.0**	**625.2**	**133.0**	**9.1**	**7.1**	**6.5**	**3.1**	**2.7**
Ninilchik	1982			91.7			229.9	76.7					
Ninilchik	**1998**	**99.0**	**97.0**	**96.0**	**92.1**	**73.3**	**439.5**	**163.8**	**8.6**	**6.6**	**5.6**	**4.0**	**3.1**
North Fork Road	**1998**	**98.3**	**86.2**	**86.2**	**93.1**	**62.1**	**275.3**	**98.0**	**7.6**	**5.6**	**4.8**	**3.7**	**2.1**
Port Graham	1987	100.0	100.0	100.0	98.1	81.5	656.8	228.8	21.5	14.9	14.3	10.6	6.3
Port Graham	1989	95.8	93.8	93.8	91.7	64.6	323.4	122.2	11.2	8.3	7.7	6.4	4.4
Port Graham	1990	100.0	100.0	100.0	97.8	89.1	637.2	214.0	17.4	12.1	11.0	9.3	6.7
Port Graham	1991	100.0	95.9	95.9	98.0	87.8	779.6	280.9	22.0	14.7	13.6	13.4	10.2
Port Graham	1992	100.0	100.0	100.0	100.0	97.9	784.1	272.7	22.1	14.8	13.6	14.0	11.1
Port Graham	1993	100.0	98.0	98.0	100.0	90.2	607.7	212.3	19.4	11.6	10.9	13.0	9.9
Port Graham	1998	100.0	97.7	97.7	95.5	86.4	627.8	253.4	16.5	10.1	9.6	10.3	7.3
Seldovia	1982			94.3			176.8	50.7					
Seldovia	1991	98.5	92.4	92.4	95.5	84.8	604.0	205.5	13.5	9.3	9.0	6.4	4.8
Seldovia	1992	98.5	93.8	93.8	95.4	84.6	397.5	145.1	12.3	8.9	8.4	6.2	4.3
Seldovia	1993	95.4	95.4	95.4	86.2	78.5	516.8	183.6	12.9	9.3	8.9	6.4	5.0
Voznesenka	**1998**	**100.0**	**100.0**	**100.0**	**83.3**	**77.8**	**883.3**	**167.4**	**8.6**	**6.9**	**6.4**	**3.1**	**4.4**

Source: Scott et al. 1999 and this study; blank cells indicate data unavailable

Figure 64. Harvests of Wild Resources for Home Use, Kenai Peninsula Communities

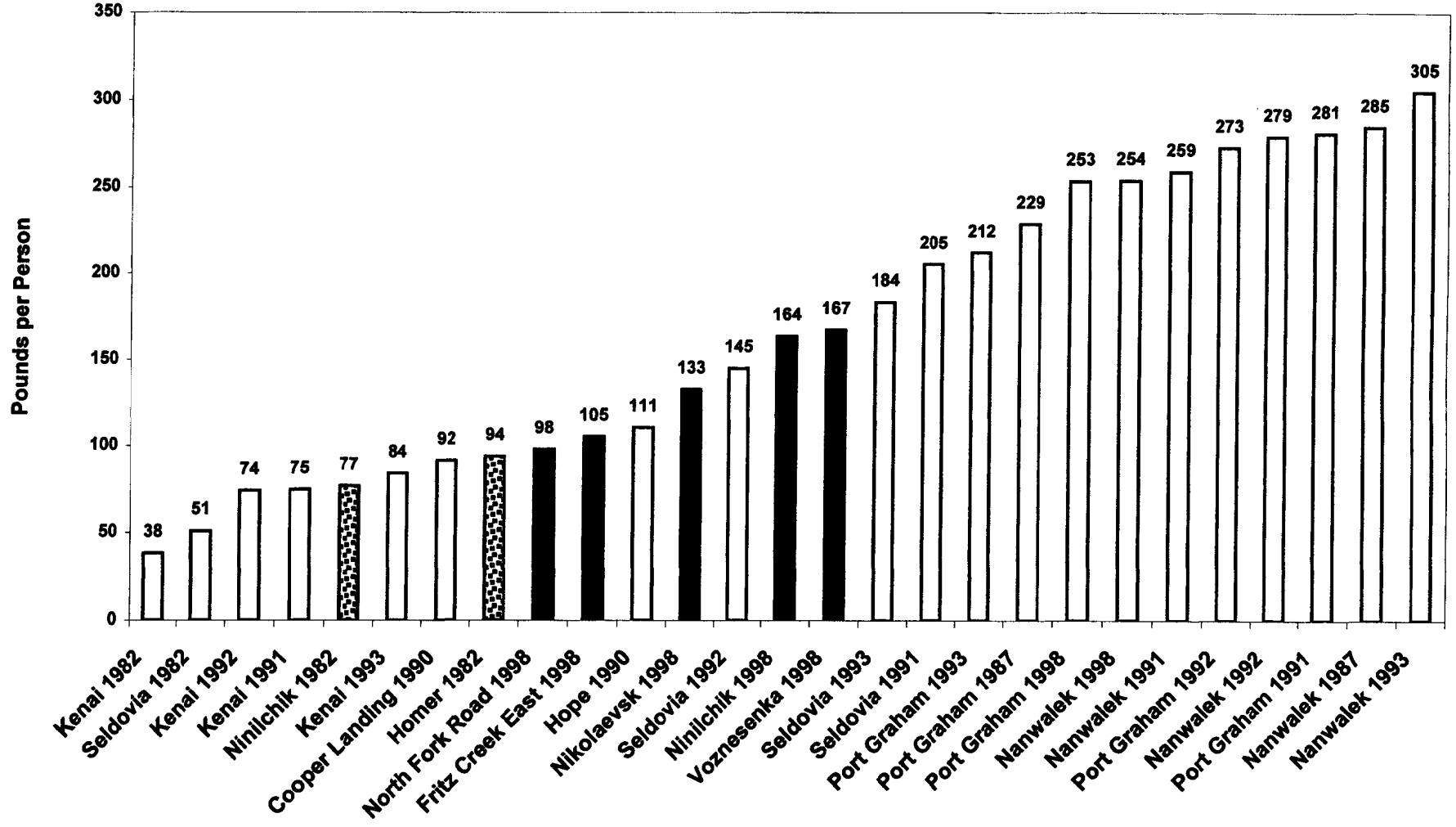


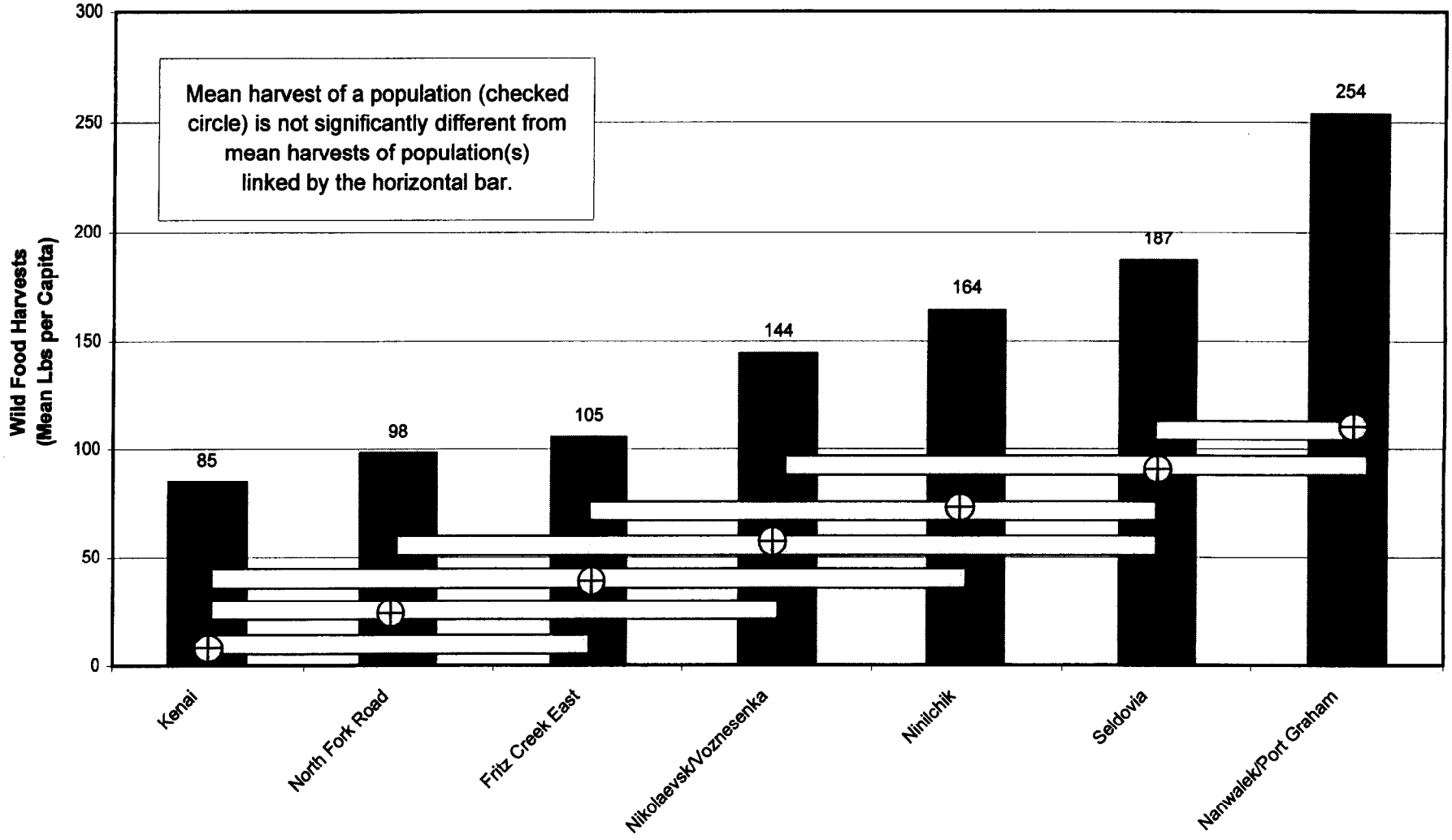
Table 113. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Wild Food Harvests (Mean Lbs per Capita)

Population	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels					
				Kenai	North Fork Road	Fritz Creek East	Nikolaevsk/ Vosnesenka	Ninilchik	Seldovia
Kenai	1993	99	84.6	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	98.0	-0.609 *ns = .504*	X X	X X	X X	X X	X X
Fritz Creek East	1998	65	105.4	-0.927 *ns = .355*	0.266 *ns = .791*	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	144.2	**-2.149** ***sig = .035***	1.489 *ns = .139*	-1.236 *ns = .219*	X X	X X	X X
Ninilchik	1998	101	163.8	**-3.127** ***sig = .002***	**2.26** ***sig = .025***	-1.967 *ns = .051*	0.560 *ns = .576*	X X	X X
Seldovia	1993	63	186.6	**-3.035** ***sig = .003***	**2.424** ***sig = .017***	**2.194** ***sig = .030***	1.043 *ns = .299*	0.612 *ns = .542*	X X
Nanwalek/Port Graham	1997	73	253.6	**-5.515** ***sig = .000***	**4.344** ***sig = .000***	**4.084** ***sig = .000***	**2.795** ***sig = .006***	**2.458** ***sig = .015***	-1.537 *ns = .127*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Figure 65. Wild Food Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



down the continuum. In the figure, a bar links populations that are not significantly different in mean harvests per person. For instance, Kenai's mean harvest level is not significantly different from North Fork Road or Fritz Creek East. North Fork Road's mean harvest is not significantly different from Kenai, Fritz Creek East, or Nikolaevsk/Vosnesenka. Fritz Creek East's mean harvest is not significantly different from Kenai, North Fork Road, Nikolaevsk/Vosnesenka, or Ninilchik. Nikolaevsk/Vosnesenka's mean harvest is not significantly different from North Fork Road, Fritz Creek East, Ninilchik, or Seldovia. Ninilchik's mean harvest is not significantly different from Fritz Creek East, Nikolaevsk/Vosnesenka, or Seldovia. Seldovia's mean harvest is not significantly different from Nikolaevsk/Vosnesenka, Ninilchik, or Nanwalek/Port Graham. Nanwalek/Port Graham's mean harvest is not significantly different from Seldovia.

There are contrasts between communities on and off the road system regarding the range of resources used, an index of diet breadth (Table 112, Fig. 66). In most study years, households in Nanwalek and Port Graham used about 20 or more kinds of wild foods, and never less than 16.5 kinds. In contrast, in no study year did any community on the road system have a household average of greater than 9.4 kinds. Seldovia's average was in-between these two sets of communities. Similar contrasts occur for the average number of resources attempted to harvest, harvested, received, and given away (Table 112).

Table 114 and Figure 67 report the results of comparative T-tests for equality of means for seven Kenai Peninsula populations for the number of resources used per household. The same conventions apply as in Table 113 and Figure 65. For this statistic, Nanwalek and Port Graham stand alone, with a significantly higher range of resources used (18.4 kinds per household) than any other Kenai Peninsula population. The other populations illustrate the clinal relationship that was also evident for harvest levels. Again, Seldovia (with an average of 12.4 kinds of resources used per household) ranks higher than any population except Nanwalek/Port Graham, while Kenai has the narrowest range of resources used (6.9 kinds per household).

Regarding the sharing of fish and wildlife resources, equality of means tests again illustrated the distinctiveness of Nanwalek and Port Graham and the intermediate position of Seldovia relative to the other populations. For the average number of resources received per household (Table 115, Fig. 68), Nanwalek/Port Graham's average of 11.7 kinds per household was significantly higher than that of any other population. Seldovia ranked second (6.4 kinds), and was significantly lower than Nanwalek/Port Graham but significantly higher than every other population but Fritz Creek (4.7 kinds). Again, Kenai had the lowest value (3.1 kinds) but was not significantly different from Nikolaevsk (3.1 kinds) or North Fork Road (3.8 kinds), and North Fork Road was not significantly lower than Fritz Creek.

Similar relationships were found for the average number of resources given away per household (Table 116, Fig. 69). Nanwalek/Port Graham had the highest mean (8.9 kinds) and was significantly different from all other populations. Seldovia had the second highest average (5.0 kinds), and was also

Figure 66. Average Number of Kinds of Resources Used per Household, Kenai Peninsula Communities

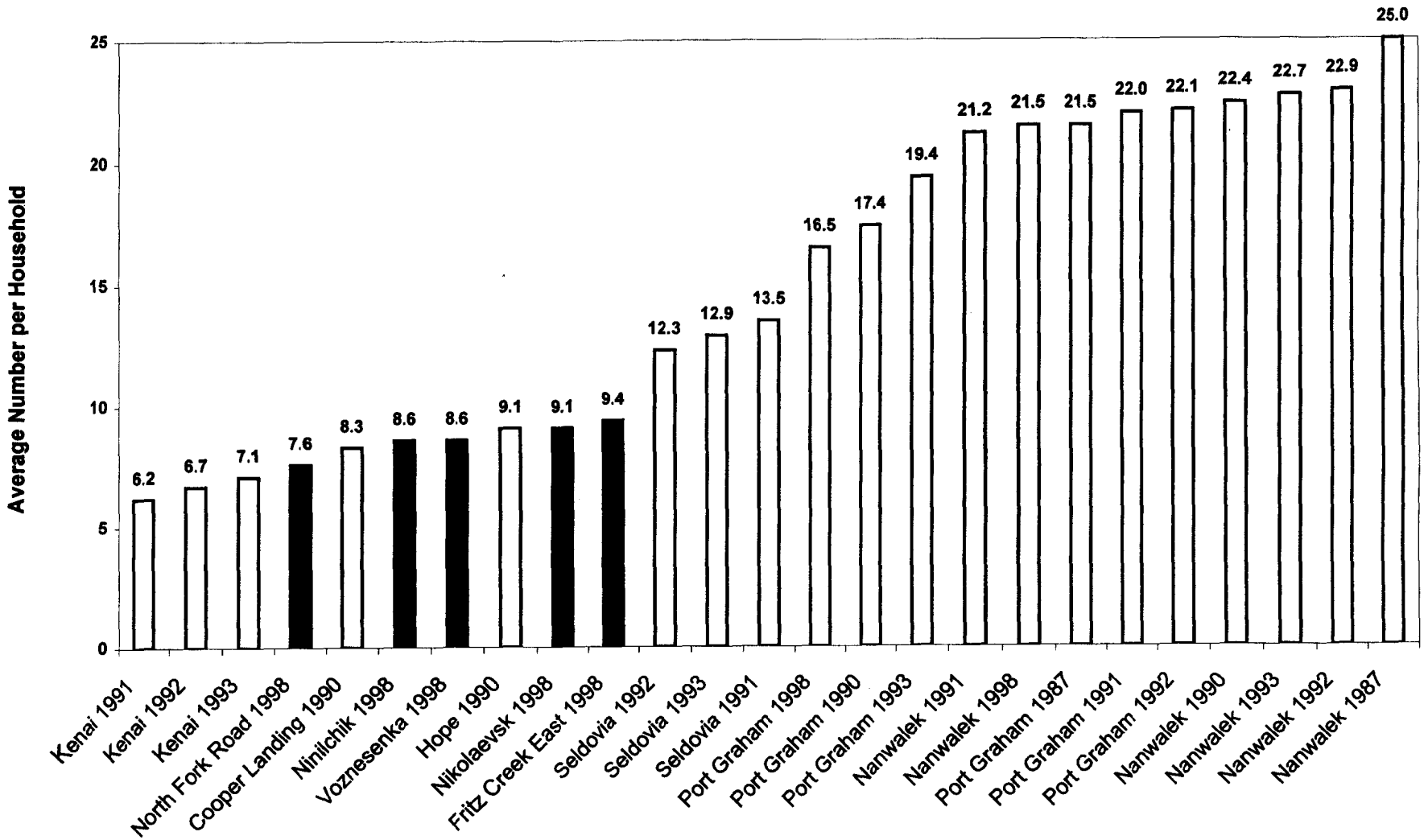


Table 114. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Diversity of Wild Foods Used (Mean Number of Kinds of Wild Foods per Household)

Population	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels					
				Kenai	North Fork Road	Ninilchik	Nikolaevsk/ Vosnesenka	Fritz Creek East	Seldovia
Kenai	1993	99	6.9	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	8.4	-1.693 *ns = .093*	X X	X X	X X	X X	X X
Ninilchik	1998	101	9.2	**-2.985** ***sig = .003***	0.944 *ns = .347*	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	9.3	**-2.842** ***sig = .005***	0.974 *ns = .331*	-0.047 *ns = .963*	X X	X X	X X
Fritz Creek East	1998	65	10.1	**-3.529** ***sig = .001***	1.627 *ns = .106*	0.891 *ns = .385*	0.778 *ns = .438*	X X	X X
Seldovia	1993	63	12.4	**-5.230** ***sig = .000***	**3.477** ***sig = .001***	**3.051** ***sig = .003***	**2.776** ***sig = .006***	1.876 *ns = .063*	X X
Nanwalek/Port Graham	1997	73	18.4	**-10.519** ***sig = .000***	**8.439** ***sig = .000***	**8.083** ***sig = .000***	**7.811** ***sig = .000***	**6.555** ***sig = .000***	**-4.440** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Figure 67. Diversity of Wild Food Uses by Kenai Peninsula Population, and Populations with Equality of Means

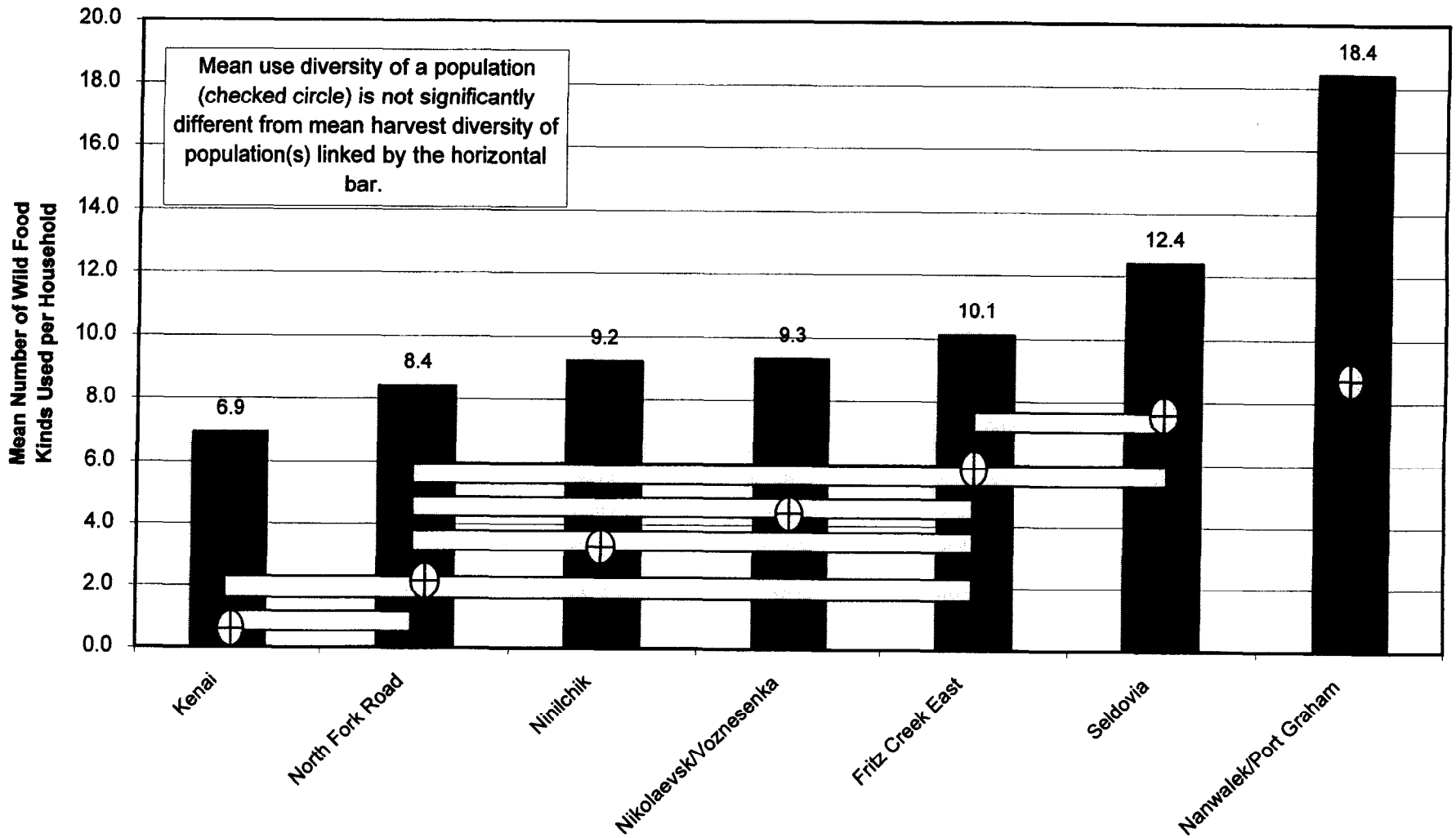


Table 115. Comparative T-Tests for Equality of Means for Seven Kenai Peninsulat Populations: Mean Number of Kinds of Wild Foods Received per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: Kenai	Nikolaevsk	North Fork Road	Ninilchik	Fritz Creek	Seldovia
Kenai	1993	99	3.1	X X	X X	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	3.1	-0.014 *ns = .989*	X X	X X	X X	X X	X X
North Fork Road	1998	58	3.8	-1.179 *ns = .240*	-0.922 *ns = .359*	X X	X X	X X	X X
Ninilchik	1998	101	4.1	**-2.061** ***sig = .041***	1.591 *ns = .114*	-1.82 *ns = .072*	X X	X X	X X
Fritz Creek	1998	65	4.7	**-2.799** ***sig = .006***	**2.182** ***sig = .031***	0.599 *ns = .550*	0.924 *ns = .357*	X X	X X
Seldovia	1993	63	6.4	**-4.239** ***sig = .000***	**3.766** ***sig = .000***	**3.092** ***sig = .003***	**2.828** ***sig = .006***	1.944 *ns = .054*	X X
Nanwalek/Port Graham	1997	73	11.7	**-10.924** ***sig = .000***	**8.992** ***sig = .000***	**8.468** ***sig = .000***	**8.481** ***sig = .000***	**7.327** ***sig = .000***	**-4.994** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Figure 68. Mean Number of Kinds of Resources Received per Household by Kenai Peninsula Population, and Populations with Equality of Means

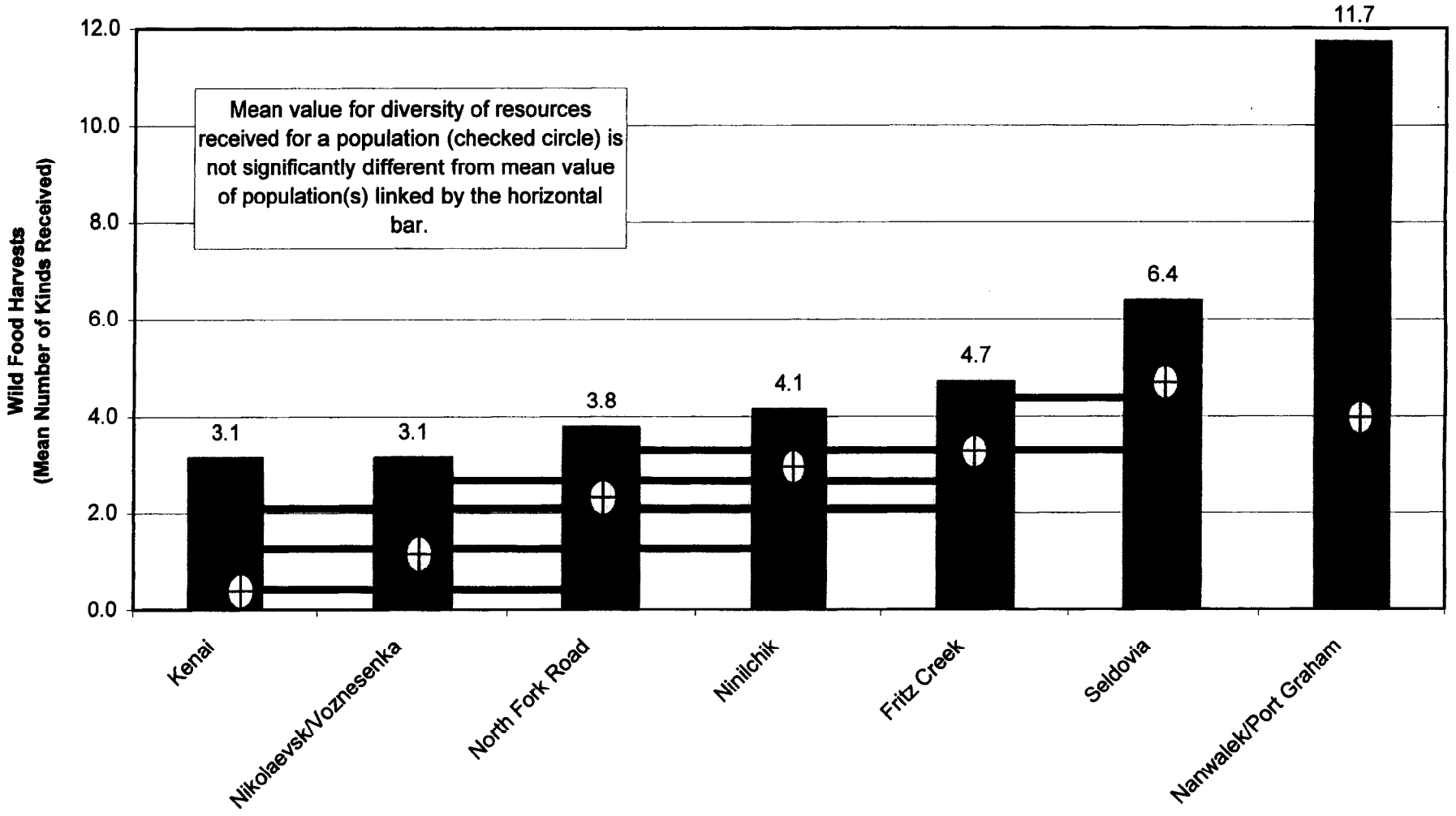


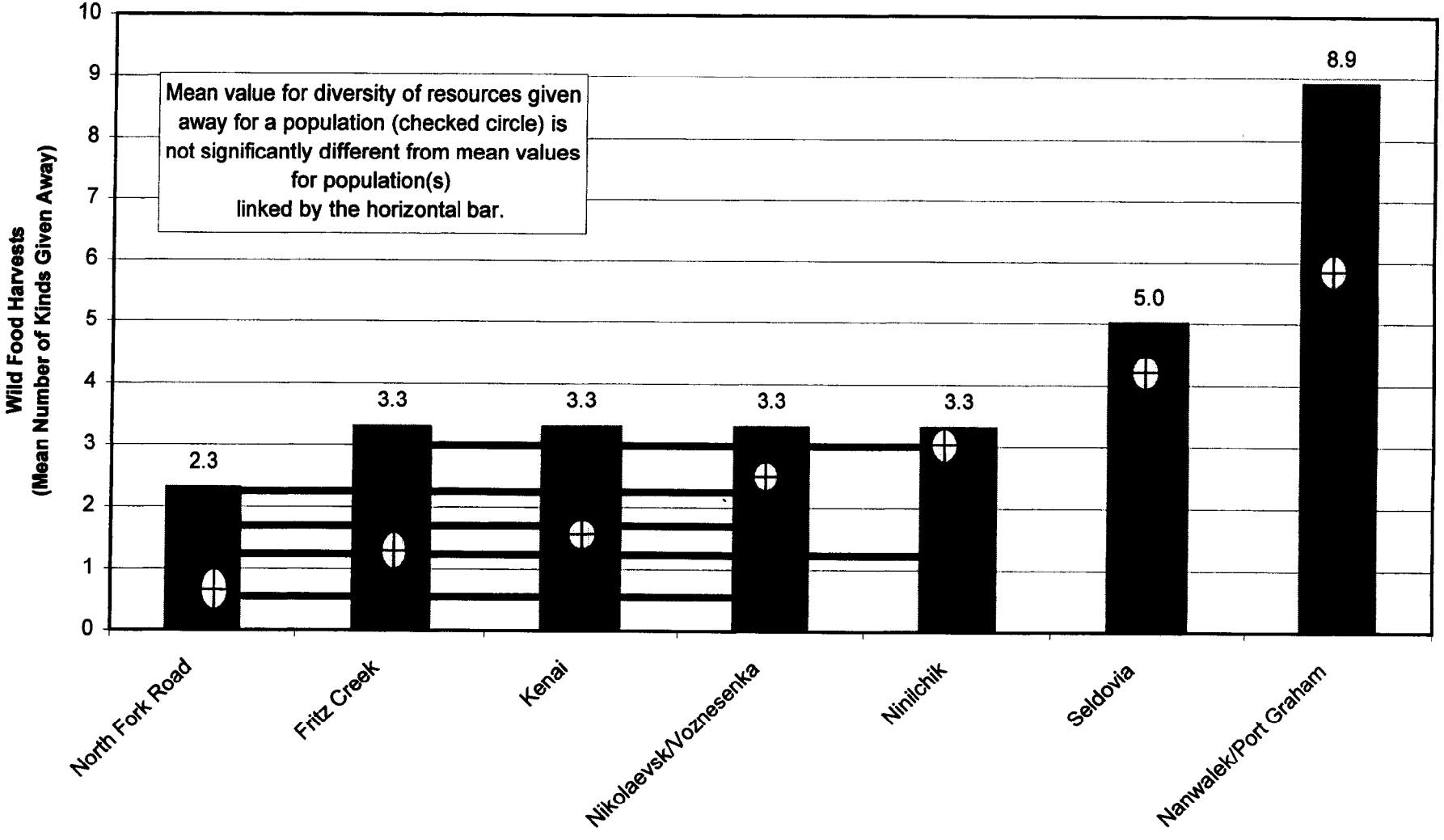
Table 116. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Wild Foods Given Away per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: North Fork Road	Fritz Creek	Kenai	Nikolaevsk	Ninilchik	Seldovia
North Fork Road	1998	58	2.3	X X	X X	X X	X X	X X	X X
Fritz Creek	1998	65	3.3	1.677 *ns = .096*	X X	X X	X X	X X	X X
Kenai	1993	99	3.3	-0.01 *ns = .992*	-1.946 *ns = .053*	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	3.3	1.71 *ns = .090*	-0.006 *ns = .995*	-1.82 *ns = .072*	X X	X X	X X
Ninilchik	1998	101	3.3	**2.064** ***sig = .041***	-0.006 *ns = .995*	**-2.261** ***sig = .025***	-0.001 *ns = .999*	X X	X X
Seldovia	1993	63	5.0	**4.341** ***sig = .000***	**2.349** ***sig = .020***	**-4.593** ***sig = .000***	**2.316** ***sig = .022***	**2.731** ***sig = .007***	X X
Nanwalek/Port Graham	1997	73	8.9	**7.266** ***sig = .000***	**5.716** ***sig = .000***	**-7.459** ***sig = .000***	**5.698** ***sig = .000***	**6.092** ***sig = .000***	**-3.933** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Figure 69. Mean Number of Kinds of Resources Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



significantly higher than the remaining five populations. The other populations exhibited a clinal relationship and were largely not significantly different from each other.

Appendix E provides more detailed comparisons of these seven Kenai Peninsula populations in terms of harvest quantities, resources used, resources received, and resources given away at the resource category level.

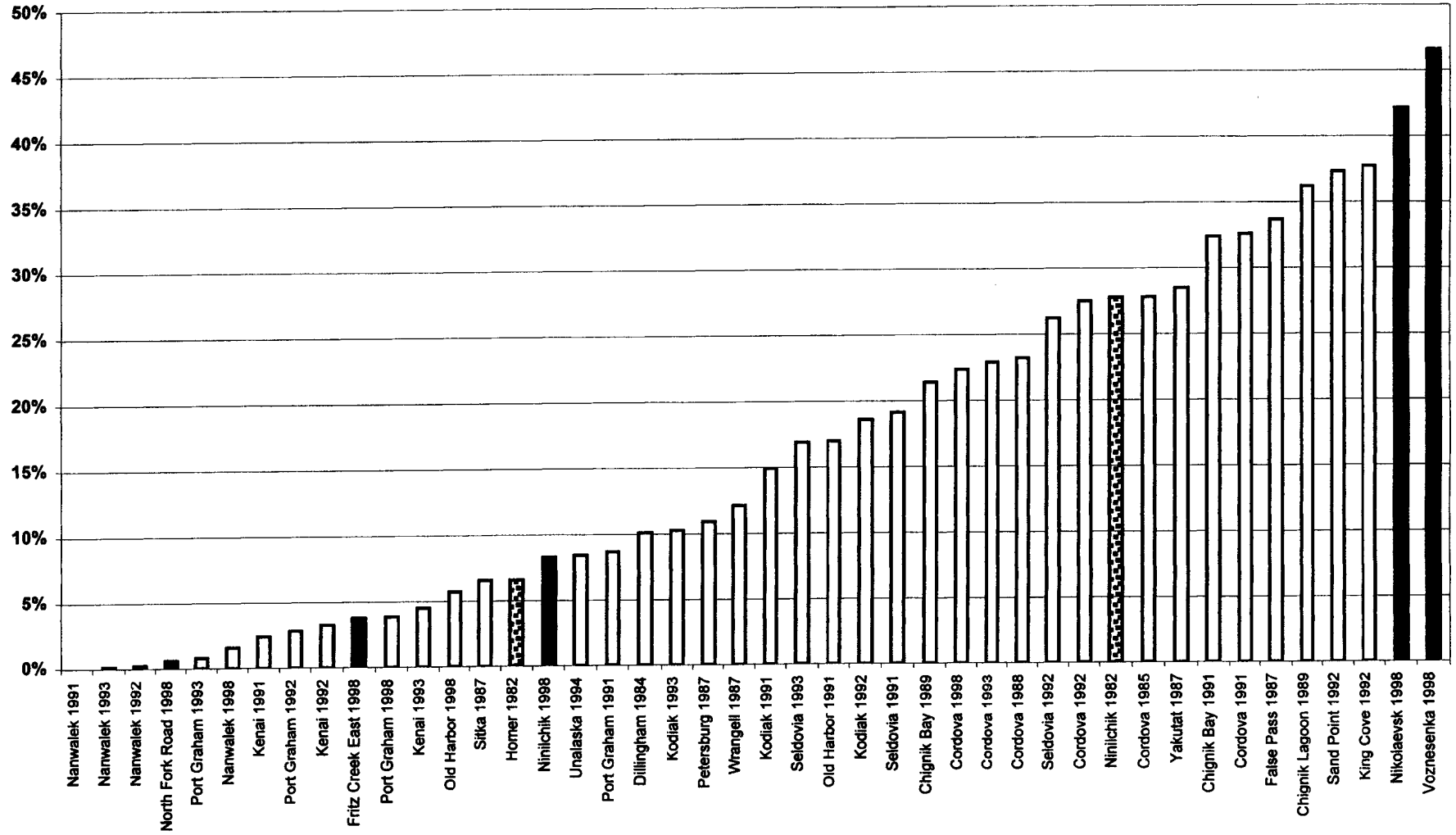
There are also contrasts between communities regarding the contribution of resources removed from commercial harvests to the overall community harvest. Figure 70 includes data for Kenai Peninsula communities as well as other coastal Alaska communities that have significant commercial fisheries components to their local economy. (The data in Figure 70 all derive from systematic household surveys conducted by the Division of Subsistence and reported in Scott et al. [1999]). Of all communities, Voznesenka and Nikolaevsk in 1998 demonstrated the greatest reliance on commercial fisheries as a source of home use resources (both higher than 40 percent of the total harvest). Communities such as Sand Point, King Cove, Chignik Lagoon, False Pass, and Cordova (in 1991) all topped 30 percent. The Kenai Peninsula community of Seldovia is in the mid range of communities depicted in Figure 70, with commercial fisheries removals contributing about 15 percent to 25 percent of the community total. In 1998, the study communities of Ninilchik, Fritz Creek East, and North Fork Road ranked much lower, with all less than 10 percent of the total community harvests removed from commercial catches. In this respect, they were in the same general range as Kenai, Nanwalek, and Port Graham.

CONCLUSIONS

The study findings regarding patterns of wild resource use in the five study communities of the Kenai Peninsula in 1998 support the conclusions of the earlier Division of Subsistence research in Kenai, Homer, and Ninilchik pertaining to 1982. Fritz Creek East in 1998 exhibited resource use patterns very similar to those of Homer in 1982. In terms of harvest levels, levels of participation, harvest breadth, and harvest methods, the North Fork Road area also fit this pattern. Both study areas appear to be economically integrated with the other communities of the lower Kenai Peninsula along the road system, namely, Anchor Point and Homer.

Further to the north and more distant from the main Kenai Peninsula Borough population concentrations at Kenai-Soldotna and Homer-Anchor Point, Ninilchik in 1998 continued its transition from a small, long-term, close-knit, commercial-fishing community to a more heterogeneous area with many newcomers engaged in a wider range of economic pursuits or settling there in their retirement years. This is a process first described in the earlier Division study (Georgette 1983, Reed 1985). Many people who move to Ninilchik, as well as to other Kenai Peninsula communities, bring a interest in resource harvest activities, or develop an interest after they arrive. This interest is evidenced by Ninilchik households' involvement in rod and reel fisheries for salmon and halibut, dipnet fisheries for salmon, and moose hunting. Income levels, through employment or retirement sources, are sufficient to support these

Figure 70. Percentage of Total Harvest for Home Use Removed from Commercial Catches, Selected Communities



activities. Regulatory changes and the development of the sport fishing industry are conducive to moderate levels of harvest of a small core of wild foods, primarily salmon, halibut, and moose. Even so, most households harvest relatively low levels of wild resources, and the range of wild resources used, harvested, and shared is substantially lower than that of Nanwalek or Port Graham. It should also be noted that the Alaska Native population of Ninilchik represents an enclave with a long history of local resource harvests and some distinctive values related to wild resource uses as expressed in the educational set net salmon fishery.

The Old Believer communities of Nikolaevsk and Voznesenka in 1998 exhibited some distinctiveness in resource use patterns. This included a significant use of resources removed from commercial catches. Further research would likely provide additional information on how the shared culture of these communities is expressed in resource harvest and use patterns. Regarding these patterns, these communities have adapted to the contemporary regulatory system in place when the communities were established, taking advantage of personal use fisheries and moose hunting opportunities, among other activities. Their patterns do not represent a way of life with deep roots on the Kenai Peninsula, however, as shown, for example, by differences between these communities and Nanwalek and Port Graham in terms of the range of resources used and shared.

In closing, resource uses in Ninilchik, Fritz Creek East, North Fork road, Nikolaevsk, and Voznesenka fit within the pattern that characterizes the road-connected communities of the Kenai Peninsula Borough. Harvests as estimated in usable pounds per person are moderate to low. The large majority of households use a narrow range of wild foods. Most of the harvest is taken by a very small percentage of households. Harvests are shared among a relatively small number of households and sharing does not result in an integrated, community-wide pattern of resource uses. These patterns are statistically significantly different from those of Port Graham and Nanwalek, two Kenai Peninsula communities that are not road-connected.

In the road-connected communities of the Kenai Peninsula, wild resource harvests occur within and are structured by regulatory systems established by government management bodies. Relatively recent state regulatory actions, such as stable dipnet fisheries and longer moose hunting seasons, have led to increased salmon and moose harvests over the past decade.

Wild resource uses in the study areas occur within a local economy similar to that of the most populous parts of the state, with a diverse and expanding local employment picture. These uses take place in a demographic context of very rapid growth due to in-migration. The large majority of household heads in all the study areas moved to the Kenai Peninsula from other parts of Alaska, other states, or other countries, most likely for reasons related to employment opportunities and lifestyle. Most families have relatively short histories of use of Kenai Peninsula resources. That most households use and harvest wild foods demonstrates that harvest activities are highly valued as a source of recreation, of nutritious foods, and as an expression of a valued lifestyle. These uses do not link most of the households in these communities to the traditions and history of the Kenai Peninsula. Rather, most

households in the study areas engage in fishing and hunting as valued recreational activities that provide wild food harvests to supplement a primarily cash-based household socioeconomic system.

REFERENCES CITED

Alaska Cooperative Extension
1999 Cost of Food at Home in Alaska for a Week. University of Alaska Fairbanks.

Alaska Department of Community and Economic Development
1999 Alaska Community Database. Municipal and Regional Assistance Division. www.dced.state.ak.us/mra/CF_COMDB.htm

Alaska Department of Fish and Game
1982 Alaska Hunting Regulations No. 23 Effective dates July 1, 1982 - June 30, 1983. Division of Wildlife Conservation. Juneau.

1992 Report on Proposed Nonsubsistence Areas. Prepared for the Meeting of the Alaska Joint Board of Fisheries and Game, November, 1992, Anchorage, Alaska.

1998a Alaska Hunting Regulations No. 39. Effective dates July 1, 1998 - June 30, 1999. Division of Wildlife Conservation. Juneau.

1998b Subsistence and Personal Use Fishing Regulations.

2000 Moose and Caribou Harvest Database. [moose as of May 3, 2000] Division of Wildlife Conservation. Anchorage.

Alaska Department of Labor
1991 Alaska Population Overview: 1990 Census and Estimates. Research and Analysis Section. Juneau.

1998 Alaska Population Overview: 1997 Estimates. Research and Analysis Section. Juneau.

1999 Alaska Population Overview: 1998 Estimates. Research and Analysis Section. Juneau.

Arndt, Katherine L.
1996 "Released to Reside Forever in the Colonies:" Founding of a Russian-American Company Retirement Settlement at Ninilchik, Alaska. *In* Adventures Through Time: Readings in the Anthropology of Cook Inlet, Alaska, Nancy Yaw Davis and William E. Davis, editors, pp. 235 - 250. Anchorage: Cook Inlet Historical Society.

Basargin, Olympiada
1984 A Story of Nikolaevsk, as told to Olympiada Basargin by Solomia Kalugin. Nikolaevsk School.

Boucher, John
1999a The Cost of Living: Measuring it for Alaska. Alaska Economic Trends 19(6):3-16.

1999b Per Capita Income: How It Stacks up in Alaska in 1997 and 1998. Alaska Economic Trends 19(6):20-21.

Braund, Stephen R. and Associates
1982 Cook Inlet Subsistence Salmon Fishery. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 54. Juneau.

Bureau of the Census
1980 Census of Population and Housing, 1980 – Summary Tape File 3A. Files, Division of Subsistence, ADF&G, Anchorage

1984 Supplementary Report: American Indian Areas and Alaska Native Villages: 1980. US Department of Commerce. Washington, DC.

1992 1990 Census of Population and Housing: Summary Social, Economic, and Housing Characteristics, Alaska. Report 1990 CPH-5-3. Washington DC: US Department of Commerce.

Chapman, Vi
1983 Anchor Point, *in* A Larger History of the Kenai Peninsula, W. and E. Pedersen, eds., pp. 107 - 119. Chicago: Adams Press.

Crapo, Chuck, Brian Paust, and Jerry Babbitt
1993 Recoveries and Yields from Pacific Fish and Shellfish. Alaska Sea Grant College Program, Marine Advisory Bulletin 37. University of Alaska Fairbanks.

Dolitsky, Alexander B.
1994 Change, Stability, and Values in the World of Culture: A Case from Russian Old Believers in Alaska. Alaska-Siberia Research Center Publication # 6. Juneau.

Dolitsky, Alexander B. and Lyudmila P. Kuz'mina
1986 Cultural Change vs. Persistence: A Case from Old Believer Settlements. Arctic 39(3):223-231.

Fall, James A. and Charles J. Utermohle, compilers
1995 An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska. US Minerals Management Service Technical Report No. 160. Alaska Department of Fish and Game, Division of Subsistence. Anchorage.

1999 Subsistence Service Update: Subsistence Harvests and Uses in Eight Communities Ten Years after the Exxon Valdez Oil Spill. Exxon Valdez Oil Spill Restoration Project Final Report (Restoration Project 99471). Alaska Department of Fish and Game, Division of Subsistence, Anchorage.

Federal Subsistence Board
1998 Subsistence Management Regulations for the Harvest of Fish and Wildlife on Federal Public Lands in Alaska, effective July 1, 1998 – June 30, 1999. US Fish and Wildlife Service, Anchorage.

1999 Subsistence Management Regulations for the Harvest of Fish and Wildlife on Federal Public Lands in Alaska, effective July 1, 1999 – June 30, 2000. US Fish and Wildlife Service, Anchorage.

Fried, Neal and Brigitta Windisch-Cole
1999 An Economic Profile: The Kenai Peninsula. Alaska Economic Trends 19(10):3-15.

Georgette, Susan
1983 Ninilchik: Resource Uses in a Small, Road-Connected Community of the Kenai Peninsula Borough. *In* Resource Use and Socioeconomic Systems: Case Studies of Fishing and Hunting in Alaskan Communities, Robert J. Wolfe and Linda J. Ellanna, compilers, pp. 170 - 187. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 61. Juneau.

Graef, Kris Valencia, editor
1999 The Milepost. Augusta, GA: Morris Communications Corporation.

Hicks, Mary V. , editor
1995 Moose: Federal Aid in Wildlife Restoration Survey-Inventory Management Repot 1 July 1991 to 30 June 1993. Alaska Department of Fish and Game, Division of Wildlife Conservation. Juneau.

Kalifornsky, Peter
1991 *K'tl'egh'i Sukdu*: A Dena'ina Legacy, The Collected Writings of Peter Kalifornsky. Alaska Native Language Center, University of Alaska Fairbanks.

Kenai Peninsula Borough School District
1999 Information on school enrollments. Personal communication to Vicki Vanek, ADF&G.

Leer, Jeff
1978 A Conversational Dictionary of Kodiak Alutiiq. Fairbanks: Alaska Native Language Center.

Lonner, Thomas
1980 Subsistence as an Economic System in Alaska: Theoretical and Policy Implications. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 67. Juneau.

Moore, Bob
1983 Nikolaevsk, *in* A Larger History of the Kenai Peninsula, W. and E. Pedersen, eds., pp. 120 - 123. Chicago: Adams Press.

Nelson, Dave, David Athons, Patricia Berkhahn, and Sandra Sonnichsen
1999 Area Management Report for the Recreational Fisheries of the Kenai Peninsula, 1995 - 1997. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Management Report No. 99-3. Anchorage.

Nikolaevsk School
1995 A Brief History of Old Believers.

1999 Home Page, Nikolaevsk School. www2.kpbsd.k12.ak.us/schools/nikolaevsk.

Ninilchik Traditional Council
1994 Ninilchik Subsistence Survey 1994. Unpublished report. Files, Division of Subsistence, Alaska Department of Fish and Game. Anchorage.

1998 Goals and Objectives: Educational Fishery Program 1998. Report to the Alaska Department of Fish and Game, September 23, 1998. Ninilchik.

Orth, Donald J.
1967 Dictionary of Alaska Place Names. Geological Survey Professional Paper 567. Washington: Government Printing Office.

Osgood, Cornelius
1937 The Ethnography of the Tanaina. Yale University Publications in Anthropology No. 16. New Haven: Yale University Press.

Pedersen, Walt and Elsa
1983 A Larger History of the Kenai Peninsula. Chicago: Adams Press.

Reed, Carolyn
1983 Homer: Resource Uses in a Middle-Sized, Road-Connected Community of the Kenai Peninsula Borough. In Resource Use and Socioeconomic Systems: Case Studies of Fishing and Hunting in Alaskan Communities, Robert J. Wolfe and Linda J. Ellanna, compilers, pp. 154 - 169. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 61. Juneau.

1985 The Role of Wild Resource Use in Communities of the Central Kenai Peninsula and Kachemak Bay, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 106. Juneau.

Rollins, Alden M.
1978 Census Alaska: Numbers of Inhabitants, 1792 - 1970. University of Alaska Anchorage Library.

Ruesch, Paul H. and Jeff Fox
1999 Upper Cook Inlet Commercial Fisheries Annual Management Report, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries Regional Information Report No. 2A99-21. Anchorage.

Scott, Cheryl, Amy Paige, and Louis Brown
1999 Community Profile Database. Alaska Department of Fish and Game, Division of Subsistence. Juneau.

Seitz, Jody, Lisa Tomrdle, and James A. Fall
1994 The Use of Fish and Wildlife in the Upper Kenai Peninsula Communities of Hope, Whittier, and Cooper Landing. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 219. Juneau. [Draft]

Szarzi, Nicky
1999 Personal communication regarding harvests in Ninilchik educational fisheries. Alaska Department of Fish and Game, Division of Sport Fish, Homer. 10/25/99.

Tomrdle, Lisa, Lisa Hutchinson-Scarbrough, and Ronald T. Stanek
1995 Kenai. *In* An Investigation of the Sociocultural Consequences of Outer Continental Shelf Development in Alaska, Volume III: Lower Cook Inlet, James A. Fall and Charles J. Utermohle, editors, Chapter Six. US Minerals Management Service Technical Report No. 160. Alaska Department of Fish and Game, Division of Subsistence. Anchorage.

Tikhmenev, P. A.
1978 [1861 - 1863] A History of the Russian-American Company. Translated and edited by Richard Pierce and Alton S. Donnelly. Seattle: University of Washington Press.

Townsend, Joan
1981 Tanaina. *In* Handbook of North American Indians, Volume 6: Subarctic, June Helm, editor, pp. 623 - 640. Washington: Smithsonian Institution.

United States Fish and Wildlife Service (USFWS)
1994 Summary of Review Comments on the Kenai Peninsula Customary and Traditional Use Determination Reports. Prepared by the Office of Subsistence Management for the Interagency Staff Committee Meeting for Federal Subsistence Management. Anchorage, Alaska, November 2&3, 1994.

1997 Maps of non-rural areas established by the Federal Subsistence Board. Off ice of Subsistence Management. Anchorage.

Vincent-Lang, Doug
1998 Area Management Report for North Gulf of Alaska Recreational Groundfish Fisheries, 1997. Alaska Department of Fish and Game, Division of Sport Fish Fishery Management Report No. 98-2. Anchorage.

Wolfe, Robert J.
1983 Understanding Resource Uses in Alaska Socioeconomic Systems. *In* Resource Use and Socioeconomic Systems: Case Studies of Fish and Hunting in Alaska Communities, Robert J. Wolfe and Linda J. Ellanna, eds., pp. 248 - 274. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 61. Juneau

1987 The Super-Household: Specialization in Subsistence Economies. Paper presented at the 14th Annual Meeting of the Alaska Anthropological Association, Anchorage, Alaska. Alaska Department of Fish and Game, Division of Subsistence.

Wolfe, Robert J. and Linda J. Ellanna, editors
1983 Resource Use and Socioeconomic Systems: Case Studies of Fish and Hunting in Alaska Communities. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 61. Juneau.

Wolfe, Robert J., James A. Fall, Virginia Fay, Susan Georgette, James Magdanz, Sverre Pedersen, Mary Pete, and Janet Schichnes
1986 The Role of Fish and Wildlife in the Economies of Barrow, Bethel, Dillingham, Kotzebue, and Nome. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 154. Juneau.

Wolfe, Robert J. (principal investigator) and Lisa Hutchinson-Scarbrough (project coordinator)
1999 The Subsistence Harvest of Harbor Seal and Sea Lion by Alaska Natives in 1998. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 250. Juneau.

APPENDIX A: ONE-PAGE OVERVIEW OF STUDY

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF SUBSISTENCE

333 Raspberry Road
ANCHORAGE, AK 99518-1599
PHONE: (907) 267-2353
FAX: (907) 267-2450

February 1999

Overview of Study of Fish and Wildlife Harvests and Uses in the Ninilchik and Homer Areas

The Alaska Department of Fish and Game, Division of Subsistence, is conducting a study of patterns of harvest and use of fish and wildlife resources in the selected communities of the Kenai Peninsula Borough, including the general Ninilchik area and areas near Anchor Point and Homer. The project is funded by the US Fish and Wildlife Service. Department of Fish and Game personnel will be contacting residents of the study areas and asking them if they will consent to be interviewed about their fish and wildlife harvest and use activities in 1998. Most interviews will be conducted face-to-face at respondents' homes or other convenient locations. Households to be interviewed are being selected at random and it is important that we interview a broad cross section of the population of each study community. Participation in the interview is entirely voluntary. Responses to the survey questions are anonymous and confidential. The results of this research are not being used for regulation enforcement purposes.

The research is following procedures used in other Division of Subsistence projects. Similar projects have been conducted in well over 100 Alaska communities. Since only limited information is available about resource use patterns in the Kenai Peninsula study communities, it is important that these communities be represented in the growing database about resource uses in Alaska so that resource management agencies can serve them better. Applications of the research findings include regulation change, land use planning, and fish and wildlife management plans. Among the types of information being collected are the following:

⇒ Resource harvests and uses in 1998, such as:
- Whether the household used, tried to harvest, gave away, or received wild resources
- Harvest quantities
- Harvest locations

⇒ Demographic information
- Household size
- Length of residency
- Ethnicity
- Individual involvement in harvesting and processing activities

⇒ Other economic data such as the kinds of jobs held by household members, the location and amount earned from these jobs

The research findings will be summarized in a final report that will be completed by the end of 1999. Participants in the research and others may obtain (free of charge) a short overview of the study findings by returning a request form to the Division of Subsistence office in Anchorage (see address and phone numbers above).

If you are selected for an interview, we hope you will take the time to talk with one of the members of our study team. The interview may take 30 minutes or so, or longer (perhaps up to an hour) if your household is very active in fishing and hunting and/or has a lot of information to voluntarily share with us. We think you will find the interviewing process interesting.

We thank you very much for your help. If you have questions, contact the Division of Subsistence at the address and numbers above.

NINILCHIK/HOMER RURAL 1998

HH ID: _____ START TIME: _____

COMMUNITY: NINILCHIK 249 STOP TIME: _____

ID # OF PERSON RESPONDING TO SURVEY: ____

INTERVIEWER: _____

DATE: _____

CODER: _____

FIELD SUPERVISOR: _____

HOUSEHOLD INFORMATION. WHO WERE MEMBERS OF THIS HOUSEHOLD IN1998?

PERSON ID#	M/F	RELATION TO HH HEAD	AGE	RESIDENCE OF PARENT WHEN BORN	TOTAL YEARS IN COMM.	ETHNICITY	IN THE STUDY YEAR, DID YOU HUNT/PROCESS: GAME/MM/BIRDS* HUNT? Y/N	GAME/MM/BIRDS* PROCESS? Y/N	FISH/MI** FISH? Y/N	FISH/MI** PROCESS? Y/N	FURBEARERS HUNT/TRAP? Y/N	FURBEARERS PROCESS? Y/N	PLANTS GATHER? Y/N	PLANTS PROCESS? Y/N
HEAD 1														
1		1												
HEAD 2														
2		2												
3														
3														
4														
4														
5														
5														
6														
6														
7														
7														
8														
8														
9														
9														
10														
10														

* GAME/MM/BIRDS - should include harvesting/attempting to harvest large and small game, birds, and marine mammals.

** FISH/MI - should include harvesting/attempting to harvest marine invertebrates, eg., clam digging, etc.

COMMERCIAL FISHING - SALMON.

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL SALMON FISHING IN 1998? YES ____ NO ____

IF YES: PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS, IF POUNDS THEN EDIBLE WEIGHT):

IF NO: DID YOU INCIDENTALLY HARVEST SALMON WHILE COMMERCIAL FISHING OTHER SPECIES?

SPECIES	COMMERCIAL FISHED? Y/N	COMMERCIAL FISHED? INCIDENTAL*	REMOVED FOR OWN USE NUMBER	GAVE AWAY TO CREW NUMBER	GAVE AWAY TO OTHERS NUMBER	UNITS	ID #'S OF FISHERS PERMIT HOLDER	ID #'S OF FISHERS CREW	NOTES:
CHINOOK SALMON						IND			
113000001						1			
CHUM SALMON						IND			
111000001						1			
SOCKEYE SALMON						IND			
115000001						1			
PINK SALMON						IND			
114000001						1			
COHO SALMON						IND			
112000001						1			
UNKNOWN SALMON						IND			
119000001						1			

* Incidental harvest - use only if household was not engaged in any commercial salmon fishing.

NOTES:

COMMERCIAL FISHING - NON-SALMON FISH

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL FISHING (OTHER THAN SALMON) IN 1998? YES: ____ NO: ____

IF YES: PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

IF NO: DID YOU INCIDENTALLY HARVEST OTHER FISH WHILE COMMERCIAL FISHING FOR SALMON?

SPECIES	COMMERCIAL FISHED? Y/N	COMMERCIAL FISHED? INCIDENTAL	REMOVED FOR OWN USE NUMBER	GAVE AWAY TO CREW NUMBER	GAVE AWAY TO OTHERS NUMBER	UNITS	ID #'S OF FISHERS PERMIT HOLDER	ID #'S OF FISHERS CREW	NOTES:
HERRING						GAL			
120200001						4			
SPAWN ON KELP						GAL			
120306001						4			
HERRING SAC ROE						GAL			
120304001						4			
STURGEON						IND			
125899001						1			
LINGCOD						IND			
121506001						1			
PACIFIC COD (GRAY)						IND			
121004001						1			
SABLEFISH (BLACK COD)						IND			
122800001						1			
UNKNOWN FLOUNDER						IND			
121499001						1			
SOLE						IND			
123699001						1			
HALIBUT						LBS			
121800001						2			
BLACK ROCKFISH*						IND			
122602001						1			
RED ROCKFISH**						IND			
122604001						1			
UNKNOWN ROCKFISH						IND			
122699001						1			

* BLACK ROCKFISH = DARK DUSKY, BLACK, LIGHT DUSKY, SILVERGRAY, WIDOW, YELLOWTAIL, "SEA BASS" OR "BLACK BASS".

** RED ROCKFISH = YELLOWEYE (RED SNAPPER), ROUGHEYE, PACIFIC OCEAN PERCH, DARK BLOTCHED, HARLEQUIN, NORTH, COPPER, QUILLBACK, ROSETHORN, REDSTRIPE, CANARY, SHORTRAKER, BLACKQUILL, RED BANDED, TIGER, AND "IDIOTFISH" OR "SHORTSPINE THORNYHEAD".

NINILCHIK/HOMER RURAL 1998

SPECIES	COMMERCIAL FISHED? Y/N	COMMERCIAL FISHED? INCIDENTAL	REMOVED FOR OWN USE NUMBER	GAVE AWAY TO CREW NUMBER	GAVE AWAY TO OTHERS NUMBER	UNITS	ID #'S OF FISHERS PERMIT HOLDER	ID #'S OF FISHERS CREW	NOTES:
GREENLING 121699001						IND 1			
WOLF EEL (WOLFFISH) 124200001						IND 1			
SHARK 123299001						IND 1			
WALLEYE POLLOCK (WHITING) 121012001						IND 1			

NOTES:

NINILCHIK (249) HH:_____ COMMERCIAL FISHING - NON-SALMON FINFISH (3B)

COMMERCIAL FISHING - MARINE INVERTEBRATES

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMM. FISHING FOR MARINE INVERTEBRATES IN 1998? YES: ____ NO: ____

IF YES: PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD BE EDIBLE WEIGHT):

IF NO: DID YOU INCIDENTALLY HARVEST MARINE INVERTEBRATES WHILE COMMERCIAL FISHING FOR OTHER SPECIES?

SPECIES	COMMERCIAL FISHED? Y/N	COMMERCIAL FISHED? INCIDENTAL	REMOVED FOR OWN USE NUMBER	GAVE AWAY TO CREW NUMBER	GAVE AWAY TO OTHERS NUMBER	UNITS	SHELLS ON? Y/N	ID #'S OF FISHERS PERMIT HOLDER	ID #'S OF FISHERS CREW	NOTES:
RAZOR CLAMS						GAL				
500612001						4				
PACIFIC LITTLENECK CLAMS (STEAMERS)						GAL				
500608001						4				
DUNGENESS CRAB						IND				
501004001						1				
KING CRAB						IND				
501008991						1				
TANNER CRAB						IND				
501012991						1				
OCTOPUS						IND				
502200001						1				
SHRIMP						LBS				
503400001						2				
SCALLOPS						LBS				
502699001						2				

NOTES:

NON-COMMERCIAL FISHING: SALMON.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SALMON IN 1998? YES: ____ NO: ____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED BY: SET NET #	DIP NET #	FISH WHEEL #	ROD & REEL* #	OTHER TYPE	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
CHINOOK SALMON 113000002									IND 1			
CHUM SALMON 111000002									IND 1			
SOCKEYE SALMON 115000002									IND 1			
PINK SALMON 114000002									IND 1			
COHO SALMON 112000002									IND 1			
LANDLOCKED SALMON 116000002									IND 1			
UNKNOWN SALMON 119000002									IND 1			

* 'ROD & REEL' INCLUDES TROLLING IN OPEN WATER

SALMON FISHING LOCATIONS:

DURING 1998, WHERE DID YOUR HOUSEHOLD FISH FOR SALMON?

	USE MAP TO IDENTIFY AREAS ON THE KENAI PENINSULA (Y/N)											NAMES OF OTHER FISHERIES USED IN 1998		
	GMU 15A: non-Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non-Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non-Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	Upper Cook Inlet Area Marine Waters	Lower Cook Inlet Area Marine Waters	Resurrection Bay / Outer Kenai Coast	Most Important Other Fishery Area	Second Most Important Other Fishery Area	Third Most Important Other Fishery Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
FISHED FOR SALMON: Y/N														
110000002														
					IF YES AND COHO HARVESTED, SEE BELOW	IF YES AND COHO HARVESTED, SEE BELOW				IF YES AND COHO HARVESTED, SEE BELOW				

KACHEMAK BAY COHO:

BECAUSE YOUR HOUSEHOLD HARVESTED COHO AND INDICATED USE OF LOWER COOK INLET WATERS, I WOULD LIKE TO ASK THE FOLLOWING QUESTIONS.

HOW MANY COHO SALMON, IF ANY, DID YOUR HOUSEHOLD HARVEST FROM THE FOX CREEK (CARIBOU LAKE) DRAINAGE IN 1998? _____ [101:A]

HOW MANY COHO SALMON, IF ANY, DID YOUR HOUSEHOLD HARVEST FROM THE FOX RIVER DRAINAGE (INCLUDING CLEARWATER SLOUGH) IN 1998? _____ [101:B]

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE FISH OTHER THAN SALMON IN 1998? YES: ____ NO: ____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	ROD & REEL #	DIP NET #	HAND LINE #	SET NET #	ICE FISHING #	OTHER TYPE	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
HERRING										GAL			
120200002										4			
SPAWN ON KELP										GAL			
120306002										4			
EULACHON (HOOLIGAN)										GAL			
120404002										4			
SMELT										GAL			
120499002										4			
SABLEFISH (BLACK COD)										IND			
122800002										1			
PACIFIC COD (GRAY)										IND			
121004002										1			
LINGCOD										IND			
121606002										1			
PACIFIC TOMCOD										IND			
121008002										1			
COD, UNKNOWN										IND			
121099002										1			
STARRY FLOUNDER										IND			
121406002										1			
SOLE										IND			
123699002										1			
HALIBUT										LBS			
121800002										2			
BLACK ROCKFISH*										IND			
122602002										1			
RED ROCKFISH**										IND			
122604002										1			
UNKNOWN ROCKFISH										IND			
122699002										1			

* BLACK ROCKFISH = DARK DUSKY, BLACK, LIGHT DUSKY, SILVERGRAY, WIDOW, YELLOWTAIL, "SEA BASS" OR "BLACK BASS".

** RED ROCKFISH = YELLOWEYE (RED SNAPPER), ROUGHEYE, PACIFIC OCEAN PERCH, DARK BLOTCHED, HARLEQUIN, NORTH, COPPER, QUILLBACK, ROSETHORN, REDSTRIPE, CANARY, SHORTRAKER, BLACKQUILL, RED BANDED, TIGER, AND "IDIOTFISH" OR "SHORTSPINE THORNYHEAD".

NINILCHIK/HOMER RURAL 1998

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	ROD & REEL #	DIP NET #	HAND LINE #	SET NET #	ICE FISHING #	OTHER TYPE	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
GREENLING 12169900Z										IND 1			
WALLEYE POLLOCK (WHITING) 12101200Z										IND 1			
SHARK 12329900Z										IND 1			
SKATES 12340000Z										IND 1			
DOLLY VARDEN 12500600Z										IND 1			
LAKE TROUT 12501000Z										IND 1			
RAINBOW TROUT 12620400Z										IND 1			
STEELHEAD 12620600Z										IND 1			
CUTTHROAT TROUT 12620200Z										IND 1			
TROUT, UNKNOWN 12629900Z										IND 1			
SEA BASS 12060200Z										IND 1			
WOLF EEL (WOLFFISH) 12420000Z										IND 1			
GRAYLING 12520000Z										IND 1			
PIKE 12549900Z										IND 1			
WHITEFISH 12649900Z										IND 1			
IRISH LORD 12300699O										IND 1			
UNKNOWN SCULPIN 12309900Z										IND 1			
EEL 12120000Z										IND 1			

NINILCHIK (249) HH:_____

NON-SALMON FINFISH (6A)

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	ROD & REEL #	DIP NET #	HAND LINE #	SET NET #	ICE FISHING #	OTHER TYPE	OTHER #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NOTES

STEELHEAD AND OTHER FRESHWATER FISH FISHING LOCATIONS.

DURING 1998, WHERE DID YOUR HOUSEHOLD FISH FOR STEELHEAD AND OTHER FRESHWATER FISH (OTHER THAN STEELHEAD OR SALMON)?

	USE MAP TO IDENTIFY AREAS ON THE KENAI PENINSULA (Y/N)											NAMES OF OTHER FISHERIES USED IN 1998		
	GMU 15A: non-Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non-Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non-Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	Upper Cook Inlet Area Marine Waters	Lower Cook Inlet Area Marine Waters	Resurrection Bay / Outer Kenai Coast	Most Important Other Fishery Area	Second Most Important Other Fishery Area	Third Most Important Other Fishery Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
FISHED FOR STEELHEAD: Y/N														
126206002														
FISHED FOR OTHER FRESH WATER FISH*: Y/N														
125999999														

* DOES NOT INCLUDE STEELHEAD OR SALMON.

NON-COMMERCIAL FISHING: MARINE INVERTEBRATES [SHELLFISH].

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE INVERTEBRATES IN 1998? YES: _____ NO: _____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED NUMBER #	HARVESTED UNITS	RECEIVED Y/N	GAVE AWAY Y/N	**SHELLS ON? Y/N**	NOTES
BUTTER CLAMS				GAL				
500602002				4				
RAZOR CLAMS				GAL				
500612002				4				
LITTLENECK CLAMS (STEAMERS)				GAL				
500608002				4				
PINKNECK (SURF) CLAMS				GAL				
500610002				4				
HORSE CLAMS (GAPER)				GAL				
500606002				4				
UNKNOWN CLAMS				GAL				
500699002				4				
DUNGENESS CRAB				IND				
501004002				1				
KING CRAB				IND				
501008992				1				
TANNER CRAB, BAIRDI (SNOW CRAB)				IND				
501012022				1				
UNKNOWN CRABS				IND				
501099002				1				
COCKLES				GAL				
500899002				4				
SCALLOPS				LBS				
502699002				2				
MUSSELS				GAL				
502099002				4				
BLACK CHITONS (BIDARKIS)				GAL				
500408002				4				
RED CHITONS (BIDARKIS)				GAL				
500404002				4				
OCTOPUS				IND				
502200002				1				
SEA URCHIN				GAL				
503299002				4				

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED NUMBER #	HARVESTED UNITS	RECEIVED Y/N	GAVE AWAY Y/N	SHELLS ON? Y/N	NOTES
SHRIMP 503400002				LBS 2				
SNAILS 503600002				GAL 4				
LIMPETS 501800002				GAL 4				
OYSTER 502499002				GAL 4				
WHELK 504000002				GAL 4				
SEA CUCUMBER 503000002				GAL 4				

BLANK

MARINE INVERTEBRATE HARVEST LOCATIONS.

DURING 1998, WHERE DID YOUR HOUSEHOLD FISH FOR MARINE INVERTEBRATES?

	USE MAP TO IDENTIFY AREAS ON THE KENAI PENINSULA (Y/N)											NAMES OF OTHER FISHERIES USED IN 1998		
	GMU 15A: non-Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non-Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non-Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest	Upper Cook Inlet Area Marine Waters	Lower Cook Inlet Area Marine Waters	Resurrection Bay / Outer Kenai Coast	Most Important Other Fishery Area	Second Most Important Other Fishery Area	Third Most Important Other Fishery Area
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
FISHED FOR MARINE INVERTEBRATES: Y/N														
500000000														

LARGE LAND MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE LARGE LAND MAMMALS IN 1998? YES: ____ NO: ____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD BE INDIVIDUALS):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED FOR FOOD/ FOOD & FUR Number	HARVESTED FUR ONLY Number	HARVESTED TOTAL Number	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
BISON 210400000						IND 1			
BLACK BEAR 210600000						IND 1			
BROWN BEAR 210800000						IND 1			
CARIBOU 211000000						IND 1			
DALL SHEEP 212200000						IND 1			
DEER 211200000						IND 1			
ELK 211400000						IND 1			
MOOSE 211800000						IND 1			
MOUNTAIN GOAT 211600000						IND 1			
						IND 1			
						IND 1			
						IND 1			

LARGE LAND MAMMALS HUNTING AND HARVEST LOCATIONS.

DURING 1998, WHERE DID YOUR HOUSEHOLD HUNT AND HARVEST THE FOLLOWING SPECIES?

USE MAP TO IDENTIFY AREAS ON THE KENAI PENINSULA (Y/N)

		GMU 15A: non Kenai Peninsula Wildlife Refuge	GMU 15A: Kenai Peninsula Wildlife Refuge	GMU 15B: non Kenai Peninsula Wildlife Refuge	GMU 15B: Kenai Peninsula Wildlife Refuge	GMU 15C: non Kenai Peninsula Wildlife Refuge	GMU 15C: Kenai Peninsula Wildlife Refuge	GMU 7: non-Kenai Peninsula Wildlife Refuge/ Chugach National Forest	GMU 7: Kenai Peninsula Wildlife Refuge/ Chugach National Forest
		A	B	C	D	E	F	G	H
BLACK BEAR	HUNTED (Y/N)								
210600000	1								
BLACK BEAR	HARVESTED (Y/N)								
210600000	2								
BROWN BEAR	HUNTED (Y/N)								
210800000	1								
BROWN BEAR	HARVESTED (Y/N)								
210800000	2								
CARIBOU	HUNTED (Y/N)								
211000000	1								
CARIBOU	HARVESTED (Y/N)								
211000000	2								
DALL SHEEP	HUNTED (Y/N)								
212200000	1								
DALL SHEEP	HARVESTED (Y/N)								
212200000	2								
MOOSE	HUNTED (Y/N)								
211800000	1								
MOOSE	HARVESTED (Y/N)								
211800000	2								
MOUNTAIN GOAT	HUNTED (Y/N)								
211600000	1								
MOUNTAIN GOAT	HARVESTED (Y/N)								
211600000	2								

NINILCHIK/HOMER RURAL 1998

SMALL LAND MAMMALS/FURBEARERS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SMALL LAND MAMMALS/FURBEARERS IN 1998? YES: ____ NO: ____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED			UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NUMBER SOLD	AVERAGE PRICE	NOTES
			FOOD NUMBER	FUR ONLY NUMBER	TOTAL NUMBER						
RED FOX 220804000						IND 1					
BEAVER 220200000						IND 1					
COYOTE 220400000						IND 1					
SNOWSHOE HARE 221004000						IND 1					
LAND OTTER 221200000						IND 1					
LYNX 221600000						IND 1					
MARMOT 221800000						IND 1					
MARTEN 222000000						IND 1					
MINK 222200000						IND 1					
MUSKRAT 222400000						IND 1					
PORCUPINE 222600000						IND 1					
WEASEL 223000000						IND 1					
WOLF 223200000						IND 1					
WOLVERINE 223400000						IND 1					
TREE SQUIRREL (RED) 222804000						IND 1					
PARKA SQUIRREL (GROUND) 222802000						IND 1					

MARINE MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE MAMMALS IN 1998? YES: ____ NO: ____
IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS ARE INDIVIDUALS. POUNDS SHOULD BE EDIBLE WEIGHT.):

SPECIES	USED*? Y/N	TRIED TO HARVEST? Y/N	SALVAGE? Y/N	NUMBER HARVESTED FOR FOOD #	FOR HIDE ONLY #	TOTAL	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
HARBOR SEAL							IND			
300806040							1			
STELLER SEA LION							IND			
301200000							1			
SEA OTTER							IND			
301000000							1			
BELUKHA WHALE							IND			
301602000							1			
							IND			
							1			
							IND			
							1			
							IND			
							1			
							IND			
							1			
							IND			
							1			

* Use includes meat and/or oil, and/or fur.

BIRDS AND EGGS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE BIRDS OR EGGS IN 1998? YES:____ NO:____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD BE INDIVIDUALS).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVEST	UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
GROUSE 421802000				IND 1			
PTARMIGAN 421804990				IND 1			
HARLEQUIN (ROCK DUCK) 410212000				IND 1			
GOLDENEYE (COPPERHEAD) 410210990				IND 1			
BUFFLEHEAD (BUTTERBALL) 410202000				IND 1			
RED-BRESTED MERGANSER (SAWBILL) 410216040				IND 1			
COMMON MERGANSER (SAWBILL) 410216020				IND 1			
UNKNOWN MERGANSER (SAWBILL) 410216990				IND 1			
SCAUP (BLUEBILL) 410226990				IND 1			
MALLARD 410214000				IND 1			
PINTAIL 410220000				IND 1			
AMERICAN WIGEON 410236020				IND 1			
GREEN-WINGED TEAL 410232060				IND 1			
GADWALL 410208000				IND 1			
OLDSQUAW 410218000				IND 1			
SHOVELER 410230000				IND 1			
EIDER SPECIFY: 4102_____				IND 1			

NINILCHIK/HOMER RURAL 1998

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	UNKNOWN	UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
BLACK SCOTER				IND			
410226020				1			
WHITE-WINGED SCOTER				IND			
410226060				1			
SURF SCOTER				IND			
410226040				1			
UNKNOWN SCOTER				IND			
410226990				1			
DUCKS, UNKNOWN				IND			
410299000				1			
BRANT				IND			
410402000				1			
WHITE-FRONTED GEESE				IND			
410410000				1			
CANADA GEESE, LESSER				IND			
410404080				1			
CANADA GEESE, DUSKY				IND			
410404060				1			
CANADA GEESE, UNKNOWN				IND			
410404990				1			
UNKNOWN GEESE				IND			
410499000				1			
TUNDRA SWAN (WHISTLING)				IND			
410604000				1			
SANDHILL CRANE				IND			
410802000				1			
COMMON SNIPE				IND			
411002000				1			
PELAGIC CORMORANT				IND			
411204040				1			
DOUBLE-CRESTED CORMORANT				IND			
411204020				1			
UNKNOWN CORMORANT (FISH DUCK)				IND			
411204990				1			
LOONS				IND			
411216990				1			

NINILCHIK/HOMER RURAL 1998

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	UNKNOWN	UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
HORNED PUFFINS				IND			
411222020				1			
TUFTED PUFFINS				IND			
411222040				1			
UNKNOWN PUFFINS				IND			
411222990				1			
GULLS				IND			
411212990				1			
COMMON MURRE				IND			
411218020				1			
GULL EGGS, UNKNOWN				IND			
431212990				1			
PUFFIN EGGS				IND			
431222990				1			
GEESE EGGS				IND			
430499000				1			
DUCK EGGS, UNKNOWN				IND			
430299000				1			
SEABIRD EGGS, UNKNOWN				IND			
431299000				1			
TERN EGGS				IND			
431226000				1			

WILD PLANTS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE WILD PLANTS (INCLUDING FIREWOOD) IN 1998? YES: ____ NO: ____

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	AMOUNT HARVESTED NUMBER	AMOUNT HARVESTED UNIT	RECEIVED Y/N	GAVE AWAY Y/N	NOTES
BERRIES				GAL			
601000000				4			
PLANTS/GREENS/MUSHROOMS				GAL			
602000000				4			
SEAWEED/KELP (FOOD)				GAL			
603099000				4			
WOOD				CORDS			
604000000				6			

EMPLOYMENT.

PLEASE INDICATE THE FOLLOWING INFORMATION FOR ALL JOBS HELD BY THE EMPLOYED PERMANENT HOUSEHOLD MEMBERS 16 OR OLDER LISTED ON PAGE 1 IN 1998.
FOR THOSE NOT EMPLOYED, PLEASE SPECIFY RETIRED, UNEMPLOYED, DISABLED, STUDENT, OR HOMEMAKER.

PERSON ID # *	JOB #	JOB TITLE	SOC	EMPLOYER CATEGORY	SIC	TYPE**	LOCATION	WHICH MONTHS WORKED IN 1998	HRS/DAY	DAYS/ WEEK	WORK *** SCHEDULE	PERSONAL GROSS INCOME****
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				
								J F M A M J J A S O N D				

* PERSON ID # = PERSON NUMBER FROM FIRST PAGE OF SURVEY.
** TYPE: (1) NATIVE PROFIT or (2) NATIVE NON-PROFIT; OTHERWISE LEAVE BLANK.
*** WORK SCHEDULE = (1) FULLTIME (35+ HOURS/WK) (2) PARTTIME (<35 HOURS/WEEK) (3) SHIFT (2 WEEKS ON/2 OFF, 1 WEEK ON/1 OFF, ETC.) (4) COMMERCIAL FISHING, AND OTHER IRREGULAR, AS REQUIRED POSITIONS (5) SHIFT - PART TIME
**** COMMERCIAL FISHING AND BUSINESS OWNERS - ADJUSTED GROSS AFTER EXPENSES. IF LESS THAN ZERO, ENTER 0.

OTHER INCOME.

ANSWER ALL THAT APPLY. INDICATE ANNUAL AMOUNT FOR THE PERIOD OF 1998.
OKAY TO LEAVE BLANK IF NOT APPLICABLE OR TO STATE SOME AMOUNT, AMOUNT UNKNOWN (-8) IF IT EXISTED.

AK PERMANENT FUND: NUMBER: ____
" ($1541 EA) (32) $ ____
SOCIAL SECURITY (07) $ ____
SUPP. SECURITY INCOME (SSI) (10) $ ____
NATIVE CORP. DIVIDEND (13) $ ____

AID TO FAMILIES WITH
DEPENDENT CHILDREN (02) $ ____
PENSION/RETIREMENT (05) $ ____
WORK COMP/INSURANCE (08) $ ____
FOOD STAMPS (11) $ ____

DIVIDENDS/INTEREST (14) $ ____
ADULT PUBLIC ASSISTANCE (03) $ ____
LONGEVITY BONUS (06) $ ____
($250/MONTH)
ENERGY ASSISTANCE (09) $ ____
UNEMPLOYMENT (12) $ ____
OTHER: ____ (____) $ ____

[AK PERMANENT FUND 1998: 1 - $1,541 2 - $3,082 3 - $4,623 4 - $6,164 5 - $7,704 6 - $9,245 7 - $10,786 8 - $12,327 9 - $13,868 10 - $15,409]

FOOD:

PLEASE ESTIMATE YOUR MONTHLY EXPENSES TO PURCHASE FOOD: $ ____/MONTH

WHAT PERCENTAGE OF ALL THE MEAT, FISH, AND BIRDS THAT YOU ATE IN THE LAST YEAR WAS FROM WILD RESOURCES? [33]
____ (1) NONE ____ (2) 1-25% ____ (3) 26-50% ____ (4) 51-75% ____ (5) 76-99% ____ (6) ALL

NOTES: ____

MAPPING.

OVER THE LAST TEN YEARS (OR SINCE YOU HAVE LIVED IN THIS COMMUNITY, IF LESS), WHERE HAVE YOU HUNTED OR FISHED THE FOLLOWING RESOURCES?

	HUNTED Y/N	MAPPED Y/N	OTHER AREAS NOT ON BASE MAP (IN ORDER OF ACTIVITY):		
BLACK BEAR			1	2	3
210600000					
BROWN BEAR			1	2	3
210800000					
CARIBOU			1	2	3
211000000					
DALL SHEEP			1	2	3
212200000					
MOOSE			1	2	3
211800000					
MOUTAIN GOAT			1	2	3
211600000					

	FISHED FOR Y/N	MAPPED Y/N	OTHER AREAS NOT ON BASE MAP (IN ORDER OF ACTIVITY):		
SALMON			1	2	3
110000000					
STEELHEAD			1	2	3
126206002					
OTHER FRESHWATER FISH*			1	2	3
125999999					
MARINE INVERTEBRATES			1	2	3
500000000					

* DOES NOT INCLUDE STEELHEAD OR SALMON.

DO YOU HAVE ANY OTHER QUESTIONS, COMMENTS, OR CONCERNS?

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

INTERVIEW SUMMARY:

APPENDIX C: CONVERSION FACTORS

The following factors were used to convert resources from the unit in which the harvest data were collected to "pounds usable weight." Contact the Division of Subsistence for background on sources for these factors.

Resource	Unit	Conversion Factor
Chum Salmon	individual	5.40
Coho Salmon	individual	5.20
Chinook Salmon	individual	15.50
Pink Salmon	individual	2.40
Sockeye Salmon	individual	3.90
Landlocked Salmon	individual	1.50
Unknown Salmon	individual	4.32
Herring	gallons	6.00
Eulachon (hooligan, candlefish)	gallons	3.25
Unknown Smelt	gallons	3.25
Sea Bass	individual	1.00
Pacific Cod (gray)	individual	3.20
Pacific Tom Cod	individual	0.50
Walleye Pollock	individual	1.40
Unknown Cod	individual	3.20
Starry Flounder	individual	3.00
Unknown Flounder	individual	3.00
Lingcod	individual	4.00
Unknown Greenling	individual	1.00
Halibut	individual	16.40
Black Rockfish	individual	1.50
Red Rockfish	individual	4.00
Unknown Rockfish	individual	2.88
Sablefish (black cod)	individual	3.10
Unknown Shark	individual	9.00
Skates	individual	5.00
Unknown Sole	individual	1.00
Arctic Char	individual	1.40
Dolly Varden	individual	1.40
Lake Trout	individual	1.40
Grayling	individual	0.70
Unknown Pike	individual	3.00
Sheefish	individual	5.50
Rainbow Trout	individual	1.40
Steelhead	individual	1.40
Unknown Trout	individual	1.40
Unknown Whitefish	individual	1.75
Black Bear	individual	58.00
Caribou	individual	150.00
Deer	individual	43.20
Elk	individual	225.00

Appendix C, conversion factors, continued

Resource	Unit	Conversion Factor
Goat	individual	72.50
Moose	individual	540.00
Dall Sheep	individual	104.00
Beaver	individual	8.75
Snowshoe Hare	individual	2.00
Lynx	individual	4.00
Tree Squirrel	individual	0.50
Bufflehead	individual	0.40
Unknown Goldeneye	individual	0.80
Mallard	individual	1.00
Northern Pintail	individual	0.80
Unknown Scaup	individual	0.90
Northern Shoveler	individual	0.60
Green-Winged Teal	individual	0.30
American Wigeon	individual	0.70
Dusky Canada Geese	individual	3.60
Lesser Canada Geese	individual	1.20
White-fronted Geese	individual	2.40
Unknown Geese	individual	1.39
Sandhill Crane	individual	8.40
Grouse	individual	0.70
Unknown Ptarmigan	individual	0.70
Black (small) Chitons	gallons	4.00
Butter Clams	gallons	3.00
Horse Clams (Gaper)	gallons	3.00
Pacific Littleneck Clams (Steamers)	gallons	3.00
Pinkneck Clams	gallons	3.00
Razor Clams	gallons	3.00
Unknown Clams	gallons	3.00
Unknown Cockles	gallons	3.00
Dungeness Crab	individual	0.70
Unknown King Crab	individual	2.30
Tanner Crab, Bairdi	individual	1.60
Unknown Tanner Crab	individual	1.60
Unknown Mussels	gallons	1.50
Octopus	individual	4.00
Sea Cucumber	gallons	2.00
Unknown Sea Urchin	gallons	0.50
Shrimp	gallons	2.00
Snails	gallons	1.50
Berries	gallons	4.00
Plants/Greens/Mushrooms	gallons	4.00
Unknown Seaweed	gallons	4.00

APPENDIX D: OVERVIEW OF STUDY FINDINGS

Wild Resource Harvests and Uses by Residents of Selected Communities of the Kenai Peninsula Borough

An Overview of Study Findings

Division of Subsistence,
Alaska Department of Fish and Game,

May 2000

Background

In February and March 1999, researchers employed by the Alaska Department of Fish and Game's (ADF&G) Division of Subsistence conducted 279 interviews with residents of five areas along the road system of the Kenai Peninsula Borough which were classified as rural by the Federal Subsistence Board in 1990. The study areas included Ninilchik, the North Fork Road (near Anchor Point), Fritz Creek East, Nikolaevsk, and Voznesenka. Most residents of the latter two communities are members of the Old Believer branch of the Russian Orthodox faith. The study was designed to collect information about the harvest and use of wild fish, game, and plant resources, demography, and aspects of the local cash economy such as employment and income. Data were collected for the 1998 calendar year. The study was funded through a cooperative agreement between ADF&G and the US Fish and Wildlife Service.

Methods

Information was collected during face-to-face interviews using a standard survey form. The goal was to talk with representatives of a randomly selected sample of year-round households in Ninilchik, North Fork Road, and Fritz Creek East, and all households in Nikolaevsk and Voznesenka. Of all households contacted, a large majority (85 percent) agreed to be interviewed. Table 1 shows sample achievements in each study community. Households were also asked to map areas used on the Kenai Peninsula to hunt, fish, and gather wild resources over the last ten years.

Table 1. Sample Achievement

Community	Total Households	Interviewed	Percent Inteviewed	Declined an Interview	Failed to Contact
Fritz Creek East	150	65	43.3%	13	16
Nikolaevsk	50	37	74.0%	4	9
Ninilchik	400	101	25.3%	9	8
North Fork Road	166	58	34.9%	6	26
Voznesenka	62	18	29.0%	18	26
Total	828	279	33.7%	50	85

Demography

The population of the study area has grown very rapidly in the last several decades, with a 432 percent increase since 1980. Estimated population sizes for the study year were as follows: Fritz Creek East, 434; Nikolaevsk, 235; Ninilchik, 1,073; North Fork Road, 467; and Voznesenka, 327. Only three of the sample areas had an Alaska Native segment to their population. These were Ninilchik (9.6 percent of the total population was Alaska Native), North Fork Road (1.8 percent), and Fritz Creek East (0.5 percent). About 88 percent of the household heads in the five study areas were born in outside of Alaska. The average length of residency in the study communities for household heads was relatively short, ranging from a high of 17.9 years for Nikolaevsk to a low of 11.7 years for Voznesenka.

Local Cash Economy

Table 2 reports some findings regarding features of the local cash economy in the five study communities in 1998. In all communities, most adults had jobs. As in much of the Kenai Peninsula, much cash employment was seasonal; in no community did most adults work year-round. Commercial fishing was especially important as a source of jobs and income in Nikolaevsk and Voznesenka. Employment and income were more evenly distributed among employer types in the other communities. Only in Ninilchik were a majority of jobs (52 percent) located in an area of the Kenai Peninsula classified as rural by the Federal Subsistence Board. In the other four communities, most jobs were in the "non-rural" portion of the Borough or in other parts of the state. (The latter category includes non-Cook Inlet commercial fisheries.) Average household incomes in all five study areas were the same range at around $50,000 to $54,000. Because of their larger households, Nikolaevsk and Voznesenka had lower per capita incomes than the other three areas. Retirement income was especially significant in Ninilchik.

Table 2. Some Features of the Local Cash Economy of the Study Areas, 1998

	Fritz Creek East	Nikolaevak	Ninilchik	North Fork Road	Voznesenka
% of Adults with Cash Employment	83.6%	76.7%	72.7%	75.4%	69.8%
% of Employed Adults with Year-Round Employment	42.9%	12.7%	43.4%	39.3%	10.0%
Mean Number of Weeks Employed	37.2	29.3	38.4	39.2	35.7
Percentage of Jobs in:					
Commercial Fishing	9.7%	52.2%	12.3%	6.3%	43.9%
Mining	2.8%	1.8%	3.8%	1.8%	0.0%
Construction	13.9%	13.3%	10.9%	10.7%	9.8%
Manufacturing	4.9%	4.4%	17.5%	14.3%	0.0%
Transportation & Utilities	5.6%	0.9%	3.8%	6.3%	0.0%
Trade	9.0%	4.4%	14.2%	15.2%	12.2%
Services	35.4%	6.2%	25.9%	17.0%	17.1%
Government	15.3%	12.4%	6.6%	25.0%	14.6%
Other	3.5%	4.4%	5.2%	3.6%	2.4%
Percentage of Income from:					
Commercial Fishing	7.6%	67.4%	6.1%	2.2%	53.3%
Mining	13.5%	2.5%	11.1%	7.4%	0.0%
Construction	13.7%	11.2%	11.3%	12.7%	13.8%
Manufacturing	4.7%	2.3%	20.1%	11.2%	0.0%
Transportation & Utilities	8.8%	2.0%	9.7%	2.3%	0.0%
Trade	4.0%	1.9%	8.8%	14.8%	6.9%
Services	25.5%	2.0%	24.4%	12.3%	10.6%
Government	20.4%	9.6%	5.1%	36.0%	15.5%
Other	2.0%	1.3%	3.4%	1.1%	0.0%
Average Household Income	$50,328	$52,388	$50,078	$50,975	$53,625
Per Capita Income	$17,400	$11,140	$18,664	$18,138	$10,160
% of Income from Jobs	78.3%	79.1%	69.8%	82.1%	80.2%
% of Income from PFD	8.1%	12.4%	7.2%	7.6%	14.2%
% of Income from Retirement	5.9%	6.0%	13.6%	5.9%	0.0%

Harvests and Uses of Wild Resources for Home Use

Table 3 reports selected findings about patterns of harvest and use of wild resources for home use in the study communities in 1998. Almost all the households used wild foods and a large majority fished, hunted, or gathered resources. As estimated in pounds usable weight per person, wild resource harvests ranged from a high of 167 pounds per person at Voznesenka, followed by Ninilchik at 164 pounds per person, Nikolaevsk at 133 pounds per person, Fritz Creek East at 105 pounds per person, and North Fork Road at 98 pounds per person. The average number of different kinds of resources used per household in 1998 ranged from a high of 9.4 kinds in Fritz Creek East, to 9.1 kinds at Nikolaevsk, 8.6 kinds in Ninilchik, 8.6 kinds in Voznesenka, and 7.6 kinds in North Fork Road.

Table 3. Resource Harvest and Use Characeristics, Study Areas, 1998

	Fritz Creek East	Nikolaevsk	Ninilchik	North Fork Road	Voznesenka
Percentage of households:					
Using any resource	100%	100%	99%	98%	100%
Attempting any resource harvest	94%	89%	97%	86%	100%
Harvesting any resource	94%	89%	96%	86%	100%
Receiving any resource	94%	78%	92%	93%	83%
Giving away any resource	85%	73%	73%	62%	78%
Mean household harvest	305 lbs	625 lbs	440 lbs	275 lbs	883 lbs
Per capita harvest	105 lbs	133 lbs	164 lbs	98 lbs	167 lbs
Mean number of kinds of resources per household					
Used	9.4	9.1	8.6	7.6	8.6
Attempted	6.8	7.1	6.6	5.6	6.9
Harvested	6.1	6.5	5.6	4.8	6.4
Received	4.7	3.1	4.0	3.7	3.1
Gave Away	3.1	2.7	3.1	2.1	4.4

Figure 1 (next page) reports per capita harvests for each community for six resource categories. (Note that there were no marine mammal harvests reported by any interviewed household in 1998.) As expressed by a percentage of the total harvest (Figure 2, next page), salmon ranked first in all communities but Ninilchik, where land mammals (primarily moose) ranked first. Resources removed from commercial harvests for home use provided 42 percent of the total harvest in Nikolaevsk, and 47 percent at Voznesenka, but less in Ninilchik (8 percent), North Fork Road (1 percent), and Fritz Creek East (4 percent). In North Fork Road, Fritz Creek, and Ninilchik, rod and reel harvests provided by far the largest number of salmon for home use, with personal use dipnet and set net fisheries second. Removal from commercial catches was the major source of salmon for Voznesenka and Nikolaevsk.

Moose was by far the most frequently used land mammal in the study communities, with most of the harvest taking place on the Kenai Peninsula. Ninilchik residents took the most moose (estimated at 95+/- 35 animals), accounting for much of the difference in total harvest levels between Ninilchik on the one hand, and North Fork Road and Fritz Creek East on the other.

There were substantial differences between households in harvest levels and the range of resources used. For example, in North Fork Road, 25 percent of the households accounted for 79 percent of the community's total harvest. In each community, households that ranked in the top quarter of harvesters used three to four times as many kinds of resources as did the lowest quarter. It did not appear that most low-producing households received a wide range of wild foods from high harvesters. In Ninilchik, there was a weak positive relationship between length of residency in the community and harvest levels, but there was no such relationship in the other study communities. There were no significant differences between Alaska Native and other households in Ninilchik in terms of per capita harvests. An educational set net fishery at Ninilchik enabled Alaska Native families to teach traditional skills and values.

Figure 1. Harvests of Wild Resources for Home Use by Category, Study Areas, 1998

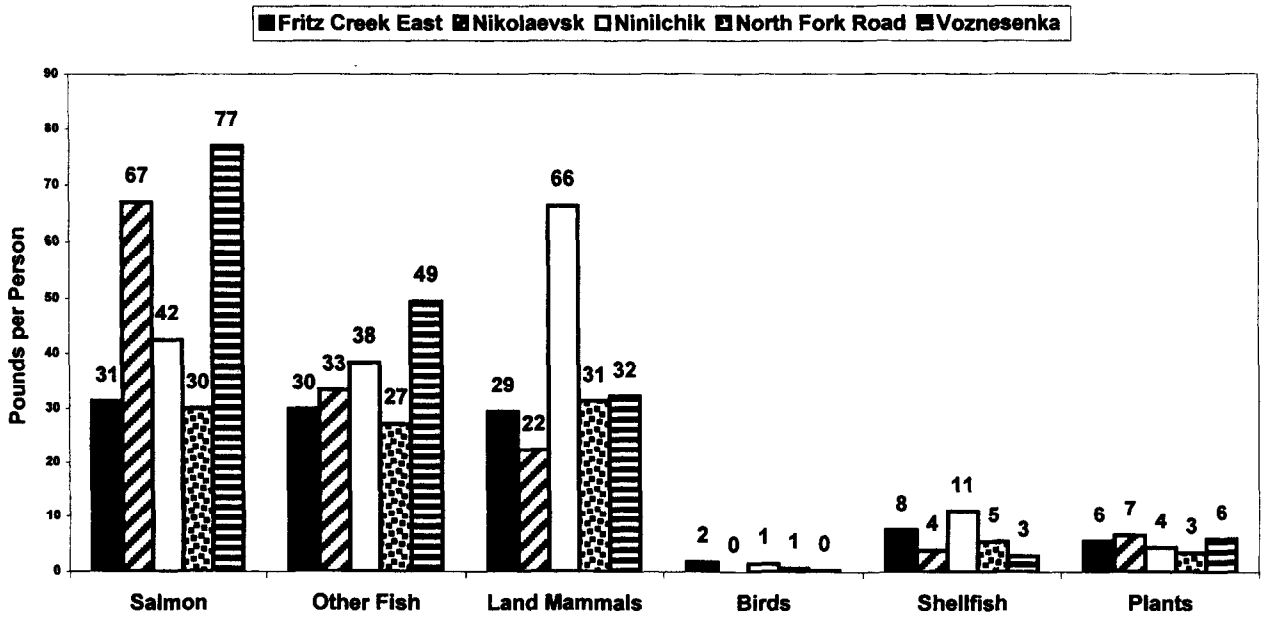
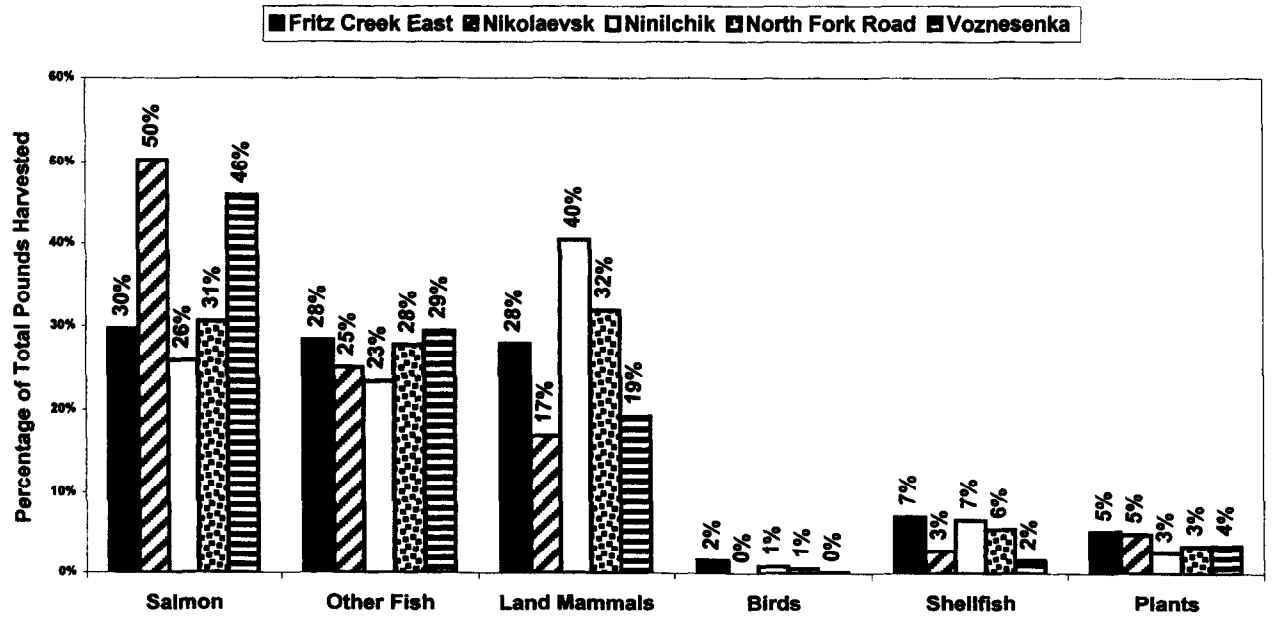


Figure 2. Composition of Harvests for Home Use by Resource Category, Study Areas, 1998

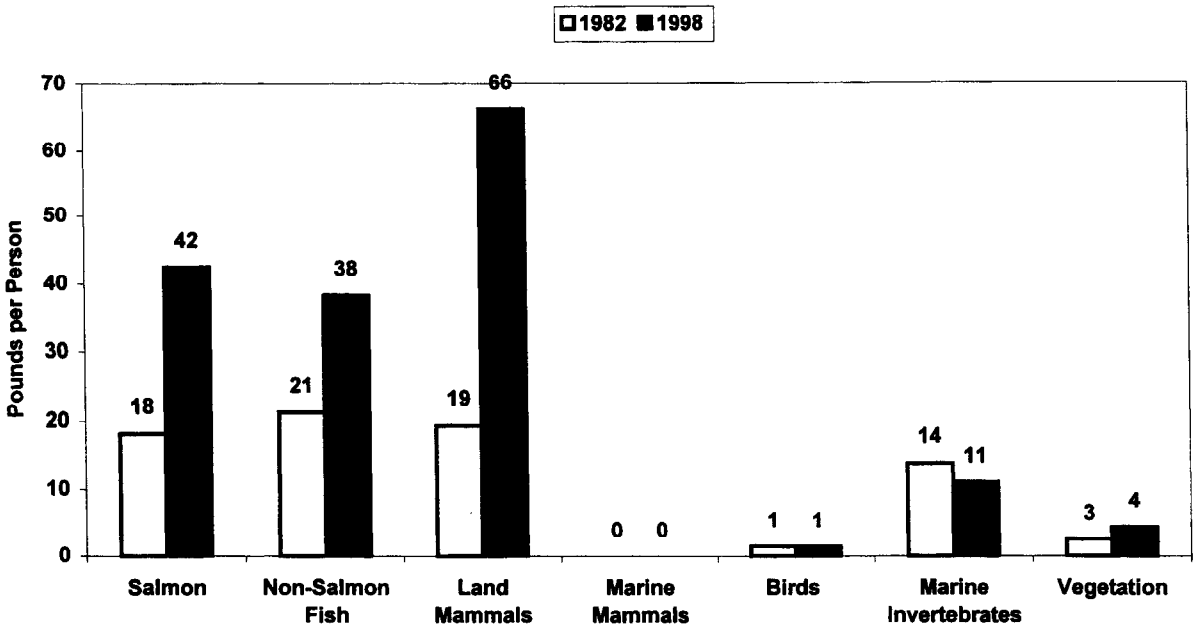


Comparing Ninilchik in 1998 with Ninilchik in 1982

The Division of Subsistence conducted household harvest surveys in Ninilchik pertaining to 1982 that can be compared with the findings for 1998. Most of Ninilchik's household heads in 1998 (56 percent) were not living in the community at the time of the previous research, reflecting the continuing population growth due to in-migration, including many retired people. Since 1980, the population of the Ninilchik area has grown by 215 percent. Ninilchik's economy has diversified since 1982, with more employment and higher cash incomes (when adjusted for inflation). While the role of commercial fishing has declined over the last two decades, it is still important as a source of jobs and income. Ninilchik has benefited, along with the rest of the road-connected portion of the Kenai Peninsula Borough, from the large growth in the tourism industry and stability or more modest growth in other economic sectors.

As estimated in pounds usable weight per person, harvests for home use in Ninilchik in 1998 (164 pounds per person) were more than double that of 1982 (77 pounds per person). Salmon harvests increased substantially (Figure 3), reflecting more opportunity through personal use set net and dipnet fisheries and more involvement by Ninilchik residents in rod and reel fisheries. Newcomers to the community are generally not commercial fishermen, but people who enjoy rod and reel and dip net fishing, seeing them as productive activities. In 1982, removal of salmon from commercial catches was the primarily source of salmon for home use in Ninilchik (54 percent), but this declined to 24 percent in 1998. Harvests of other finfish also increased, likely in part reflecting the growth of opportunities to harvest halibut with rod and reel utilizing local recreational charter services. In 1982, Ninilchik households commonly complained about the difficulties of harvesting moose due to scarcity and competition with non-local residents. In 1998, Ninilchik households were particularly successful in their moose hunts. Longer seasons may account for much of this increased success. In contrast to harvest quantities, the range of resources used was similar in the two study years: 8.0 kinds per household in 1982 and 8.6 kinds per household in 1998. This shows that the increase in community harvests was the result of harvesting more of a small set of locally-available resources, rather than adding additional resources to the harvest mix.

Figure 3. Ninilchik Wild Resource Harvests by Category, 1982 and 1998



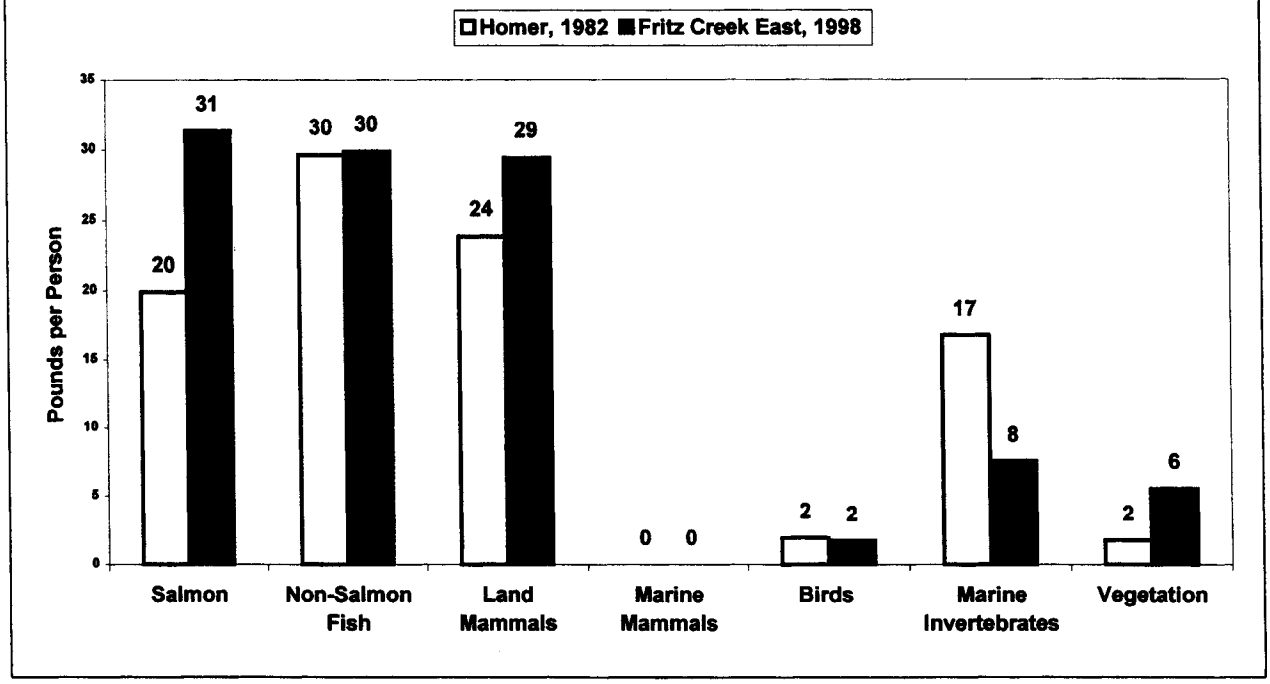
In summary, a combination of demographic, economic, regulatory, and social/cultural factors appear related to the increase in wild resource harvests in Ninilchik in 1998 compared to 1982. Nevertheless, the role of wild resource harvests for home use in the community economy and way of life does not appear to have changed much since 1982. Demographic, economic, and sociocultural trends identified in 1982 have continued. The community remains heterogeneous in terms of resource uses, with a small segment of the population producing and using most of the wild foods. There is a focus on a small set of resources: sockeye and king salmon, halibut, and moose. With an expanding population and local cash economy, Ninilchik more and more resembles other communities in the Kenai Peninsula Borough and elsewhere in Alaska in which an industrial/capital economy prevails.

Comparing Fritz Creek East in 1998 with Homer in 1982

The findings for Fritz Creek East can be compared with the results of the study of Homer and the surrounding area conducted by the Division of Subsistence for 1982. This area, like Ninilchik, has undergone substantial population growth over the last two decades: the Fritz Creek and Fox River census areas grew by 500 percent from 1980 to 1998. The economy has diversified, although it retains a strong seasonal dimension linked to the summer tourism industry. The relative role of commercial fishing in the local economy has declined since 1982. Income, adjusted for inflation, was up about 15 percent in 1998 compared to 1982.

The pattern of wild resource uses in Fritz Creek East in 1998 resembled that of the general Homer area in 1982. Harvest levels in pounds per person were similar: 94 pounds in 1982, 105 pounds in 1998. The average range of resources used and harvested per household were also similar across study years: on average, households used 8.8 kinds in 1982 and harvested 5.0 types, while in 1998, households used 9.4 kinds and harvested 6.1 types. Marine invertebrate harvests in 1998 were lower than in 1982, likely due to declining stocks of crab and shrimp. On the other hand, salmon harvests increased, likely due, as in Ninilchik, to expanded opportunities through personal use fisheries and the arrival of new families who enjoy participating in personal use and rod and reel fisheries.

Figure 4. Harvests by Category, Homer 1982 and Fritz Creek East 1998



The findings for 1998 for Fritz Creek East indicted the continuation of trends detected in Homer and the surrounding area in 1982: the arrival of many new families with no ties to commercial fishing who are accustomed to harvesting resources for home use in recreational fisheries and regulated hunts.

Comparing the Study Areas with Other Kenai Peninsula Communities

The report includes comparisons of the five study areas with other communities of the Kenai Peninsula Borough for which comparable data from Division of Subsistence studies are available. These other communities include Hope, Cooper Landing, and Kenai, which are on the road system, and Seldovia, Port Graham, and Nanwalek, which are not connected by road to the rest of the state. Selected economic and demographic data appear in Table 4. The study communities display a more seasonal pattern of employment than Kenai. However, per capita monetary income in Ninilchik, Fritz Creek East, and North Fork Road were generally in the same range as Kenai, at the high end of the scale for the Kenai Peninsula Borough, and were higher than those of more remote areas of the state.

Table 4. Selected Demographic and Economic Characteristics of Kenai Peninsula Communities

Community	Year	Population	Per Capita Income	Average Months Employed	Percent Employed Year Round
Cooper Landing	1990	258	$14,780	8.6	46.0%
Fritz Creek East	1998	434	$17,400	8.6	42.9%
Homer	1982	5,633	$10,070	9.7	NA
Hope	1990	152	$13,679	9.0	49.1%
Kenai	1993	6,372	$19,562	10.3	65.7%
Nanwalek	1993	141	$7,787	7.4	26.8%
Nikolaevsk	1998	235	$11,140	6.8	12.7%
Ninilchik	1998	1,073	$18,664	8.9	43.4%
North Fork Road	1998	467	$18,134	9.0	39.3%
Port Graham	1993	175	$9,810	8.0	37.1%
Seldovia	1993	431	$17,502	8.9	45.3%
Voznesenka	1998	327	$10,160	8.2	10.0%

In terms of per capita wild food harvests, there is a "clinal continuum" across populations on the Kenai Peninsula, from a low in Kenai (85 pounds) to a high in Nanwalek/Port Graham (254 pounds), with other populations falling between. (See Table 5 on the next page.) For the most recent study years, a population's harvest level was not significantly different from the harvest levels of immediate neighboring population(s) on the continuum, while a population's harvest level was significantly different from the harvest levels of populations farther up or down the continuum. However, harvest levels for Nanwalek and Port Graham were significantly different from all communities on the road system. Seldovia, the other non-road-connected community, occupied a middle position: its overall per capita harvest levels were not significantly different from Nanwalek, Port Graham, Ninilchik, Nikolaevsk, or Voznesenka.

For the diversity of resources used, Nanwalek and Port Graham stood alone, with a significantly higher range of resources used (18 kinds per household) than any other Kenai Peninsula population. The other populations illustrate the clinal relationship that was also evident for harvest levels, with Seldovia ranking highest. This was also largely the case regarding sharing, as expressed in the average number of resources received or given away per household. Nanwalek and Port Graham had significantly higher means for the number of resources received and given away per household. Seldovia also was significantly different from the road-connected communities in these measures of sharing.

The Old Believer communities of Nikolaevsk and Voznesenka exhibited some distinctiveness in resource uses, including a significant use of resources removed from commercial catches. These communities have adapted to the contemporary regulatory system in place when the communities were established, taking advantage of personal use fisheries and moose hunting opportunities, among other activities, but do not represent a way of life with deep roots on the Kenai Peninsula, as do Nanwalek and Port Graham.

Table 5. Selected Characteristics of Wild Resource Harvests and Uses, Kenai Peninsula Borough Communities

Community	Year	Estimated Harvests (lbs)		Average Number of Kinds of Resources per Household				
		Household	Per Capita	Use	Attempt	Harvest	Receive	Give
Cooper Landing	1990	238	92	8.3	6.4	5.9	3.4	2.1
Fritz Creek East	1998	305	105	9.4	6.8	6.1	4.7	3.1
Homer	1982	294	94	8.8	NA	5.0	NA	NA
Hope	1990	262	111	9.1	7.2	6.4	3.8	2.8
Kenai	1993	235	84	7.1	5.4	4.5	3.2	2.3
Nanwalek	1993	1,164	254	21.5	16.0	15.6	14.3	11.6
Nikolaevsk	1998	625	133	9.1	7.1	6.5	3.1	2.7
Ninilchik	1998	440	164	8.6	6.6	5.6	4.0	3.1
North Fork Road	1998	275	98	7.6	5.6	4.8	3.7	2.1
Port Graham	1993	628	253	16.5	10.1	9.6	10.3	7.3
Seldovia	1993	517	184	12.9	9.3	9.0	6.4	4.8
Voznesenka	1998	883	167	8.6	6.9	6.4	3.1	4.4

Conclusions

In closing, resource uses in the study communities in 1998 fit within the pattern that has characterized the road-connected communities of the Kenai Peninsula Borough for the last several decades. Compared to more remote parts of Alaska, harvests as estimated in usable pounds per person are moderate to low. The large majority of households use a narrow range of wild foods. Most of the harvest is taken by a very small percentage of households. Harvests occur within and are structured by regulatory systems established by government management bodies. Productive harvest activities are the result of relatively recent regulatory actions, such as personal use dipnet fisheries and longer moose hunting seasons. Harvests are shared among a relatively small number of households and sharing does not result in an integrated, community-wide pattern of resource uses. These uses occur within an economic context of cash economies like those of the most populous parts of the state and a diverse and expanding local employment picture. These uses take place in a demographic context of very rapid growth due to in-migration. The large majority of household heads moved to the Kenai Peninsula from other parts of Alaska, other states, or other countries, most likely for reasons related to employment opportunities and lifestyle, including an attractive place to retire. Most families have relatively short histories of use of Kenai Peninsula resources. That most households use and harvest wild foods demonstrates that harvest activities are highly valued as a source of recreation, of nutritious foods, and as an expression of a valued lifestyle. These uses do not link most of the households in the study areas to the traditions and history of the Kenai Peninsula. Rather, most households engage in fishing and hunting as valued recreational activities that provide wild foods to supplement a primarily cash-based household socioeconomic system.

For more information, see the final report for the project: Fall, J.A., V. Vanek, L. Brown, G. Jennings, R. Wolfe, and C.J. Utermohle. 2000. Wild Resource Harvests and Uses by Residents of Selected Communities of the Kenai Peninsula Borough, Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 253. You may contact the Division of Subsistence at 333 Raspberry Road, Anchorage, Alaska, 99518; (voice) 907-267-2353; (fax) 907-267-2450. Selected study findings appear in the Community Profile Database, which is accessed through the division's web page at: www.state.ak.us/local/akpages/FISH.GAME/subsist/subhome.htm.

Appendix E:

Resource Category Level Comparisons

of Kenai Peninsula Communities

Introduction to Appendix E Tables and Figures

The tables and figures in Appendix E supplement the discussion of differences between Kenai Peninsula populations in terms of quantities of resources harvested for home use and the diversity of resources used, harvested, and shared that appears in Chapter Four. As in Chapter Four, for these comparisons, two pairs of very similar communities were grouped to equalize sample sizes of populations. (An exception is Table E-29, see below.) These are Nikolaevsk/Voznesenka and Nanwalek/Port Graham. Where harvest data for multiple years were available, the most recent year was chosen for these comparisons. The following conventions are used in the tables:

1. They includes the actual significance value as well as the t statistic;
2. They list populations in ascending order of total wild food harvests;
3. When a test is not significant, they use the convention ns = .504, etc, and is not in a bold font;
4. When a test is significant, they use the convention sig = .017, etc, and is in a bold font; and
5. They refer to the groupings as "populations" rather than "communities".

In the figures, horizontal bars connect the populations that are not significantly different.

Harvest Quantities in Pounds Usable Weight per Person

Table E-1 through E-7 and Figure E-1 through E-7 compare populations on the basis of per capita harvests of seven categories of wild resources: salmon, non-salmon fish, marine invertebrates, land mammals, birds, marine mammals, and wild plants. Harvests of salmon and marine mammals by Nanwalek/Port Graham are significantly higher than those of the other populations. Seldovia had significantly higher harvests of marine invertebrates and wild plants. Ninilchik's 1998 land mammal harvests were significantly higher than that of any other population. (See Chapter Three for a discussion of possible qualifiers for Ninilchik's relatively large harvest of moose in 1998.)

Mean Number of Kinds of Resources Used per Household

Table E-8 through E-14 and Figure E-8 through E-14 compare populations on the basis of the average number of different kinds of resources used per household within seven categories of wild resources: salmon, non-salmon fish, marine invertebrates, land mammals, birds, marine mammals, and wild plants. These tables and figures illustrate the distinctiveness of Nanwalek and Port Graham in terms of diversity of resource uses. The Nanwalek/Port Graham population had a significantly higher household mean number of kinds of resources used than any of the other populations for four categories: salmon, other fish, marine mammals, and wild plants. For marine invertebrates, Nanwalek/Port Graham and Seldovia were not significantly different from each other, but were significantly higher than the other five populations. For birds, Nanwalek/Port Graham was not significantly higher than Seldovia, but was significantly higher than the other five populations. The relatively narrow ranges of land mammals used in all seven populations showed no significant differences.

Mean Number of Kinds of Resources Received per Household

Table E-15 through E-21 and Figure E-15 through E-21 compare populations on the basis of the average number of different kinds of resources received per household within seven categories of wild resources: salmon, non-salmon fish, marine invertebrates, land mammals, birds, marine mammals, and wild plants. These tables and figures illustrate the distinctiveness of Nanwalek and Port Graham in terms of sharing of resources. The Nanwalek/Port Graham population had a significantly higher household mean number of kinds of resources received than any of the other populations for three categories: salmon, other fish, and marine mammals. For marine invertebrates and birds, Nanwalek/Port Graham was significantly higher than all other populations but Seldovia. For wild plants, Nanwalek/Port Graham was significantly higher than all other populations but Fritz Creek. There were no significant differences among the seven populations in terms of the diversity of kinds of land mammals received; all the populations had relatively low means.

Mean Number of Kinds of Resources Given Away per Household

Table E-22 through E-28 and Figure E-22 through E-28 compare populations on the basis of the average number of different kinds of resources given away per household within seven categories of wild resources: salmon, non-salmon fish, marine invertebrates, land mammals, birds, marine mammals, and wild plants. As with the previous set of tables and figures regarding receiving of different kinds of resources, these tables and figures illustrate the distinctiveness of Nanwalek and Port Graham in terms of sharing of resources. The Nanwalek/Port Graham population had a significantly higher household mean number of kinds of resources received than any of the other populations for four categories: salmon, other

fish, birds, and marine mammals. For marine invertebrates and wild plants, Nanwalek/Port Graham was significantly higher than all other populations but Seldovia. There were virtually no significant differences among the seven populations in terms of the diversity of kinds of land mammals given away; all the populations had relatively low means. Ninilchik's mean was significantly higher than Kenai and North Fork Road.

Multi-Year Comparisons of Harvest Quantities: Nanwalek, Port Graham, and Seldovia

Table E-29 compares the mean per capita harvests of all wild resources for Nanwalek, Port Graham, and Seldovia for all years for which harvest data area available, except the 1982 estimate for Seldovia of 51 pounds per person. There are no significant differences between Nanwalek and Port Graham for any study year. Only in 1992 was Seldovia significantly lower than the combined Nanwalek/Port Graham population. Also in 1992, Seldovia was significantly lower than both Nanwalek and Port Graham. Finally, in 1993, Seldovia's per capita harvest was significantly lower than that of Nanwalek, but not that of Port Graham.

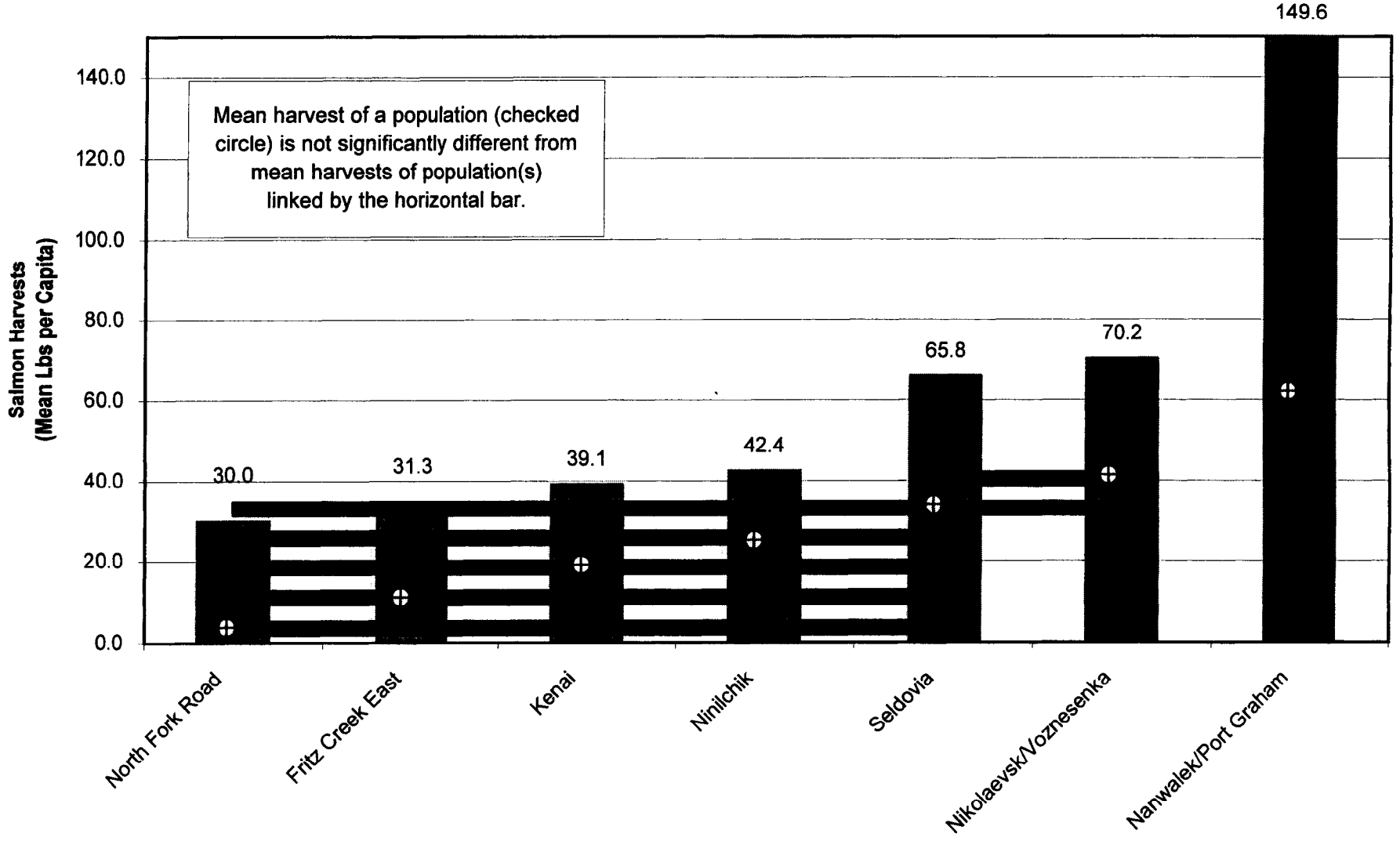
Appendix Table E-1. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Salmon Harvests (Mean Lbs per Capita)

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Fritz Creek East	Kenai	Ninilchik	Seldovia	Nikolaevsk/ Voznesenka
North Fork Road	1998	58	30.0	X X	X X	X X	X X	X X	X X
Fritz Creek East	1998	65	31.3	0.164 *ns = ..870*	X X	X X	X X	X X	X X
Kenai	1993	99	39.1	0.905 *ns = .367*	0.818 *ns = .415*	X X	X X	X X	X X
Ninilchik	1998	101	42.4	1.216 *ns = .226*	-1.268 *ns = .207*	-0.339 *ns = .735*	X X	X X	X X
Seldovia	1993	63	65.8	1.733 *ns = .086*	1.742 *ns = .086*	-1.525 *ns = .129*	1.336 *ns = .183*	X X	X X
Nikolaevsk/Voznesenka	1998	55	70.2	**3.189** ***sig = .002***	**-3.138** ***sig = .002***	**-2.493** ***sig = .014***	**-2.205** ***sig = .029***	-0.191 *ns = .848*	X X
Nanwalek/Port Graham	1997	73	149.6	**5.954** ***sig = .000***	**5.928** ***sig = .000***	**-7.037** ***sig = .000***	**2.795** ***sig = .006***	**-3.039** ***sig = .003***	**3.571** ***sig = .001***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-1. Salmon Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



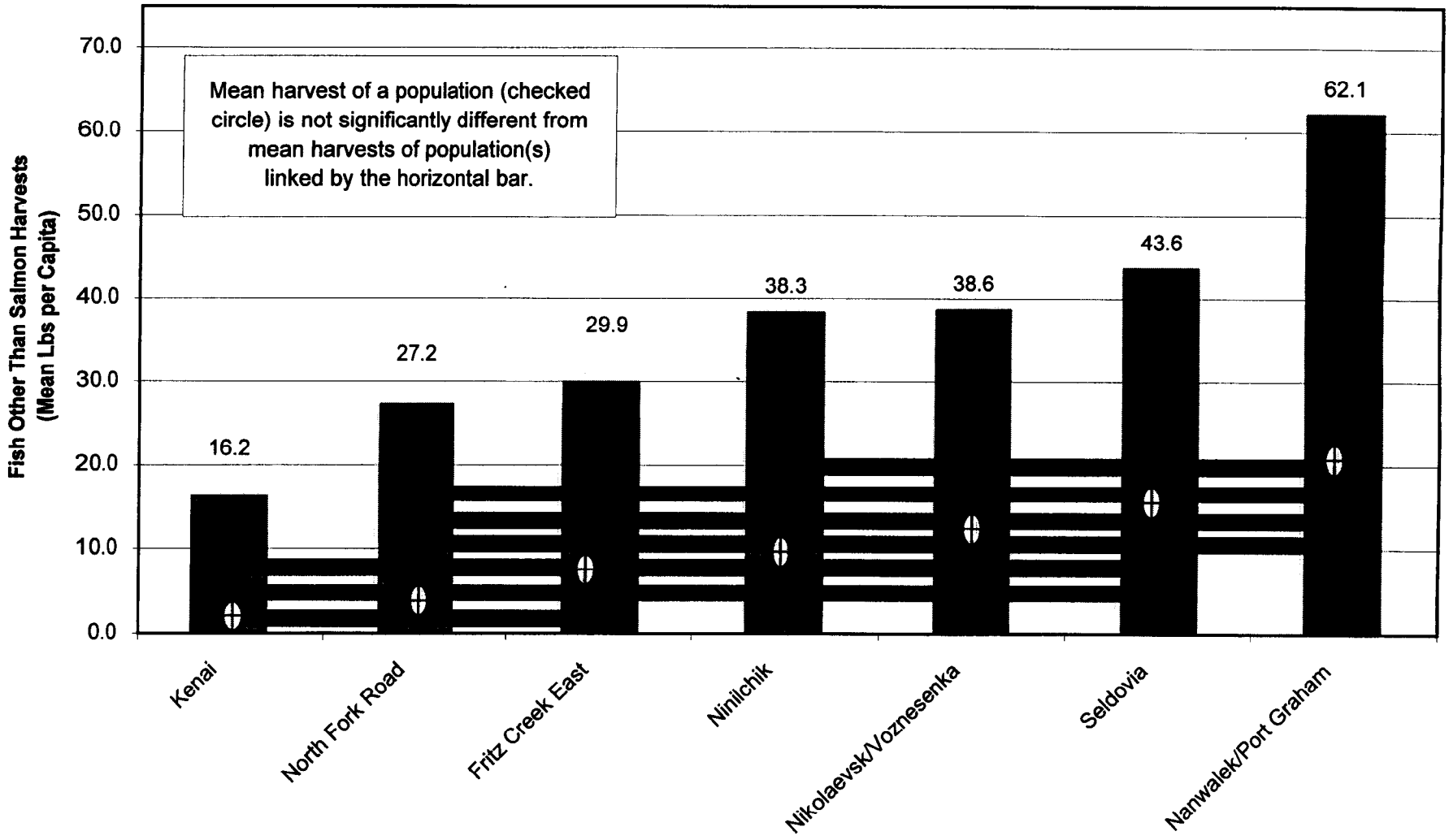
Appendix Table E-2. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Fish Other Than Salmon Harvests (Mean Lbs per Capita)

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Kenai	North Fork Road	Fritz Creek East	Ninilchik	Nikolaevsk/ Voznesenka	Seldovia
Kenai	1993	99	16.2	X	X	X	X	X	X
				X	X	X	X	X	X
North Fork Road	1998	58	27.2	-1.627	X	X	X	X	X
				ns = 108	X	X	X	X	X
Fritz Creek East	1998	65	29.9	-1.969	0.296	X	X	X	X
				ns = .052	*ns = .768*	X	X	X	X
Ninilchik	1998	101	38.3	**-3.168**	1.135	-0.88	X	X	X
				sig = .002	*ns = .258*	*ns = .380*	X	X	X
Nikolaevsk/Voznesenka	1998	55	38.6	**-2.582**	1.104	-0.841	-0.024	X	X
				sig = .012	*ns = .272*	*ns = .402*	*ns = .981*	X	X
Seldovia	1993	63	43.6	**-3.015**	1.527	1.27	0.49	0.413	X
				sig = .004	*ns =.130*	*ns = .206*	*ns = .625*	*ns = .681*	X
Nanwalek/Port Graham	1997	73	62.1	**-4.212**	**2.682**	**2.459**	1.811	1.668	-1.337
				sig = .000	***sig = .008***	***sig = .015***	*ns = .073*	*ns = 0.09*	*ns = .183*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-2. Fish Other Than Salmon Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



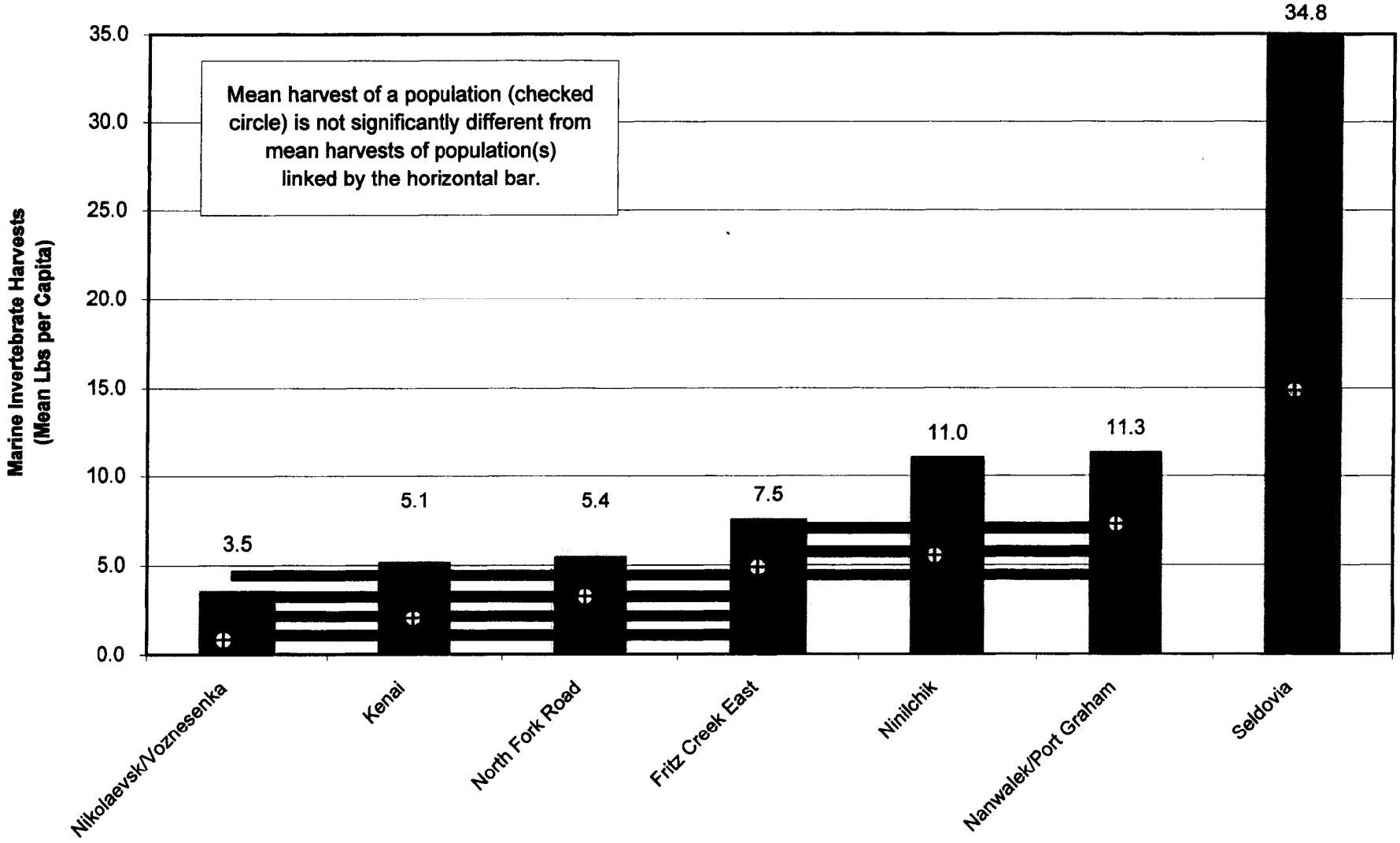
Appendix Table E-3. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Marine Invertebrate Harvests (Mean Lbs per Capita)

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	Kenai	North Fork Road	Fritz Creek East	Ninilchik	Nanwalek/ Port Graham
Nikolaevsk/Voznesenka	1998	55	3.5	X X	X X	X X	X X	X X	X X
Kenai	1993	99	5.1	0.974 *ns = .331*	X X	X X	X X	X X	X X
North Fork Road	1998	58	5.4	-0.942 *ns = .348*	-0.171 *ns = .865*	X X	X X	X X	X X
Fritz Creek East	1998	65	7.5	1.442 *ns = .142*	-1.044 *ns = .298*	0.712 *ns = .478*	X X	X X	X X
Ninilchik	1998	101	11.0	**3.732** ***sig = .000***	**-3.145** ***sig = .002***	**2.471** ***sig = .015***	-1.293 *ns = .198*	X X	X X
Nanwalek/Port Graham	1997	73	11.3	**3.59** ***sig = .000***	**-4.629** ***sig = .000***	**2.436** ***sig .016***	1.297 *ns = .197*	0.107 *ns = .915*	X X
Seldovia	1993	63	34.8	**3.851** ***sig = .000***	**-3.662** ***sig = .001***	**3.58** ***sig = .001***	**3.257** ***sig = .002***	**2.904** ***sig = .005***	**2.35** ***sig = .022***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-3. Marine Invertebrate Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



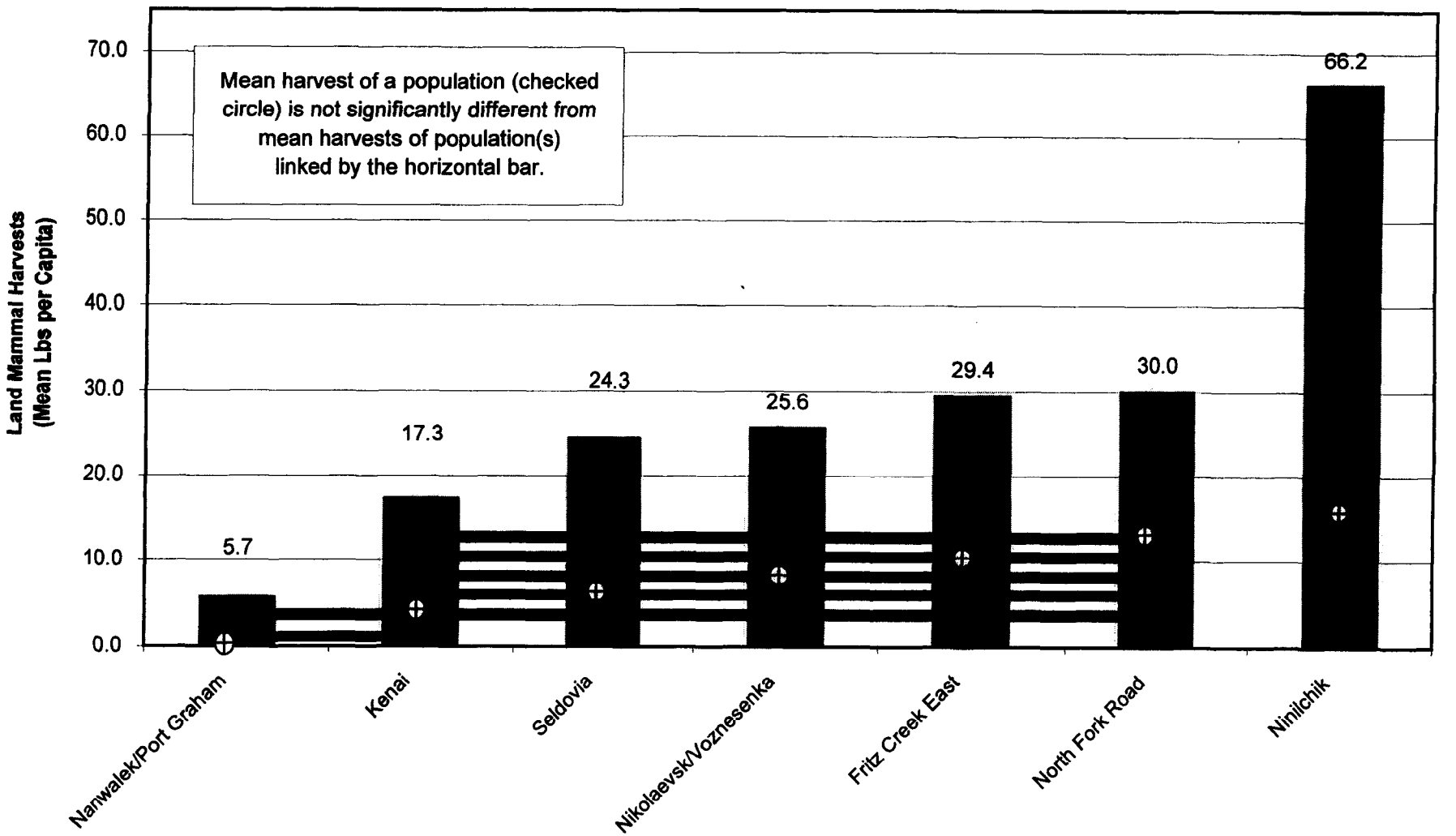
Appendix Table E-4. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Land Mammal Harvests (Mean Lbs per Capita)

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nanwalek/ Port Graham	Kenai	Seldovia	Nikolaevsk/ Voznesenka	Fritz Creek East	North Fork Road
Nanwalek/Port Graham	1997	73	5.7	X X	X X	X X	X X	X X	X X
Kenai	1993	99	17.3	1.782 *ns = .077*	X X	X X	X X	X X	X X
Seldovia	1993	63	24.3	**2.137** ***sig = .036***	-0.694 *ns = .489*	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	25.6	**-2.104** ***sig = .039***	-0.788 *ns = .432*	-0.103 *ns = .918*	X X	X X	X X
Fritz Creek East	1998	65	29.4	**-2.169** ***sig = .033***	-0.999 *ns = .320*	-0.376 *ns = .708*	0.271 *ns = .787*	X X	X X
North Fork Road	1998	58	30.0	**-2.257** ***sig= .027***	-1.119 *ns = .266*	-0.509 *ns = .612*	-0.401 *ns = .690*	-0.124 *ns = .902*	X X
Ninilchik	1998	101	66.2	**-5.057** ***sig = .000***	**-3.739** ***sig = .000***	**-2.925** ***sig = .004***	**2.772** ***sig = .006***	**-2.352** ***sig = .020***	**2.191** ***sig = .030***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-4. Land Mammal Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



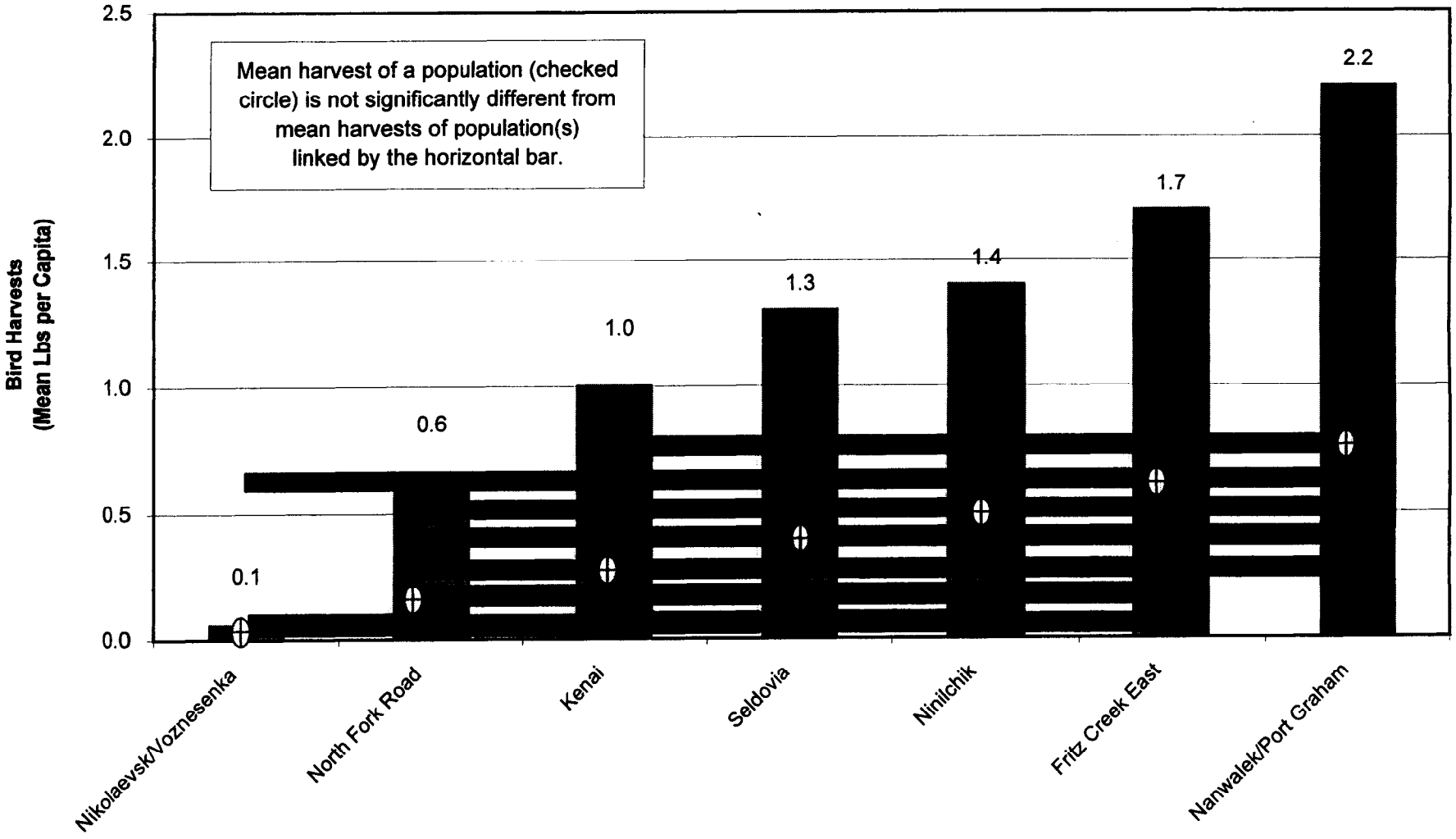
Appendix Table E-5. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Bird Harvests (Mean Lbs per Capita)

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	North Fork Road	Kenai	Seldovia	Ninilchik	Fritz Creek East
Nikolaevsk/Voznesenka	1998	55	0.1	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.6	**-2.381** ***sig = .020***	X X	X X	X X	X X	X X
Kenai	1993	99	1.0	**3.66** ***sig = .000***	0.969 *ns = .334*	X X	X X	X X	X X
Seldovia	1993	63	1.3	**3.158** ***sig = .002***	1.548 *ns = .125*	-0.811 *ns = .419*	X X	X X	X X
Ninilchik	1998	101	1.4	**2.859** ***sig = .005***	1.559 *ns = .121*	-0.882 *ns = .379*	-0.178 *ns = .859*	X X	X X
Fritz Creek East	1998	65	1.7	1.556 *ns = .125*	0.971 *ns = .334*	-0.841 *ns = .402*	-0.360 *ns = .719*	0.282 *ns = .778*	X X
Nanwalek/Port Graham	1997	73	2.2	**3.084** ***sig = .003***	**2.173** ***sig .032***	-1.677 *ns = .097*	-1.092 *ns = .277*	0.916 *ns = .361*	0.359 *ns = .720*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-5. Bird Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



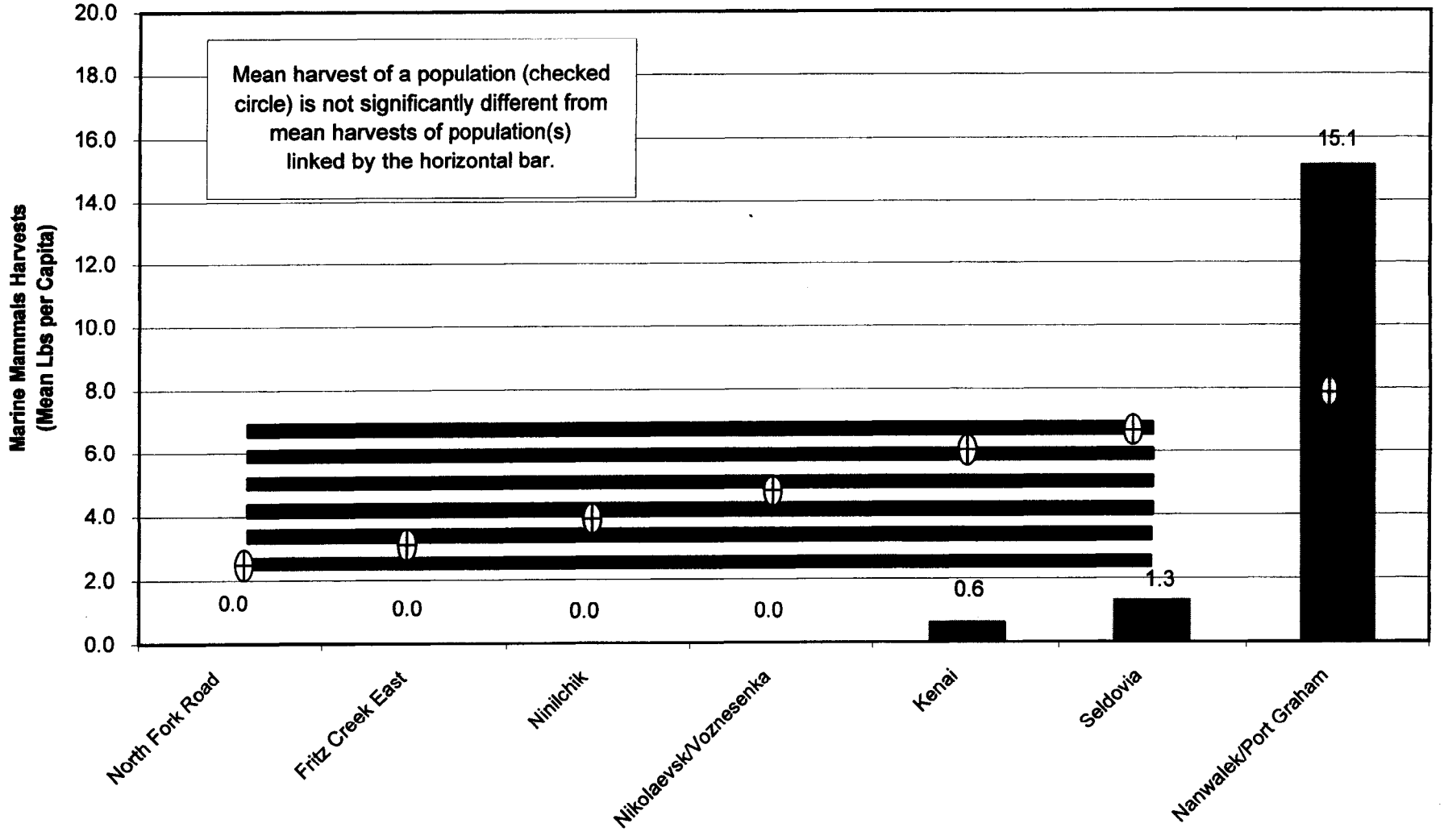
Appendix Table E-6. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Marine Mammals Harvests (Mean Lbs per Capita)

				t - Values and Significance Levels					
Community	Study Year	House-holds Surveyed	Per Capita Harvest	North Fork Road	Fritz Creek East	Ninilchik	Nikolaevsk /Voznesenka	Kenai	Seldovia
North Fork Road	1998	58	0.0	X	X	X	X	X	X
			0.0	X	X	X	X	X	X
Fritz Creek East	1998	65	0.0	X	X	X	X	X	X
			0.0	X	X	X	X	X	X
Ninilchik	1998	101	0.0	X	X	X	X	X	X
			0.0	X	X	X	X	X	X
Nikolaevsk/Voznesenka	1998	55	0.0	X	X	X	X	X	X
			0.0	X	X	X	X	X	X
Kenai	1993	99	0.6	0.764	0.809	1.000	0.744	X	X
			0.6	*ns = .466*	*ns = .415*	*ns = .320*	*ns = .458*	X	X
Seldovia	1993	63	1.3	0.959	1.000	1.000	0.934	-0.521	X
			1.3	*ns = .339*	*ns = .321*	*ns = .321*	*ns = .352*	*ns = .602*	X
Nanwalek/Port Graham	1997	73	15.1	**3.331**	**3.331**	**3.331**	**3.331**	**-4.479**	**-3.985**
			15.1	***sig = .001***	***sig = .001***	***sig = .001***	***sig = .001***	***sig = .000***	***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-6. Marine Mammal Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



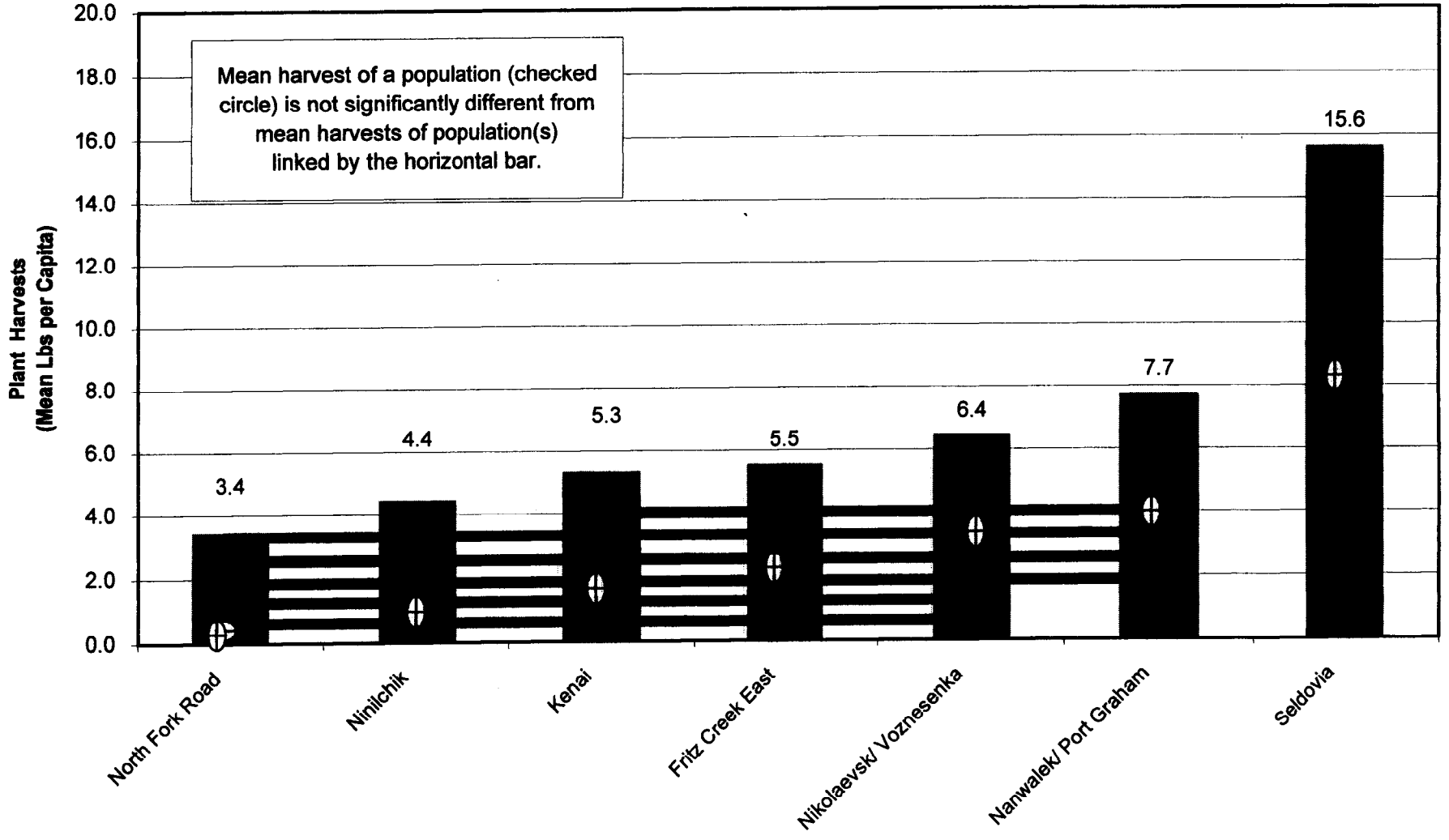
Appendix Table E-7. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Wild Plant Harvests (Mean Lbs per Capita)

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Ninilchik	Kenai	Fritz Creek East	Nikolaevsk/ Voznesenka	Nanwalek/ Port Graham
North Fork Road	1998	58	3.4	X X	X X	X X	X X	X X	X X
Ninilchik	1998	101	4.4	0.802 *ns = .402*	X X	X X	X X	X X	X X
Kenai	1993	99	5.3	0.419 *ns = .676*	0.275 *ns = .783*	X X	X X	X X	X X
Fritz Creek East	1998	65	5.5	1.359 *ns = .177*	0.81 *ns = .419*	-0.043 *ns = .966*	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	6.4	1.554 *ns = .124*	-1.045 *ns = .299*	-0.213 *ns = .831*	0.392 *ns = .696*	X X	X X
Nanwalek/Port Graham	1997	73	7.7	**3.237** ***sig = .002***	**2.547** ***sig = .012***	-1.663 *ns = .098*	1.29 *ns = .199*	0.682 *ns = .496*	X X
Seldovia	1993	63	15.6	**5.246** ***sig = .000***	**4.808** ***sig = .000***	**-2.181** ***sig = .031***	**3.933** ***sig = .000***	**3.282** ***sig = .001***	**2.219** ***sig = .029***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-7. Wild Plant Harvest Levels by Kenai Peninsula Population, and Populations with Equality of Means



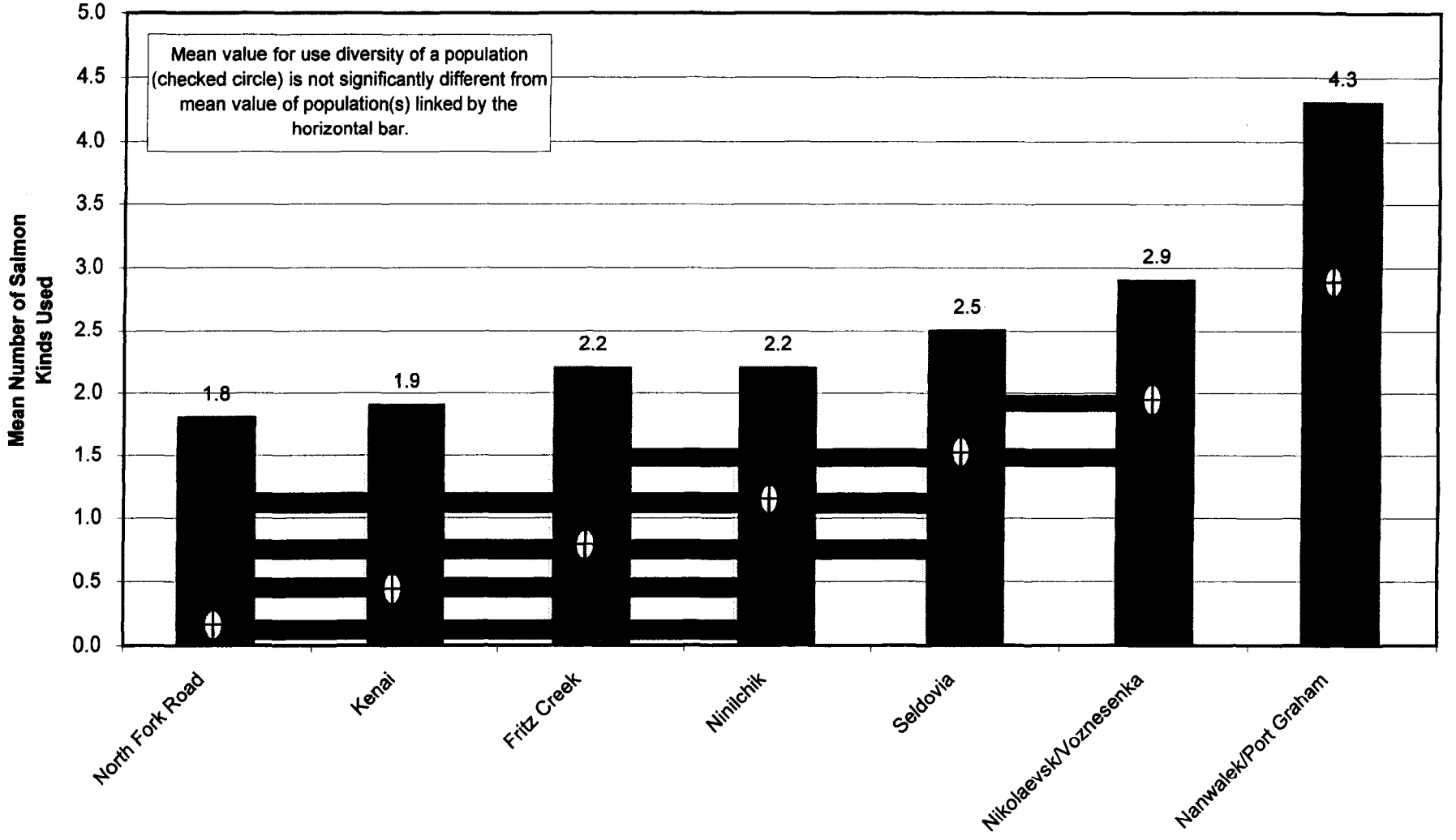
Appendix Table E-8. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Salmon Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: North Fork Road	Kenai	Fritz Creek East	Ninilchik	Seldovia	Nikolaevsk/ Voznesenka
North Fork Road	1998	58	1.8	X X	X X	X X	X X	X X	X X
Kenai	1993	99	1.9	0.306 *ns = .760*	X X	X X	X X	X X	X X
Fritz Creek	1998	65	2.2	1.292 *ns = .199*	-1.233 *ns = .220*	X X	X X	X X	X X
Ninilchik	1998	101	2.2	1.674 *ns = .096*	-1.686 *ns = .093*	-0.264 *ns = .792*	X X	X X	X X
Seldovia	1993	63	2.5	**2.518** ***sig = .013***	**-2.754** ***sig = .007***	1.391 *ns = .167*	1.304 *ns = .194*	X X	X X
Nikolaevsk/Voznesenka	1998	55	2.9	**4.314** ***sig = .000***	**-4.86** ***sig = .000***	**-3.258** ***sig = .001***	**-3.314** ***sig = .001***	-1.699 *ns = .092*	X X
Nanwalek/Port Graham	1997	73	4.3	**11.129** ***sig = .000***	**-13.275** ***sig = .000***	**10.546** ***sig = .000***	**11.174** ***sig = .000***	**-8.015** ***sig = .000***	**6.414** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-8. Mean Number of Kinds of Salmon Used per Household by Kenai Peninsula Population, and Populations with Equality of Means



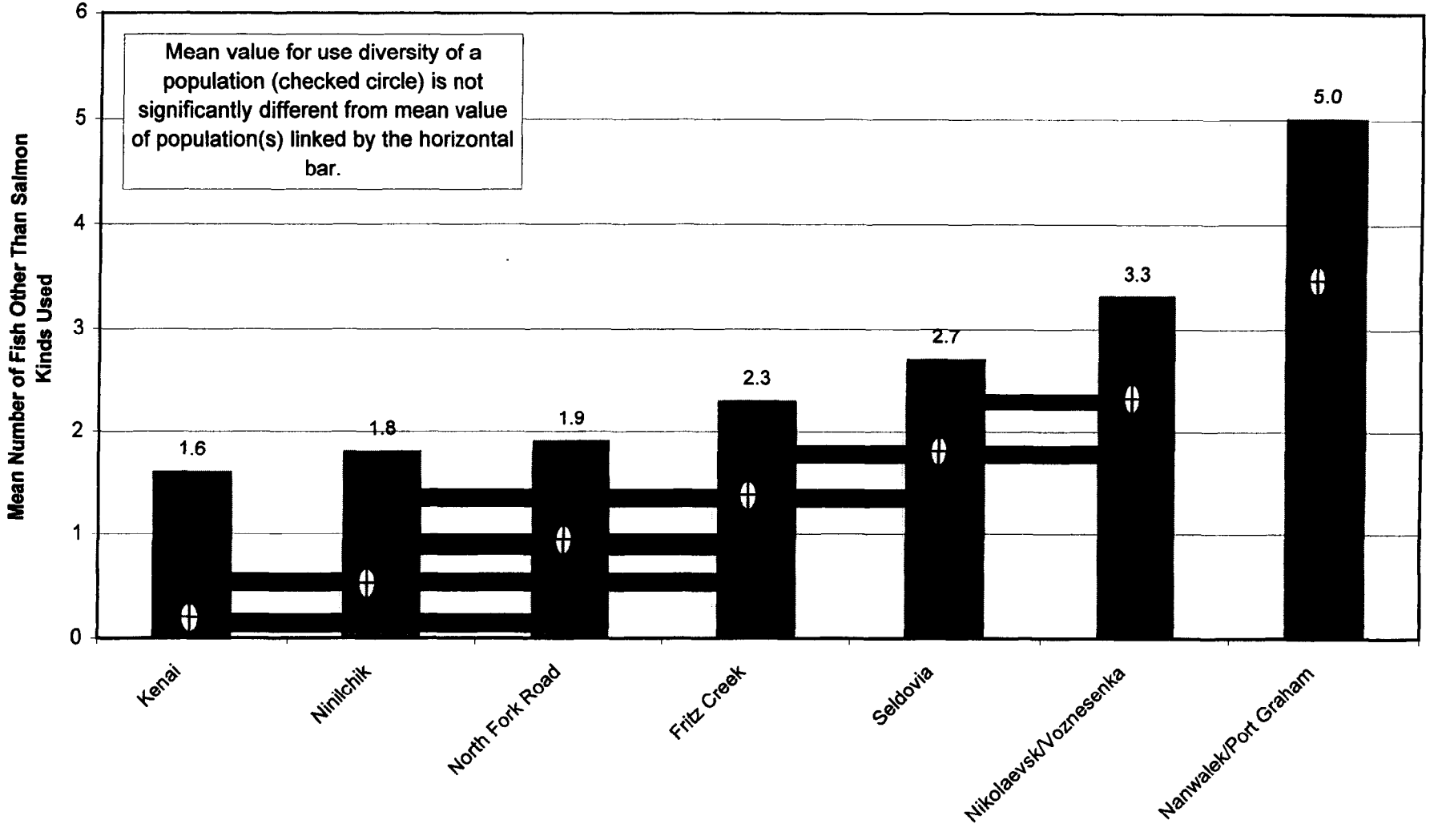
Appendix Table E-9. Comparative T-Tests for Equality of Means for Kenai Peninsula Inlet Populations: Mean Number of Kinds of Fish Other Than Salmon Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: Kenai	Ninilchik	North Fork Road	Fritz Creek	Seldovia	Nikolaevsk/ Voznesenka
Kenai	1993	99	1.6	X X	X X	X X	X X	X X	X X
Ninilchik	1998	101	1.8	-0.767 *ns = .444*	X X	X X	X X	X X	X X
North Fork Road	1998	58	1.9	1.453 *ns = .148*	-0.651 *ns = .516*	X X	X X	X X	X X
Fritz Creek	1998	65	2.3	**-2.594** ***sig = .011***	1.857 *ns = .065*	1.168 *ns = .245*	X X	X X	X X
Seldovia	1993	63	2.7	**-3.795** ***sig = .000***	**3.083** ***sig = .003***	**2.443** ***sig = .016***	1.314 *ns = .191*	X X	X X
Nikolaevsk/Voznesenka	1998	55	3.3	**-5.163** ***sig = .000***	**-4.479** ***sig = .000***	**3.862** ***sig = .000***	**-2.804** ***sig = .006***	-1.449 *ns = .150*	X X
Nanwalek/Port Graham	1997	73	5.0	**-7.465** ***sig = .000***	**6.973** ***sig = .000***	**6.515** ***sig = .000***	**5.661** ***sig = .000***	**-4.586** ***sig = .000***	**3.362** ***sig = .001***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-9. Mean Number of Kinds of Fish Other Than Salmon Used per Household by Kenai Peninsula Population, Populations with Equality of Means



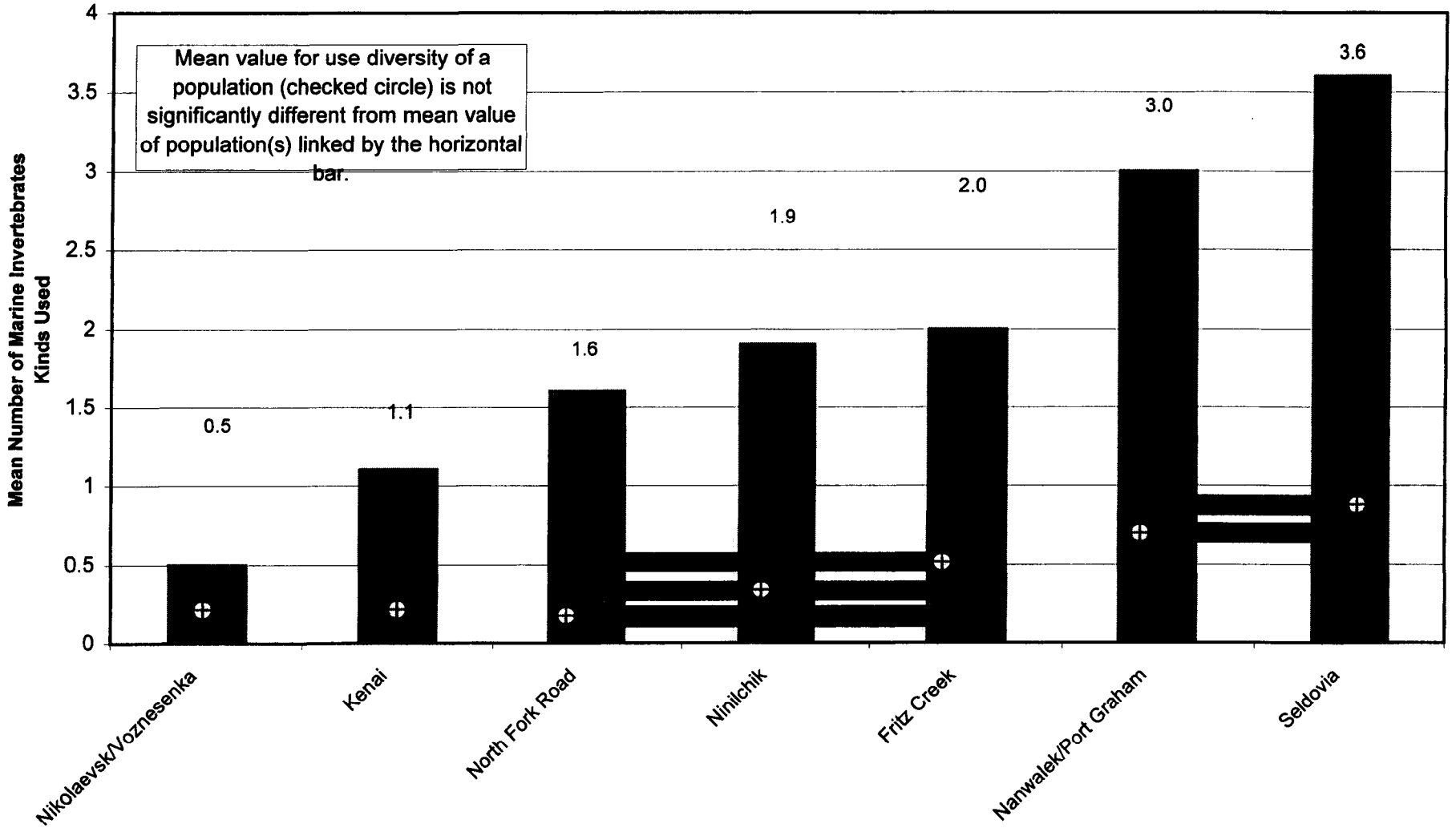
Appendix Table E-10. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Marine Invertebrates Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	Kenai	North Fork Road	Ninilchik	Fritz Creek	Nanwalek/ Port Graham
Nikolaevsk/Voznesenka	1998	55	0.5	X X	X X	X X	X X	X X	X X
Kenai	1993	99	1.1	**2.988** ***sig = .003***	X X	X X	X X	X X	X X
North Fork Road	1998	58	1.6	**-4.259** ***sig = .000***	**-2.721** ***sig = .007***	X X	X X	X X	X X
Ninilchik	1998	101	1.9	**5.974** ***sig = .000***	**-3.451** ***sig = .001***	0.810 *ns = .419*	X X	X X	X X
Fritz Creek	1998	65	2.0	**5.588** ***sig = .000***	**3.432** ***sig = .001***	1.116 *ns = .245*	0.402 *ns = .688*	X X	X X
Nanwalek/Port Graham	1997	73	3.0	**8.449** ***sig = .000***	**-6.462** ***sig = .000***	**3.872** ***sig = .000***	**3.422** ***sig = .001***	**2.777** ***sig = .006***	X X
Seldovia	1993	63	3.6	**9.580** ***sig = .000***	**-7.694** ***sig = .000***	**5.138** ***sig = .000***	**4.788** ***sig = .000***	**4.123** ***sig = .000***	1.400 *ns = .164*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-10. Mean Number of Kinds of Marine Invertebrates Used per Household by Kenai Population, and Populations with Equality of Means



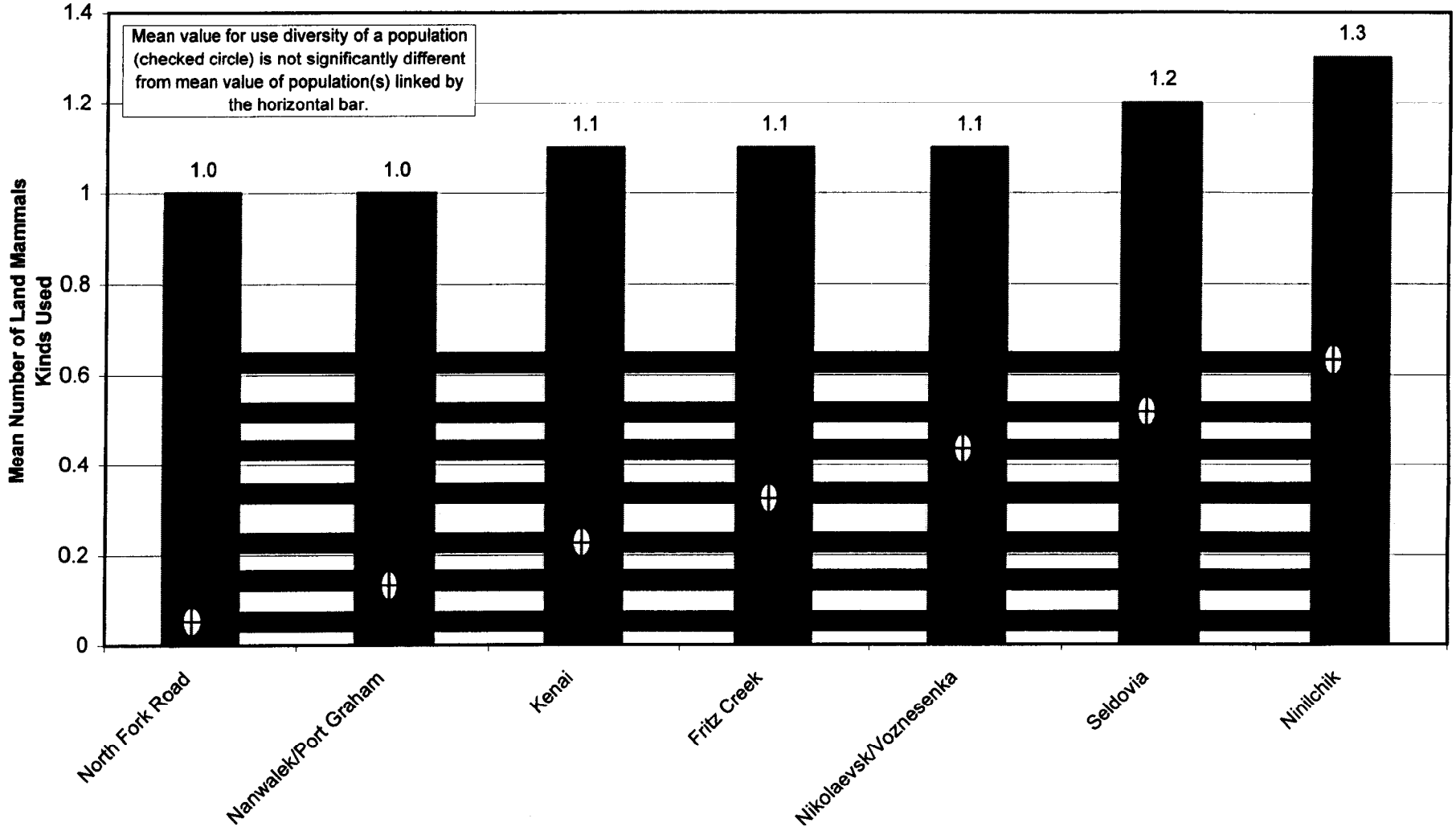
Appendix Table E-11. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Land Mammals Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: North Fork Road	Nanwalek/ Port Graham	Kenai	Fritz Creek	Nikolaevsk/ Voznesenka	Seldovia
North Fork Road	1998	58	1.0	X X	X X	X X	X X	X X	X X
Nanwalek/Port Graham	1997	73	1.0	0.065 *ns = .949*	X X	X X	X X	X X	X X
Kenai	1993	99	1.1	0.702 *ns = .484*	0.673 *ns = .502*	X X	X X	X X	X X
Fritz Creek	1998	65	1.1	0.503 *ns = .616*	-0.458 *ns = .648*	0.173 *ns = .863*	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	1.1	0.322 *ns = .748*	-0.272 *ns = .786*	0.332 *ns = .740*	0.190 *ns = .874*	X X	X X
Seldovia	1993	63	1.2	0.830 *ns = .408*	0.821 *ns = .413*	-0.298 *ns = .766*	0.411 *ns = .682*	0.523 *ns = .602*	X X
Ninilchik	1998	101	1.3	1.173 *ns = .243*	-1.208 *ns = .229*	-0.710 *ns = .478*	-0.765 *ns = .445*	0.853 *ns = .395*	-0.317 *ns = .752*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-11. Mean Number of Kinds of Land Mammals Used per Household by Kenai Peninsula Population, and Populations with Equality of Means

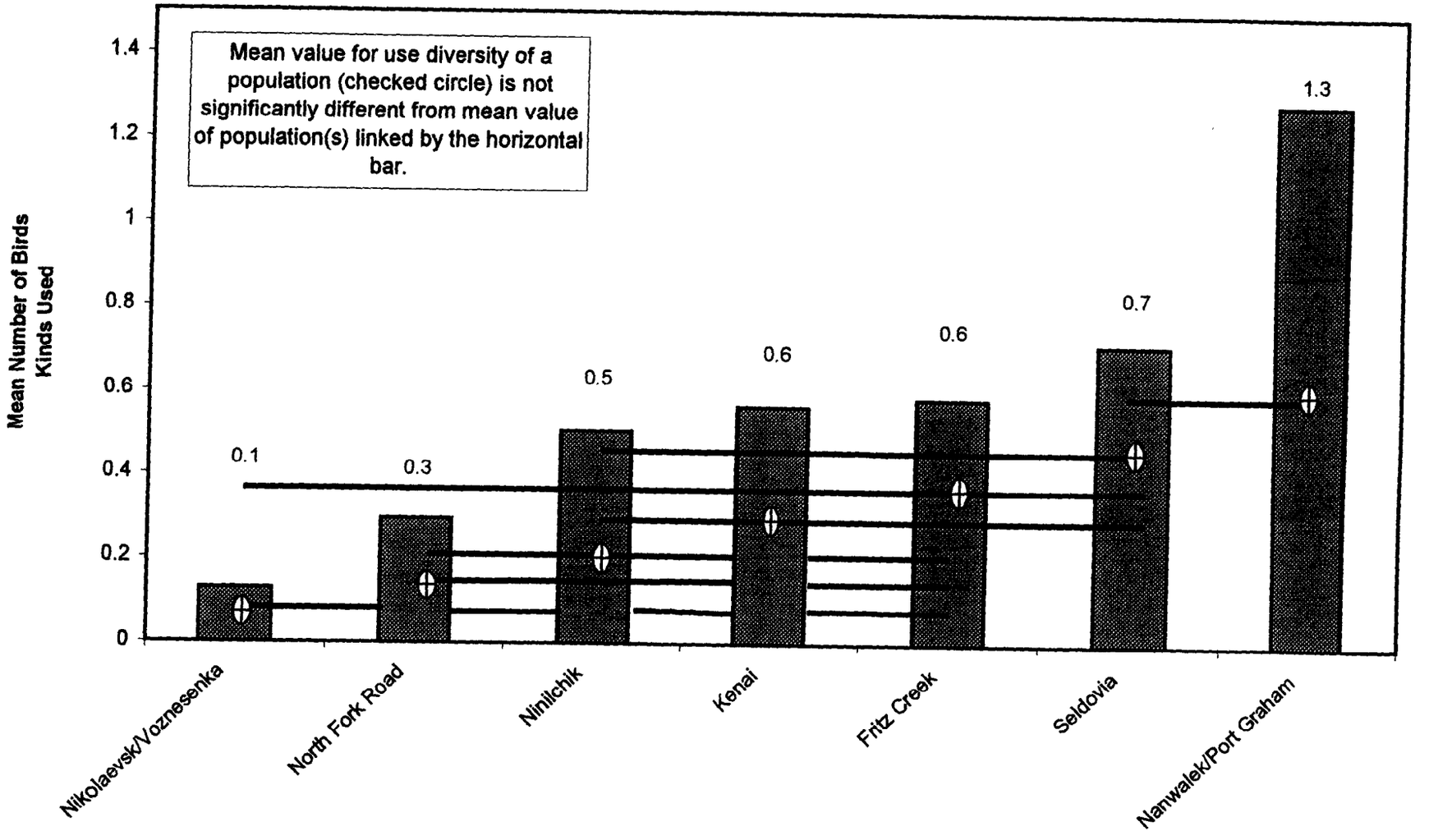


Appendix Table E-12. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Birds Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	North Fork Road	Ninilchik	Kenai	Fritz Creek	Seldovia
Nikolaevsk/Voznesenka	1998	55	0.1273	X	X	X	X	X	X
				X	X	X	X	X	X
North Fork Road	1998	58	0.2931	**-1.996**	X	X	X	X	X
				sig.=.049	X	X	X	X	X
Ninilchik	1998	101	0.505	**3.568**	1.798	X	X	X	X
				sig.=.000	*ns = .074*	X	X	X	X
Kenai	1993	99	0.5657	**3.476**	**1.994**	0.402	X	X	X
				sig. = .001	***sig. = .048***	*ns = .688*	X	X	X
Fritz Creek	1998	65	0.5846	1.952	1.214	0.364	-0.800	X	X
				ns = .055	*ns = .229*	*ns = .716*	*ns = .936*	X	X
Seldovia	1993	63	0.7143	**3.689**	**2.512**	1.165	-0.777	0.467	X
				sig = .008	***sig = .014***	*ns = 247*	*ns = .438*	*ns = .641*	X
Nanwalek/Port Graham	1997	73	1.29	**4.375**	**3.678**	**2.815**	**-2.519**	**2.02**	-1.895
				sig = .000	***sig = .000***	***sig = .006***	***sig = .013***	***sig = .045***	*ns = .061*

Note: Levene's Test for Equality of Variances used in selecting t-value.

Appendix Figure E-12. Mean Number of Kinds of Birds Used per Household by Kenai Peninsula Population, and Populations with Equality of Means



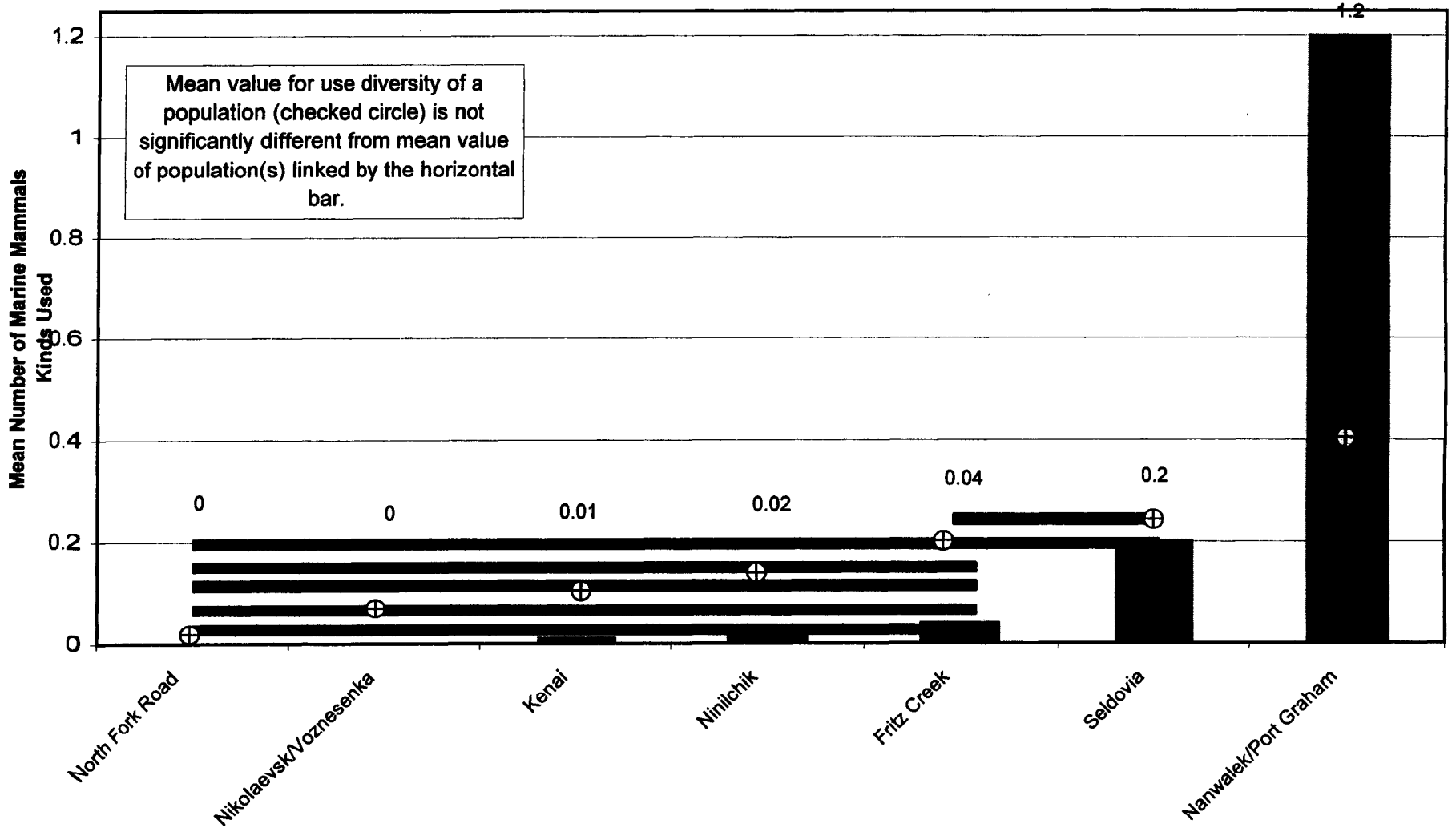
Appendix Table E-13. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Marine Mammals Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: North Fork Road	Nikolaevsk/ Voznesenka	Kenai	Ninilchik	Fritz Creek	Seldovia
North Fork Road	1998	58	0	X X	X X	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	0	X X	X X	X X	X X	X X	X X
Kenai	1993	99	0.01	0.764 *ns = .446*	0.744 *ns = .458*	X X	X X	X X	X X
Ninilchik	1998	101	0.02	1.421 *ns = .158*	1.421 *ns = .158*	-0.562 *ns = .575*	X X	X X	X X
Fritz Creek	1998	65	0.04	1.35 *ns = .182*	1.35 *ns = .182*	-1.011 *ns = .315*	0.813 *ns = .418*	X X	X X
Seldovia	1993	63	0.2	**2.73** ***sig = .008***	**2.73** ***sig = .008***	**-2.573** ***sig = .012***	**2.427** ***sig = .018***	1.931 *ns = .057*	X X
Nanwalek/Port Graham	1997	73	1.2	**12.439** ***sig = .000***	**12.439** ***sig = .000***	**-12.271** ***sig = .000***	**12.115** ***sig = .000***	**11.3** ***sig = .00***	**-8.183** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-13. Mean Number of Kinds of Marine Mammals Used per Household by Kenai Peninsula Population, and Populations with Equality of Means



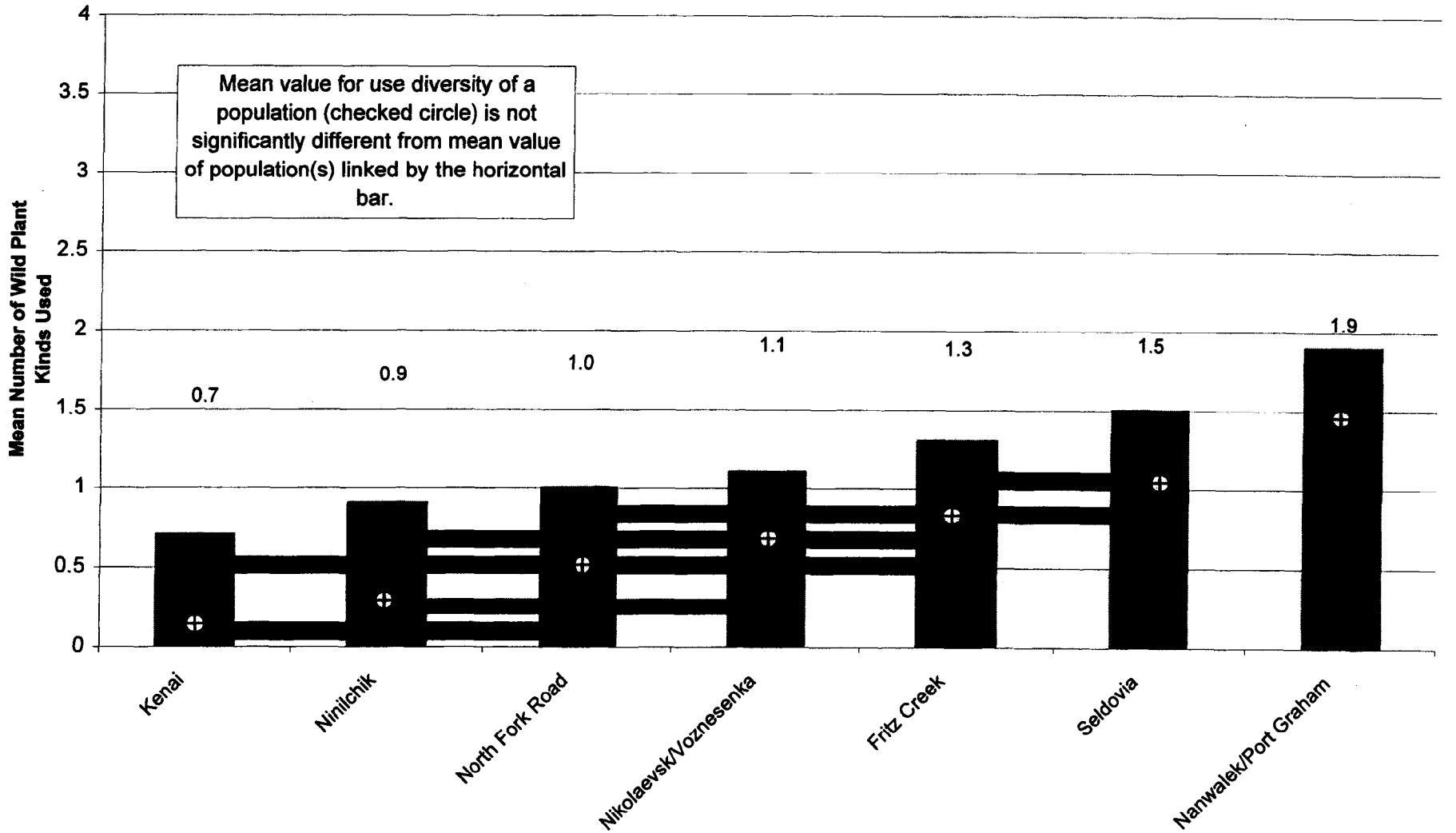
Appendix Table E-14. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Wild Plants Used per Household

Community	Study Year	House-holds Surveyed	Number of Wild Foods	t - Values and Significance Levels: Kenai	Ninilchik	North Fork Road	Nikolaevsk/ Voznesenka	Fritz Creek	Seldovia
Kenai	1993	99	0.7	X X	X X	X X	X X	X X	X X
Ninilchik	1998	101	0.9	**-2.37** ***sig = .019***	X X	X X	X X	X X	X X
North Fork Road	1998	58	1.0	-1.693 *ns = .092*	-0.757 *ns = .450*	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	1.1	**-2.824** ***sig = .006***	-1.148 *ns = .254*	0.425 *ns = .672*	X X	X X	X X
Fritz Creek	1998	65	1.3	**-4.688** ***sig = .000***	**2.74** ***sig = .007***	1.674 *ns = .097*	1.129 *ns = .261*	X X	X X
Seldovia	1993	63	1.5	**-7.254** ***sig = .000***	**5.021** ***sig = .000***	**3.474** ***sig = .001***	**2.784** ***sig = .006***	1.772 *ns = .079*	X X
Nanwalek/Port Graham	1997	73	1.9	**-8.933** ***sig = .000***	**7.064** ***sig = .000***	**5.479** ***sig = .000***	**4.656** ***sig = .000***	**3.932** ***sig = .000***	**-2.42** ***sig = .017***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-14. Mean Number of Kinds of Wild Plants Used per Household by Kenai Peninsula Population, and Populations with Equality of Means.



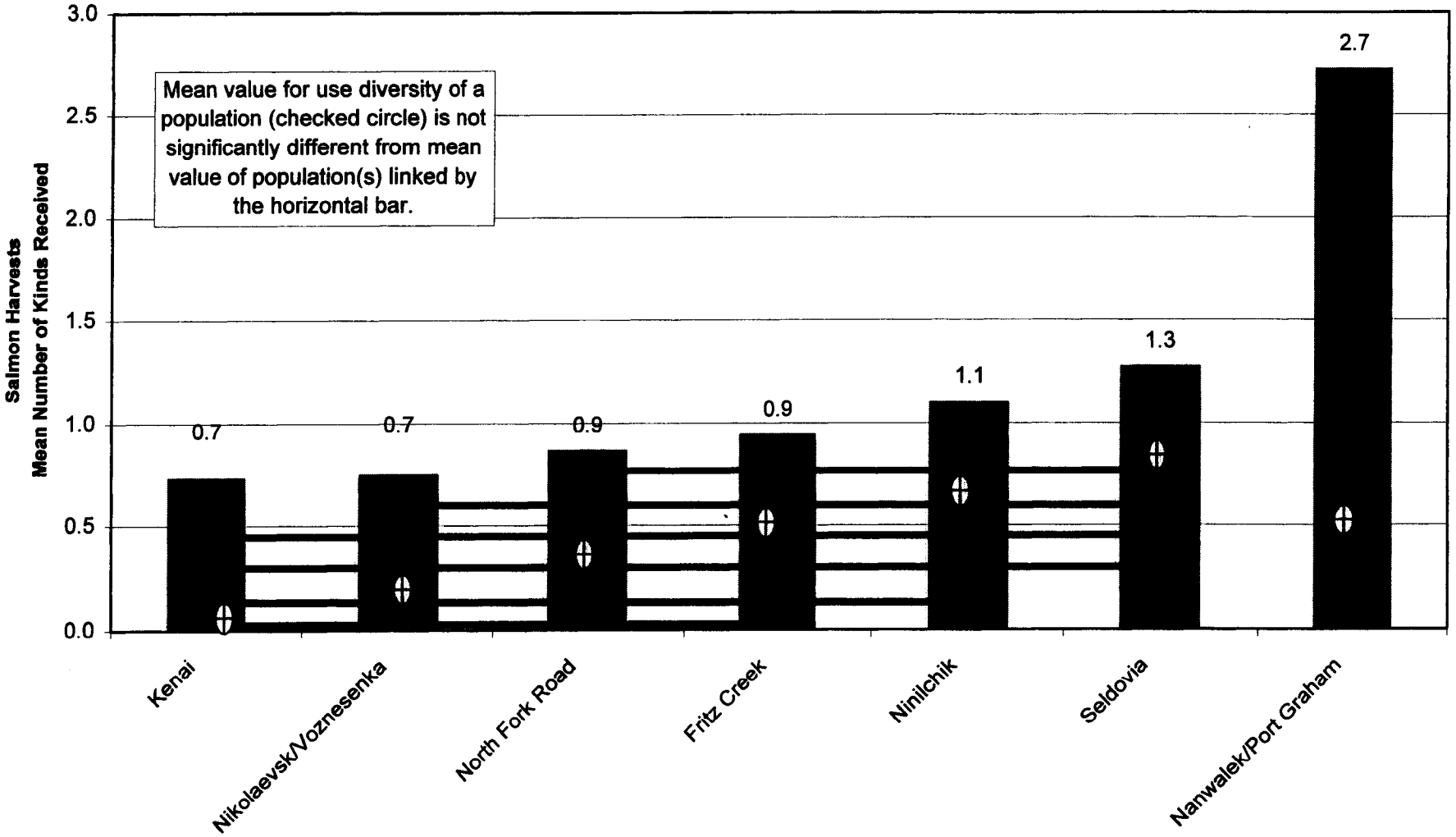
Appendix Table E-15. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Salmon Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Kenai	Nikolaevsk/ Voznesenka	North Fork Road	Fritz Creek	Ninilchik	Seldovia
Kenai	1993	99	0.7	X X	X X	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	0.7	-0.105 *ns = .916*	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.9	-0.791 *ns = .430*	-0.574 *ns = .567*	X X	X X	X X	X X
Fritz Creek	1998	65	0.9	-1.309 *ns = .192*	1.003 *ns = .318*	0.401 *ns = .689*	X X	X X	X X
Ninilchik	1998	101	1.1	**-2.468** ***sig = .014***	1.902 *ns = .059*	1.294 *ns = .198*	-0.926 *ns = .356*	X X	X X
Seldovia	1993	63	1.3	**-2.869** ***sig = .005***	**2.398** ***sig = .018***	1.89 *ns = .061*	1.622 *ns = .107*	0.898 *ns = .370*	X X
Nanwalek/Port Graham	1997	73	2.7	**-8.796** ***sig = .000***	**7.916** ***sig = .000***	**7.497** ***sig = .000***	**7.431** ***sig = .000***	**6.992** ***sig = .000***	**-5.614** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-15. Mean Number of Kinds of Salmon Received per Household by Kenai Peninsula Population, and Populations with Equality of Means



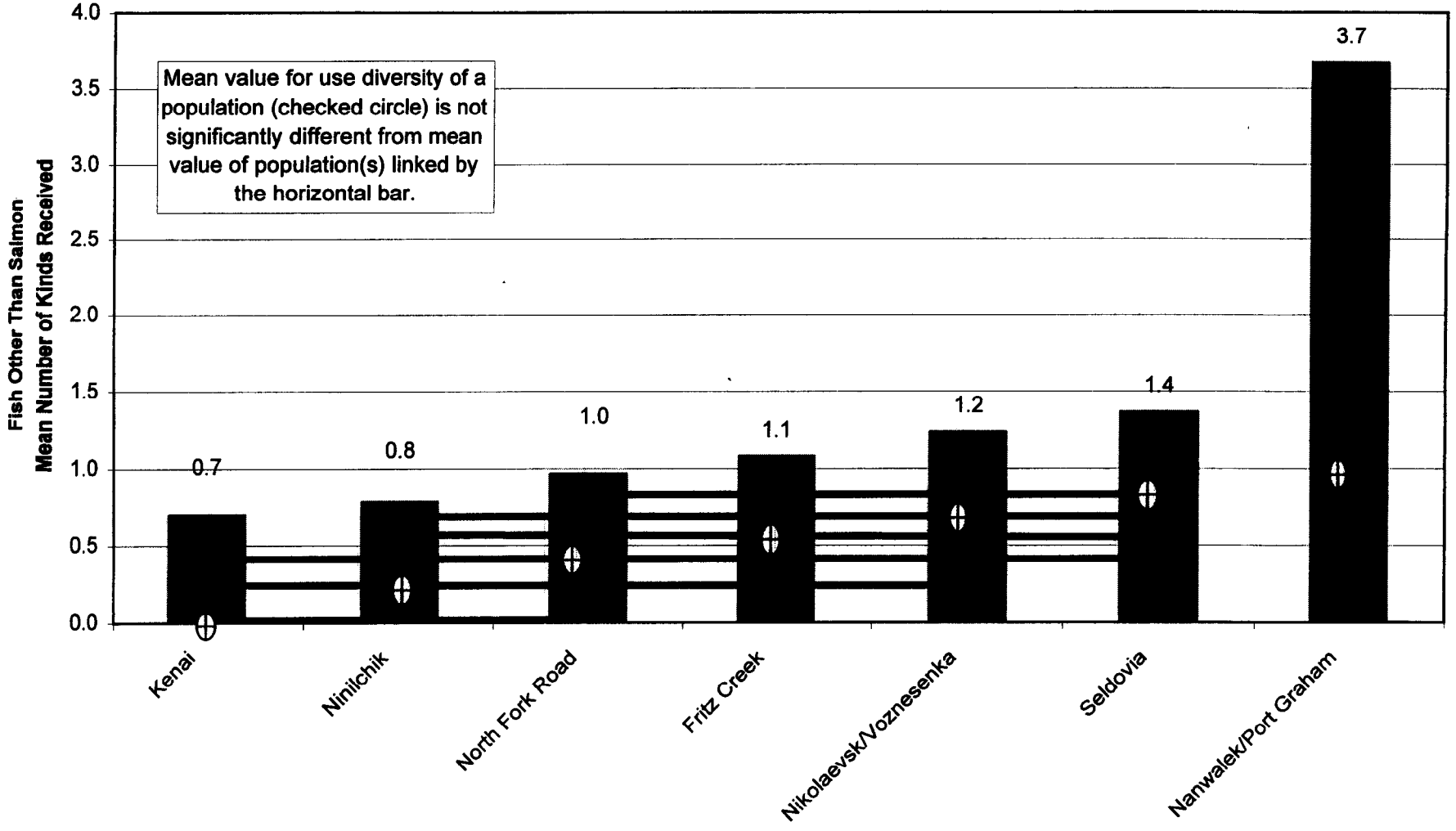
Appendix Table E-16. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Fish Other Than Salmon Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Kenai	Ninilchik	North Fork Road	Fritz Creek	Nikolaevsk/ Voznesenka	Seldovia
Kenai	1993	99	0.7	X	X	X	X	X	X
				X	X	X	X	X	X
Ninilchik	1998	101	0.8	-0.635	X	X	X	X	X
				ns = 526	X	X	X	X	X
North Fork Road	1998	58	1.0	-1.635	-1.048	X	X	X	X
				ns = .104	*ns = .296*	X	X	X	X
Fritz Creek	1998	65	1.1	**-2.429**	1.77	0.546	X	X	X
				sig = .016	*ns = .079*	*ns = .586*	X	X	X
Nikolaevsk/Voznesenka	1998	55	1.2	**-2.103**	-1.743	0.953	0.575	X	X
				sig = .039	*ns = .086*	*ns = .343*	*ns = .567*	X	X
Seldovia	1993	63	1.4	**-2.898**	**2.48**	1.53	1.138	0.402	X
				sig = .005	***sig = .015***	*ns = .129*	*ns = .258*	*ns = .688*	X
Nanwalek/Port Graham	1997	73	3.7	**-8.307**	**8.004**	**7.149**	**6.954**	**5.769**	**-5.669**
				sig = .000	***sig = .000***	***sig - .000***	***sig = .000***	***sig = .000***	***sig - .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-16. Mean Number of Kinds of Fish Other Than Salmon Received per household by Kenai Peninsula Population, and Populations with Equality of Means



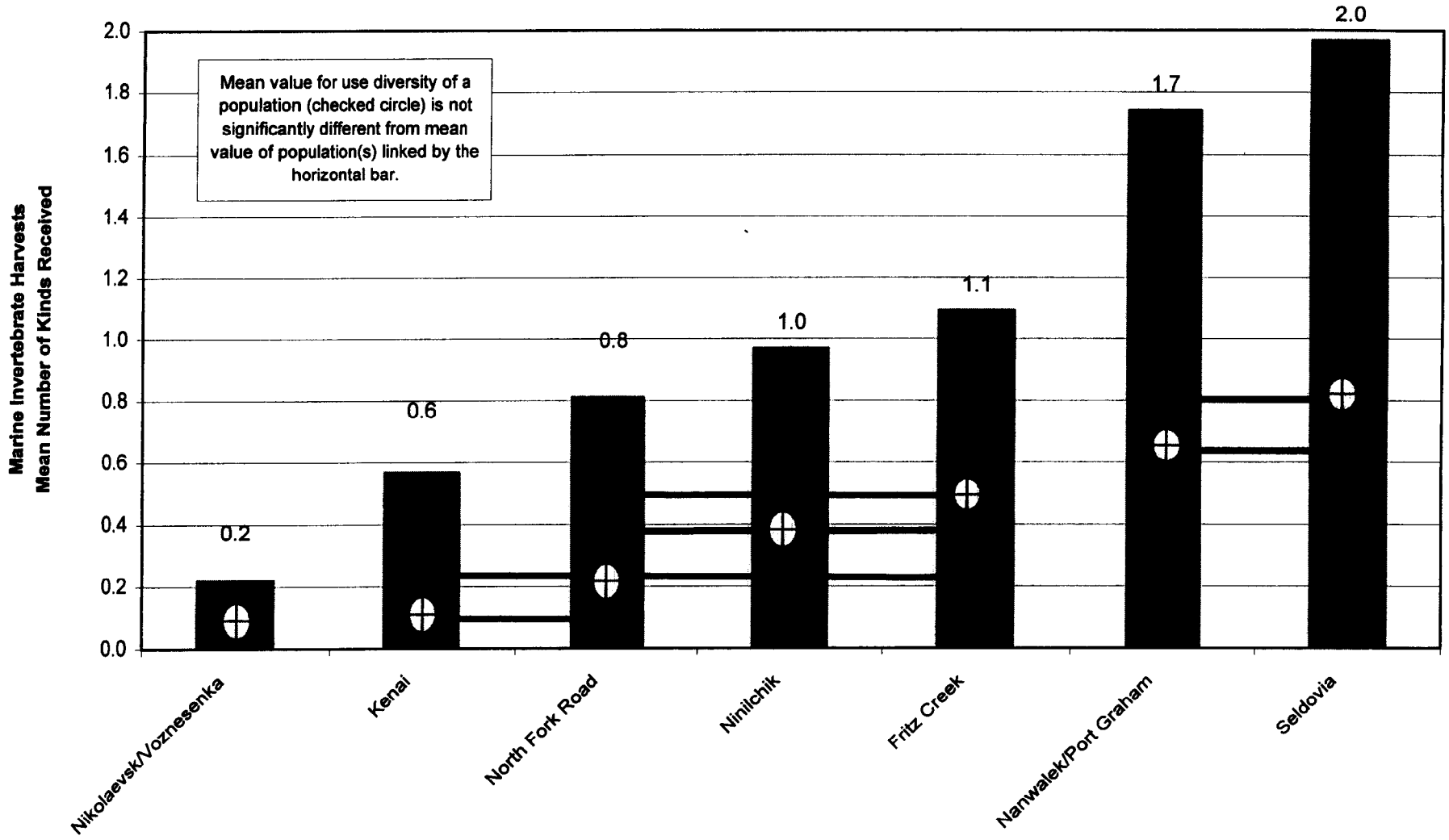
Appendix Table E-17. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Marine Invertebrates Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	Kenai	North Fork Road	Ninilchik	Fritz Creek	Nanwalek
NikolaevskVoznesenka	1998	55	0.2	X X	X X	X X	X X	X X	X X
Kenai	1993	99	0.6	**2.709** ***sig = .008***	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.8	**-3.299** ***sig = .001***	-1.368 *ns = .73*	X X	X X	X X	X X
Ninilchik	1998	101	1.0	**0.527** ***sig = .000***	**2.298** ***sig = .023***	0.705 *ns = .482*	X X	X X	X X
Fritz Creek	1998	65	1.1	**4.625** ***sig = .000***	**-2.45** ***sig = .005***	1.195 *ns = .234*	0.537 *ns = .592*	X X	X X
Nanwalek/Port Graham	1997	73	1.7	**6.474** ***sig = .000***	**-4.848** ***sig = .000***	**3.407** ***sig .001***	**2.912** ***sig = .004***	**2.319** ***sig = .022***	X X
Seldovia	1993	63	2.0	**6.342** ***sig = .000***	**-4.973** ***sig = .000***	**3.751** ***sig = .000***	**3.314** ***sig = .001***	**2.787** ***sig = .006***	0.669 *ns = .504*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-17. Mean Number of Kinds of Marine Invertebrates Received per Household by Kenai Peninsula Population, and Populations with Equality of Means



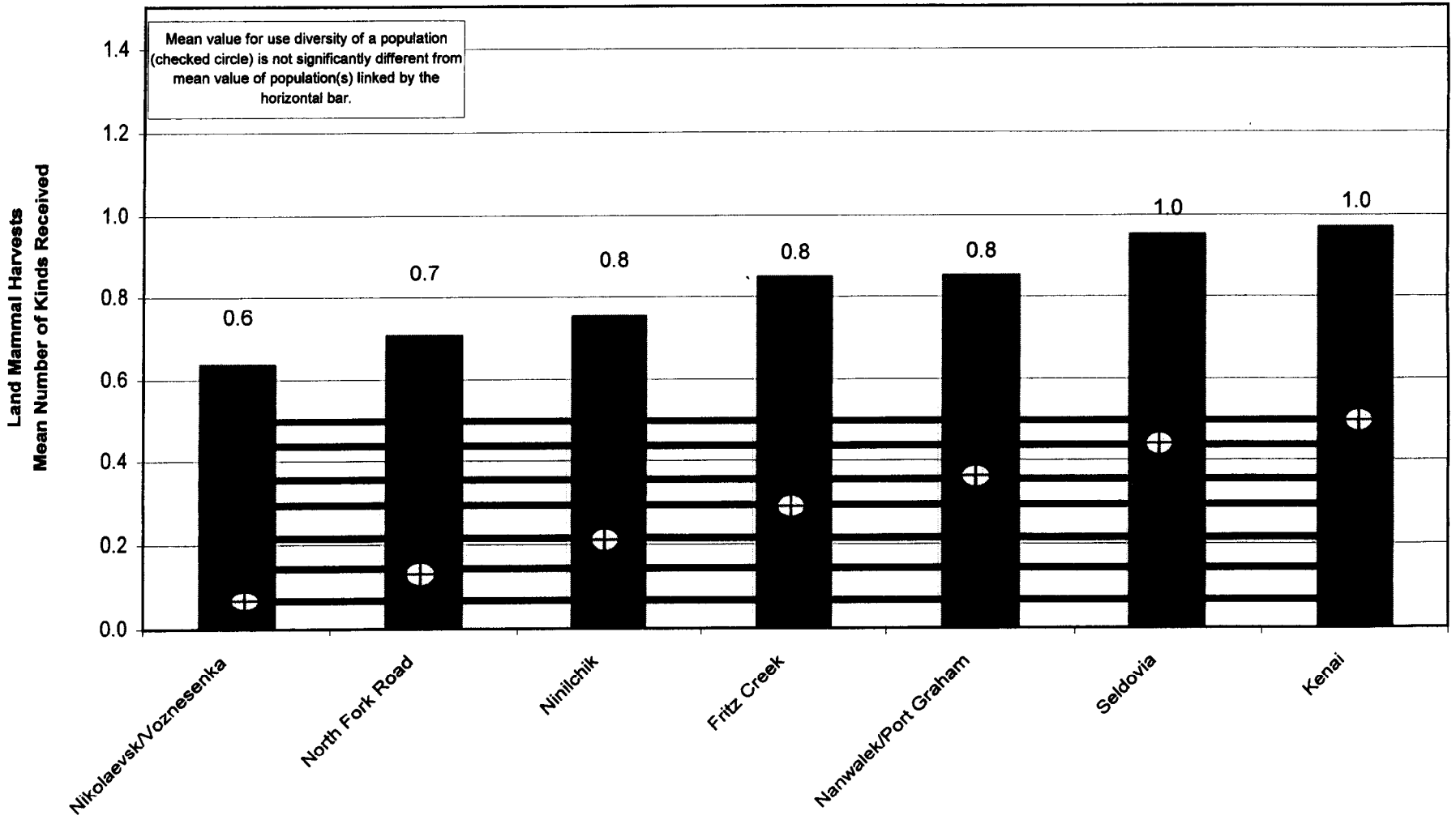
Appendix Table E-18. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Land Mammals Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	North Fork Road	Ninilchik	Fritz Creek	Nanwalek	Seldovia
Nikolaevsk/Voznesenka	1998	55	0.6	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.7	-0.406 *ns = .686*	X X	X X	X X	X X	X X
Ninilchik	1998	101	0.8	0.718 *ns = .474*	0.288 *ns = .774*	X X	X X	X X	X X
Fritz Creek	1998	65	0.8	1.19 *ns = .236*	0.807 *ns = .421*	0.598 *ns = .551*	X X	X X	X X
Nanwalek/Port Graham	1997	73	0.8	1.202 *ns = .232*	0.821 *ns = .413*	0.626 *ns = .532*	0.018 *ns = .985*	X X	X X
Seldovia	1993	63	1.0	1.584 *ns = .116*	1.258 *ns = .211*	1.163 *ns = .246*	0.548 *ns = .584*	0.538 *ns = .591*	X X
Kenai	1993	99	1.0	1.803 *ns = .073*	1.455 *ns = .148*	1.414 *ns = .159*	0.698 *ns = .486*	0.695 *ns = .488*	0.09 *ns = .928*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-18. Mean Number of Kinds of Land Mammals Received per Household by Kenai Peninsula Population, and Populations with Equality of Means



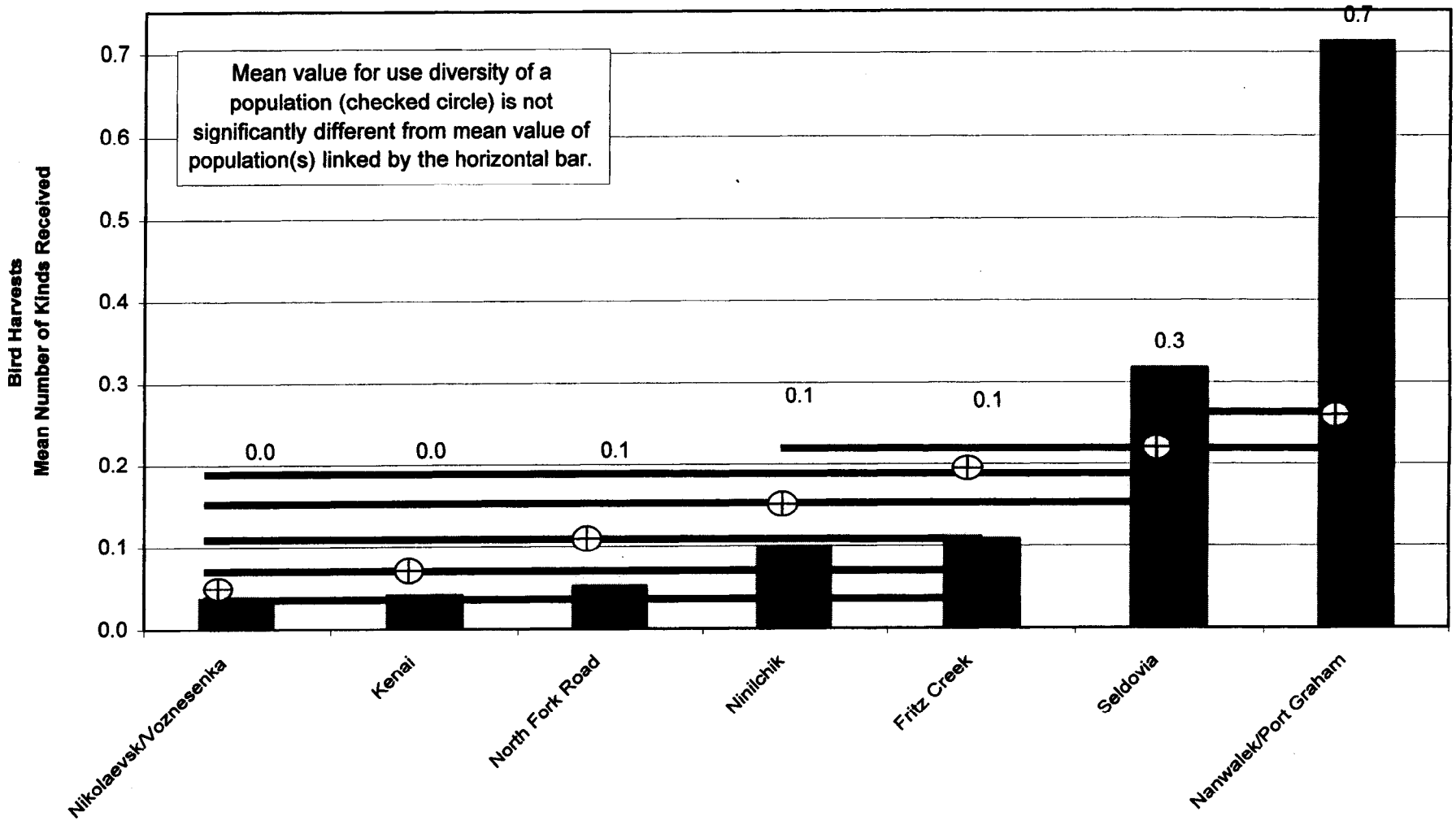
Appendix Table E-19. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Birds Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	Kenai	North Fork Road	Ninilchik	Fritz Creek	Seldovia
Nikolaevsk/Voznesenka	1998	55	0.0	X X	X X	X X	X X	X X	X X
Kenai	1993	99	0.0	0.106 *ns = .915*	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.1	-0.394 *ns = .695*	-0.289 *ns = .773*	X X	X X	X X	X X
Ninilchik	1998	101	0.1	1.423 *ns = .157*	-1.348 *ns = .179*	0.903 *ns = .368*	X X	X X	X X
Fritz Creek	1998	65	0.1	1.118 *ns = .267*	-1.06 *ns = .292*	0.824 *ns = .411*	0.134 *ns = .894*	X X	X X
Seldovia	1993	63	0.3	**2.48** ***sig = .016***	**-2.449** ***sig = .017***	**2.325** ***sig = .023***	1.881 *ns = .064*	1.678 *ns = .097*	X X
Nanwalek/Port Graham	1997	73	0.7	**3.476** ***sig = .001***	**-3.461** ***sig .001***	**3.391** ***sig = .001***	**3.131** ***sig = .002***	**3.004** ***sig = .004***	-1.779 *ns = .078*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-19. Mean Number of Kinds of Birds Received per Household by Kenai Peninsula Population, and Populations with Equality of Means



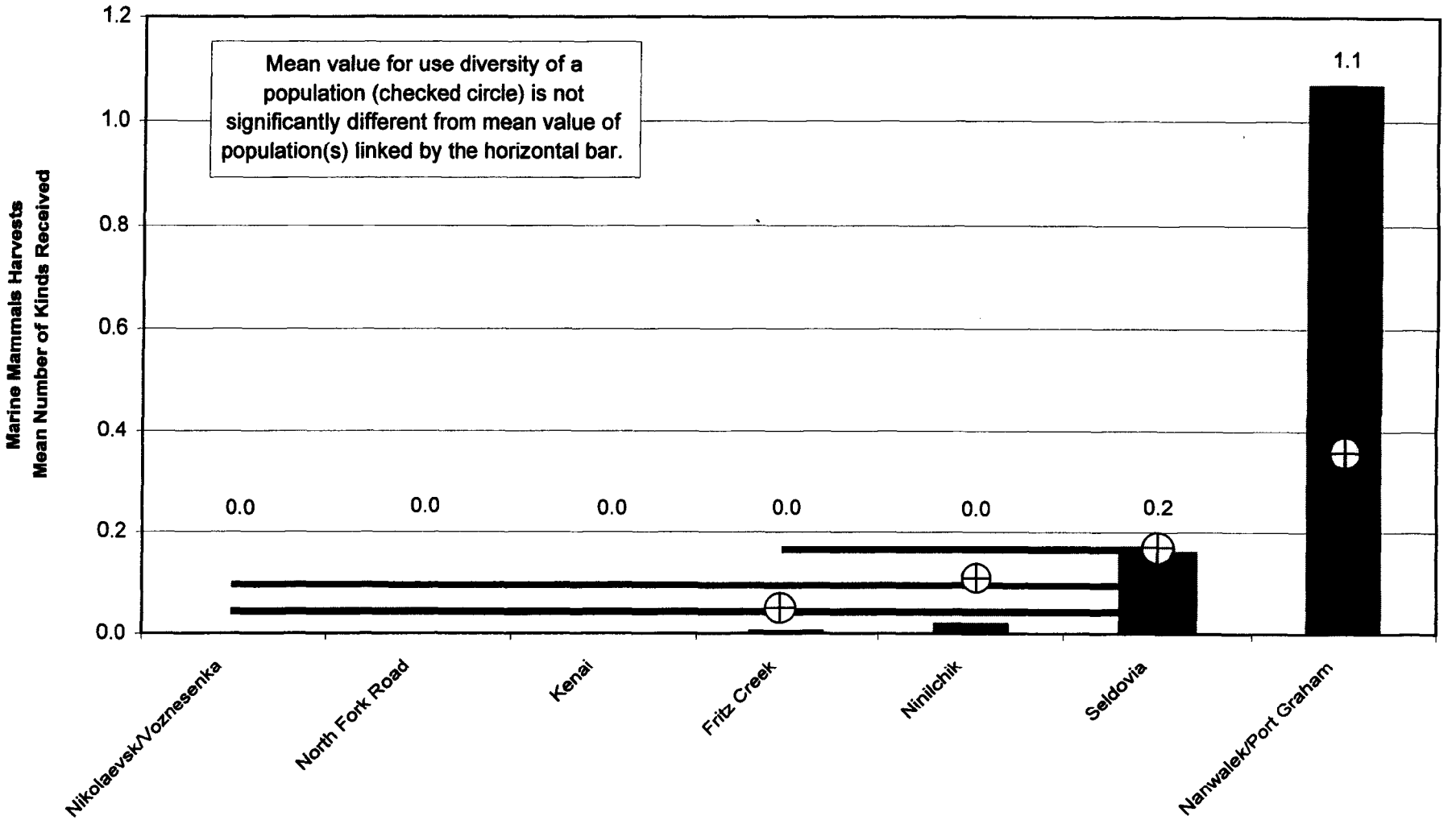
Appendix Table E-20. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Marine Mammals Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	North Fork Road	Kenai	Fritz Creek	Ninilchik	Seldovia
Nikolaevsk/Voznesenka	1998	55	0.0	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.0	X x	X X	X X	X X	X X	X X
Kenai	1993	99	0.0	X x	X x	X X	X X	X X	X X
Fritz Creek	1998	65	0.0	1.35 *ns = .182*	1.35 *ns = .182*	-1.35 *ns = .182*	X X	x x	X X
Ninilchik	1998	101	0.0	1.421 *ns = .158*	1.421 *ns = .158*	-1.421 *ns = .158*	0.813 *ns = .418*	X X	X X
Seldovia	1993	63	0.2	**2.196** ***sig = .032***	**2.196** ***sig = .032***	**-2.196** ***sig = .032***	1.408 *ns = .163*	1.887 *ns = .064*	X X
Nanwalek/Port Graham	1997	73	1.1	**11.592** ***sig = .000***	**11.592** ***sig = .000***	**-11.592** ***sig = .000***	**10.399** ***sig = .000***	**11.249** ***sig = .000***	**-7.766** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-20. Mean Number of Kinds of Marine Mammals Received per Household by Kenai Peninsula Population, and Populations with Equality of Means



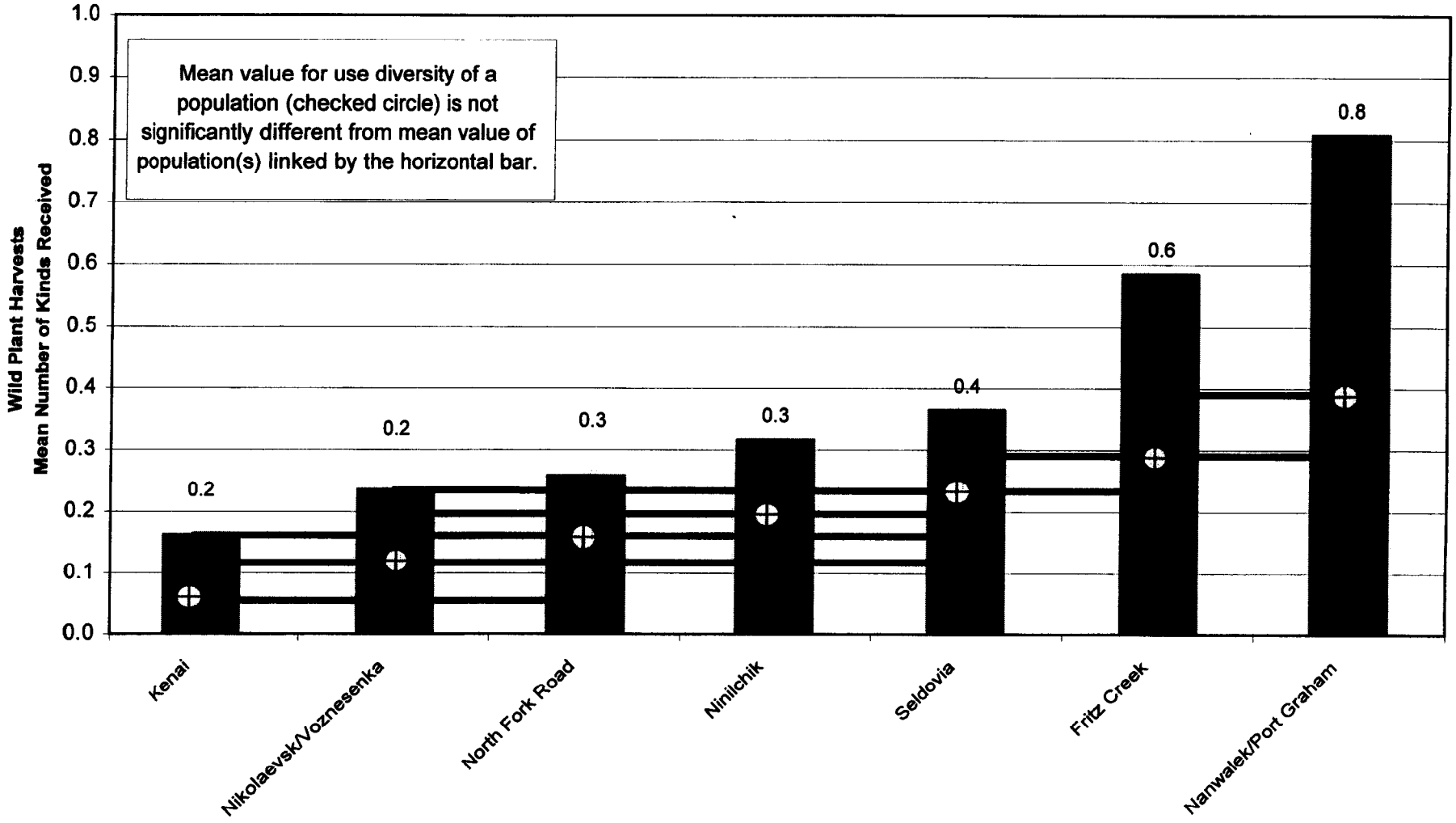
Appendix Table E-21. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Wild Plants Received per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels					
				Kenai	Nikolaevsk/ Voznesenka	North Fork Road	Ninilchik	Seldovia	Fritz Creek
Kenai	1993	99	0.2	X X	X X	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	0.2	-0.831 *ns = .409*	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.3	-1.1 *ns = .274*	-0.194 *ns = .846*	X X	X X	X X	X X
Ninilchik	1998	101	0.3	**-2.355** ***sig = .020***	0.844 *ns = .400*	0.2 *ns = .536*	X X	X X	X X
Seldovia	1993	63	0.4	**-2.248** ***sig = .027***	1.101 *ns = .273*	0.924 *ns = .357*	0.509 *ns = 6.11*	X X	X X
Fritz Creek	1998	65	0.6	**-4.339** ***sig = .000***	**2.86** ***sig = .005***	**2.706** ***sig = .008***	**2.544** ***sig = .012***	-1.794 *ns = .075*	X X
Nanwalek/Port Graham	1997	73	0.8	**-5.502** ***sig = .000***	**4.134** ***sig = .000***	**4.007** ***sig = .000***	**3.962** ***sig = .000***	**-3.195** ***sig. = 002***	0.56 *ns = .121*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-21. Mean Number of Kinds of Wild Plants Received per Household by Kenai Peninsula Population, and Populations with Equality of Means



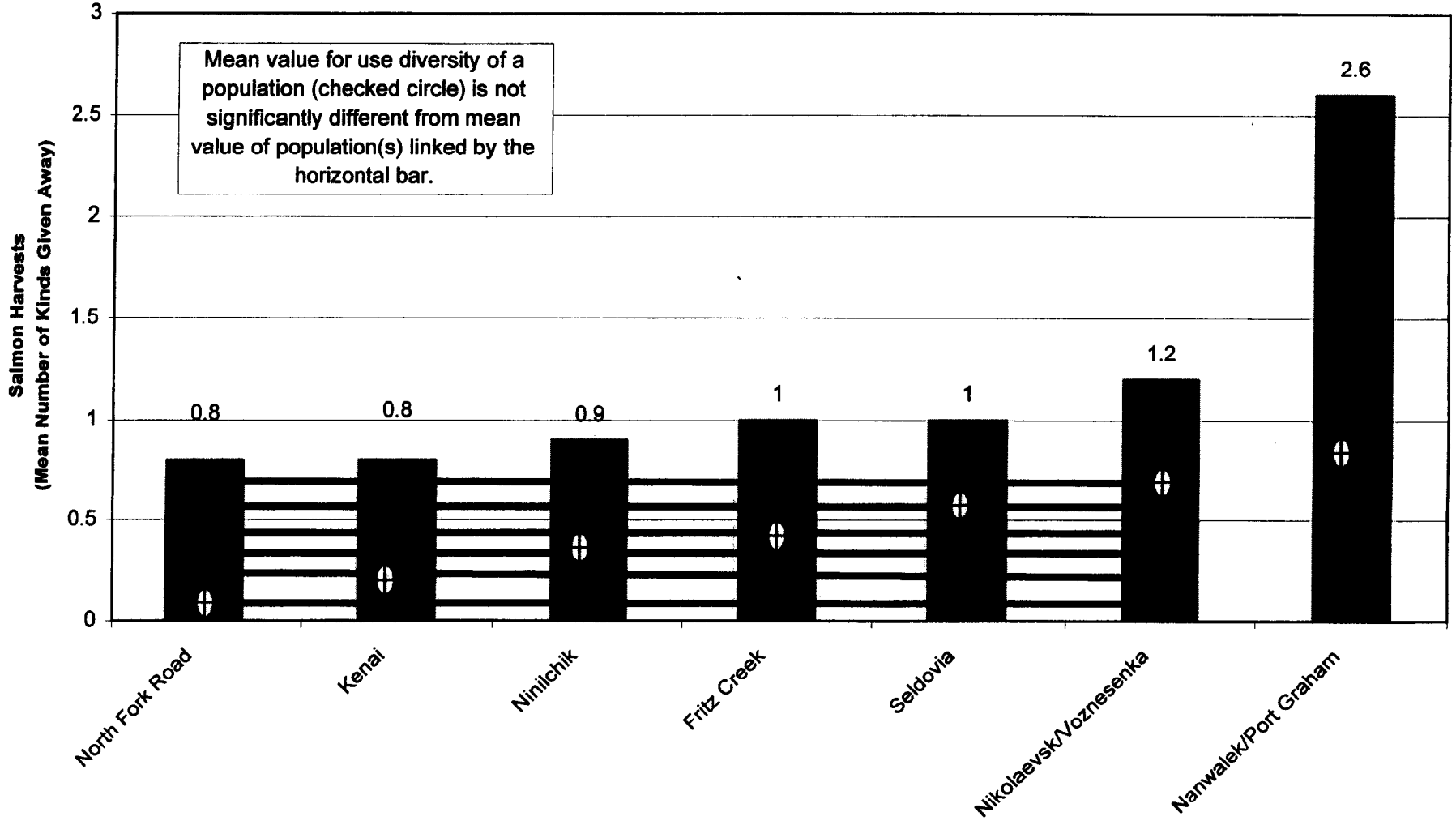
Appendix Table E-22. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Salmon Given Away per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Kenai	Ninilchik	Fritz Creek	Seldovia	Nikolaevsk/ Voznesenka
North Fork Road	1998	58	0.8	X X	X X	X X	X X	X X	X X
Kenai	1993	99	0.8	0.342 *ns = .733*	X X	X X	X X	X X	X X
Ninilchik	1998	101	0.9	0.789 *ns = .431*	-0.557 *ns = .578*	X X	X X	X X	X X
Fritz Creek	1998	65	1	0.854 *ns = .395*	-0.635 *ns = .526*	0.12 *ns = .905*	X X	X X	X X
Seldovia	1993	63	1	1.009 *ns = .315*	-0.804 *ns = .423*	0.276 *ns = .783*	0.146 *ns = .884*	X X	X X
Nikolaevsk/Voznesenka	1998	55	1.2	1.766 *ns = .081*	-1.637 *ns = .105*	-1.282 *ns = .202*	-1.05 *ns = .296*	-0.934 *ns = .353*	X X
Nanwalek/Port Graham	1997	73	2.6	**6.612** ***sig = .000***	**-6.815** ***sig = .000***	**6.308** ***sig = .000***	**5.922** ***sig = .000***	**-5.833** ***sig = .000***	**4.38** ***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-22. Mean Number of Kinds of Salmon Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



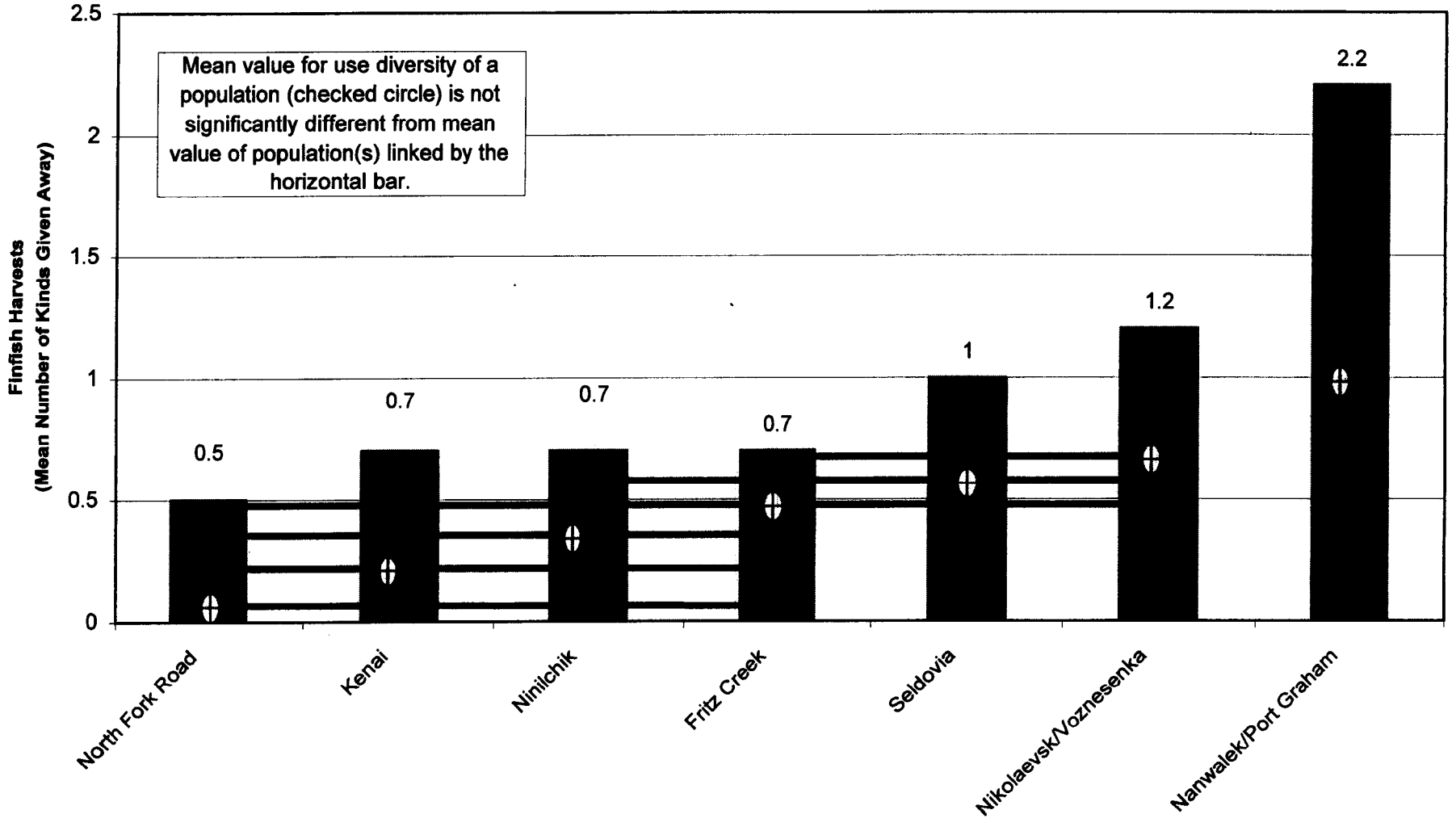
Appendix Table E-23. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Fish Other Than Salmon Given Away per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Kenai	Ninilchik	Fritz Creek	Seldovia	Nikolaevsk/ Voznesenka
North Fork Road	1998	58	0.5	X X	X X	X X	X X	X X	X X
Kenai	1993	99	0.7	0.016 *ns = 873*	X X	X X	X X	X X	X X
Ninilchik	1998	101	0.7	1.686 *ns = .094*	-1.779 *ns = .077*	X X	X X	X X	X X
Fritz Creek	1998	65	0.7	1.495 *ns = .138*	-1.368 *ns = .174*	-0.086 *ns = .931*	X X	X X	X X
Seldovia	1993	63	1	**3.203** ***sig = .002***	**-3.083** ***sig = .003***	1.663 *ns = .099*	1.573 *ns = .118*	X X	X X
Nikolaevsk/Voznesenka	1998	55	1.2	**3.317** ***sig = .001***	**-3.217** ***sig = .002***	**-2.017** ***sig = .047***	-1.927 *ns = .057*	-0.522 *ns = .603*	X X
Nanwalek/Port Graham	1997	73	2.2	**5.276** ***sig = .000***	**-5.211** ***sig = .000***	**4.372** ***sig = .000***	**4.25** ***sig = .000***	**-3.168** ***sig = .002***	**2.646** ***sig. = .009***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-23. Mean Number of Kinds of Fish Other Than Salmon Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



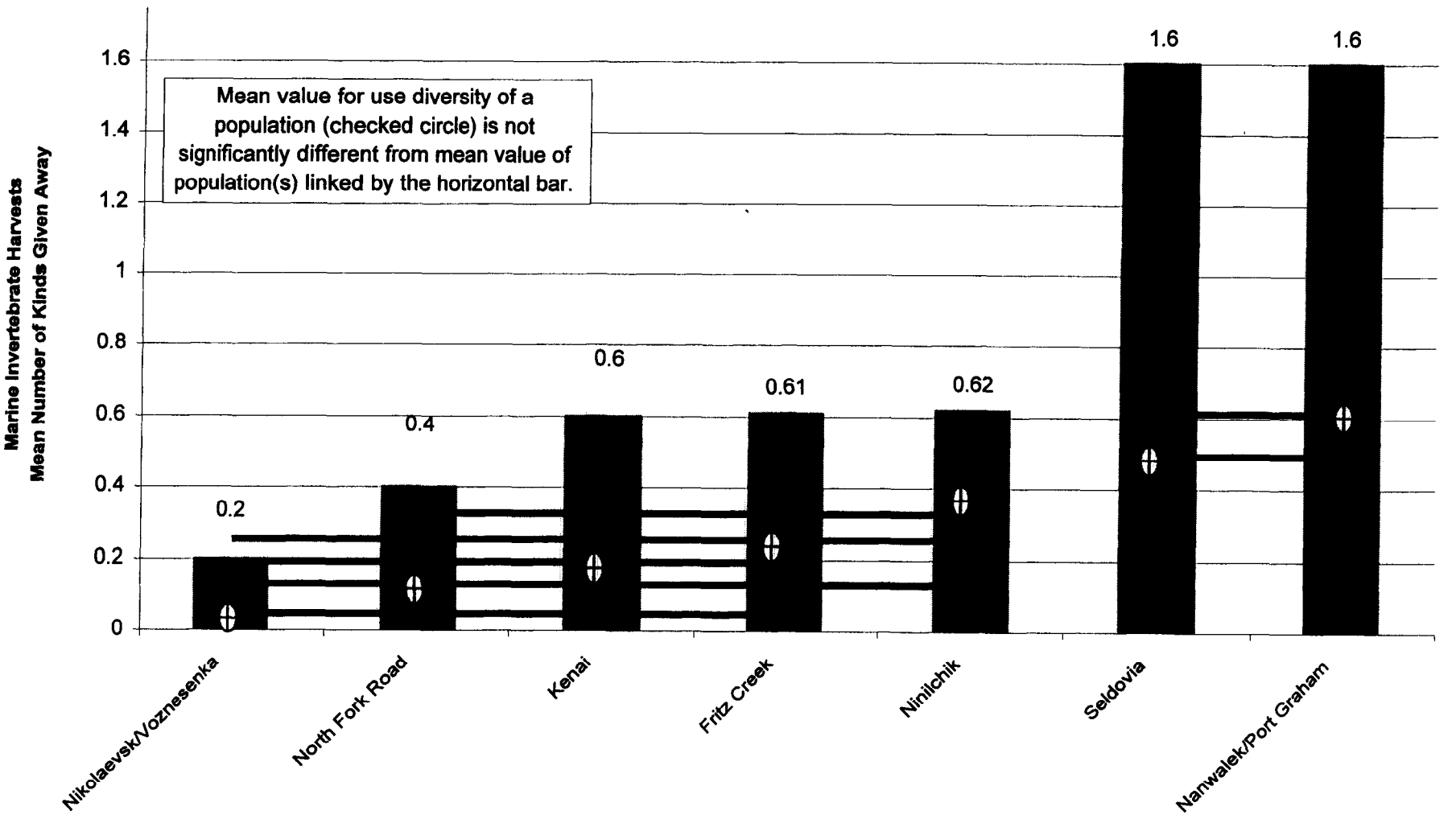
Appendix Table E-24. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations
Mean Number of Kinds of Marine Invertebrates Given Away per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	North Fork Road	Kenai	Fritz Creek East	Ninilchik	Seldovia
Nikolaevsk/Voznesenka	1998	55	0.2	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.4	-0.845 *ns = .400*	X X	X X	X X	X X	X X
Kenai	1993	99	0.6	0.733 *ns = .465*	-0.317 *ns = .752*	X X	X X	X X	X X
Fritz Creek	1998	65	0.6	1.677 *ns = .097*	0.993 *ns = .323*	-1.334 *ns = .186*	X X	X X	X X
Ninilchik	1998	101	0.6	**2.495** ***sig = .014***	1.46 *ns = .146*	**-2.2** ***sig = .029***	-0.082 *ns = .935*	X X	X X
Seldovia	1993	63	1.6	**6.004** ***sig = .000***	**5.357** ***sig = .000***	**-5.938** ***sig .000***	**3.879** ***sig = .000***	**4.507** ***sig = .000***	X X
Nanwalek/Port Graham	1997	73	1.6	**6.267** ***sig = .000***	**5.599** ***sig = .000***	**-6.224** ***sig = .000***	**4.048** ***sig = .000***	**4.738** ***sig = .000***	-0.094 *ns = .925*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-24. Mean Number of Kinds of Marine Invertebrates Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



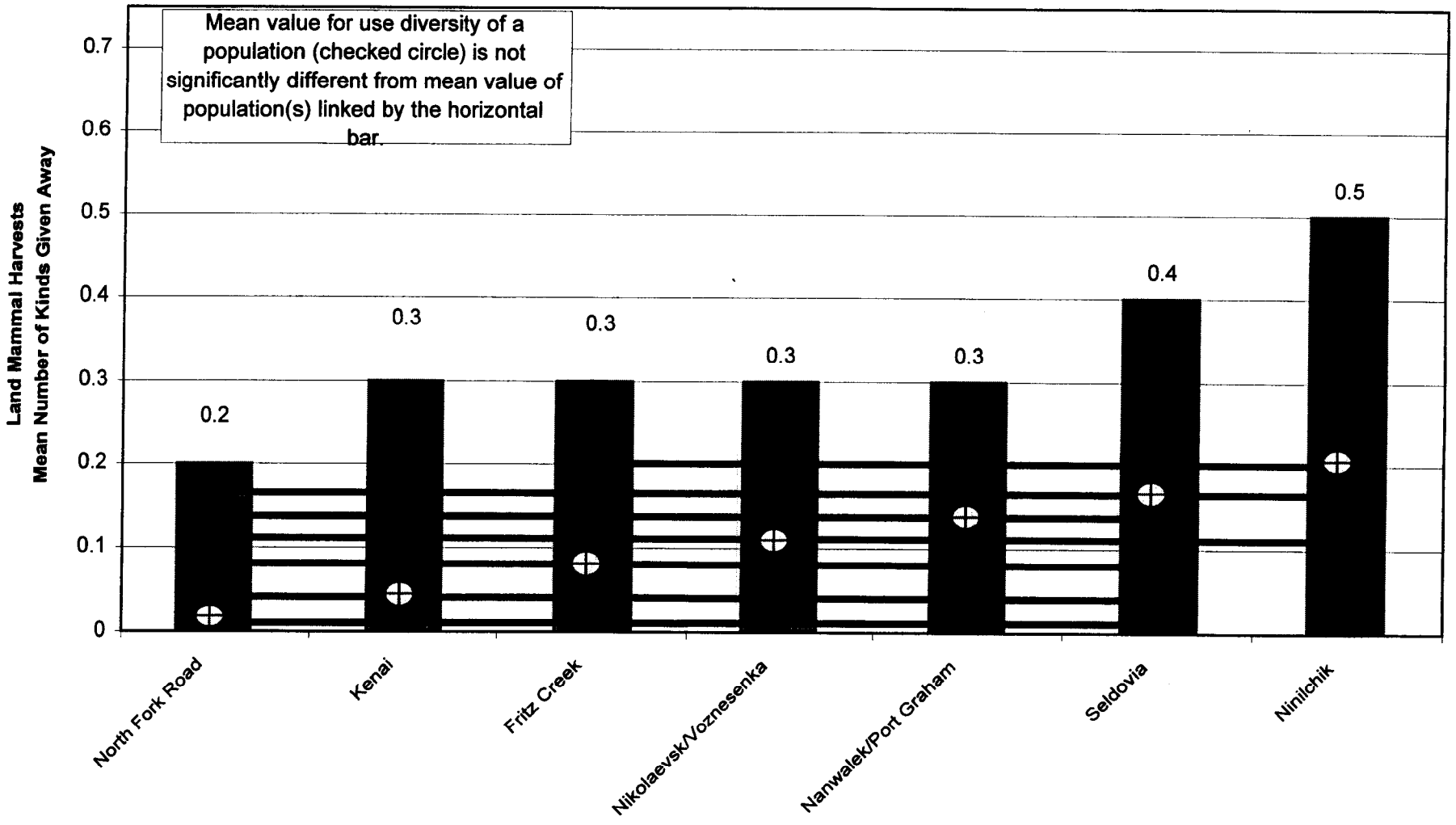
Appendix Table E-25. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Land Mammals Given Away per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Kenai	Fritz Creek	Nikolaevsk/ Voznesenka	Nanwalek	Seldovia
North Fork Road	1998	58	0.2	X X	X X	X X	X X	X X	X X
Kenai	1993	99	0.3	0.181 *ns = .857*	X X	X X	X X	X X	X X
Fritz Creek	1998	65	0.3	0.856 *ns = .939*	-0.873 *ns = .384*	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	0.3	0.472 *ns = .638*	-0.368 *ns = .714*	0.436 *ns = .664*	X X	X X	X X
Nanwalek/Port Graham	1997	73	0.3	0.653 *ns = .515*	-0.597 *ns = .551*	-0.287 *ns = .774*	0.182 *ns = .856*	X X	X X
Seldovia	1993	63	0.4	1.499 *ns = .137*	-1.472 *ns = .145*	0.698 *ns = .486*	1.09 *ns = .278*	1.02 *ns = .309*	X X
Ninilchik	1998	101	0.5	**2.59** ***sig = .011***	**-2.744** ***sig = .007***	-1.346 *ns = .180*	**2.029** ***sig = .044***	-1.851 *ns = .066*	-0.401 *ns = .689*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-25. Mean Number of Kinds of Land Mammals Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



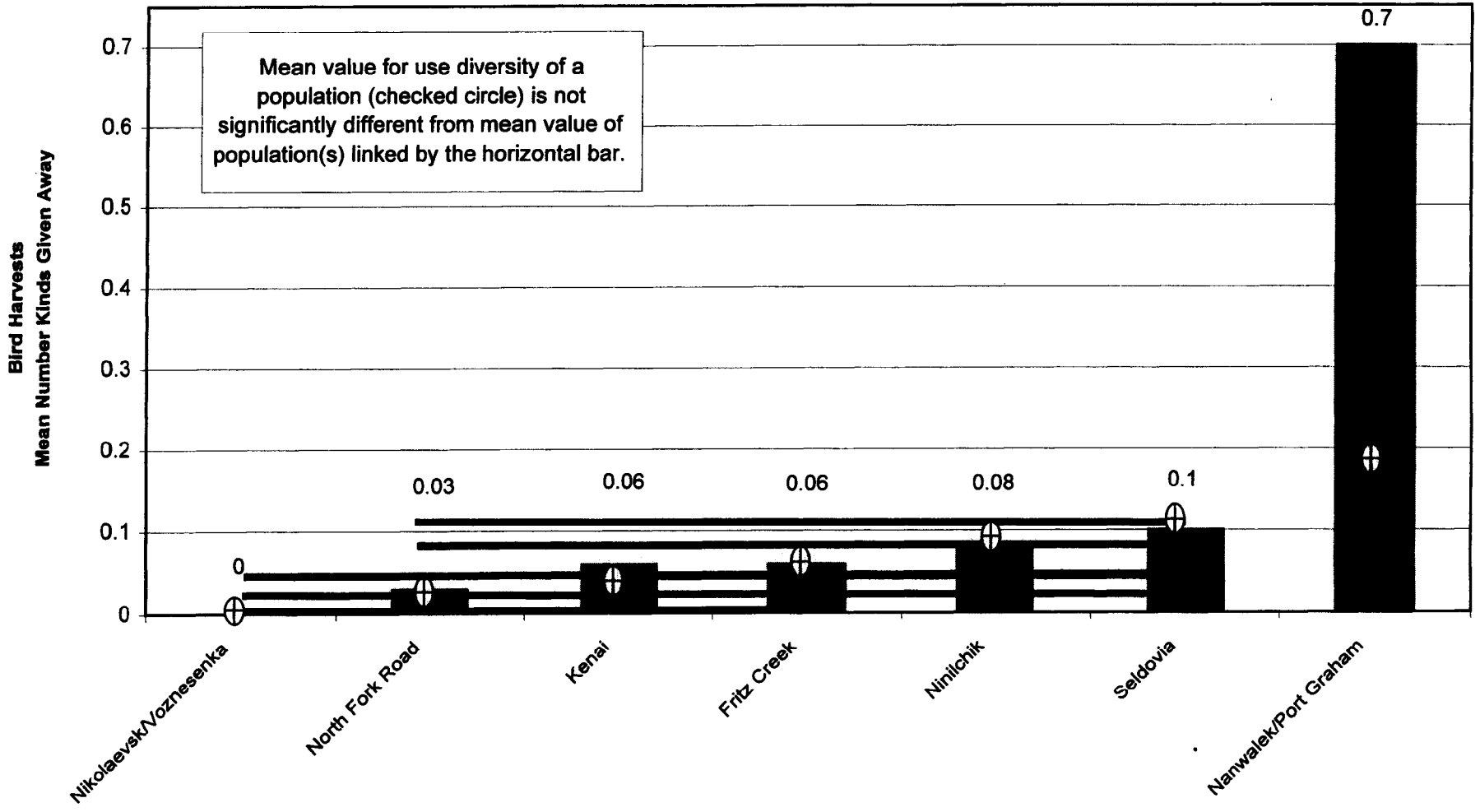
Appendix Table E-26. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations, *Mean Number of Kinds of Birds Given Away per Household*

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: Nikolaevsk/ Voznesenka	North Fork Road	Kenai	Fritz Creek	Ninilchik	Seldovia
Nikolaevsk/Voznesenka	1998	55	0	X X	X X	X X	X X	X X	X X
North Fork Road	1998	58	0.03	-1.427 *ns = .159*	X X	X X	X X	X X	X X
Kenai	1993	99	0.06	**3.001** ***sig = .003***	**2.091** ***sig = .038***	X X	X X	X X	X X
Fritz Creek	1998	65	0.06	1.271 *ns = .208*	0.482 *ns = .631*	1.286 *ns = .200*	X X	X X	X X
Ninilchik	1998	101	0.08	**2.804** ***sig = .006***	1.368 *ns = .173*	1.046 *ns = .297*	-0.497 *ns = .620*	X X	X X
Seldovia	1993	63	0.1	**2.252** ***sig = .028***	1.597 *ns = .114*	0.107 *ns = .915*	1.023 *ns = .308*	0.837 *ns = .404*	X X
Nanwalek/Port Graham	1997	73	0.7	**3.467** ***sig = .001***	**3.28** ***sig .002***	**-2.667** ***sig = .009***	**3.091** ***sig = .003***	**3.007** ***sig = .004***	**-2.665** ***sig = .009***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-26. Mean Number of Kinds of Birds Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



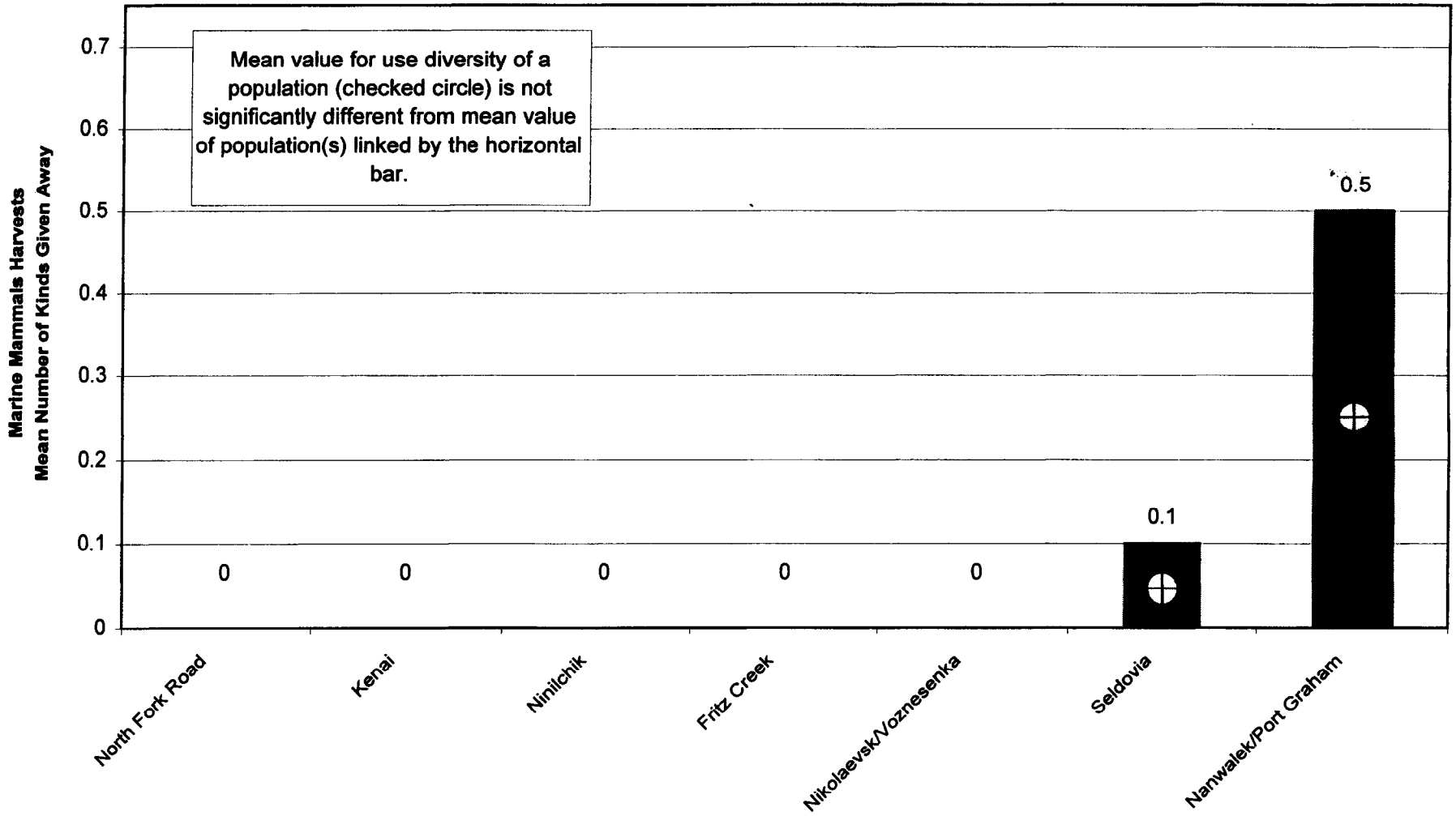
Appendix Table E-27. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations: Mean Number of Kinds of Marine Mammals Given Away per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Kenai	Fritz Creek	Nikolaevsk/ Voznesenka	Ninilchik	Seldovia
North Fork Road	1998	58	0	X	X	X	X	X	X
				X	X	X	X	X	X
Kenai	1993	99	0	X	X	X	X	X	X
				X	X	X	X	X	X
Fritz Creek	1998	65	0	X	X	X	X	X	X
				X	X	X	X	X	X
Nikolaevsk/Voznesenka	1998	55	0	X	X	X	X	X	X
				X	X	X	X	X	X
Ninilchik	1998	101	0	X	X	X	X	X	X
				X	X	X	X	X	X
Seldovia	1993	63	0.1	**2.555**	**-2.555**	**2.555**	**2.555**	**2.555**	X
				sig = .013	***sig = .013***	***sig = .013***	***sig = .013***	***sig = .013***	X
Nanwalek/Port Graham	1997	73	0.5	**6.323**	**-6.323**	**6.323**	**6.323**	**6.323**	**-4.547**
				sig = .000	***sig = .000***	***sig = .000***	***sig = .000***	***sig = .000***	***sig = .000***

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-27. Mean Number of Kinds of Marine Mammals Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means



Appendix Table E-28. Comparative T-Tests for Equality of Means for Seven Kenai Peninsula Populations, Mean Number of Kinds of Wild Plants Given Away per Household

Community	Study Year	House-holds Surveyed	Per Capita Harvest	t - Values and Significance Levels: North Fork Road	Ninilchik	Nikolaevsk/ Voznesenka	Kenai	Fritz Creek	Seldovia
North Fork Road	1998	58	0.3	X X	X X	X X	X X	X X	X X
Ninilchik	1998	101	0.3	0.709 *ns = .479*	X X	X X	X X	X X	X X
Nikolaevsk/Voznesenka	1998	55	0.4	1.063 *ns = .290*	-0.559 *ns = .577*	X X	X X	X X	X X
Kenai	1993	99	0.5	-0.789 *ns = .431*	-1.872 *ns = .063*	**-1.995** ***sig = .049***	X X	X X	X X
Fritz Creek	1998	65	0.5	**2.21** ***sig = .029***	1.868 *ns = .064*	1.212 *ns = .228*	**-3.211** ***sig = .002***	X X	X X
Seldovia	1993	63	0.7	**3.43** ***sig = .001***	**3.23** ***sig = .002***	**2.42** ***sig = .017***	**-4.614** ***sig = .000***	1.14 *ns = .257*	X X
Nanwalek/Port Graham	1997	73	1	**4.696** ***sig = .000***	**4.576** ***sig = .000***	**3.83** ***sig = .000***	**-5.705** ***sig = .000***	**2.673** ***sig = .008***	-1.675 *ns = .096*

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1994, 1998, and 1999.

Appendix Figure E-28. Mean Number of Kinds of Wild Plants Given Away per Household by Kenai Peninsula Population, and Populations with Equality of Means

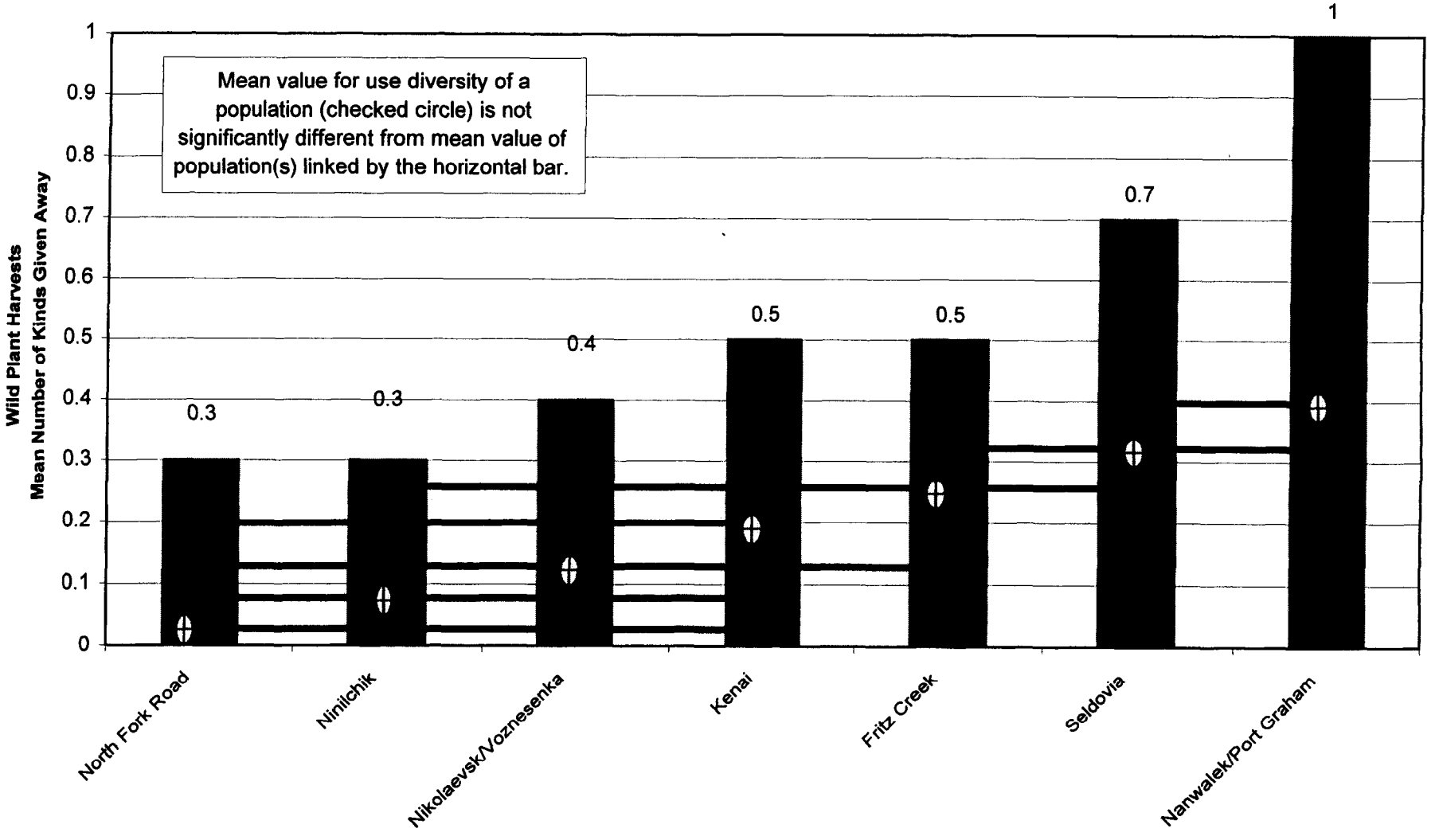


Table E-29. Comparative T-Tests for Equality of Means for Nanwalek/Port Graham with Seldovia: Mean Per Capita Pounds of Total Wild Foods Harvested

Community	House-holds Surveyed	Mean Pounds Per Capita	t - Values and Significance Levels									
			Seldovia 1991	Seldovia 1992	Seldovia 1993	Port Graham 1987	Port Graham 1989	Port Graham 1990	Port Graham 1991	Port Graham 1992	Port Graham 1993	Port Graham 1997
Households Surveyed			66	65	63	54	48	46	49	48	51	44
Mean Pounds Per Capita			205.5	145.1	186.6	228.8	122.2	214.0	280.9	272.7	212.3	253.4
Nanwalek/Port Graham 1987	87	250.0	-1.009	X	X	X	X	X	X	X	X	X
			ns = .314	X	X	X	X	X	X	X	X	X
Nanwalek/Port Graham 1989	81	129.8	1.795	X	X	X	X	X	X	X	X	X
			ns = .075	X	X	X	X	X	X	X	X	X
Nanwalek/Port Graham 1990	81	199.8	0.142	X	X	X	X	X	X	X	X	X
			ns = .887	X	X	X	X	X	X	X	X	X
Nanwalek/Port Graham 1991	78	272.7	-1.550	X	X	X	X	X	X	X	X	X
			ns = .123	X	X	X	X	X	X	X	X	X
Nanwalek/Port Graham 1992	80	275.2	X	**-3.563**	X	X	X	X	X	X	X	X
			X	***sig = .000***	X	X	X	X	X	X	X	X
Nanwalek/Port Graham 1993	63	251.3	X	X	-1.550	X	X	X	X	X	X	X
			X	X	*ns = .123*	X	X	X	X	X	X	X
Nanwalek/Port Graham 1997	73	253.6	X	X	-1.316	X	X	X	X	X	X	X
			X	X	*ns = .190*	X	X	X	X	X	X	X
Nanwalek 1987	33	284.7	-1.397	X	X	-0.955	X	X	X	X	X	X
			ns = .165	X	X	*ns = .343*	X	X	X	X	X	X
Nanwalek 1989	33	140.9	1.576	X	X	X	-0.370	X	X	X	X	X
			ns = .118	X	X	X	*ns = .712*	X	X	X	X	X
Nanwalek 1990	35	181.3	0.482	X	X	X	X	0.720	X	X	X	X
			ns = .631	X	X	X	X	*ns = .474*	X	X	X	X
Nanwalek 1991	29	258.8	-0.936	X	X	X	X	X	0.398	X	X	X
			ns = .352	X	X	X	X	X	*ns = .692*	X	X	X
Nanwalek 1992	32	279.0	X	**-2.955**	X	X	X	X	X	-0.125	X	X
			X	***sig = .004***	X	X	X	X	X	*ns = .901*	X	X
Nanwalek 1993	32	313.4	X	X	**-2.243**	X	X	X	X	X	-1.386	X
			X	X	***sig = .027***	X	X	X	X	X	*ns = .170*	X
Nanwalek 1997	29	253.9	X	X	-1.195	X	X	X	X	X	X	-0.009
			X	X	*ns = .235*	X	X	X	X	X	X	*ns = .993*
Port Graham 1987	54	228.8	-0.458	X	X	X	X	X	X	X	X	X
			ns = .648	X	X	X	X	X	X	X	X	X
Port Graham 1989	48	122.2	1.602	X	X	X	X	X	X	X	X	X
			ns = .112	X	X	X	X	X	X	X	X	X
Port Graham 1990	46	214.0	-0.169	X	X	X	X	X	X	X	X	X
			ns = .866	X	X	X	X	X	X	X	X	X
Port Graham 1991	49	280.9	-1.485	X	X	X	X	X	X	X	X	X
			ns = .140	X	X	X	X	X	X	X	X	X
Port Graham 1992	48	272.7	X	**-2.972**	X	X	X	X	X	X	X	X
			X	***sig = .004***	X	X	X	X	X	X	X	X
Port Graham 1993	51	212.3	X	X	-0.463	X	X	X	X	X	X	X
			X	X	*ns = .644*	X	X	X	X	X	X	X
Port Graham 1997	44	253.4	X	X	-1.343	X	X	X	X	X	X	X
			X	X	*ns = .182*	X	X	X	X	X	X	X

Note: Levene's Test for Equality of Variances used in selecting t-value.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1988, 1990, 1991, 1992, 1993, 1994, and 1998.