

**SUBSISTENCE HARVESTS AND USES OF
CARIBOU, MOOSE, AND BROWN BEAR IN
12 ALASKA PENINSULA COMMUNITIES, 1994/95**

by

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ABSTRACT

The report presents findings from a research project to estimate the harvest of caribou, moose, and brown bear by residents of 12 northern Alaska Peninsula communities from July 1994 through June 1995. The study communities were Naknek, South Naknek, and King Salmon in Game Management Unit (GMU) 9C; Egegik, Pilot Point, Ugashik, and Port Heiden in the Bristol Bay drainage portion of GMU 9E; and Chignik (Chignik Bay), Chignik Lagoon, Chignik Lake, Ivanof Bay, and Perryville in the Pacific Ocean drainage portion of GMU 9E. The research was conducted by the Natural Resources Department of the Bristol Bay Native Association and the Division of Subsistence of the Alaska Department of Fish and Game, with partial funding provided by the United States Fish and Wildlife Service.

Data were collected through systematic household interviews conducted in each community with the help of local research assistants. In total, 316 interviews were conducted. Random samples were selected in the larger communities of Naknek and King Salmon, while an attempt was made to interview every permanent household in the other ten communities.

Estimated harvests by residents of the study communities in the 1994/95 regulatory year included 1,345 caribou (mostly from the Northern Alaska Peninsula Herd), 127 moose, and 13 brown bears. Information is reported on the timing and sex of the harvests, as well as harvest locations by uniform coding subunit. In addition, maps depict the number of each species harvested in each of the uniform coding subunits.

The final section of the report summarizes comments provided by interviewed hunters. The report concludes that the majority of households in GMUs 9C and 9E communities used caribou and moose in the 1994/95 study year, either by harvesting for themselves or receiving these resources from others. Brown bear was used for food by a much smaller portion of the population, except for in Chignik Lake, Perryville, and Ivanof Bay where many households used this species. Hunting patterns were dependent on the migration of local caribou herds and weather conditions. Communities in GMU 9E reported lowered caribou harvests and more difficult hunting, which is probably linked to the decreased population of the Northern Alaska Peninsula Herd. Local hunters suggested other factors as well, such as increased hunting by non-local hunters and changes in herd migration linked to this increased hunting pressure.

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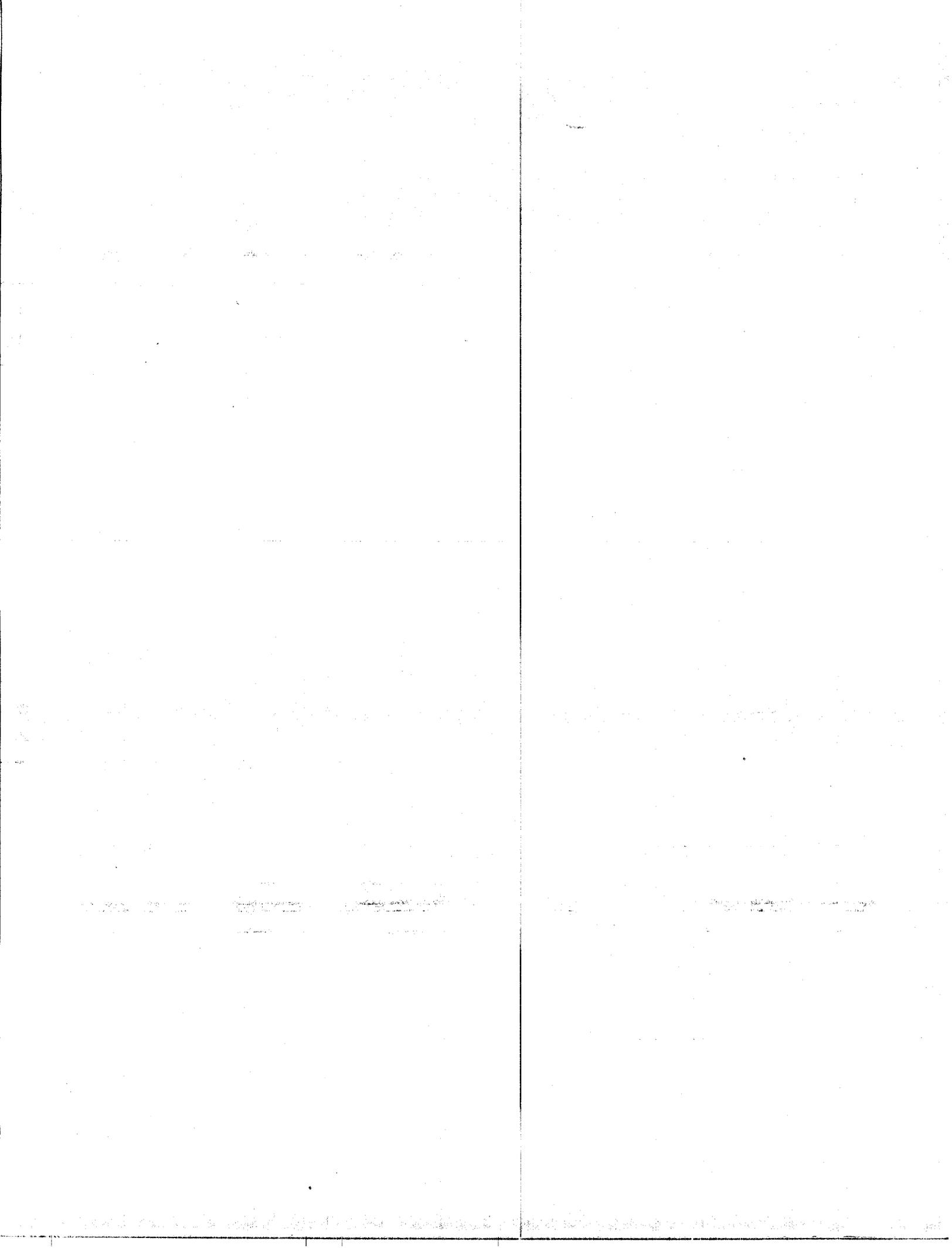
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PURPOSES AND OBJECTIVES

This study was conducted by the Natural Resource Department of the Bristol Bay Native Association and the Division of Subsistence of the Alaska Department of Fish and Game (ADF&G), with funding from the United States Fish and Wildlife Service (USFWS).¹ The primary purpose of this study was to document contemporary patterns of harvesting caribou, moose, and brown bear by residents of 12 Alaska Peninsula communities: Chignik Bay (Chignik), Chignik Lagoon, Chignik Lake, Egegik, Ivanof Bay, King Salmon, Naknek, Perryville, Pilot Point, Port Heiden, South Naknek, and Ugashik (Fig. 1).

Harvests of northern Alaska Peninsula caribou reported through the state harvest ticket system have ranged between 800 and 1,000 animals from 1988 through 1992 (ADF&G 1994:41). However, a substantial unreported harvest occurred during this period, which the Division of Wildlife Conservation of ADF&G estimated at 1,000 caribou or more annually (ADF&G 1994:41). Most unreported harvests are by residents of the 12 communities in Game Management Units (GMUs) 9C and 9E which use the herd for subsistence purposes. Division of Subsistence household surveys conducted in the 1980s and early 1990s estimated an annual caribou harvest by these communities of about 900 to 1,250 animals (Fall 1995:8-10). The Division of Wildlife Conservation has relied upon these data to estimate the total annual harvest. However, household surveys have not been conducted annually, and for some communities (i.e., Egegik, Naknek, and King Salmon) the harvest estimates are 10 years old or more. The Northern Alaska Peninsula Caribou Herd (NAP) experienced an unexpected decline from 16,000-16,500 caribou in 1993 to 12,500 in 1994. In 1995 and 1996 the population remained at about 12,000 caribou (Sellers 1996). State and federal caribou hunting regulations have been restricted in GMUs 9C and 9E. Some federal lands in GMU 9E have been closed to all caribou hunting.

Since 1991, numerous proposals have come before the Federal Subsistence Board and Alaska Board of Game addressing moose and brown bear management. Since 1991, the Federal Subsistence Board and Alaska Board of Game have changed brown bear regulations in portions of the Alaska Peninsula to make them more consistent with the subsistence hunting practices of the residents of Chignik Lake, Perryville, and Ivanof Bay. The Alaska Board of Game adopted regulations creating a Chignik Brown Bear Management Area with liberalized subsistence hunting regulations on state and federal land (Fall and Hutchinson-Scarborough 1996). A federal early September subsistence moose hunt for residents of GMU 9 only has been established in GMU 9E.

Complete and current information on subsistence use of caribou, moose, and brown bear is desirable where proposals to change hunting regulations on the Alaska Peninsula are under consideration. The information contained in this report will be useful to local residents, advisory councils

¹ The final project report was submitted to the Office of Subsistence Management of the US Fish and Wildlife Service in November 1996. This technical paper (intended for a wider distribution) is based entirely on that final report, and incorporates some minor editing.

and committees, the Federal Subsistence Board, and Alaska Board of Game for addressing issues of both immediate and long-term management concerns on the Alaska Peninsula.

METHODOLOGY

The primary purpose of this study was to document the harvest levels, seasons of harvests, and locations of harvests of caribou, moose, and brown bear by residents of 12 Alaska Peninsula study communities from July 1, 1994 to June 30, 1995 (one full regulatory year). Data were collected through the use of voluntary and confidential household surveys, mapping activities, and key informant interviews. BBNA staff obtained tribal resolutions supporting this research from each of the 12 communities. For purposes of summarizing information, the communities are grouped into three regions. Three surveyed communities lie in GMU 9C: Naknek, South Naknek, and King Salmon. Four communities lie within Bristol Bay drainages of GMU 9E: Egegik, Pilot Point, Ugashik, and Port Heiden. And five communities lie within Pacific Ocean drainages of GMU 9E: Chignik Lake, Chignik Lagoon, Chignik Bay, Perryville, and Ivanof Bay.

Sampling Design and Statistical Analysis

In the 12 communities, systematic interviews were conducted with potential hunters living in 316 households (Table 1). Households were selected using two main designs, depending on the community – census sampling and random sampling. The type of design used for each community is shown in Table 1. Identical harvest survey forms (Appendix B) were used during all 316 interviews.

In 10 communities with less than 50 households, researchers attempted to conduct interviews with all households in the community. This is called census sampling, because all households were identified and selected for interviews. Estimates of total community harvests are fairly simple under a complete census design, being the sum of the harvests of each household when all are indeed surveyed. Commonly, a portion of households could not be interviewed (see Table 1), usually because some people were out of the community while surveys were being conducted, but also because a few households declined to participate in the interview. In this event, the mean harvest of surveyed households was applied to missing households, producing an estimated expanded community harvest.

For two communities with larger populations, King Salmon and Naknek, a random sampling design was used (Table 1). A 30 percent random sample was drawn for interviews. Estimates of harvest numbers were made, with unsurveyed households receiving the mean of the households that were surveyed.

For communities with census sampling, 220 of 290 households (76 percent) were successfully contacted and interviewed (Table 1). For communities with random sampling, 30 percent of the

Table 1. Survey sampling and participation summary.

Community	Type of Sample	Total Identified Households	Surveyed Households	Percent of Total	Households Not Able to Contact	Households That Declined Survey
Chignik Bay	Census	29	24	82.8%	3	2
Chignik Lagoon	Census	28	27	96.4%	1	0
Chignik Lake	Census	39	32	82.1%	1	6
Egegik	Census	42	22	52.4%	16	4
Ivanof Bay	Census	9	8	88.9%	1	0
Perryville	Census	31	20	64.5%	11	0
Pilot Point	Census	29	27	93.1%	1	1
Port Heiden	Census	39	32	82.1%	7	0
South Naknek	Census	38	26	68.4%	11	1
Ugashik	Census	6	2	33.3%	4	0
Subtotal		290	220	75.9%	56	14
King Salmon	Random	123	37	30.1%	1	1
Naknek	Random	196	59	30.1%	3	0
Subtotal		319	96	30.1%	4	1
TOTAL		609	316	51.9%	60	15

households were interviewed. The non-response rate was primarily due to logistical problems in contacting households (60 of 75 households), rather than households declining to participate (15 households).

In this report, under each section for caribou, moose, and brown bear, the statistical analysis presents harvest data in three different tables for each community. In the first table, the estimated expanded harvests are presented for each community. In this table, harvests of surveyed hunters are expanded to unsurveyed hunters. The expansion treats each community as a different sampling universe. The second table presents the seasonally adjusted expanded harvest. The third table presents the harvest from the 1994/95 regulatory year and compares it to the harvest from previous years, when these numbers are known from previous surveys.

The calculation of the confidence range around the estimate is done for each community separately. In census sampling or random draw sampling, it is possible that certain high or low harvesters are disproportionately selected by chance. The extent of the effect of this potential sampling bias is reflected by the size of the confidence range. Confidence intervals are relatively larger when there is greater variation between households in take.

In addition to the information collected for the 1994/95 regulatory year, in Appendix A the estimated expanded harvest from the 1995/96 regulatory year is presented. Each surveyed household was asked to report its harvests of caribou, moose, and brown bear for the 1995/96 regulatory year, up to the date of the interview. The 1995/96 regulatory year was in progress when these interviews were conducted from October 1995 to April 1996.

Surveys and Mapped Data Collection

The survey form (Appendix B) contained questions about quantity, month, and sex of harvest, and sharing of caribou, moose, and brown bear. Researchers also collected kill location information for each reported harvest. USGS quadrangles, 1:250,000 scale, covered with clear inking film were used. Respondents were asked to locate the kill locations for the caribou, moose, and brown bear harvested by their households during the survey period, the 1994/95 regulatory year.

The surveys were conducted by one person from BBNA's Natural Resource Department, two people from ADF&G's Division of Subsistence, and 12 people from the communities. The completed surveys were sent to the Division of Subsistence data management staff in Anchorage who entered the information into a Statistical Package for the Social Sciences (SPSS) data base. Tables containing harvest levels, month and sex of harvest, and sharing information were produced. The kill location maps were given to staff at Habitat and Restoration Division, ADF&G, who used ARC/INFO to organize the data.

In each resource section for caribou, moose, and brown bear, the kill location information is presented in one figure and one table by Uniform Coding Unit (UCU). Each Game Management Unit is

divided into major subunits. The estimated expanded community harvests are presented in these figures and tables, where the unknown kill locations were assigned to UCUs based on the proportion of the known harvest in each UCU. No site specific information was included in the figures and tables to maintain confidentiality.

Within GMUs 9C and 9E, there are five federal land units: Alaska Peninsula National Wildlife Refuge, Aniakchak National Monument and Preserve, Becharof National Wildlife Refuge, Katmai National Park and Preserve, and Alagnak Wild and Scenic River. Federal land unit boundaries were added to ARC/INFO files, and tables were produced describing the estimated harvest by each community within federal land unit boundaries. This information is limited to determining kill locations within these boundaries. Precise data were not available about the locations of private and state inholdings. Therefore, it is not possible to identify kill locations as being on or off federal lands. This point is relevant because, in the past, most federal subsistence regulations have not applied on state and private inholdings.

BACKGROUND SOURCES

Previous research on the subsistence harvests and uses of wild resources has been conducted in all 12 Alaska Peninsula study communities. These sources should be consulted for additional information on subsistence uses of caribou, moose, and brown bear. Most recently, Fall and Hutchinson-Scarborough (1996) described research on brown bear use in GMU 9E. Fall (1993) overviewed caribou uses by residents of all communities in GMU 9C and 9E. These Division of Subsistence technical papers report local knowledge as well as survey data. At least one harvest survey of all wild resources has been conducted by the Division of Subsistence in all 12 of the study communities (Morris 1985 and 1987, Fall and Morris 1987, and Fall et al. 1995), published in a technical paper series. These reports include additional information on caribou, moose, and brown bear uses. In addition, for 1991/92, caribou harvest surveys were conducted by the Division of Subsistence in Pilot Point, Ugashik, and Port Heiden (Fall 1993). A harvest survey of all wild resources was conducted in South Naknek for 1992/93 (Scott et al. 1995). For 1989, harvest surveys of all wild resources were conducted in Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay; and for 1991/92 in Chignik Lake and Chignik Lagoon (Hutchinson-Scarborough 1995a and 1995b). Complete harvest surveys were conducted for 1975 by Tuten (1977) in Chignik Lake, Chignik Lagoon, and Chignik Bay. Gasbarro and Utermohle (1974) conducted surveys of most wild resources for 1973/74 in King Salmon, Naknek, South Naknek, Egegik, Pilot Point, Ugashik, and Port Heiden. Harvest and use data from household surveys have been entered into the Community Profile Data Base, a computerized system (Scott et al. 1995). Harvest area maps appear in ADF&G's Habitat Management Guide Reference Atlas (ADF&G 1985).

HISTORY AND CONTEMPORARY DEMOGRAPHY

The first European explorers arrived in the northern Alaska Peninsula region in the late 18th and early 19th centuries. At that time people living in the region moved seasonally to harvest wild resources. Russians established a Russian Orthodox mission and began the fur trade, and both were major agents of change in the 19th century. Salmon salteries and canneries were established on the north side of the peninsula beginning in the 1880s. More permanent communities were forming, partly in response to the growth of the commercial fishing industry. In 1912, Novarupta Volcano erupted and the villages of Katmai and Douglas on the Pacific side of the peninsula moved to the contemporary site of Perryville and later to Ivanof Bay (Fig. 1). The people of Old Savonoski, close to the eruption, moved to a new site near South Naknek. During World War II, Air Force stations were built at King Salmon and near Port Heiden. In the 1950s the community of Chignik Lake began as people, many from Ilnik on the Bristol Bay coast, settled year-round at what had been a seasonal trapping camp.

The Alutiiq language was spoken historically in the area, and is still spoken by some of the older residents in most of the study communities. This language was also spoken on Kodiak Island, lower Cook Inlet, and Prince William Sound. It is closely related to Central Yup'ik, spoken in the rest of the Bristol Bay region, but not mutually intelligible with it.

Today, 12 permanent communities are in the northern Alaska Peninsula region. Some have obtained city status and all have tribal councils or associations. Three communities (King Salmon, Naknek, and South Naknek) have combined to form the Bristol Bay Borough. King Salmon and Naknek are the only communities connected to each other by road and together form the transportation hub of the region. The other nine communities (Egegik, Pilot Point, Ugashik, Port Heiden, Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay) are in the Lake and Peninsula Borough. Ivanof Bay is the most distant from King Salmon, approximately 361 kilometers (217 miles). According to the U.S. Census, there were 1,920 people in the area in 1990, 54.3 percent Alaska Native. Of the region's population, 52 percent resided in Naknek and King Salmon. Results from this current harvest survey indicated there were about 1,853 people in the area in 1995 (Table 2).

Table 2. The human population of northern Alaska Peninsula communities.

Community	1990 US Census			1995 Survey Results		
	Human Population	Number of Households	Percent Alaska Native Individuals	Human Population	Number of Households	Percent Alaska Native Households
<i>Residents of Game Management Unit 9C</i>						
King Salmon ¹	416	158	25.9%	369	123	21.6%
Naknek	575	208	41.0%	548	196	54.2%
South Naknek	136	39	79.4%	131	38	88.0%
Remainder, Bristol Bay Borough	3	2	100.0%	0	0	0.0%
Subtotal	1,130	407	39.8%	1,048	357	46.6%
<i>Residents of Game Management Unit 9E: Bristol Bay Drainages</i>						
Egegik	122	48	70.5%	118	42	68.2%
Pilot Point	53	17	84.9%	104	29	100.0%
Port Heiden	119	42	72.3%	106	39	71.9%
Ugashik	7	4	85.7%	9	6	100.0%
Subtotal	301	111	74.1%	337	116	79.0%
<i>Residents of Game Management Unit 9E: Pacific Drainages</i>						
Chignik Bay ¹	160	46	53.1%	75	29	79.2%
Chignik Lagoon	53	17	56.6%	97	28	74.1%
Chignik Lake	133	34	91.7%	158	39	87.5%
Ivanof Bay	35	9	94.3%	33	9	87.5%
Perryville	108	31	94.4%	105	31	90.0%
Subtotal	489	137	76.0%	468	136	83.5%
Grand Total	1,920	655	54.3%	1,853	609	61.0%

¹Excludes 280 active-duty armed forces personnel in group quarters in King Salmon and 28 in group quarters in Chignik Bay.

Source: Scott et al. 1992.

CARIBOU: SUBSISTENCE HARVESTS AND USES

Generally, the caribou in GMUs 9C and 9E make up the Northern Alaska Peninsula Caribou Herd. During the 1994/95 regulatory year, portions of the Mulchatna Caribou Herd migrated into the Naknek River drainage, GMU 9C. Some mixing of the two herds occurred in GMU 9C. Because an unknown but high percentage of caribou was from the Mulchatna herd, a large part of the estimated caribou harvest in that subunit in 1994/95 was Mulchatna caribou. Thus the total harvest from the Northern Alaska Peninsula Herd has not been estimated.

Participation in the Subsistence Harvest and Use of Caribou - 1994/95 Regulatory Year

During the 1994/95 regulatory year (July 1, 1994 to June 30, 1995), caribou was used by at least 70 percent of the surveyed households in all 12 communities in GMUs 9C and 9E (Table 3). There was also a high degree of effort, with 50 percent or more of households attempting to harvest caribou, except in Chignik Bay and Perryville where only 8 percent and 20 percent, respectively, of households attempted to harvest caribou. Caribou was harvested by at least 50 percent of households in all communities except Chignik Bay (4 percent), Chignik Lagoon (41 percent), and Perryville (10 percent). Caribou was also shared extensively. It was shared by large portions of households in all of the study communities. Caribou was sometimes shared and exchanged with communities outside the area. For instance, respondents in Chignik Bay described receiving caribou in exchange for halibut, crab, and other foods not readily available to communities on Bristol Bay. Seventy percent of households in Chignik Bay used caribou, although only four percent harvested caribou. In all communities in Pacific drainages of GMU 9E, over 65 percent of surveyed households received caribou.

Caribou Harvest Quantities - 1994/95 Regulatory Year

An estimated total of 1,345 caribou was harvested by northern Alaska Peninsula communities during the 1994/95 regulatory year (with a 95 percent confidence range of between 1,001 and 1,720 animals) (Table 3). Over half (761 caribou; 57 percent) was harvested by communities in GMU 9C (King Salmon, Naknek, and South Naknek). Another 434 caribou (32 percent) were harvested by communities on the Bristol Bay side of GMU 9E (Egegik, Pilot Point, Port Heiden, and Ugashik). Only 11 percent (150 caribou) was harvested by the five communities on the Pacific Ocean side of GMU 9E (Chignik Bay, Chignik Lagoon, Chignik Lake, Ivanof Bay, and Perryville). Of those animals for which respondents were able to report the sex, 66 percent were bulls and 34 percent were cows. The percentage of animals which were bulls varied by area: GMU 9C, 73 percent bulls; GMU 9E, Bristol Bay drainages, 48 percent bulls; and GMU 9E, Pacific drainages, 70 percent bulls).

Table 3. Levels of participation in the use and harvest of caribou and caribou harvest levels, 1994/95 regulatory year.

Community	Percentage of Households						Caribou Harvest									
	Used Caribou (%)		Hunted Caribou (%)		Harvested Caribou (%)		Received Caribou (%)		Gave Caribou (%)		Total		Per			
											Household	Person	Successful Hunter	95% Confidence Limit of Total Harvest %	Low*	High
<u>Residents of GMU 9C</u>																
King Salmon	86.5	64.9	59.5	32.4	45.9	226	1.84	0.61	2.27	33.0%	151	301				
Naknek	84.7	67.8	64.4	35.6	42.4	432	2.20	0.79	2.60	24.0%	328	536				
South Naknek	96.0	76.0	68.0	72.0	52.0	103	2.72	0.79	2.19	26.0%	76	130				
Subtotal						761				26.9%	556	966				
<u>Residents of GMU 9E: Bristol Bay Drainages</u>																
Egegik	86.4	54.5	54.5	59.1	50.0	147	3.50	1.24	5.13	41.0%	87	207				
Pilot Point	100.0	55.6	55.6	81.5	59.3	127	4.37	1.22	6.56	14.0%	119	145				
Ugashik	100.0	100.0	100.0	100.0	100.0	21	3.50	2.33	3.50	148.0%	7	31				
Port Heiden	100.0	53.1	50.0	84.4	53.1	139	3.56	1.31	6.33	29.0%	114	179				
Subtotal						434				29.6%	326	562				
<u>Residents of GMU 9E: Pacific Drainages</u>																
Chignik Bay	70.8	8.3	4.2	66.7	20.8	1	0.04	0.02	1.00	86.0%	1	2				
Chignik Lagoon	92.6	55.6	40.7	66.7	40.7	21	0.74	0.22	1.82	17.0%	20	25				
Chignik Lake	93.8	65.6	56.3	71.9	50.0	111	2.84	0.70	3.37	22.0%	91	135				
Perryville	75.0	20.0	10.0	75.0	35.0	12	0.40	0.12	2.67	89.0%	8	23				
Ivanof Bay	87.5	75.0	50.0	87.5	62.5	5	0.50	0.14	1.00	30.0%	4	7				
Subtotal						150				27.4%	119	191				
Grand Total						1,345				27.8%	1,001	1,720				

* Lower Confidence Limit is the higher of the Lower 95% confidence limit and reported harvest.

Timing of Caribou Harvests - 1994/95 Regulatory Year

With a total harvest of 1,345 caribou by all 12 study communities, peak harvest months were February (222 caribou, 17 percent), August (174 caribou, 13 percent), and December (170 caribou, 13 percent) (Table 4, Fig. 2). Caribou were reported harvested in every month of the 1994/95 regulatory year, primarily from August through March. The month of harvest was not reported or was not known for 4 percent of the harvest (Fig. 2 and Table 4).

For GMU 9C communities, caribou harvests began in August and gradually increased to a peak in February (Fig. 3). There were few or no caribou taken in April, May, and June. The month of harvest was not reported for less than one percent of the total harvest (Fig. 3, Table 4).

For GMU 9E Bristol Bay drainage communities, harvests peaked in August and September when 20 and 18 percent, respectively, of the total harvest occurred (Fig. 3). Harvests were fairly consistent in October through April, with a spike in March when 11 percent was harvested. (The month of harvest was not reported in 10 percent of the harvest.) This corresponds to previous research findings (Fall 1993) which revealed that there are two distinct caribou harvest periods in Port Heiden and Pilot Point, fall (September - August) and spring (March), which correspond with the seasonal movements of the Northern Alaska Peninsula Caribou Herd. Review of the data by Port Heiden revealed that there may have been more caribou harvested in the spring than is estimated in this report, probably due to the unavailability of several key households when the interviews took place.

For residents on the Pacific side of GMU 9E, the size of caribou harvests shows high points in August (15 percent) and February (19 percent) (Fig. 3). Caribou were harvested throughout the year. The month of harvest was reported for every caribou taken.

Caribou Harvest Levels

In all communities in this area, caribou are the most widely used large land mammal species. Moose were quite scarce in this area until the mid 20th century. Most people in these Alaska Peninsula communities grew up eating caribou. In past surveys, caribou has been shown to be a large portion of the overall wild resource harvest in most GMU 9C and 9E communities. For instance in GMU 9C, caribou has comprised between 28 percent to 55 percent of the overall wild food harvest, in pounds usable weight (Table 5). On the Bristol Bay side of GMU 9E, from past surveys, caribou has comprised 36 percent to 62 percent of the total harvest of wild resources, and from 4 percent to 42 percent in communities on the Pacific side of GMU 9E.

In the 1994/95 regulatory year, caribou was harvested at a level of from 0.61 to 0.79 caribou per person in King Salmon, Naknek and South Naknek; in GMU 9E Bristol Bay drainage communities, from 1.22 to 2.33 caribou per person; and in GMU 9E Pacific drainage communities, from 0.02 to 0.70 caribou

Table 4. The estimated caribou harvest by sex and month, 1994/95 regulatory year.

		Caribou Harvest by Month													
Community	Sex	July	August	September	October	November	December	January	February	March	April	May	June	Unknown	Total
<u>Residents of GMU 9(C)</u>															
King Salmon	All	0	10	13	10	33	40	47	63	10	0	0	0	0	226
	Male	0	10	13	7	30	17	20	27	7	0	0	0	0	130
	Female	0	0	0	3	3	7	23	30	3	0	0	0	0	70
	Unknown	0	0	0	0	0	17	3	7	0	0	0	0	0	27
Naknek	All	0	30	40	33	37	76	60	100	53	3	0	0	0	432
	Male	0	27	27	23	30	47	33	63	17	3	0	0	0	269
	Female	0	0	7	7	3	20	27	23	20	0	0	0	0	106
	Unknown	0	3	7	3	3	10	0	13	17	0	0	0	0	56
South Naknek	All	0	24	11	8	14	14	14	5	6	0	0	0	9	103
	Male	0	20	11	8	5	11	11	5	5	0	0	0	9	82
	Female	0	0	0	0	0	2	0	0	2	0	0	0	0	3
	Unknown	0	5	0	0	9	2	3	0	0	0	0	0	0	18
<u>Total Harvest - Residents of GMU 9(C)</u>															
	All	0	64	64	51	83	130	120	167	69	3	0	0	9	761
	Male	0	56	51	38	64	74	64	94	28	3	0	0	9	481
	Female	0	0	7	10	7	28	50	53	25	0	0	0	0	179
	Unknown	0	8	7	3	12	28	6	20	17	0	0	0	0	101
<u>Residents of GMU 9(E): Bristol Bay Drainages</u>															
Egegik	All	0	34	17	17	13	21	19	15	6	4	0	0	0	147
	Male	0	19	4	4	4	2	2	2	0	2	0	0	0	38
	Female	0	2	10	6	8	11	15	11	6	2	0	0	0	71
	Unknown	0	13	4	8	2	8	2	2	0	0	0	0	0	38
Pilot Point	All	4	24	17	6	3	5	3	10	33	17	1	2	0	127
	Male	0	15	12	4	0	0	0	0	6	8	0	0	0	45
	Female	0	2	3	0	2	1	1	0	14	10	1	0	0	34
	Unknown	4	6	2	2	1	4	2	10	13	0	0	2	0	47
Port Heiden	All	2	27	38	6	9	4	0	1	4	5	0	0	44	139
	Male	2	11	28	4	4	0	0	0	0	2	0	0	0	51
	Female	0	13	6	2	4	1	0	0	2	2	0	0	1	33
	Unknown	0	2	4	0	1	2	0	1	1	0	0	0	43	55
Ugashik	All	0	3	6	0	3	3	0	0	3	3	0	0	0	21
	Male	0	0	0	0	3	0	0	0	0	0	0	0	0	3
	Female	0	3	3	0	0	0	0	0	3	0	0	0	0	9
	Unknown	0	0	3	0	0	3	0	0	0	3	0	0	0	9
<u>Total Harvest - Residents of GMU 9(E): Bristol Bay Drainages</u>															
	All	7	88	78	30	28	33	22	26	46	29	1	2	44	434
	Male	2	45	44	12	10	2	2	2	6	12	0	0	0	137
	Female	0	20	22	8	13	14	16	11	25	14	1	0	1	147
	Unknown	4	22	13	10	4	17	4	13	14	3	0	2	43	149

Table 4. Continued.

Community	Sex	Caribou Harvest by Month													Total
		July	August	September	October	November	December	January	February	March	April	May	June	Unknown	
<i>Residents of GMU 9(E): Pacific Ocean Drainages</i>															
Chignik Bay	All	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	Male	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chignik Lagoon	All	0	3	9	5	0	1	0	0	1	1	1	0	0	21
	Male	0	3	2	4	0	1	0	0	1	1	0	0	0	13
	Female	0	0	1	1	0	0	0	0	0	0	1	0	0	3
	Unknown	0	0	5	0	0	0	0	0	0	0	0	0	0	5
Chignik Lake	All	5	11	7	9	6	5	17	28	11	6	2	4	0	111
	Male	1	7	5	1	5	0	4	9	6	5	1	2	0	46
	Female	0	0	0	7	1	2	2	4	5	1	0	1	0	24
	Unknown	4	4	2	0	0	2	11	16	0	0	1	0	0	40
Ivanof Bay	All	3	0	0	0	0	1	0	0	0	0	0	0	0	5
	Male	2	0	0	0	0	1	0	0	0	0	0	0	0	3
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Perryville	All	5	8	0	0	0	0	0	0	0	0	0	0	0	12
	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	5	8	0	0	0	0	0	0	0	0	0	0	0	12
<i>Total Harvest - Residents of GMU 9(E): Pacific Drainages</i>															
	All	13	22	17	14	6	7	17	28	12	7	4	4	0	150
	Male	3	11	8	6	5	2	4	9	7	6	1	2	0	64
	Female	0	0	1	8	1	2	2	4	5	1	1	1	0	28
	Unknown	9	11	8	0	0	2	11	16	0	0	1	0	0	59
Grand Total	All	20	174	159	94	118	170	159	222	127	39	5	6	53	1345
	Male	6	112	102	55	80	78	69	105	41	21	1	2	9	682
	Female	0	20	30	27	21	44	69	68	55	15	2	1	1	354
	Unknown	14	42	27	13	17	48	21	49	31	3	1	2	43	310

Fig. 2. The caribou harvest by month, all communities, 1994/95 regulatory year.

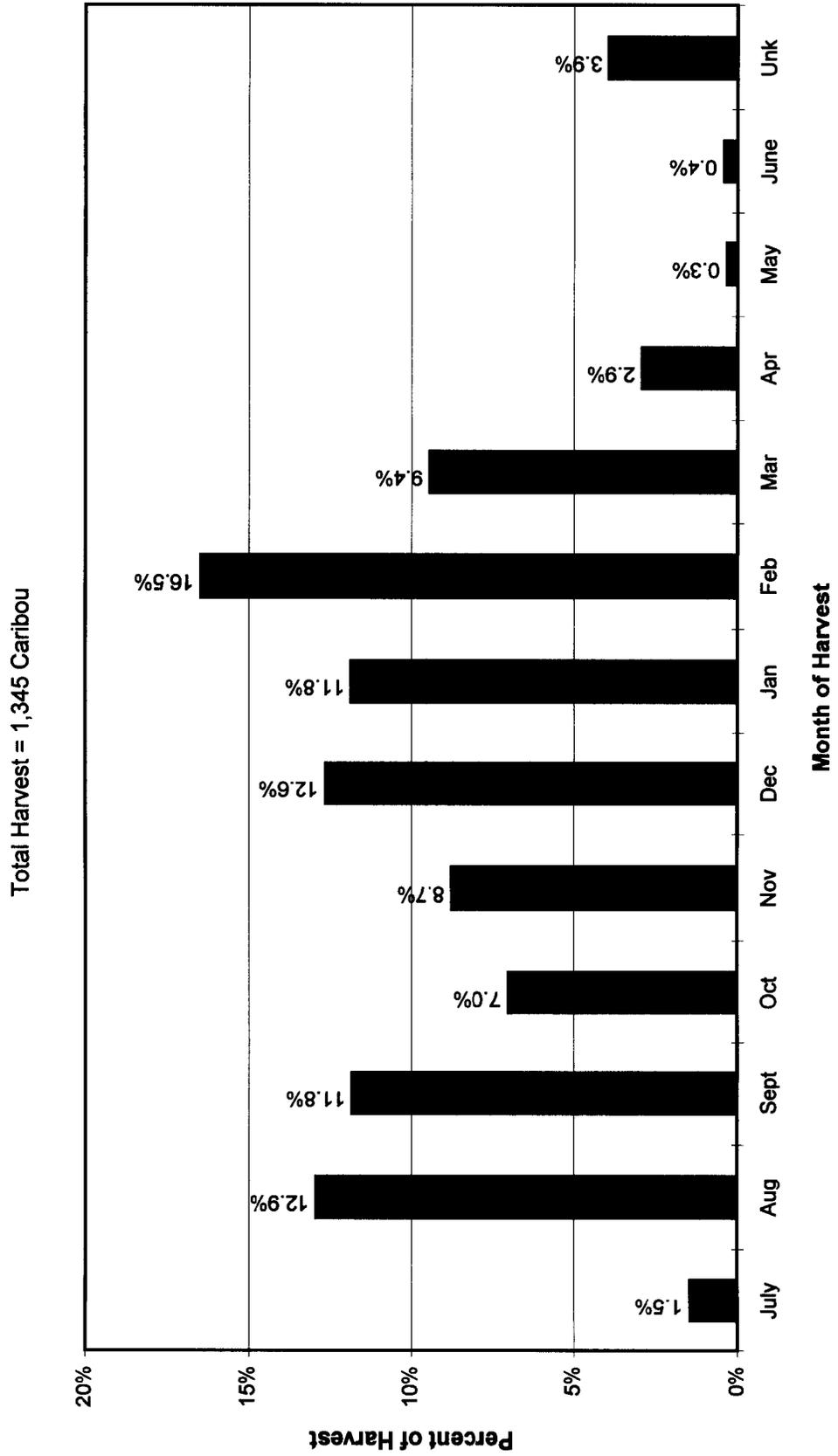


Fig. 3. The caribou harvest by month, residents of GMU 9C, GMU 9E Bristol Bay drainages, and GMU 9E Pacific drainages; 1994/95 regulatory year.

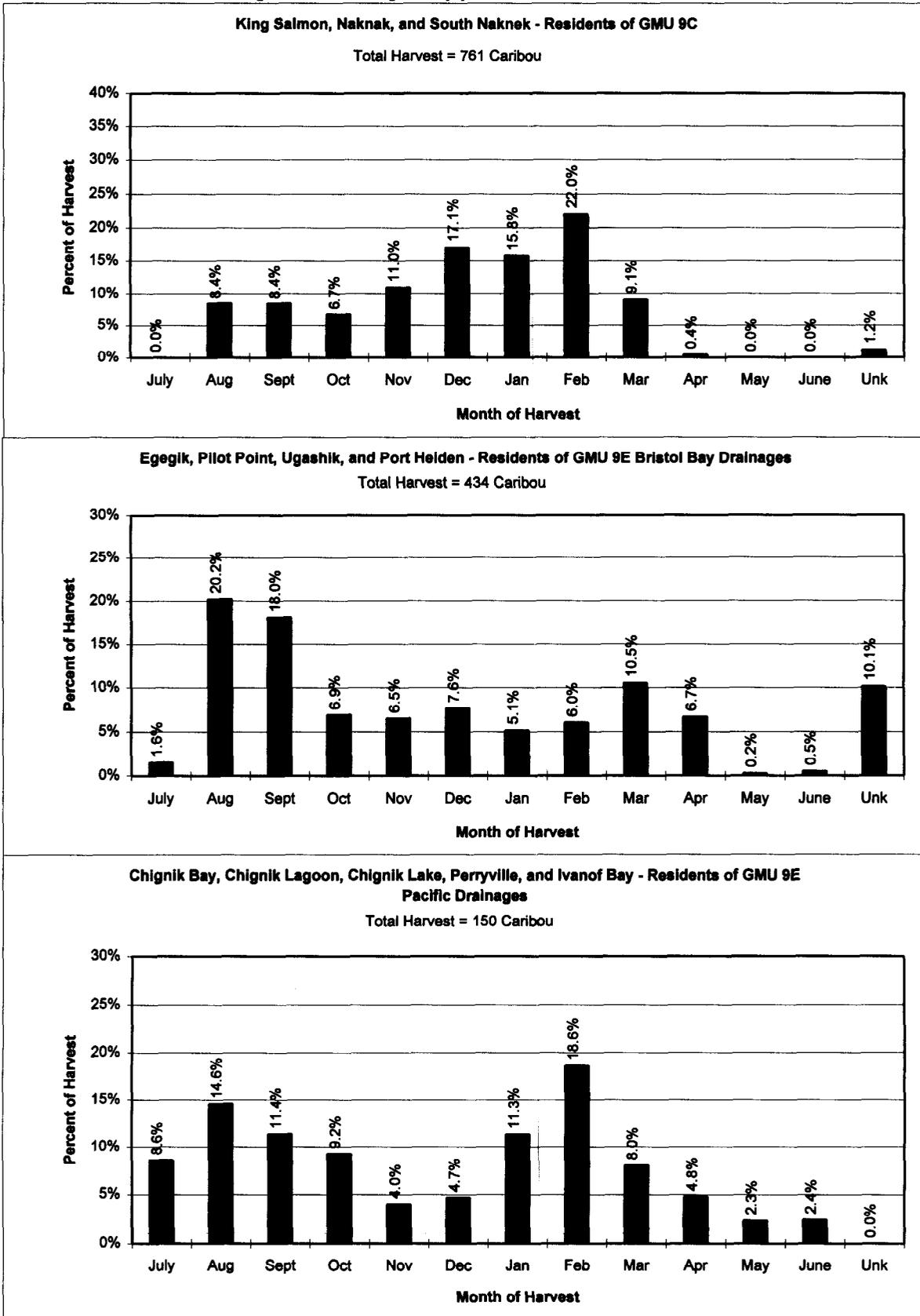


Table 5. Levels of participation in the use and harvest of caribou and caribou harvest levels, 1970s - 1990s.

Community	Survey Year	Percentage of Households				Harvest Levels in			Percentage of Total Wild Resource arvest (%)
		Used Caribou (%)	Hunted Caribou (%)	Harvested Caribou (%)	Received Caribou (%)	Usable Weight Per Person		Caribou (pounds)	
						All Resources ¹ (pounds)	Caribou (pounds)		
Residents of GMU 9C									
King Salmon	1973/74	NA	NA	66.7	NA	NA	276.3	138.2	50.0
	1983	74.4	53.5	44.2	34.9	NA	220.3	73.9	33.5
Naknek	1994/95	86.5	64.9	59.5	32.4	46.0	NA	91.9	NA
	1973/74	NA	NA	44.6	NA	NA	182.5	52.3	28.7
South Naknek	1983	73.1	48.1	36.5	51.9	NA	188.2	54.6	29.0
	1994/95	84.8	67.8	64.4	35.6	42.4	NA	118.2	NA
	1973/74	NA	NA	58.8	NA	NA	245.7	100.0	40.7
	1983	90.5	71.4	57.1	52.4	NA	267.9	147.5	55.1
	1992/93	85.7	62.9	45.7	60.0	37.1	296.8	91.1	30.7
	1994/95	96.0	76.0	68.0	72.0	52.0	NA	118.6	NA
Residents of GMU 9E: Bristol Bay Drainages									
Egegik	1973/74	NA	NA	65.0	NA	NA	219.4	104.2	47.5
	1984	96.0	80.0	72.0	60.0	64.0	384.3	232.8	60.6
Pilot Point	1994/95	86.4	54.6	54.6	59.1	50.0	NA	186.3	NA
	1973/74	NA	NA	70.0	NA	NA	321.9	146.2	45.4
Pilot Point/Ugashik	1986/87	94.1	82.4	76.5	58.8	52.9	383.7	228.7	59.6
	1994/95	100.0	55.6	55.6	81.5	59.3	NA	182.5	NA
Ugashik	1991/92	100.0	83.3	83.3	72.2	50.0	NA	260.7	NA
	1973/74	NA	NA	60.0	NA	NA	889.3	512.5	57.6
Port Heiden	1986/87	80.0	80.0	80.0	0.0	80.0	814.4	300.0	36.8
	1994/95	100.0	100.0	100.0	100.0	100.0	NA	350.0	NA
	1973/74	NA	NA	30.0	NA	NA	125.9	78.5	62.4
	1986/87	100.0	70.3	67.6	62.2	51.4	407.6	244.7	60.0
	1991/92	100.0	75.0	72.5	75.0	80.0	NA	226.6	NA
	1994/95	100.0	53.1	50.0	84.4	53.1	NA	196.6	NA

Table 5. Continued.

Community	Survey Year	Percentage of Households						Harvest Levels in			Percentage of Total Wild Resource Harvest (%)
		Used		Hunted		Harvested		Usable Weight Per Person		Caribou (pounds)	
		Caribou (%)	(%)	Caribou (%)	(%)	Caribou (%)	(%)	All Resources ¹ (pounds)			
<u>Residents of GMU 9E: Pacific Ocean Drainages</u>											
Chignik Bay	1975	NA	NA	NA	NA	NA	NA	NA	351.0	48.2	13.7
	1984	68.4	31.6	21.1	63.2	36.8	187.9	7.3	208.6	15.3	3.9
	1989	77.1	45.7	22.9	65.7	14.3	208.6	15.3	353.4	15.3	7.3
	1991/92	86.7	30.0	16.7	80.0	33.3	NA	2.4	598.8	106.0	NA
	1994/95	70.8	8.3	4.2	66.7	20.8	220.2	10.5	211.4	14.6	4.8
Chignik Lagoon	1975	NA	NA	NA	NA	NA	NA	NA	250.6	106.9	42.7
	1984	76.5	29.4	17.6	64.7	29.4	279.0	78.9	447.6	171.2	28.3
	1989	73.3	33.3	20.0	53.3	26.7	442.3	120.0	NA	105.0	27.1
	1994/95	92.6	55.6	40.7	66.7	40.7	NA	455.6	489.8	107.8	18.0
	1975	NA	NA	NA	NA	NA	250.6	106.9	279.0	78.9	NA
Chignik Lake	1984	100.0	73.9	73.9	91.3	69.6	279.0	78.9	447.6	171.2	28.3
	1989	95.2	66.7	57.1	85.7	61.9	442.3	120.0	NA	105.0	27.1
	1991/92 ²	100.0	58.3	58.3	79.2	58.3	NA	455.6	489.8	107.8	18.0
	1994/95	93.8	65.6	56.3	71.9	50.0	NA	489.8	20.7	38.8	9.9
	1984	100.0	66.7	66.7	83.3	66.7	455.6	107.8	489.8	107.8	22.0
Ivanof Bay	1989	100.0	85.7	85.7	85.7	57.1	NA	NA	391.2	20.7	NA
	1994/95	87.5	75.0	50.0	87.5	62.5	391.2	38.8	394.3	28.2	7.2
	1984	100.0	40.0	35.0	95.0	50.0	394.3	28.2	NA	17.6	NA
Perryville	1989	66.7	37.0	22.2	59.3	25.9	394.3	28.2	NA	17.6	NA
	1994/95	75.0	20.0	10.0	75.0	35.0	NA	17.6	NA	17.6	NA

NA = Data not collected.

¹ The surveys for 1973/74 and 1984 did not include plants and berries.

² The survey year ended March 31, 1992; therefore, total harvest does not include 1 caribou taken in April 1992 special opening.

Sources: Gasbairo and Utermohle 1974, Scott et al. 1995, and Tuten 1977.

per person (Table 3).

Caribou harvest levels have varied considerably from community to community over the recent historic period, increasing in some and decreasing in others (Table 6). In Bristol Bay Borough communities, levels have ranged from 0.37 to 0.98 caribou per person. The largest harvests of caribou, as measured by the number harvested per person, occur in the Bristol Bay drainage communities of GMU 9E. The harvest levels for the Pacific drainage communities of GMU 9E are generally lower than those of the Bristol Bay side. Harvest levels appear to have dropped in some communities, such as Ivanof Bay, 0.72 caribou per person in 1989 (total harvest of 23 animals) to 0.14 caribou per person in 1994/95 (5 animals), and Perryville, 1.11 caribou per person in 1984 (total harvest of 30 animals) to 0.40 caribou per person in 1994/95 (total harvest of 12 animals).

Caribou Harvest Areas by Drainage (Uniform Coding Unit) - 1994/95 Regulatory Year

In 1994/95, residents of the 12 Alaska Peninsula study communities harvested caribou from an area stretching from the Nushagak River south to Ivanof Bay in GMUs 17C, 9B, 9C, and 9E (Table 7 and Fig. 4). From north to south, harvests occurred in the following GMUs: in GMU 17C, 1 caribou; in GMU 9B, 15 caribou (1 percent); in GMU 9C, 693 caribou (52 percent); and in GMU 9E, 637 caribou (47 percent). Almost half of the harvest locations (600 caribou; 45 percent), were concentrated in the Naknek River drainage in GMU 9C, while another 93 caribou (7 percent) were taken in the Alagnak River drainage in GMU 9C.

Looking closer at the kill locations in GMU 9E, 124 caribou (9 percent of the total harvest) were harvested in the areas adjacent to the coast north and south of Egegik in the Cape Chichagof and Dago lake and creek drainages; 76 caribou (6 percent) in the Egegik and King Salmon river drainages, inland from the village of Egegik; 25 caribou (2 percent) from the Becharof Lake area; 130 caribou (10 percent) in the Ugashik river and lakes and Dog Salmon River drainages, inland from Pilot Point; 169 caribou (13 percent) in the Port Heiden and Cinder River drainages; 79 caribou (6 percent) in the Unangashak River and Chignik Bay drainages, including Black Lake; 33 caribou (2 percent) adjacent to the Pacific coast, north of Chignik Bay; and 1 caribou in the Kupreanof Peninsula area, including Ivanof Bay.

Community Caribou Harvest Areas - 1994/95 Regulatory Year

Previous investigations (Fall 1993) concluded that, particularly for Egegik, Pilot Point and Ugashik, and Port Heiden, each community, or group of communities, in GMUs 9C and 9E uses fairly distinct areas for hunting caribou. The harvest locations reported for 1994/95 also display these patterns (Table 7). Caribou hunting tends to be concentrated in coding units surrounding a hunter's community of origin.

Table 6. Caribou harvest levels per household, per person, and per successful hunter, 1970s - 1990s.

Community	Survey Year	Caribou Harvest			
		Total	Per Household	Per Person	Per Successful Hunter
<i>Residents of GMU 9(C)</i>					
King Salmon	1973/74	185	3.93	0.92	NA
	1983	182	1.49	0.49	1.88
	1994/95	226	1.84	0.61	2.27
Naknek	1973/74	81	1.32	0.35	NA
	1983	140	1.14	0.37	2.11
	1994/95	432	2.20	0.79	2.60
South Naknek	1973/74	85	3.41	0.67	NA
	1983	135	2.76	0.98	3.63
	1992/93	82	1.90	0.61	2.13
	1994/95	103	2.72	0.79	2.19
<i>Residents of GMU 9(E): Bristol Bay Drainages</i>					
Egegik	1973/74	68	2.85	0.70	NA
	1984	151	3.66	1.55	4.50
	1994/95	147	3.50	1.24	5.13
Pilot Point/Ugashik	1973/74	133	8.85	3.16	NA
	1986/87	118	5.13	1.58	3.77
	1991/92	135	5.89	1.73	5.56
	1994/95	148	4.22	1.30	5.83
Port Heiden	1973/74	29	2.20	0.52	NA
	1986/87	168	4.54	1.63	4.00
	1991/92	174	4.35	1.51	5.15
	1994/95	139	3.56	1.31	6.33
<i>Residents of GMU 9(E): Pacific Ocean Drainages</i>					
Chignik Bay	1975	36	1.38	0.32	NA
	1984	6	0.21	0.05	1.00
	1989	12	0.31	0.10	1.11
	1991/92	13	0.30	0.10	1.50
	1994/95	1	0.04	0.02	1.00
Chignik Lagoon	1975	40	2.08	0.71	NA
	1984	5	0.23	0.07	1.33
	1989	4	0.27	0.10	1.00
	1994/95	21	0.74	0.22	1.82
Chignik Lake	1975	75	3.56	0.71	NA
	1984	82	2.65	0.52	2.65
	1989	129	4.61	1.14	4.62
	1991/92	106	3.18	0.80	2.81
	1994/95	111	2.84	0.70	3.22
Ivanof Bay	1984	20	2.00	0.55	3.00
	1989	23	3.29	0.72	2.09
	1994/95	5	0.50	0.14	1.00
Perryville	1984	30	1.11	0.26	3.14
	1989	22	0.71	0.19	2.38
	1994/95	12	0.40	0.12	2.67

NA = Data not collected.

Source: Gasbarro and Utermohle 1973, Scott et al. 1995, and Tuten 1977.

Table 7. The estimated harvest of caribou by uniform coding unit, 1994/95 regulatory year.

Uniform Coding Unit	Study Community											Total	Percent				
	King		South		Pilot		Port		Chignik		Chignik			Chignik	Ivanof		
	Salmon	Naknek	Naknek	Egegik	Egegik	Point	Ugashik	Heiden	Heiden	Chignik	Chignik	Chignik	Lake	Perryville	Bay		
Nushagak R. (17C 901)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.1%
Kvichak R. (9B 201)	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	8.2	0.6%
Kvichak R. (9B 202)	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.2%
Kvichak R. (9B 203)	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.2%
Alagnak R. (9C 701)	0.0	93.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.0	6.9%
Naknek/Savonoski R. (9C 602)	13.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.6	1.2%
Naknek/Savonoski R. (9C 603)	16.6	26.6	73.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	117.7	8.7%
Naknek/Savonoski R. (9C 604)	159.6	89.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	249.3	18.5%
Naknek/Savonoski R. (9C 605)	26.6	189.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	216.0	16.1%
Cape Chichagof (9E 101)	3.3	16.6	28.9	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.3	4.5%
Dago Lake/Creek (9E 601)	0.0	6.6	0.0	34.4	22.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.6	4.7%
King Salmon R. (9E 201)	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	0.6%
Egegik R. (9E 301)	0.0	0.0	0.0	34.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.4	2.6%
Egegik R. (9E 302)	0.0	0.0	0.0	34.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.4	2.6%
Becharof Lake (9E 401)	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.3%
Becharof Lake (9E 402)	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0	1.6%
Ugashik R./Lakes (9E 701)	0.0	0.0	1.5	0.0	101.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	118.1	8.8%
Ugashik R./Lakes (9E 703)	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.1%
Dog Salmon R. (9E 801)	0.0	0.0	0.0	0.0	2.1	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.8%
Cinder R. (9E 1001)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	2.9%
Port Heiden/Meshik (9E 1101)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.9	0.0	0.0	0.0	0.0	20.7	9.3	0.0	130.0	9.7%
Unangashak R. (9E 1201)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.3	0.0	0.0	46.3	3.4%
Chignik Bay (9E 2001)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.3	0.0	0.0	32.5	2.4%
Wide Bay (9E 1601)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.1%
Imuya Bay/Yantami Bay (9E 1701)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	3.5	0.3%
Amber/Aniakchak Bays (9E 1801)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0	4.9	0.4%
Kujulik Bay/Hook Bay (9E 1901)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	16.1	2.4	2.4	0.0	3.4	23.1	1.7%
Kupreanof Peninsula (9E 2201)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.1%
Total	226.1	431.9	103.4	147.0	126.7	126.7	21.0	136.9	1.2	21.5	110.9	12.4	8.2%	0.9%	4.5	1345.5	100.0%
Percent	16.8%	32.1%	7.7%	10.9%	9.4%	9.4%	1.6%	10.3%	0.1%	1.6%	8.2%	0.9%	0.3%	0.3%	0.3%	100.0%	100.0%

Figure 4.

**Estimated Harvest Of Caribou
By Northern Alaska Peninsula
Communities, By Uniform
Coding Subunit**

July 1994-June 1995

LEGEND

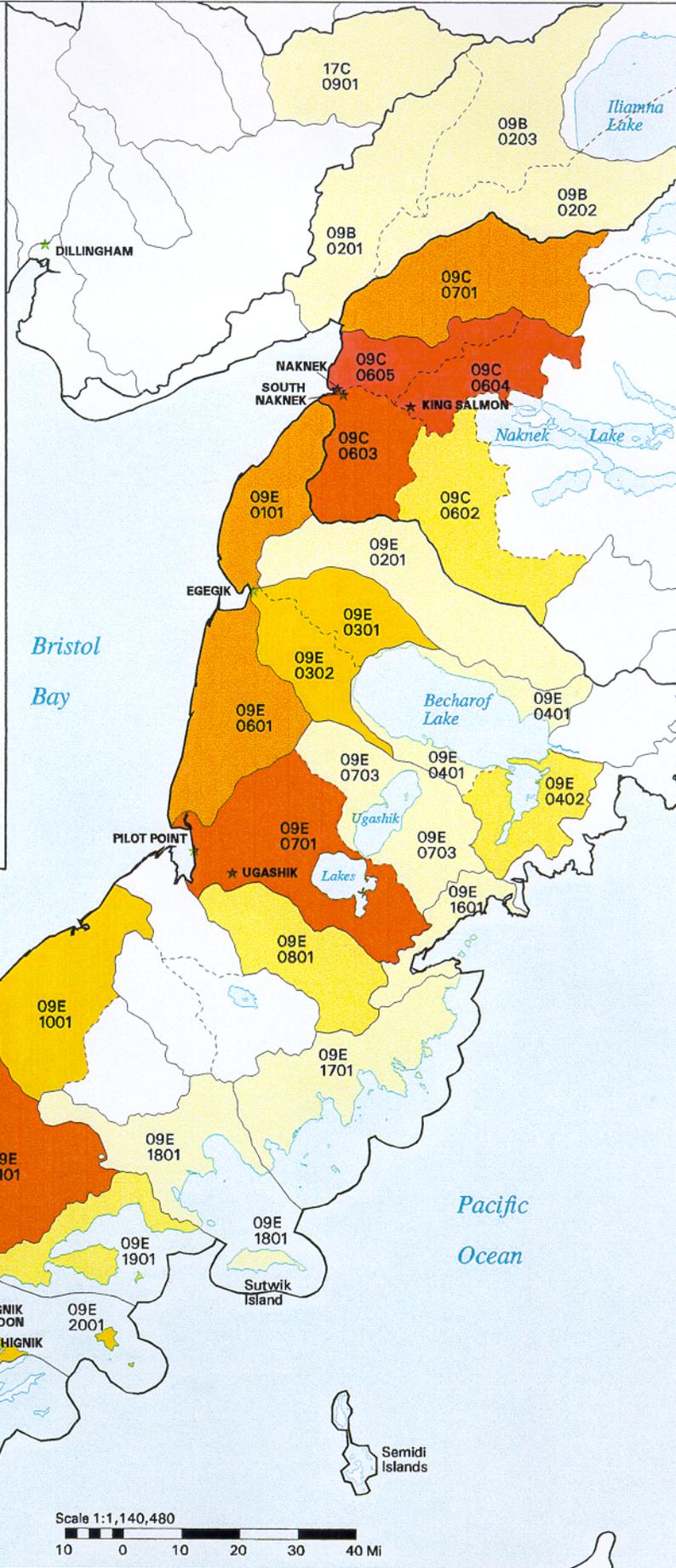
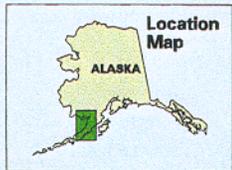
- 10 Or Less Kills/UCU
- 11-30 Kills/UCU
- 31-50 Kills/UCU
- 51-100 Kills/UCU
- 101-200 Kills/UCU
- 201 Or More Kills/UCU

- GMU Subunit Boundary
- Uniform Coding Unit Boundary
- Uniform Coding Subunit Boundary

Numbers indicate Game Management Unit, Subunit, and Uniform Coding Subunit

Source: Household interviews conducted by the Bristol Bay Native Association and the Alaska Department of Fish and Game, Division of Subsistence, 1995 and 1996. In total, 315 of 810 households living in communities of GMUs 9C and 9E were interviewed (52%).

See: Krieg, Kenner & Hutchinson-Scarborough 1996, Division of Subsistence Technical Paper 240.



Areas used by a community's hunters overlap areas used by neighboring communities' hunters at the margins.

Residents of communities in GMU 9C (King Salmon, Naknek, and South Naknek) primarily harvested caribou in GMU 9C (691 caribou; 91 percent of their total harvest of 761 caribou). More than three-quarters (598 caribou; 79 percent of the total harvest) was taken in the Naknek River drainage. No South Naknek resident reported a kill location north of the Naknek River, indicating a south-oriented hunting pattern. By contrast, all caribou harvested in the Alagnak River drainage (93 caribou; 12 percent) were killed by residents of Naknek. Other kill locations were reported in the Cape Chichagof, Dago lake and creek, lower Ugashik river and lake drainages, and the Kvichak River in GMU 9B (Table 7).

Residents of Egegik, Pilot Point, Ugashik, and Port Heiden harvested all their estimated 434 caribou in GMU 9E. In the Cape Chichagof, King Salmon River, Egegik River, and Becharof Lake drainages, an area surrounding the village of Egegik, 113 caribou (26 percent of the harvest reported by the four communities) were taken, all by Egegik residents. In the Dago creek and lake drainage, between Egegik and Pilot Point villages, 57 caribou (13 percent) were harvested, all by residents of Egegik and Pilot Point. In the Ugashik river and lakes and Dog Salmon River drainages, 125 caribou (29 percent) were taken by residents of Pilot Point and Ugashik. In the Cinder River and Port Heiden drainages, 138 caribou (32 percent) were all taken by residents of Port Heiden (Table 7).

Residents of Chignik Lake, Chignik Lagoon, Chignik Bay, Perryville, and Ivanof Bay harvested most of their caribou (146 of 150 caribou) in GMU 9E. In the Unangashak River and Chignik Bay drainages, including Black Lake, 79 caribou were harvested (52 percent of the harvest by all five communities), all by residents of Chignik Lake and Chignik Lagoon. Adjacent to the Pacific coast north of Chignik Bay, 33 caribou were harvested (22 percent) by residents of all villages except Perryville. In the Cinder River and Port Heiden drainages, 30 caribou were harvested (20 percent) by residents of Chignik Lake and Perryville. In the Kupreanof Peninsula area including Ivanof Bay village, 1 caribou was harvested by Ivanof Bay residents. Some Chignik Lake residents went as far north as the lower Ugashik river and lake drainage and harvested 3 caribou). In addition, kill locations were recorded in GMU 17C, 1 caribou; GMU 9B, 2 caribou; and GMU 9C, 2 caribou (Table 7).

Caribou Harvests within Federal Land Units - 1994/95 Regulatory Year

As stated in the methodology section, it was not possible to identify kill locations on federal lands. It only was possible to identify kill locations within the outer boundaries of federal land units. Kill locations within federal land unit boundaries may be on private inholdings or state land.

Within GMUs 9C and 9E, there are five federal land units (Fig. 1). Residents of the 12 study communities reported harvesting 117 (9 percent) of 1,345 caribou within federal land unit boundaries. Of this harvest, 76 caribou (6 percent) was harvested with the Alaska Peninsula National Wildlife Refuge, 3

caribou (less than 1 percent) from the Aniakchak National Monument and Preserve, 28 caribou (2 percent) from the Becharof National Wildlife Refuge, and 10 caribou (less than 1 percent) from the Katmai National Park and Preserve (Table 8).

Three communities (Chignik Bay, Chignik Lagoon, and Ivanof Bay) recorded all their caribou harvest locations (27) within federal land unit boundaries of the Alaska Peninsula National Wildlife Refuge and the Aniakchak National Monument and Preserve. Chignik Lake residents reported 46 caribou (42 percent of the community total) harvested within the Alaska Peninsula National Wildlife Refuge. Other communities reported from 1 to 17 percent of their total harvests within federal land unit boundaries (Table 8), except for South Naknek, Ugashik, and Perryville, which reported no kill locations within federal land unit boundaries.

Table 8. The estimated harvest of caribou by federal land unit, 1994/95 regulatory year.¹

Federal Land Unit	Study Community												TOTAL
	King Salmon	Naknek	Naknek	South Naknek	Egegik	Point Barrow	Ugashik	Heiden	Port Heiden	Chignik Bay	Chignik Lake	Chignik Lagoon	
COMMUNITY HARVEST TOTALS	226.1	431.9	103.4	147.0	126.7	21.0	138.9	1.2	21.5	110.9	12.4	4.5	1345.5
TOTAL FEDERAL LAND UNITS	10.0	3.3	0.0	24.8	3.2	0.0	2.4	1.2	21.5	46.3	0.0	4.5	117.3
Percentage of Community Totals	4.4%	0.8%	0.0%	16.9%	2.5%	0.0%	1.8%	100.0%	100.0%	41.8%	0.0%	100.0%	8.7%
Alaska Peninsula National Wildlife Refuge	0.0	0.0	0.0	0.0	3.2	0.0	2.4	1.2	18.3	46.3	0.0	4.5	75.9
Percentage of Community Totals	0.0%	0.0%	0.0%	0.0%	2.5%	0.0%	1.8%	100.0%	85.0%	41.8%	0.0%	100.0%	5.6%
Aniakchak National Monument and Preserve	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.2
Percentage of Community Totals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	15.0%	0.0%	0.0%	0.0%	0.2%
Becharof National Wildlife Refuge	3.3	0.0	0.0	24.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.1
Percentage of Community Totals	1.5%	0.0%	0.0%	16.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%
Katmai National Park and Preserve	6.6	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
Percentage of Community Totals	2.9%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
Katmai National Park and Preserve	23.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.3
Native Inholdings	10.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
Percentage of Community Totals													

¹ The table indicates harvests which fall within the boundaries of the federal conservation units, but do not necessarily indicate harvests from federal lands. The identification of Native and other inholdings on which harvests could occur is underway by the US Fish and Wildlife Service and could not be incorporated into this report.

MOOSE: SUBSISTENCE HARVESTS AND USES

Participation in the Subsistence Harvest and Use of Moose - 1994/95 Regulatory Year

In the 1994/95 regulatory year (July 1, 1994 to June 30, 1995), moose was used by a large percentage of the surveyed households in all communities in GMU 9C and 9E (Table 9). Chignik Bay had the lowest household use of moose (37.5 percent of the households used moose), while King Salmon (70.3 percent), Pilot Point (70.4 percent), Chignik Lagoon (81.5 percent), Port Heiden (87.5 percent), and Ugashik (100 percent) reported high household use of moose. As was the case with caribou, moose was shared extensively, but less so than caribou. It was received by large portions of households in all communities (33 percent to 78 percent). Giving of moose was greatest in the communities on the Bristol Bay side of GMU 9E, ranging from 27 percent of households in Pilot Point to 100 percent in Ugashik. In the communities on the Pacific Ocean side of GMU 9E, giving of moose ranged from 8 percent of households in Chignik Bay to 37 percent of households in Chignik Lagoon.

Moose Harvest Quantities - 1994/95 Regulatory Year

An estimated total of 127 moose was harvested by the 12 northern Alaska Peninsula communities during the 1994/95 regulatory year (with a 95 percent confidence range between 76 and 222 animals) (Table 9 and Table 10). Over half, (78 moose; 61 percent) was harvested by communities in GMU 9C (King Salmon, Naknek, and South Naknek). Residents of GMU 9(E) Bristol Bay drainage communities harvested 22 moose (17 percent). Residents on the Pacific Ocean side of GMU 9(E) harvested 26 moose (21 percent). Of the 118 moose for which respondents were able to identify sex, 93 moose (79 percent) were bulls and 25 (21 percent) were cows.

The estimated harvest of 127 moose by residents of GMUs 9C and 9E based on household surveys was compared to the number reported from permits and tags returned to the Division of Wildlife Conservation, ADF&G. Based on permit and tag returns, residents of the 12 communities of GMUs 9C and 9E reported harvesting 51 moose in the 1994/95 regulatory year (ADF&G 1996). Permit and tag returns accounted for about 40 percent of the moose harvested by the Alaska Peninsula study communities as estimated from household surveys. Residents of GMU 9C had a higher permit and tag return level than residents of GMU 9E. For GMU 9C residents, 57.7 percent of the estimated harvest from the surveys was reported through permit and tag returns, compared with 12.2 percent for residents of GMU 9E.

Table 9. Levels of participation in the use and harvest of moose and moose harvest levels, 1994/95 regulatory year.

Community	Percentage of Households						Moose Harvest				95 % Confidence Limit		
	Used Moose (%)		Harvested Moose (%)		Received Moose (%)		Total	Per Household	Per Person	Per Successful Hunter	%	Low*	High
	(%)	(%)	(%)	(%)	(%)	(%)							
<u>Residents of GMU 9(C)</u>													
King Salmon	70.3	40.5	21.6	48.6	16.2	16.2	27	0.22	0.07	1.00	54.0%	12	41
Naknek	54.2	42.4	18.6	37.3	16.9	16.9	50	0.25	0.09	1.15	49.0%	25	74
South Naknek	40.0	16.0	4.0	40.0	12.0	12.0	2	0.04	0.01	1.00	121.0%	1	3
Subtotal							78				52.1%	39	119
<u>Residents of GMU 9(E): Bristol Bay Drainages</u>													
Egegik	50.0	27.3	13.6	40.9	27.3	27.3	8	0.18	0.06	1.00	84.0%	4	14
Pilot Point	70.4	11.1	7.4	66.7	33.3	33.3	4	0.15	0.04	1.33	37.0%	4	6
Ugashik	100.0	50.0	50.0	50.0	100.0	100.0	3	0.50	0.33	1.00	1037.0%	1	34
Port Heiden	87.5	25.0	9.4	78.1	40.6	40.6	7	0.19	0.07	2.00	52.0%	6	11
Subtotal							22				192.9%	15	65
<u>Residents of GMU 9(E) - Pacific Ocean Drainages</u>													
Chignik Bay	37.5	8.3	4.2	33.3	8.3	8.3	1	0.04	0.02	1.00	86.0%	1	2
Chignik Lagoon	81.5	37.0	14.8	77.8	37.0	37.0	6	0.22	0.07	1.50	27.0%	6	8
Chignik Lake	59.4	28.1	21.9	40.6	28.1	28.1	13	0.34	0.08	1.57	37.0%	11	18
Perryville	65.0	20.0	15.0	60.0	35.0	35.0	5	0.15	0.04	1.00	68.0%	3	8
Ivanof Bay	62.5	12.5	12.5	62.5	25.0	25.0	1	0.13	0.03	1.00	79.0%	1	2
Subtotal							27				43.9%	22	39
Grand Total							127				75.0%	76	222

* Lower Confidence Limit is the higher of the lower 95% confidence limit and reported harvest.

Table 10. The estimated moose harvest by sex and month, 1994/95 regulatory year.

		Moose Harvest By Month													
Community	Sex	July	August	September	October	November	December	January	February	March	April	May	June	Unknown	Total
<u>Residents of GMU 9C</u>															
King Salmon	All	0	3	10	0	0	13	0	0	0	0	0	0	0	27
	Male	0	0	10	0	0	10	0	0	0	0	0	0	0	20
	Female	0	3	0	0	0	3	0	0	0	0	0	0	0	7
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Naknek	All	0	0	23	0	0	20	3	0	0	0	0	0	3	50
	Male	0	0	23	0	0	10	3	0	0	0	0	0	0	37
	Female	0	0	0	0	0	10	0	0	0	0	0	0	3	13
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South Naknek	All	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	Male	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>Total Harvest - Residents of GMU 9C</u>															
	All	0	3	35	0	0	33	3	0	0	0	0	0	3	78
	Male	0	0	35	0	0	20	3	0	0	0	0	0	0	58
	Female	0	3	0	0	0	13	0	0	0	0	0	0	3	20
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>Residents of GMU 9E: Bristol Bay Drainages</u>															
Egegik	All	0	2	4	0	0	2	0	0	0	0	0	0	0	8
	Male	0	2	4	0	0	0	0	0	0	0	0	0	0	6
	Female	0	0	0	0	0	2	0	0	0	0	0	0	0	2
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pilot Point	All	0	0	0	0	0	0	1	1	0	0	0	0	2	4
	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	Unknown	0	0	0	0	0	0	0	1	0	0	0	0	2	3
Port Heiden	All	0	0	6	0	0	1	0	0	0	0	0	0	0	7
	Male	0	0	6	0	0	1	0	0	0	0	0	0	0	7
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ugashik	All	0	0	3	0	0	0	0	0	0	0	0	0	0	3
	Male	0	0	3	0	0	0	0	0	0	0	0	0	0	3
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>Total Harvest - Residents of GMU 9E: Bristol Bay Drainages</u>															
	All	0	2	13	0	0	3	1	1	0	0	0	0	2	22
	Male	0	2	13	0	0	1	0	0	0	0	0	0	0	16
	Female	0	0	0	0	0	2	1	0	0	0	0	0	0	3
	Unknown	0	0	0	0	0	0	0	1	0	0	0	0	2	3

Table 10. Continued.

		Moose Harvest By Month												Total	
Community	Sex	July	August	September	October	November	December	January	February	March	April	May	June		Unknown
<i>Residents of GMU 9E: Pacific Ocean Drainages</i>															
Chignik Bay	All	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Chignik Lagoon	All	0	0	1	1	0	3	1	0	0	0	0	0	0	6
	Male	0	0	0	1	0	2	0	0	0	0	0	0	0	3
	Female	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	Unknown	0	0	1	0	0	0	1	0	0	0	0	0	0	2
Chignik Lake	All	0	0	4	2	0	1	1	1	1	2	0	0	0	13
	Male	0	0	2	1	0	1	1	1	1	2	0	0	0	11
	Female	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	Unknown	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Ivanof Bay	All	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Perryville	All	0	0	3	0	0	0	0	0	0	0	0	0	2	5
	Male	0	0	3	0	0	0	0	0	0	0	0	0	2	5
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Total Harvest - Residents of GMU 9E: Pacific Ocean Drainages</i>															
	All	0	0	10	4	0	4	2	1	1	2	0	0	2	27
	Male	0	0	6	2	0	3	1	1	1	2	0	0	2	19
	Female	0	0	0	1	0	1	0	0	0	0	0	0	0	2
	Unknown	0	0	5	0	0	0	1	0	0	0	0	0	0	6
Grand Total	All	0	5	58	4	0	41	7	2	1	2	0	0	7	127
	Male	0	2	53	2	0	25	5	1	1	2	0	0	2	93
	Female	0	3	0	1	0	16	1	0	0	0	0	0	3	25
	Unknown	0	0	5	0	0	0	1	1	0	0	0	0	2	9

Timing of Moose Harvests - 1994/95 Regulatory Year

In 1994/95, peak harvest months for moose were September (46 percent) and December (32 percent), a pattern directly related to the two regulatory open seasons in September and December (Fig. 5). For communities in GMU 9C, September and December harvests were 87 percent of the total; in Bristol Bay drainage GMU 9E communities, 72 percent; and in Pacific drainage GMU 9E communities, 54 percent (Fig. 6). Other moose were harvested in August, October, January, February, March, and April. The month of harvest was not recorded or not known for 6 percent of the harvest (Table 10 and Fig. 5).

Moose Harvest Levels

Moose has been an important part of the harvest of wild resources in many of the Alaska Peninsula study communities, as shown in past surveys (Table 11). For residents of GMU 9C, moose has been from 5 percent to 32 percent of the total wild resource harvest, in pounds usable weight; 0 percent to 20 percent for residents of Bristol Bay drainages of GMU 9E; and 0 percent to 22 percent of the total wild resource harvest for residents of Pacific drainages of GMU 9E (Table 11). In 1994/95, harvest levels ranged from 0.01 to 0.09 moose per person for GMU 9C; 0.02 to 0.33 moose per person for residents of Bristol Bay drainages of GMU 9E; and 0.04 to 0.08 moose per person for residents of the Pacific side of GMU 9E (Table 9). Table 12 compares 1994/95 harvest levels to harvest levels from previous surveys.

Moose Harvest Areas by Drainage (Uniform Coding Unit) - 1994/95 Regulatory Year

In 1994/95, residents of the 12 Alaska Peninsula study communities harvested moose in areas between the Nushagak River and Ivanof Bay in GMUs 17C, 9B, 9C, and 9E (Fig. 7 and Table 13). In GMU 17C, 3 moose were harvested (3 percent of the total harvest); on the Kvichak River in GMU 9B, 23 moose (18 percent) were harvested; in GMU 9C, 51 moose (40 percent) were harvested; and in GMU 9E, 49 moose (39 percent) were harvested. In the Naknek River drainage, 35 moose (27 percent) were taken. In the Chignik, Kujulik, and Hook bay drainages, 21 moose (17 percent) were taken. In the Alagnak River drainage, 17 moose (13 percent) were taken. In Cinder River and Port Heiden drainages, 7 moose (6 percent) were taken. In the Ugashik river and lakes and King Salmon River drainages, 7 moose (6 percent) were taken. In the Kupreanof Peninsula area, 6 moose (5 percent) were taken. The rest of the moose harvest occurred in the King Salmon River and Becharof Lake drainages, 8 moose (6 percent).

Fig. 5. The moose harvest by month, all communities, 1994/95 regulatory year.

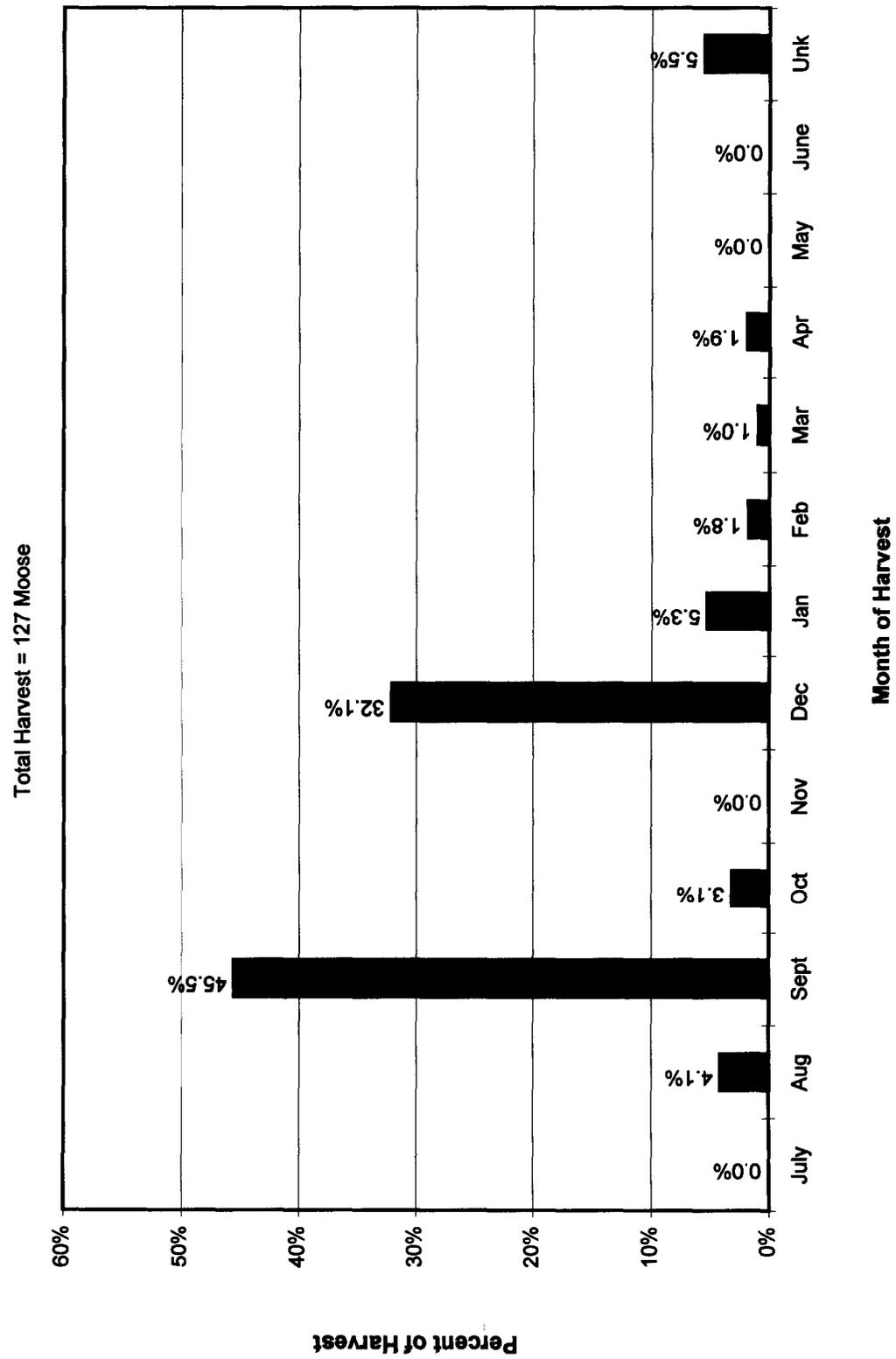


Fig. 6. The moose harvest by month, residents of GMU 9C, GMU 9E Bristol Bay drainages, and GMU 9E Pacific drainages, 1994/95 regulatory year.

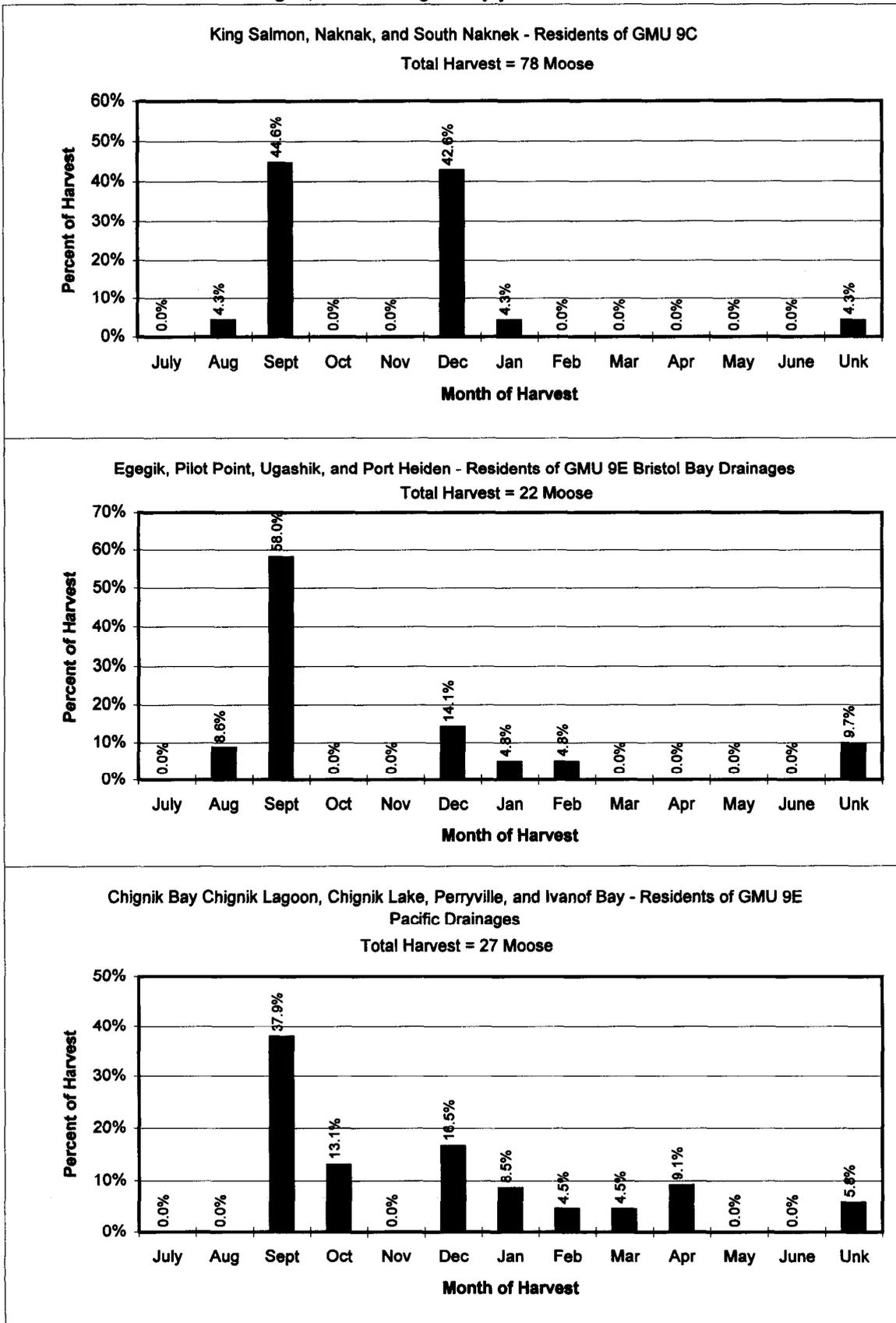


Table 11. The level of participation in the use and harvest of moose and moose harvest levels, 1970s - 1990s.

Community	Survey Year	Percentage of Households						Harvest Levels in			Percentage of Total Wild Resource Harvest (%)
		Used Moose (%)	Hunted Moose (%)	Harvested Moose (%)	Received Moose (%)	Gave Moose (%)	Usable Weight Per Person		Moose (pounds)		
							All Resources ¹ (pounds)	Moose (pounds)			
<u>Residents of GMU 9C</u>											
King Salmon	1973/74	NA	NA	53.3	NA	NA	NA	276.3	75.9	27.5%	
	1983	34.9	37.2	9.3	25.6	NA	NA	220.3	24.9	11.3%	
Naknek	1994/95	70.3	40.5	21.6	48.7	16.2	NA	NA	38.9	NA	
	1973/74	NA	NA	28.6	NA	NA	182.5	188.2	58.5	32.1%	
South Naknek	1983	32.7	21.2	5.8	26.9	NA	10.0	NA	10.0	5.3%	
	1994/95	54.2	42.4	18.6	37.3	17.0	NA	245.7	43.4	17.7%	
1983	1973/74	NA	NA	29.4	NA	NA	18.3	267.9	18.3	6.8%	
	1992/93	62.9	20.0	8.6	62.9	14.3	296.8	19.3	19.3	6.5%	
	1994/95	40.0	16.0	4.0	40.0	12.0	NA	6.3	6.3	NA	
<u>Residents of GMU 9E: Bristol Bay Drainages</u>											
Egegik	1973/74	NA	NA	5.0	NA	NA	219.4	6.5	6.5	3.0%	
	1984	36.0	16.0	4.0	32.0	8.0	384.3	9.3	9.3	2.4%	
Pilot Point	1994/95	50.0	27.3	13.6	40.9	27.3	NA	34.8	34.8	NA	
	1973/74	NA	NA	0.0	NA	NA	321.9	0.0	0.0	0.0%	
Ugashik	1986/87	47.1	5.9	5.9	47.1	5.9	383.7	8.9	8.9	2.3%	
	1994/95	70.4	11.1	7.4	66.7	33.3	NA	22.3	22.3	NA	
Port Heiden	1973/74	NA	NA	40.0	NA	NA	889.3	180.0	180.0	20.2%	
	1986/87	60.0	20.0	20.0	40.0	20.0	814.4	108.0	108.0	13.3%	
1994/95	1973/74	100.0	50.0	50.0	50.0	100.0	NA	180.0	180.0	NA	
	1986/87	21.6	5.4	2.7	18.9	10.8	125.9	12.8	12.8	10.2%	
	1994/95	87.5	25.0	9.4	78.1	40.6	407.6	5.2	5.2	1.3%	
							NA	37.2	37.2	NA	

Table 11. Continued.

Community	Survey Year	Percentage of Households						Harvest Levels in			Percentage of Total Wild Resource Harvest (%)
		Used		Harvested		Received		Usable Weight Per Person		Moose (pounds)	
		Moose (%)	Moose (%)	Moose (%)	Moose (%)	Moose (%)	Moose (%)	All Resources ¹ (pounds)			
<i>Residents of GMU 9E - Pacific Ocean Drainages</i>											
Chignik Bay	1975	NA	NA	NA	NA	NA	NA	NA	351.0	77.1	22.0%
	1984	26.3	21.1	5.3	21.1	15.8	187.9	6.6	3.5%		
	1989	37.1	20.0	0.0	37.1	0.0	208.6	0.0	0.0%		
	1991/92	50.0	10.0	0.0	50.0	6.7	353.4	0.0	0.0%		
Chignik Lagoon	1994/95	37.5	8.3	4.2	33.3	8.3	NA	8.7	NA		
	1975	NA	NA	NA	NA	NA	598.8	137.4	22.9%		
	1984	58.8	29.4	17.6	47.1	17.6	220.2	47.4	21.5%		
	1989	60.0	26.7	20.0	46.7	20.0	211.4	21.9	10.3%		
Chignik Lake	1994/95	81.5	37.0	14.8	77.8	37.0	NA	36.0	NA		
	1975	NA	NA	NA	NA	NA	250.6	33.8	13.5%		
	1984	52.2	26.1	26.1	34.8	34.8	279.0	27.9	10.0%		
	1989	52.4	9.5	9.5	42.9	14.3	453.0	25.7	5.7%		
Ivanof Bay	1991/92	58.3	16.7	16.7	45.8	33.3	442.4	28.4	6.4%		
	1994/95	59.4	28.1	21.9	40.6	28.1	NA	45.7	NA		
	1984	66.7	16.7	0.0	66.7	0.0	455.6	0.0	0.0%		
	1989	0.0	0.0	0.0	0.0	0.0	489.8	0.0	0.0%		
Perryville	1994/95	62.5	12.5	12.5	62.5	25.0	NA	18.6	NA		
	1984	85.0	30.0	50.0	75.0	50.0	391.2	38.1	9.7%		
	1989	74.1	33.3	14.8	63.0	22.2	394.3	21.4	5.4%		
	1994/95	65.0	20.0	15.0	60.0	35.0	NA	23.8	NA		

NA = Data not collected.

¹ The surveys from 1973/74 and 1984 did not include plants and berries.

Sources: Gasbarro and Utermohle 1974, Scott et al. 1995, and Tuten 1977.

Table 12. Moose harvest levels per household and per person, 1970s - 1990s.

Community	Survey Year	Moose Harvest		
		Total	Per Household	Per Person
<i>Residents of GMU 9(C)</i>				
King Salmon	1973/74	28	0.60	0.14
	1983	17	0.14	0.05
	1994/95	27	0.22	0.07
Naknek	1973/74	25	0.41	0.11
	1983	7	0.06	0.02
	1994/95	50	0.25	0.09
South Naknek	1973/74	10	0.41	0.08
	1989	5	0.10	0.04
	1992/93	5	0.12	0.04
	1994/95	2	0.04	0.01
<i>Residents of GMU 9(E) - Bristol Bay Drainages</i>				
Egegik	1973/74	1	0.05	0.01
	1984	2	0.05	0.02
	1994/95	8	0.18	0.06
Pilot Point	1973/74	0	0.00	0.00
	1986/87	1	0.06	0.02
	1994/95	4	0.15	0.04
Ugashik	1973/74	8	0.80	0.33
	1986/87	2	0.40	0.20
	1994/95	3	0.50	0.33
Port Heiden	1973/74	1	0.10	0.02
	1986/87	1	0.03	0.01
	1994/95	7	0.19	0.07
<i>Residents of GMU 9(E) - Pacific Ocean Drainages</i>				
Chignik Bay	1975	16	0.62	0.14
	1984	1	0.04	0.01
	1989	0	0.00	0.00
	1991/92	0	0.00	0.00
	1994/95	1	0.04	0.02
Chignik Lagoon	1975	14	0.75	0.25
	1984	6	0.27	0.08
	1989	2	0.13	0.05
	1994/95	6	0.22	0.07
Chignik Lake	1975	7	0.31	0.06
	1984	8	0.26	0.05
	1989	5	0.18	0.04
	1991/92	7	0.21	0.05
	1994/95	13	0.34	0.08
Ivanof Bay	1984	0	0.00	0.00
	1989	0	0.00	0.00
	1994/95	1	0.13	0.03
Perryville	1984	8	0.30	0.07
	1989	5	0.16	0.04
	1994/95	5	0.15	0.04

Sources: Gasbarro and Utermohle 1974, Scott et al. 1995, and Tuten 1977.

Figure 7.

**Estimated Harvest Of Moose
By Northern Alaska Peninsula
Communities, By Uniform
Coding Subunit**

July 1994-June 1995

LEGEND

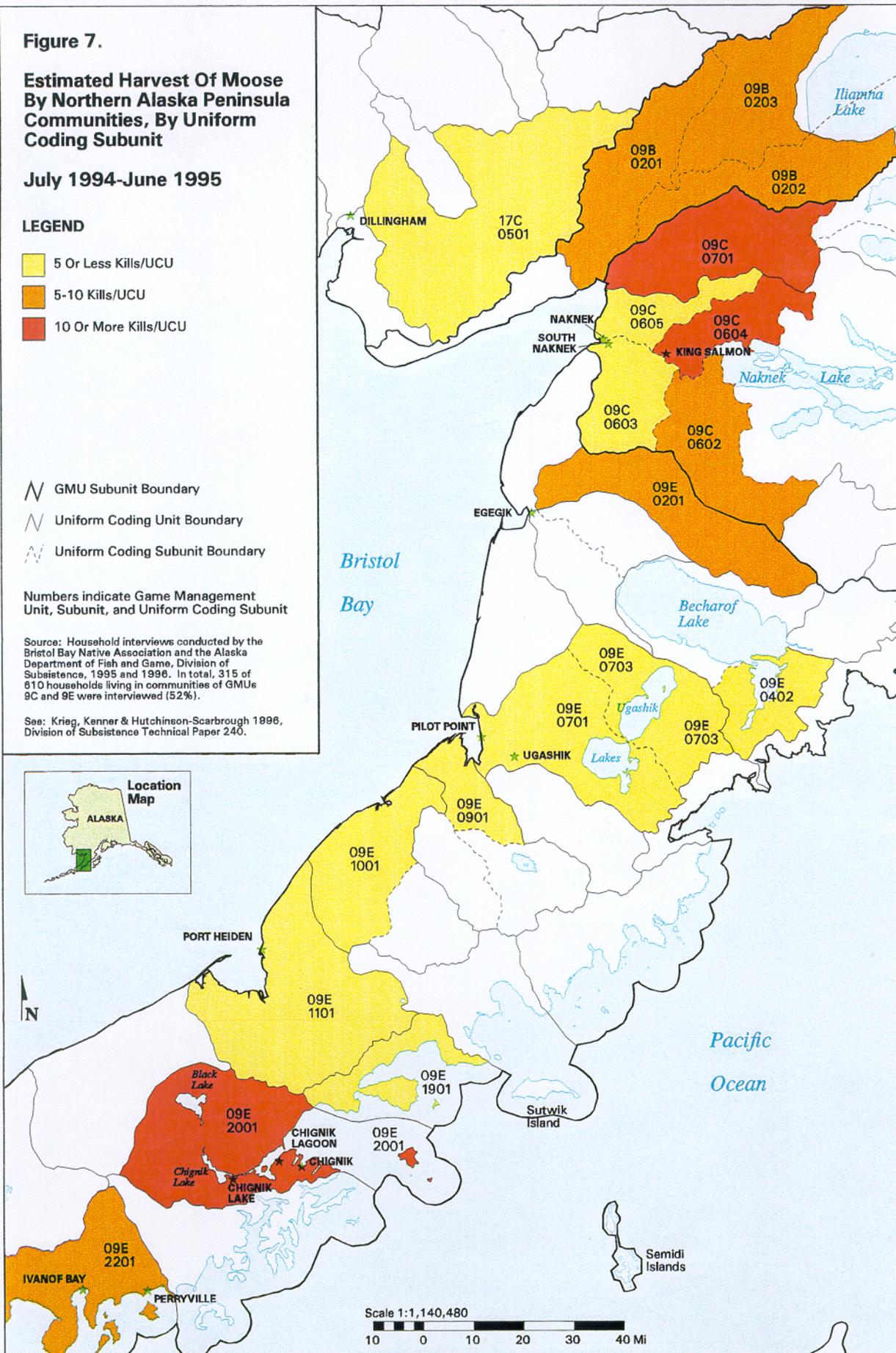
- 5 Or Less Kills/UCU
- 5-10 Kills/UCU
- 10 Or More Kills/UCU

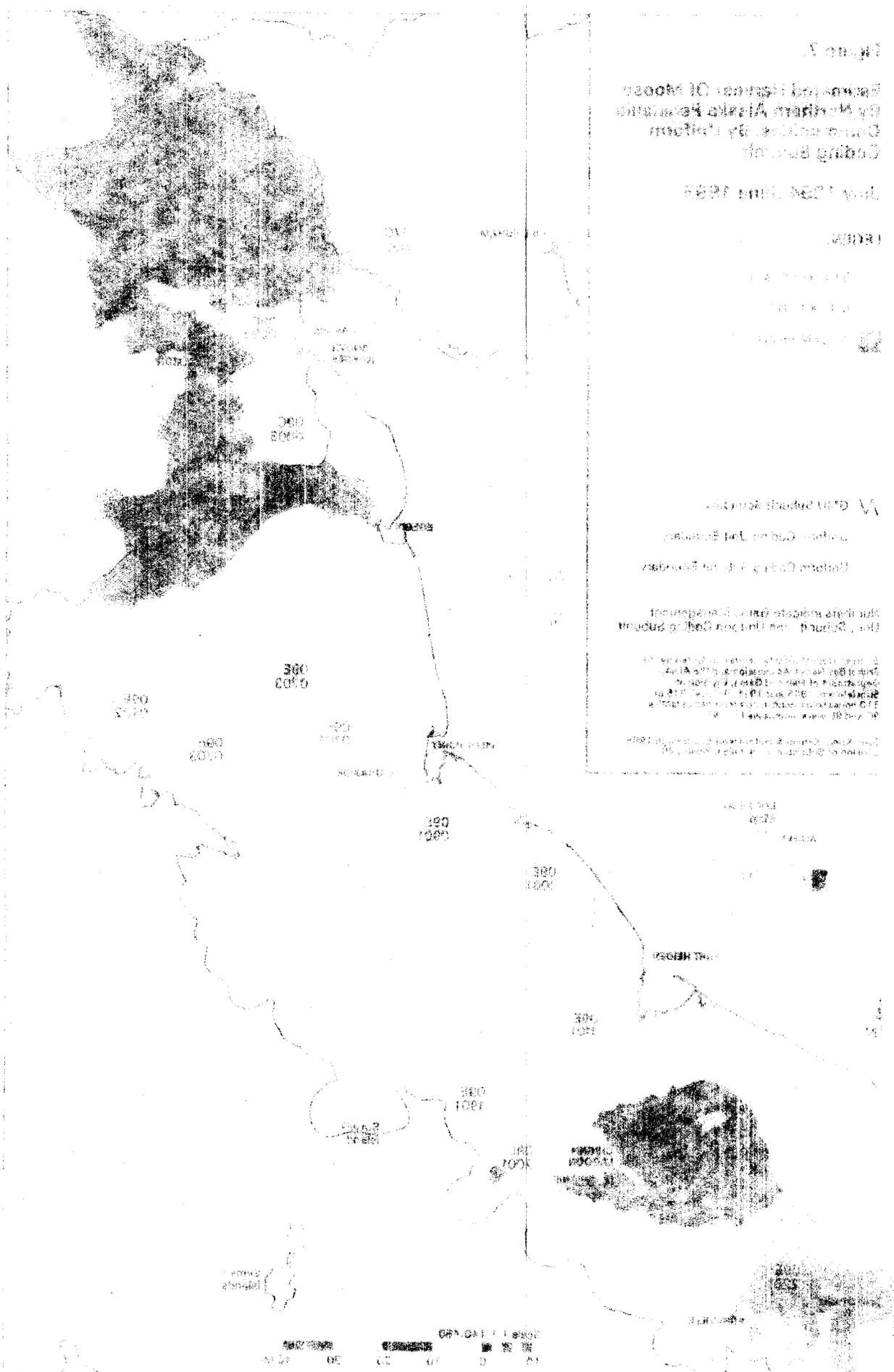
- GMU Subunit Boundary
- Uniform Coding Unit Boundary
- Uniform Coding Subunit Boundary

Numbers indicate Game Management Unit, Subunit, and Uniform Coding Subunit

Source: Household interviews conducted by the Bristol Bay Native Association and the Alaska Department of Fish and Game, Division of Subsistence, 1995 and 1996. In total, 315 of 810 households living in communities of GMUs 8C and 9E were interviewed (52%).

See: Krieg, Kenner & Hutchinson-Scarborough 1996, Division of Subsistence Technical Paper 240.





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Table 13. The estimated harvest of moose by uniform coding unit, 1994/95 regulatory year.

Uniform Coding Unit	Study Community											Total	Percent	
	King		South		Pilot		Port		Chignik		Chignik			Ivanof
	Salmon	Naknek	Naknek	Egegik	Point	Ugashik	Heiden	Bay	Lagoon	Lake	Perryville	Bay		
Nushagak R. (17C 501)	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	2.6%
Kvichak R. (9B 201)	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	7.8%
Kvichak R. (9B 202)	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	5.2%
Kvichak R. (9B 203)	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.6	5.2%
Alagnak R. (9C 701)	3.3	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.3	18.3%
Naknek/Savonoski R. (9C 602)	6.6	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	7.8%
Naknek/Savonoski R. (9C 603)	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.2%
Naknek/Savonoski R. (9C 604)	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9	15.7%
Naknek/Savonoski R. (9C 605)	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	2.6%
Becharof Lake (9E 402)	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.5%
King Salmon R. (9E 201)	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	4.5%
Ugashik R./Lakes (9E 701)	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	2.5%
Ugashik R./Lakes (9E 703)	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	2.4%
King Salmon R. (9E 901)	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.8%
Cinder R. (9E 1001)	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	3.7	2.9%
Port Heiden/Meshik (9E 1101)	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	3.7	2.9%
Kujulik Bay/Hook Bay (9E 1901)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.1	0.0	0.0	0.0	3.4	2.6%
Chignik Bay (9E 2001)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	13.4	0.0	0.0	17.7	13.9%
Kupreanof Peninsula (9E 2201)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	1.1	5.8	4.5%
Total	26.6	49.8	1.5	7.6	4.3	3.0	7.3	1.2	6.4	13.4	4.7	1.1	127.0	100.0%
Percent	20.9%	39.2%	1.2%	6.0%	3.4%	2.4%	5.8%	1.0%	5.1%	10.6%	3.7%	0.9%	100.0%	

Community Moose Harvest Areas - 1994/95 Regulatory Year

King Salmon, Naknek and South Naknek residents harvested an estimated 78 moose. Nearly half the harvest (35 moose; 45 percent) by these three communities occurred in the Naknek River drainage (Table 13). King Salmon and Naknek kill locations were reported both north and south of the Naknek River. South Naknek residents harvested moose on only the south side of the Naknek River. Another 23 moose (30 percent) were taken on the Kvichak River in GMU 9B by residents of King Salmon and Naknek. Residents of King Salmon and Naknek also reported harvesting moose in the Alagnak River drainage (17 moose; 21 percent). Finally, Naknek residents harvested moose in the Nushagak River drainage in GMU 17C (3 moose; 1 percent).

The estimated harvest total for residents of Egegik, Pilot Point, Ugashik, and Port Heiden was 22 moose. All were harvested within GMU 9E. Of this total, 7 moose (34 percent) were taken in the King Salmon River and Becharof Lake drainages, all by residents of Egegik. In the Ugashik river and lakes and King Salmon River drainages, 7 moose (33 percent) were harvested by residents of Pilot Point and Ugashik, representing the entire moose harvest by these two villages. The entire Port Heiden harvest occurred in the Cinder River and Port Heiden drainages (7 moose; 33 percent).

Residents of Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay harvested an estimated 27 moose. All were harvested in GMU 9E. Of this total, two thirds were harvested in the Chignik Bay drainage (18 moose; 66 percent) by residents of Chignik Lake and Chignik Lagoon. In the Kujulik and Hook bay drainages, 3 moose (13 percent) were harvested by residents of Chignik Lagoon and Chignik Bay. The remaining 6 moose (22 percent) were taken in the Kupreanof Peninsula area by residents of Ivanof Bay and Perryville.

Moose Harvests within Federal Land Units - 1994/95 Regulatory Year

Of the 127 moose harvested by Alaska Peninsula study community residents, almost half of recorded kills (54 moose; 43 percent) were within federal land unit boundaries. Of these kills, 32 moose were taken within the Alaska Peninsula National Wildlife Refuge, 10 moose within the Alagnak Wild and Scenic River, and 12 moose within the Becharof National Wildlife Refuge (Table 14).

Residents of five communities recorded 100 percent of moose kill locations within federal land units. Ugashik, Chignik Bay, Chignik Lagoon, Chignik Lake, Ivanof Bay, and Perryville reported all 29 moose harvested within the Alaska Peninsula National Wildlife Refuge. Egegik and King Salmon both reported 25 percent of their moose harvests (7 moose) occurred in the Becharof National Wildlife Refuge. Pilot Point reported one moose harvested within the Alaska Peninsula National Wildlife Refuge. South Naknek reported no moose harvest within federal land units.

Table 14. The estimated harvest of moose by federal land unit, 1994/95 regulatory year.¹

Federal Land Unit	Study Community										Total		
	King Salmon	Naknek	South Naknek	Egegik	Pilot Point	Ugashik	Port Heiden	Chignik Bay	Chignik Lagoon	Chignik Lake		Perryville Bay	Ivanof Bay
COMMUNITY HARVEST TOTALS	26.6	49.8	1.5	7.6	4.3	3.0	7.3	1.2	6.4	13.4	4.7	1.1	127.0
TOTAL FEDERAL LAND UNITS	6.6	13.3	0.0	1.9	1.1	3.0	1.2	1.2	6.4	13.4	4.7	1.1	54.0
Percentage of Community Totals	25.0%	26.7%	0.0%	25.0%	25.0%	100.0%	16.7%	100.0%	100.0%	100.0%	100.0%	100.0%	42.5%
Alaska Peninsula National Wildlife Refuge	0.0	0.0	0.0	0.0	1.1	3.0	1.2	1.2	6.4	13.4	4.7	1.1	32.1
Percentage of Community Totals	0.0%	0.0%	0.0%	0.0%	25.0%	100.0%	16.7%	100.0%	100.0%	100.0%	100.0%	100.0%	25.3%
Alagnak Wild and Scenic River	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
Percentage of Community Totals	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.8%
Becharof National Wildlife Refuge	6.6	3.3	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9
Percentage of Community Totals	25.0%	6.7%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.4%

¹ The table indicates harvests which fall within the boundaries of the federal conservation units, but do not necessarily indicate harvests from federal lands. The identification of Native and other inholdings on which harvests could occur is underway by the US Fish and Wildlife Service and could not be incorporated for this report.

BROWN BEAR: SUBSISTENCE HARVESTS AND USES

Participation in the Subsistence Harvest and Use of Brown Bear - 1994/95 Regulatory Year

In the 1994/95 regulatory year (July 1, 1994 to June 30, 1995), at least one household in every community, except Chignik Lagoon, reported either using or attempting to harvest brown bear (Table 15). Brown bear was used in seven of the 12 study communities: South Naknek, Pilot Point, Port Heiden, Chignik Bay, Chignik Lake, Perryville, and Ivanof Bay. Brown bear was successfully harvested in only four communities: Port Heiden, Chignik Lake, Perryville, and Ivanof Bay. Meat was used for food from the Chignik Lake, Perryville, and Ivanof Bay harvests. From 45 percent to 88 percent of the households in these three communities used brown bear during the study year, and from 15 to 50 percent attempted to harvest brown bear. In Chignik Lake, 13 percent of surveyed households reported successfully harvesting brown bear, 10 percent in Perryville, and 25 percent in Ivanof Bay. There were high levels of sharing in Chignik Lake, Perryville, and Ivanof Bay, with at least 40 percent of households receiving and 20 percent giving away brown bear. A detailed description of this pattern of brown bear use and harvest in the communities of Chignik Lake, Perryville, and Ivanof Bay can be found in Fall and Hutchinson-Scarborough (1996).

Brown Bear Harvest Quantities - 1994/95 Regulatory Year

During the 1994/95 regulatory year, an estimated total of 12 brown bears was harvested (with a 95 percent confidence range of between 10 and 21 animals) (Table 15). In round numbers, 9 were male, 2 were female, and the sex of 1 bear was not known or was not reported (Table 16). All brown bears were harvested by residents of the Pacific drainages of GMU 9E, except 2 bears killed by Port Heiden residents.

Timing of Brown Bear Harvests - 1994/95 Regulatory Year

Surveyed households reported harvesting brown bears from August through December (Table 16). The largest portion was harvested in November 1994.

Brown Bear Harvest Levels

In 1994/95, brown bear was harvested at Chignik Lake (5 bears), Ivanof Bay (2 bears), and Perryville (3 bears) and Port Heiden (2 bears) (Table 15). From past surveys from the 1970s to the

Table 15. The participation in the use and harvest of brown bear and brown bear harvest levels, 1994/95 regulatory year.

Community	Percentage of Households						Brown Bear Harvest									
	Used			Received			Gave			Total	Per Household	Per Person	Per Successful Hunter	95% Confidence Limit of Total Harvest		
	Brown Bear (%)	Brown Bear (%)	Brown Bear (%)	Brown Bear (%)	Brown Bear (%)	Brown Bear (%)	Brown Bear (%)	Brown Bear (%)	Low*					High		
<u>Residents of GMU 9(C)</u>																
King Salmon	0.0	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Naknek	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0	0.00	0.00	0.00	0.00	0.0%	0	0
South Naknek	4.0	4.0	0.0	4.0	4.0	4.0	4.0	0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Subtotal								0	0					0.0%	0	0
<u>Residents of GMU 9(E): Bristol Bay Drainages</u>																
Egegik	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Pilot Point	7.4	0.0	0.0	7.4	0.0	0.0	0.0	0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Ugashik	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Port Heiden ¹	6.3	6.3	3.1	3.1	3.1	3.1	3.1	2	2	0.06	0.02	2.00	2.00	86.0%	2	5
Subtotal								2	2					86.0%	2	5
<u>Residents of GMU 9(E): Pacific Ocean Drainages</u>																
Chignik Bay	4.2	0.0	0.0	4.2	0.0	0.0	0.0	0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Chignik Lagoon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.00	0.00	0.00	0.00	0.0%	0	0
Chignik Lake	53.1	18.8	12.5	46.9	34.4	75.0	34.4	5	5	0.13	0.03	1.33	1.33	41.0%	4	7
Ivanof Bay	87.5	50.0	25.0	62.5	75.0	20.0	75.0	2	2	0.25	0.07	1.00	1.00	52.0%	2	3
Perryville	45.0	15.0	10.0	40.0	20.0	20.0	20.0	3	3	0.10	0.03	1.00	1.00	86.0%	2	6
Subtotal								10	10					57.1%	8	16
Grand Total								12	12					72.3%	10	21

¹ The meat was not salvaged.

* Lower confidence limit is the higher of the lower 95% confidence limit and reported harvest.

Table 16. The estimated brown bear harvest by sex and month, 1994/95 regulatory year.

		Brown Bear Harvest By Month													
Community	Sex	July	August	September	October	November	December	January	February	March	April	May	June	Unknown	Total
<i>Residents of GMU 9(E): Bristol Bay Drainages</i>															
Port Heiden	All	0.0	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Residents of GMU 9(E): Pacific Ocean Drainages</i>															
Chignik Bay	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lagoon	All	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chignik Lake	All	0.0	0.0	0.0	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.9
	Male	0.0	0.0	0.0	1.2	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2
Ivanof Bay	All	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
	Male	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perryville	All	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.1
	Male	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.1
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Total Harvest - Residents of GMU 9(E): Pacific Drainages</i>															
	All	0.0	0.0	0.0	2.8	3.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	2.8	10.2
	Male	0.0	0.0	0.0	2.8	3.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.0
	Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2
Grand Total	All	0.0	1.2	1.2	2.8	3.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	2.8	12.7
	Male	0.0	0.0	0.0	2.8	3.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.0
	Female	0.0	1.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4
	Unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2

1990s, the harvest levels in Chignik Lake, Ivanof Bay, and Perryville have ranged from 2 to 5 bears per community per year (Table 17).

Brown Bear Harvest Areas by Drainage (Uniform Coding Unit) - 1994/95 Regulatory Year

All reported brown bear harvests in 1994/95 occurred in the UCUs nearest the residences of the hunters, all in GMU 9E. The Chignik Lake harvest of 5 bears occurred in the Chignik Bay drainage; harvests at Perryville (3 bears) and Ivanof Bay (2 bears) were in the Kupreanof Peninsula area; and the Port Heiden harvest of 2 bears occurred in the Port Heiden drainage (Fig. 8 and Table 18).

Brown Bear Harvests within Federal Land Units - 1994/95 Regulatory Year

In 1994/95, 80.8 percent of the brown bear harvest (about 10 bears) occurred within federal land unit boundaries, specifically the Alaska Peninsula National Wildlife Refuge. This included the entire harvest of the three communities on the Pacific drainage side of GMU 9E (Table 19).

Figure 8.

**Estimated Harvest Of Bear
By Northern Alaska Peninsula
Communities, By Uniform
Coding Subunit**

July 1994-June 1995

LEGEND

- 5 Or Less Kills/UCU
- 5-10 Kills/UCU

- GMU Subunit Boundary
- Uniform Coding Unit Boundary
- Uniform Coding Subunit Boundary

Numbers indicate Game Management Unit, Subunit, and Uniform Coding Subunit

Source: Household interviews conducted by the Bristol Bay Native Association and the Alaska Department of Fish and Game, Division of Subsistence, 1995 and 1996. In total, 315 of 610 households living in communities of GMUs 9C and 9E were interviewed (52%).

See: Krieg, Kenner & Hutchinson-Scarborough 1996, Division of Subsistence Technical Paper 240.

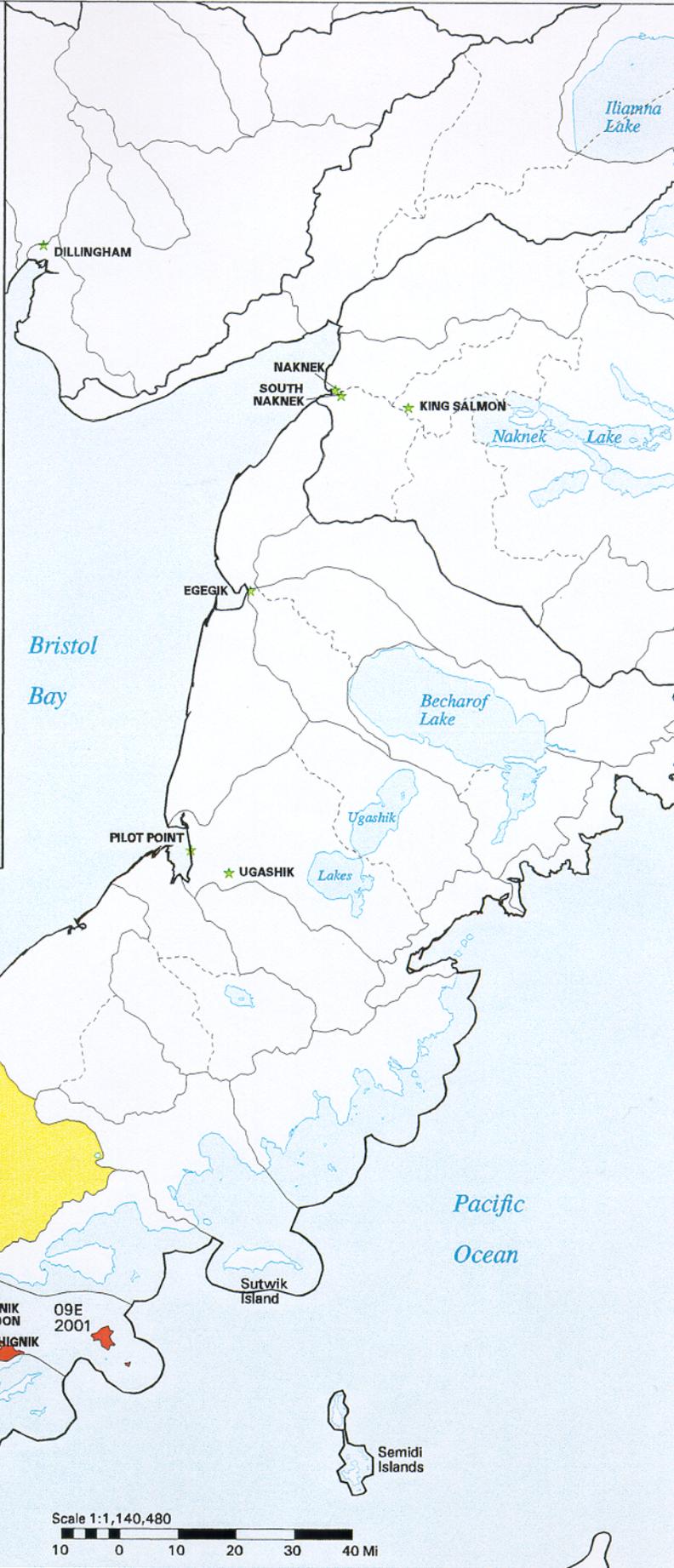


Table 18. The estimated harvest of brown bear by uniform coding subunit, 1994/95 regulatory year.

Uniform Coding Subunit	Study Community				Total
	Port Heiden	Chignik Lake	Perryville	Ivanof Bay	
Port Heiden/Meshik (9E 1101)	2.4	0.0	0.0	0.0	2.4
Chignik Bay (9E 2001)	0.0	4.9	0.0	0.0	4.9
Kupreanof Peninsula (9E 2201)	0.0	0.0	3.1	2.3	5.4
Total	2.4	4.9	3.1	2.3	12.7

Table 19. The estimated harvest of brown bear by federal land unit, 1994/1995 regulatory year.¹

Federal Land Unit	Study Community				Total
	Port Heiden	Chignik Lake	Perryville	Ivanof Bay	
COMMUNITY HARVEST TOTALS	2.4	4.9	3.1	2.3	12.7
TOTAL FEDERAL LAND UNITS	0.0	4.9	3.1	2.3	10.2
Percentage of Community Totals	0.0%	100.0%	100.0%	100.0%	80.8%
Alaska Peninsula National Wildlife Refuge	0.0	4.9	3.1	2.3	10.2
Percentage of Community Totals	0.0%	100.0%	100.0%	100.0%	80.8%

¹ The table indicates harvests which fall within the boundaries of the federal conservation units, but does not necessarily indicate harvests from federal lands. The identification of Native and other inholdings on which harvests occur is underway by the the US Fish and Wildlife Service and could not be incorporated into this report.

DISCUSSION

Comments by Residents by the GMU 9C Area

Interviewed residents of GMU 9C communities reported that caribou populations were smaller in their hunting areas compared with the past. At the same time, households reported that they were able to meet most of their needs during the 1994/95 regulatory year. For some, the weather was a problem, reported to be generally warmer than was good for hunting with off-road vehicles (ORV) (usually four and three-wheelers). The caribou were moving in and out of the area - "One day there are [many], and the next day they are all gone," reported one respondent.

In this area, moose has been an important red meat source on which people depend. Predominantly, caribou was preferred but moose appeared to be more important than in other villages in the Alaska Peninsula study area. A Naknek respondent said that moose were harder to get than in the past. In the past, he went by skiff to the Branch River and harvested a moose in a couple of days. Now it was taking a week to 10 days to find an "easy one" (one close enough to kill, butcher, and haul to the skiff). He did not go to Sugarloaf Mountain in December anymore because there were too many others hunting there. In the past, many Naknek households reportedly harvested a moose a year.

A Naknek respondent said that he hunted brown bear with his uncle in the 1930s up to the 1950s, when he started hunting with others. He had hunted for brown bear in the past year. Another said the last time he harvested a brown bear was in 1992. He has hunted since then but did not find one that he wanted to harvest. He did not want to shoot a bear just to kill it. He preferred the meat of bears caught in spring. A King Salmon hunter reported wanting to harvest a bear for the skin. An elder women reported that she ate bear meat and fat when she was younger. She added that currently brown bears in the area of the villages are eating too much garbage. People used to go to specific areas to harvest brown bears, and not just where brown bears were generally found.

There were many comments about the increasing number of hunters from outside the area, and remarks about the ones who appeared to be hunting for antlers only. Several Naknek respondents mentioned that guided and unguided hunters were going along King Salmon Creek in trucks. They said historically the King Salmon Creek was used by many local residents and that moose are very difficult to harvest there now. Big Creek was also mentioned as an area close to town, accessible to local hunters, but also being used more and more by hunters from outside the area. Some suggested that the seasons should be closed while moose and caribou are rutting. There were also concerns that the increased numbers of hunters were depleting the populations of caribou and, particularly, moose. One hunter was concerned for the rights of handicapped people, stating, "handicapped people need to have opportunities to hunt."

Comments by Residents of GMU 9E Bristol Bay Drainages

Residents of the communities of the Bristol Bay drainages of GMU 9E reported traveling to fall hunting locations by skiff and ORV (usually four and three-wheelers). In winter and spring, people relied on ORVs to travel across the tundra. Due to the wetness of the tundra and swampy terrain surrounding most of the villages on the Bristol Bay side of GMU 9E, hunters had to wait for a freeze-up before they could travel in winter and early spring. Winter weather on the north side of the Alaska Peninsula is characterized by periods of moderately cold weather interrupted by warming periods and extreme cold. For the 1994/95 regulatory year people reported that to a high degree their caribou harvests were dependent on where the caribou were in relationship to their villages when the ground was sufficiently frozen for people to travel. Not only must the weather be cold, but the caribou must be at the right place in their migration, near the villages, for hunters to be successful. However, several respondents explained that if no caribou were near the villages when the conditions were good for travel, sometimes a few men would travel to areas distant from the village looking for caribou. Apparently, the weather during the 1994/95 season was not unusual.

For caribou, hunters reported going in pairs or small groups of three or more men. In Egegik, Pilot Point, Ugashik, and Port Heiden, respondents reported that a few primary hunters in their communities supplied the majority of the caribou meat for the villages. A Port Heiden respondent said that other households asked him to get caribou for them. In Egegik, one hunter explained that he hunted for his mother's household, other members of his family, and elders - households in which people did not have ORVs, guns, or were too old to go hunting (cf. Wolfe 1987). A Ugashik respondent explained that the number of caribou he harvested depended on the size of the animal, stating, "a skinny one doesn't go far."

During the fall, people preferred to harvest young bull caribou, especially fat ones. One Port Heiden respondent explained that the big bulls were too big for his "bike" (ORV). An Egegik hunter said that fall caribou were preferred because they were fatter, and that young bulls and cows were preferred over big bulls in the fall due to the rut. But after the caribou rutting period, in November right after freeze-up, big bull caribou were good to harvest again.

In Egegik, several hunters said that during the 1994/95 season caribou were harder to get than the previous season, and the 1995/96 season was much like the previous survey year. Some had noticed what they called a "drastic decline" in the number of caribou from the previous three or four years, and that the caribou that they did see seemed skittish and more spread out than in the past. Competition with hunters from outside the area in the Becharof Lake area, which decreased the local residents' harvests from that area, was mentioned by several people. Knowledgeable Pilot Point respondents said that caribou had not been migrating as close to Pilot Point as they had in the past. So, especially when the weather conditions were not good for travel, fewer caribou were harvested by the villagers. Several people suggested that increased hunting, specifically guided hunting, in the immediate area around Pilot

Point village may have scared the herd away from the village. Generally, people reported traveling further than in the past to harvest caribou. A hunter from Ugashik said that caribou were still passing near Ugashik in December 1994. In contrast to the other three villages, Port Heiden village is spread out and the different parts of the community are connected by roads. Caribou were hunted from the road and from trails leading away from the village to well-known areas on the caribou migration route. Hunters reported that at times when the caribou were not passing nearby, some hunters traveled to areas not as easily accessible, or not in close proximity to Port Heiden. Many people mentioned that in the past the caribou, migrating north in the fall and south in the spring, passed by Port Heiden on the lowlands, but in the last few years, caribou have been traveling at higher elevations further east from Port Heiden. Also, more wolves have been observed which may be a reason for changes in the caribou migration pattern, according to several Port Heiden residents.

Moose was mentioned as an important source of red meat in all four villages, but caribou was preferred. As with caribou, moose meat was generally shared with friends and relatives. Moose was taken if "handy" said an Egegik hunter. He usually harvested a moose every three years. Another hunter said that he hunted for moose with three or four other hunters, and the harvest was quartered up and split between them. One hunter, who took his moose during the 10-day early hunt on federal land for residents of GMU 9E, said he would like the same early opportunity on state-managed land. One Pilot Point respondent said that he does not harvest big bull moose because the meat is "like chewing leather or rubber."

Concerning brown bear, one Egegik respondent said that he had hunted bear in the past and planned to harvest one sometime in his life. Someone else said that he wanted to harvest a brown bear during the study year, but had not found the right one. He wanted a spring bear. Another person stated he hunted brown bear opportunistically. Brown bear meat had been received regularly, from year to year, by another respondent. In Pilot Point, some households received brown bear meat and fat, and one respondent said he had not received enough. Meat and fat were reportedly used, currently and in the past, by some households in Port Heiden, and a number of hunters expressed an interest in getting a bear in the future.

Sport hunting, specifically trophy hunting (also known locally as "head hunting"), was the topic of many comments from residents in all these villages. Many people commented that hunters who only wanted antlers for trophies often wasted meat. Hunting for caribou and moose during their rutting season, late September to November, generally was not acceptable, and several people said that legal hunting should not be allowed during the rut because the meat of caribou and moose was not good. From Pilot Point came statements like this: "I hate to see trophy hunters. We kill for food," and "Guides are coming out here for trophies. Is it worth killing animals for the horns?" In Ugashik it was reported that four headless caribou were observed near the village recently, which offends villagers who explained, "We hunt for food." There was one report of a verbal confrontation with a guide who was trying to defend what

he considered his hunting area. Concerning wanton waste, reportedly, it was not unusual to find caribou meat left at the airport by guides and hunters who had not contacted the village. By the time the meat was found, it was spoiled. However, one respondent indicated that the quality of the meat brought in by sport hunters had improved. He said, "They seem to be more concerned about what they're doing." Overwhelming, though, the concern voiced most often was that the meat given to the villages often was not edible due to the rutted state of the animals or mishandling, such as dirty meat. A couple of guides were known for not bringing in very good meat.

Comments by Residents of GMU 9E Pacific Drainages

Hunters from the villages of Chignik Lake, Chignik Lagoon, Chignik Bay, Perryville, and Ivanof Bay reported having to travel further to harvest caribou in the 1994/95 regulatory year compared to previous years. The caribou population had been small in this area for many years. Many people explained that the population had decreased even more. Chignik Lake hunters were traveling to the flats past Black Lake to find caribou. One explained that the area between Black Lake and Bristol Bay was difficult to travel in because of the big rivers and rough tundra. So hunters often traveled to the beach at the mouth of Unangashak River and down to Ilnik and then up onto the flats. Caribou were in higher elevations, avoiding mosquitoes and bears, and then tended to move down in the fall after the first snow. Some people from Chignik Lake and Perryville went as far as Port Heiden and hunted with Port Heiden residents, returning with all the caribou harvested. One hunter explained that he had hunted in the Port Heiden area with hunters from Port Heiden. He shot and was given by the other hunters a total of five caribou, all of which he brought home to Chignik Lake. His son had gone hunting locally several times a week this fall (1995), and over three weeks had not seen a caribou. At Ivanof Bay one hunter reported that caribou had not been observed at all in the vicinity of the village. Several respondents mentioned that in the last four or five years the caribou have been more sensitive or ". . . spooked easily. [We] have to chase them." Wolves had been observed in the Chignik Lake area, possibly scattering the caribou.

Another person from Chignik Lake, originally from Chignik Bay, reported that he preferred caribou from the Pacific coast because it had better flavor. Caribou behind Black Lake had little to feed on but "swamp grass." He harvested caribou after commercial fishing season, using his commercial fishing boat, and mentioned that many hunters from other areas were doing this now, making it harder for him to find caribou. Another Chignik Bay respondent said that he saw many caribou while fishing, but they were still at higher elevations. Ten to 15 years ago it was common to see caribou in Thompson and McKinsey valleys, and Hook and Kujulik bays, but the population has declined. Several Chignik Bay residents described their exchange patterns with other communities. They most often reported trading seafood for caribou with Chignik Lake residents, but also mentioned extensive sharing with Bristol Bay side communities in general. The species they shared most often were crab and halibut, which were both

relatively easy to harvest around Chignik Bay and scarce on the Bristol Bay side of the peninsula.

At Perryville, many households reported receiving caribou meat from guides. Several hunters reported harvesting more caribou during the 1994/95 regulatory year than in past years because they traveled to Port Heiden, yet needed more because they had given most of their harvest away. Another Perryville resident said he noticed a growth in the number of "camps," probably sport hunters targeting brown bear. The past two years one guide had brought big loads of caribou meat to the village, but much of it had to be taken to the dump, probably because the guide had held it too long. "I think he waits until he gets a big load, then brings it over." Many respondents voiced concerns similar to this one, "The antler hunt bothers me intensely. . . It's a waste." The village corporation land around Chignik Lake and Chignik Bay, reportedly, has been closed to all hunters but village residents, due in part to concerns about wanton waste.

At Ivanof Bay, it was reported that hunters, even those taking caribou incidentally to harvests of moose and bear, had disrupted the migration of caribou by targeting the larger bulls. These older bulls have a role leading the other caribou through the few mountain passes that make it possible for the herd to migrate from the northern and central areas of the peninsula to the south side. In sum, in their southerly migration in the spring, the caribou travel down the Bristol Bay side of the peninsula, finally trying to move through mountain passes to Stepovak Flats. The concentration of hunters, even bear hunters, in the mountain passes reportedly deters their movement over to the Pacific coast. Reportedly, in the past, Stepovak Flats was a regular caribou calving area. "We had a large supply of caribou in the Stepovak area." This hunter said it had been 15 to 20 years since there had been such large numbers of caribou at Stepovak Flats.

In general, moose were harvested nearer the villages than caribou. Many people reported that moose were seen more often than caribou, and that they were being harvested more than in the past, in part replacing caribou in their diets. Many households at Chignik Lake mentioned making moose jerky this year, some for the first time. At Chignik Bay, the majority of respondents reported they would have liked to have received more moose. Reportedly, moose and moose tracks were rare on the Pacific coast. Coastal moose were preferred, he said, and everything was used except the skin: "Most people around here love bone soup."

Almost all households at Chignik Bay and Chignik Lagoon reported that their brown bear needs were met because they did not use brown bear. Brown bears were hunted for meat and fat at Chignik Lake, Perryville, and Ivanof Bay. At Chignik Lake a hunter reported that every fall the village brown bear harvest (several bears) was divided up between many households. He had not gone bear hunting for two years but had received brown bear meat and fat from neighbors.

Conclusion

In conclusion, in the 1994/95 study year, a majority of the households in GMUs 9C and 9E communities of the Alaska Peninsula used caribou and moose, either by harvesting it for themselves or receiving it from others. Brown bear was used for food by a much smaller portion of the population, except for in Chignik Lake, Perryville, and Ivanof Bay where many households used this species. Hunting patterns were dependent on the migration of local caribou herds and weather conditions.

Caribou harvest levels had remained somewhat steady in some communities, while in others, specifically in GMU 9E, caribou harvest levels reportedly have declined, and hunting reportedly was more difficult. This decline was probably due to the decreased population of the Northern Alaska Peninsula caribou herd. Other factors, suggested by local hunters, included increased hunting by hunters from outside the area, especially near the villages and along the migration route, and changes in herd migration linked to this increased hunting pressure.

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Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total				
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown			
Residents of GMU 9C																				
King Salmon	1/19/96 to 3/20/96	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Caribou	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			All	0	17	13	7	0	17	7	0	0	0	0	0	0	0	0	60	
			Male	0	17	7	3	0	10	3	0	0	0	0	0	0	0	0	0	40
		Moose	Female	0	0	0	3	0	7	3	0	0	0	0	0	0	0	0	13	
			Unknown	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
			All	0	0	7	0	0	10	0	0	0	0	0	0	0	0	0	0	17
		Moose	Male	0	0	7	0	0	3	0	0	0	0	0	0	0	0	0	10	
			Female	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Naknek	1/19/96 to 3/29/96	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Caribou	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			All	0	3	27	20	13	30	17	50	7	0	0	0	0	0	0	166	
			Male	0	0	13	3	10	20	10	20	3	0	0	0	0	0	0	80	
		Moose	Female	0	0	0	7	0	0	3	13	0	0	0	0	0	0	0	23	
			Unknown	0	3	13	10	3	10	3	17	3	0	0	0	0	0	0	63	
			All	0	0	20	0	0	13	0	0	0	0	0	0	0	0	0	37	
		Moose	Male	0	0	20	0	0	10	0	0	0	0	0	0	0	0	0	30	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Moose	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Moose	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Moose	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total				
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown			
South Naknek	2/16/96 to 3/6/96	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Caribou	All	0	3	5	0	8	11	5	2	0	0	0	0	0	0	0	32	
			Male	0	3	5	0	8	11	5	2	0	0	0	0	0	0	0	0	32
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Moose	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Moose	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brown Bear			All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caribou			All	0	23	44	27	21	57	28	51	7	0	0	0	0	0	258		
			Male	0	20	24	7	18	41	18	21	3	0	0	0	0	0	0	152	
			Female	0	0	0	10	0	7	7	13	0	0	0	0	0	0	0	37	
Moose			All	0	3	20	10	3	10	3	17	3	0	0	0	0	0	70		
			Male	0	0	27	0	0	23	0	0	0	0	0	0	0	0	3	53	
			Female	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	40	
			All	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7		
			Male	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	7	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			All	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3		
			Male	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Total Harvest - Residents of GMU 9C

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month																
				July	August	September	October	November	December	January	February	March	April	May	June	Unknown	Total			
Residents of GMU 9E: Bristol Bay Drainages																				
Egegik	2/15/96 to 4/8/96	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Caribou			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			All	0	17	13	13	2	11	19	6	4	0	0	0	0	0	86		
			Male	0	10	6	11	2	6	6	2	2	0	0	0	0	0	0	44	
Moose			Female	0	2	6	2	0	6	10	4	2	0	0	0	0	0	0	31	
			Unknown	0	6	2	0	0	0	4	0	0	0	0	0	0	0	0	11	
			All	0	0	2	0	0	4	0	0	0	0	0	0	0	0	0	6	
Pilot Point	2/11/96 to 2/14/96	Brown Bear	All	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1		
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
Caribou			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			All	0	14	11	3	3	2	1	1	0	0	0	0	0	0	3	39	
			Male	0	11	4	1	1	0	0	0	0	0	0	0	0	0	0	17	
Moose			Female	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	3	
			Unknown	0	3	4	2	2	2	1	0	0	0	0	0	0	0	0	3	18
			All	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	3	
			Male	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total				
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown			
Port Heiden	2/8/96 to 2/11/96	Brown Bear	All	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
		Caribou	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			All	2	17	37	10	5	11	11	1	1	1	1	1	1	1	1	1	94
			Male	0	12	22	2	4	1	5	1	1	1	1	1	1	1	1	1	48
Moose	Female	2	5	15	7	1	10	2	0	0	0	0	0	0	0	0	0	43		
	Unknown	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4		
	All	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5		
Ugashik	2/14/96	Brown Bear	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Caribou	All	0	3	9	0	3	0	0	0	0	0	0	0	0	0	0	0	15
			Male	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
			Female	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Moose	Unknown	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6		
	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total		
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown	
<u>Total Harvest - Residents of GMU 9E: Bristol Bay Drainages</u>																		
Brown Bear		Brown Bear	All	0	1	1	1	0	0	0	0	0	0	0	0	0	4	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	1	1	1	0	0	0	0	0	0	0	0	0	0	4
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caribou		Caribou	All	2	51	70	26	13	25	31	8	4	0	0	0	3	233	
			Male	0	32	32	15	10	7	11	3	2	0	0	0	0	0	112
			Female	2	10	26	9	1	15	12	5	2	0	0	0	0	0	82
			Unknown	0	9	12	2	2	2	9	0	0	0	0	0	0	3	39
Moose		Moose	All	0	0	8	0	0	5	1	0	0	0	0	0	0	14	
			Male	0	0	8	0	0	5	0	0	0	0	0	0	0	13	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
<u>Residents of GMU 9E: Pacific Drainages</u>																		
Chignik Bay	10/29/95 to 1/31/96	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caribou		Caribou	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose		Moose	All	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total				
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown			
Chignik Lagoo	10/28/95 to 11/2/95	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Caribou	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			All	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	5
			Male	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Moose	Female	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	All	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3		
Chignik Lake	10/25/95 to 10/28/95	Brown Bear	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Caribou	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			All	1	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	10
			Male	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Moose	Female	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	Unknown	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	All	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4		
Moose	Male	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total			
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown		
Ivanof Bay	1/31/96 to 3/18/96	Brown Bear	All	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	
			Male	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Caribou	Unknown	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
			All	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
			Male	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		Moose	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Perryville	10/30/95 to 10/31/95	Brown Bear	All	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	
			Male	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Caribou	Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			All	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
			Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Moose	Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
			All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Moose	Male	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Appendix A. The estimated brown bear, caribou, and moose harvest by sex and month, from surveys conducted from October 1995 to April 1996, for the 1995/96 regulatory year.

Community	Survey Dates ¹	Resource	Sex	Harvest By Month												Total				
				July	August	September	October	November	December	January	February	March	April	May	June		Unknown			
Brown Bear	All		Male	0	0	0	2	2	2	0	0	0	0	0	0	0	0	0	4	
			Female	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caribou	All		Male	2	11	6	0	0	0	0	0	0	0	0	0	0	0	0	19	
			Female	2	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	13
			Unknown	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Moose	All		Male	0	1	5	2	0	0	0	0	0	0	0	0	0	0	0	8	
			Female	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
			Unknown	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Brown Bear	All		Male	0	1	1	3	2	0	0	0	0	0	0	0	0	0	0	7	
			Female	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	3
			Unknown	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Caribou	All		Male	5	86	120	53	34	82	59	59	10	0	0	0	0	0	3	511	
			Female	2	59	60	22	27	47	28	25	5	0	0	0	0	0	0	0	276
			Unknown	0	17	32	12	5	12	12	17	3	0	0	0	0	0	0	0	121
Moose	All		Male	0	1	39	2	0	28	1	0	0	0	0	0	0	0	0	75	
			Female	0	1	36	0	0	18	0	0	0	0	0	0	0	0	0	0	55
			Unknown	0	0	0	2	0	7	0	0	0	0	0	0	0	0	0	0	9
Moose	All		Male	0	0	4	0	0	3	1	0	0	0	0	0	0	0	3	11	
			Female	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Unknown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRAND TOTAL GMUS 9C & 9E																				

¹ Survey dates indicate when the surveys were conducted in each community. Therefore, there is no harvest indicated for a community after the latest survey date. Harvests are only partial estimates for the regulatory year because additional hunting took place after the surveys were conducted.

APPENDIX B
SURVEY INSTRUMENT

ALASKA PENINSULA LARGE LAND MAMMAL SURVEY

COMMUNITY: _____ ()
HOUSEHOLD IDENTIFICATION: _____
INTERVIEWER INITIALS: _____
DATE: _____

1. HOW MANY PEOPLE LIVED IN YOUR HOUSEHOLD DURING THE 1994/1995 HUNTING SEASON (JULY 1994 - JUNE 1995): _____
2. ARE ANY MEMBERS OF THIS HOUSEHOLD ALASKA NATIVE? _____ (Y/N)

COMMUNITY: _____ () HHID: _____

ALASKA PENINSULA LARGE LAND MAMMAL SURVEY

MOOSE.

DID MEMBERS OF YOUR HOUSEHOLD USE OR HUNT MOOSE BETWEEN JULY 1994 AND JUNE 1995? YES: _____ NO: _____
 IF YES, PLEASE COMPLETE THE FOLLOWING SECTIONS.

BETWEEN JULY 1994 AND JUNE 1995, DID MEMBERS OF YOUR HOUSEHOLD...
 USE MOOSE? _____

HUNT MOOSE? _____

HARVEST MOOSE? _____

RECEIVE MOOSE? _____

GIVE MOOSE AWAY? _____

IF YES, HOW MANY MOOSE HUNTERS ARE IN THIS HOUSEHOLD? _____

IF YES, HOW MANY MOOSE WERE HARVESTED? _____

_____ [USE ONE LINE FOR EACH BELOW]

MOOSE (210800)		1994/1995 HUNTING SEASON											1995/96 SEASON							
		UNK.	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL.	AUG.	SEPT.	OCT.	NOV.	
M	LOCATION																			
1																				
2																				
3																				
4																				
5																				

HAVE MEMBERS OF YOUR HOUSEHOLD HARVESTED MOOSE AFTER THE BEGINNING OF JULY 1995? YES: _____ NO: _____

IF YES, HOW MANY MOOSE WERE HARVESTED? _____ [USE ONE LINE FOR EACH ABOVE]

MOOSE NEEDS.

WEIRE YOUR HOUSEHOLD'S NEED FOR MOOSE MET DURING THE 1994/1995 HUNTING SEASON (JULY 1994 - JUNE 1995)?

YES: _____

NO: _____

_____ DON'T KNOW: _____

IF YOUR MOOSE NEEDS WERE NOT MET, WHY?

MOOSE HARVESTS.

HOW DID YOUR 1994/1995 MOOSE HARVEST COMPARE TO PREVIOUS YEARS?

SAME: _____

LESS: _____

MORE: _____

_____ DON'T KNOW: _____

IF YOUR HARVEST WAS DIFFERENT THAN IN PAST YEARS, WHY?

COMMUNITY: _____ () HIID: _____

DATE: _____

ALASKA PENINSULA LARGE LAND MAMMAL SURVEY

BROWN BEAR.

DID MEMBERS OF YOUR HOUSEHOLD USE OR HUNT BROWN BEAR BETWEEN JULY 1994 AND JUNE 1995?
 IF YES, PLEASE COMPLETE THE FOLLOWING SECTIONS.

YES: _____ NO: _____

BETWEEN JULY 1994 AND JUNE 1995, DID MEMBERS OF YOUR HOUSEHOLD...
 USE BROWN BEAR (MEAT, FAT, OR SKIN)?

- HUNT BROWN BEAR? _____
- HARVEST BROWN BEAR? _____
- RECEIVE BROWN BEAR? _____
- GIVE BROWN BEAR AWAY? _____

IF YES, HOW MANY BROWN BEAR HUNTERS ARE IN THIS HOUSEHOLD?
 IF YES, HOW MANY BROWN BEAR WERE HARVESTED?

_____ [USE ONE LINE FOR EACH.]

MALE
 FEMALE

BROWN BEAR (210300)

1994/1995 HUNTING SEASON

1995/96 SEASON

B	LOCATION	1994/1995 HUNTING SEASON										1995/96 SEASON							
		UNK.	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL.	AUG.	SEPT.	OCT.	NOV.
1																			
2																			
3																			
4																			
5																			

HAVE MEMBERS OF YOUR HOUSEHOLD HARVESTED BROWN BEAR AFTER THE BEGINNING OF JULY 1995?
 IF YES, HOW MANY BROWN BEAR WERE HARVESTED? _____ [USE ONE LINE FOR EACH ABOVE.]

YES: _____ NO: _____

BROWN BEAR NEEDS.

WERE YOUR HOUSEHOLD'S NEED FOR BROWN BEAR MET DURING THE 1994/1995 HUNTING SEASON (JULY 1994 - JUNE 1995)?

YES: _____ NO: _____ DONT KNOW: _____

IF YOUR BROWN BEAR NEEDS WERE NOT MET, WHY?

BROWN BEAR HARVESTS.

HOW DID YOUR 1994/1995 BROWN BEAR HARVEST COMPARE TO PREVIOUS YEARS?
 IF YOUR HARVEST WAS DIFFERENT THAN IN PAST YEARS, WHY?

MORE: _____ LESS: _____ SAME: _____ DONT KNOW: _____

COMMUNITY: _____ () HHID: _____ DATE: _____

ALASKA PENINSULA LARGE LAND MAMMAL SURVEY

CARIBOU.

DID MEMBERS OF YOUR HOUSEHOLD USE OR HUNT CARIBOU BETWEEN JULY 1994 AND JUNE 1995?
 IF YES, PLEASE COMPLETE THIS PAGE.

YES: _____ NO: _____

BETWEEN JULY 1994 AND JUNE 1995, DID MEMBERS OF YOUR HOUSEHOLD....

USE CARIBOU? _____

HUNT CARIBOU? _____

HARVEST CARIBOU? _____

RECEIVE CARIBOU? _____

GIVE CARIBOU AWAY? _____

IF YES, HOW MANY CARIBOU HUNTERS ARE IN THIS HOUSEHOLD? _____

IF YES, HOW MANY CARIBOU WERE HARVESTED? _____

_____ [USE ONE LINE FOR EACH BELOW]

MALE

FEMALE

CARIBOU (210400)

C	LOCATION	1994/1995 HUNTING SEASON												1995/96 SEASON							
		UNK.	UNK.	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL.	AUG.	SEPT.	OCT.	NOV.	
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USE ADDITIONAL SHEETS IF NECESSARY.

HAVE MEMBERS OF YOUR HOUSEHOLD HARVESTED CARIBOU AFTER THE BEGINNING OF JULY 1995?

IF YES, HOW MANY CARIBOU WERE HARVESTED? _____ [USE ONE LINE FOR EACH ABOVE.]

YES: _____

NO: _____

COMMUNITY: _____ () HHID: _____

DATE: _____

