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Harvests and Uses of Wild Resources in Dillingham, Alaska, 2010

by

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April 2013

Alaska Department of Fish and Game **Division of Subsistence**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the reports by the Division of Subsistence. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

all commonly-accepted abbreviations e.g., Mr., Mrs., AM, PM, etc.	
all commonly-accepted professional titles e.g., Dr., Ph.D., R.N., etc.	
Alaska Administrative Code	AAC
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters (Jan,...,Dec)	
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, et
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	<
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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April 2013

Final Report to Stephen R. Braund and Associates under ADF&G Agreement IHP-11-080.

The Division of Subsistence Technical Paper series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions.

Technical Paper series reports are available through the Alaska Resources Library and Information Services (ARLIS), the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone editorial and professional review.

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ABSTRACT

This report presents information about subsistence uses of fish, wildlife, and plant resources in Dillingham, located in Southwest Alaska. Dillingham is the hub community of the Bristol Bay region. This is the final report for a multiyear, multiphase study conducted by the Alaska Department of Fish and Game Division of Subsistence in collaboration with Stephen R. Braund & Associates. This study is in response to the need for updated information about subsistence harvests and uses of wild resources as background for consideration of the development of a large scale mine called the Pebble Project—a mineral deposit in an advanced exploration stage located near Frying Pan Lake, which is 125 miles northeast of the study community of Dillingham. Information was collected through systematic household survey and mapping interviews. In total, 200 households were interviewed, an estimated 28% of the year-round resident households. The study documented the continuing importance of subsistence hunting, fishing, and gathering to Dillingham residents. In 2010, an estimated total of 94% of households in Dillingham participated in subsistence activities and 97% used wild resources. Subsistence harvests were large and diverse. Estimated wild resource harvests were 212 lb usable weight per capita in Dillingham. Most participants in this study reported their subsistence uses and harvests have changed in their lifetimes and over the last 5 years, changes which they ascribed to reduced resource populations, shifts in the locations of moose and caribou, competition with nonlocal hunters, and a changing climate. Study community residents voiced concerns about the development of a mine and its impacts on water quality in and near their traditional subsistence harvest areas.

Key words: Harvest survey, subsistence uses, subsistence fishing, subsistence hunting, Dillingham, Pebble Project, Bristol Bay.

CHAPTER 1: INTRODUCTION

PROJECT BACKGROUND

This report provides updated information about the subsistence economies and uses of fish, wildlife, and wild plant resources by the residents of Dillingham, located in Bristol Bay in Southwest Alaska (Figure 1-1). According to the U.S. Census, Dillingham had a population of 2,329 in 2010 (Table 1-1). Dillingham serves as the hub community (regional center) for the Bristol Bay region, which had a total population of 7,475 in 2010.[1] The salmon runs in Bristol Bay are among the world's largest, and the returns of Pacific salmon to the area support important commercial, subsistence, and sport fisheries. In the 2010 study year, many residents of Dillingham relied on subsistence hunting, fishing, and gathering for nutrition and to support their way of life. They utilized a variety of resources, including salmon and other fish, large land mammals (caribou, moose, brown bears), small land mammals (small game and furbearers), marine mammals, birds and bird eggs, marine invertebrates, and wild plants (ADF&G Community Subsistence Information System [CSIS[2]]). Table 1-2 presents a list, including the Linnaean taxonomic names, of resources used in Dillingham in 2010.

The Pebble Project is a mineral deposit in an advanced exploration phase located near Frying Pan Lake, which is 125 miles northeast of Dillingham. The mineral deposit includes gold, copper, and molybdenum. Northern Dynasty Mines Inc. (NDM) of Vancouver, British Columbia, Canada, the project operator, began environmental baseline studies in 2004 to gather information needed for a feasibility study and applications for federal and state permits (NDM 2005). In 2008, NDM partnered with Anglo-American PLC to form the Pebble Limited Partnership (PLP).[3]

Development applications for the Pebble Mine created the need for updated baseline information about subsistence harvests and uses in the nearby communities, as well as for demographic and other economic data. The Division of Subsistence, in cooperation with Stephen R. Braund & Associates (SRB&A, a contractor for PLP), undertook a multiyear, multiphase study to provide this information. Phase I examined the subsistence baseline information in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth in 2005 for the 2004 data year (Fall et al. 2006). Phase II expanded the study to 5 additional communities within the Kvichak and Nushagak watersheds: Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok for the 2005 data year (Krieg et al. 2009).

Phase III expanded the study to communities in Bristol Bay, including King Salmon, Naknek, and South Naknek in 2008 for the 2007 study year, as well as the interior community of Lime Village (Holen and Lemons 2010; Holen et al. 2011). Phase IV completed subsistence baseline studies for Bristol Bay communities in 2009 for the 2008 study year, including Aleknagik, Clark's Point, and Manokotak (Holen et al. 2012). The final phase (V) of fieldwork for the study was completed in April 2011 in Dillingham.

ADF&G Division of Subsistence conducted this study under contract number IHP-11-080 in collaboration with SRB&A. SRB&A was the sole source of funding for this study. SRB&A is an anthropological consulting firm based in Anchorage, Alaska, that specializes in sociocultural research and analysis of subsistence uses, subsistence mapping, traditional knowledge, and cultural resources. As a

1. U.S. Census Bureau. 2011. 2010 Census. http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. (Accessed 2012).
2. ADF&G CSIS: http://www.adfg.alaska.gov/sb/CSIS//. Hereinafter cited as CSIS.
3. The Pebble Partnership, "Partnership announcement," http://www.pebblepartnership.com/content/partnership-announcement. (Accessed April 26, 2012).

whole, this study has broad applicability in resource management and land planning and provides updated baseline information about demographics, economics, and subsistence activities in Southwest Alaska.

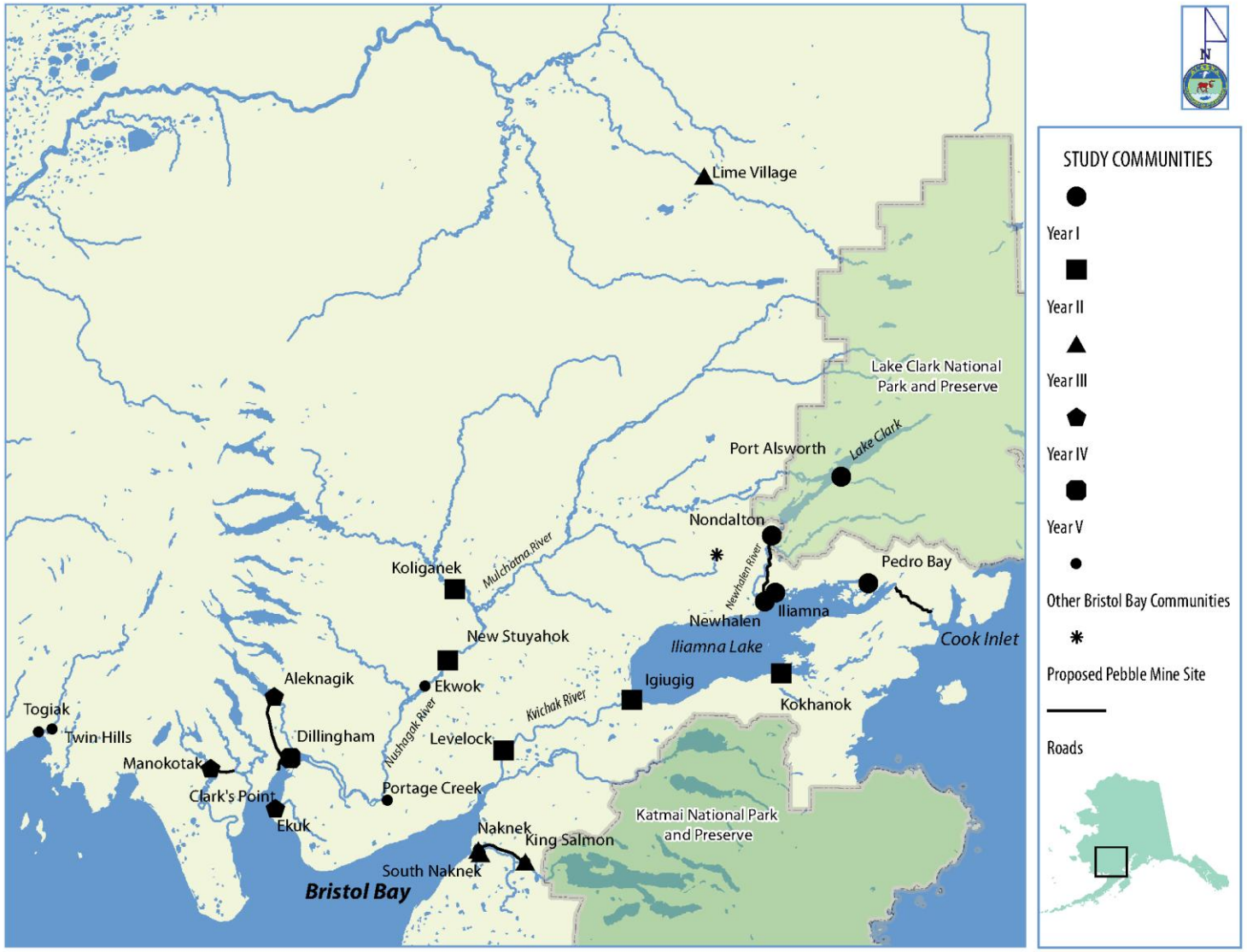

Figure 1-1.–Map of study communities, Bristol Bay, Alaska.

Table 1-1.–Population of Dillingham, 2010.

Census year 2010[a]				Study findings for 2010[b]			
Total population		Alaska Native population		Total population		Alaska Native population	
Households	Population	People	Percentage of total	Households	Population	People	Percentage of total
855	2,329	1,301	56%	726	2,294	1,553	68%

a. *Source* U.S. Census 2011.

b. *Source* ADF&G Division of Subsistence household survey, 2011.

Table 1-2.–Resources used in Dillingham, 2010.

Common name(s)[a]	Linnaean taxonomic name
Fish	
Pacific salmon	
Chum salmon	*Oncorhynchus keta*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytscha*
Pink salmon	*Oncorhynchus gorbuscha*
Sockeye salmon–fresh and spawning	*Oncorhynchus nerka*
Pacific herring–all life stages	*Clupea pallasi*
Capelin	*Mallotus villosus*
Cods	
Pacific (gray) cod	*Gadus macrocephalus*
Pacific tomcod	*Microgadus proximus*
Walleye pollock (whiting)	*Theragra chalcogramma*
Flounders /soles	
Starry flounder	*Platichthys stellatus*
Yellowfin sole	*Limanda aspera*
Pacific halibut	*Hippoglossus stenolepis*
Alaska blackfish	*Dallia pectoralis*
Burbot	*Lota lota*
Chars[b]	
Arctic char–resident and anadromous	*Salvelinus alpinus*
Dolly Varden–resident and anadromous	*Salvelinus malma*
Lake trout	*Salvelinus namaycush*
Arctic grayling	*Thymallus arcticus*
Northern pike	*Esox lucius*
Longnose sucker	*Catostomus catostomus*
Trout	
Rainbow trout (resident)/steelhead trout (anadromous)	*Oncorhynchus mykiss*
Whitefishes	
Least cisco	*Coregonus sardinella*
Humpback whitefish	*Coregonus pidschian*

-continued-

Table 1-2.–Page 2 of 4.

Common name(s)[a]	Linnaean taxonomic name
Fish, continued	
Round whitefish	*Prosopium cylindraceum*
Land mammals	
Large land mammals	
Black bear	*Ursus americanus*
Brown bear	*Ursus arctos*
Caribou	*Rangifer tarandus*
Moose	*Alces alces*
Dall sheep	*Ovis dalli*
Small land mammals/furbearers	
Beaver	*Castor canadensis*
Coyote	*Canis latrans*
Red fox	*Vulpes vulpes*
Alaska hare (jackrabbit)	*Lepus othus*
Arctic hare	*Lepus arcticus*
Snowshoe hare	*Lepus americanus*
River (land) otter	*Lontra canadensis*
Lynx	*Lynx canadensis*
Marten	*Martes americana*
Mink	*Mustela vison*
Muskrat	*Ondatra zibethicus*
Porcupine	*Erethizon dorsatum*
Red (tree) squirrel	*Tamiasciurus hudsonicus*
Short-tailed weasel (ermine)	*Mustela erminea*
Gray wolf	*Canis lupus*
Wolverine	*Gulo gulo*
Marine mammals	
Bearded seal	*Erignathus barbatus*
Harbor seal/spotted seal	*Phoca vitulina, Phoca largha*
Ringed seal	*Phoca hispida*
Sea otter	*Enhydra lutris*
Steller sea lion	*Eumetopias jubatus*
Walrus	*Odobenus rosmarus*
Beluga whale	*Delphinapterus leucas*
Birds and eggs	
Migratory birds and eggs	
Ducks and eggs	
Bufflehead	*Bucephala albeola*
Canvasback	*Aythya valisineria*
Common eider	*Somateria mollissima*
Goldeneyes	*Bucephala* spp.
Mallard	*Anas platyrhynchos*

-continued-

Table 1-2.–Page 3 of 4.

Common name(s)[a]	Linnaean taxonomic name
Birds and eggs, continued	
Common merganser	*Mergus merganser*
Northern pintail	*Anas acuta*
Scaup	*Aythya* sp.
Black scoter	*Melanitta nigra*
White-winged scoter	*Melanitta fusca*
Northern shoveler	*Anas clypeata*
Green-winged teal	*Anas crecca*
American wigeon	*Anas americana*
Geese and eggs	
Brant	*Branta bernicla*
Canada geese	
Cackling Canada goose	*Branta canadensis minima*
Lesser Canada goose	*Branta canadensis parvipes*; *B. canadensis taverner*
Snow goose	*Chen caerulescens*
White-fronted goose	*Anser* spp.
Emperor goose	*Chen canagica*
Swans	
Tundra (whistling) swan	*Cygnus columbianus*
Sandhill crane	*Grus canadensis*
Seabird eggs	
Gulls	*Larus* spp.
Terns	*Sterna* and *Chlidonias* spp.
Murres	*Uria* spp.
Terns	Various spp.
Marine invertebrates	
Butter clam	*Saxidomus giganteus*
Horse clam (gaper)	*Tresus capax*
Pacific littleneck (steamer) clam	*Protothaca staminea*
Pacific razor clam	*Siliqua patula*
Softshell clam	*Mya arenaria*
Cockle	Various spp.
Crabs	
Dungeness crab	*Cancer magister*
King crabs	*Paralithodes* spp.; *Lithodes* spp.
Tanner crabs	
Tanner crab, bairdi	*Chionoecetes bairdi*
Mussels	*Mytilus* spp.
Octopus	*Octopus vulgaris*
Shrimps	*Pandalus* spp.; *Penaeus* spp.

-continued-

Table 1-2.–Page 4 of 4.

Common name(s)[a]	Linnaean taxonomic name
Plants and fungi	
Berries	
Crowberry (blackberry)	*Empetrum nigrum*
Alpine blueberry	*Vaccinium uliginosum*
Bog cranberry	*Oxycoccus microcarpus*
High bush cranberry	*Viburnum edule*
Cranberry (lingonberry)	*Vaccinium vitus-idaea*
Northern black currant	*Ribes hudsonianum*
Northern red currant	*Ribes triste*
Nagoonberry	*Rubus arcticus*
Raspberry	*Rubus idaeus*
Salmonberry, cloudberry	*Rubus chamaemorus*
Other plants	
Chickweeds	*Stellaria* spp.
Coltsfoot, wild spinach	*Petasites hyperboreus*
Ferns (fiddleheads)	Various spp.
Fireweed	*Epilobium angustifolium*
Grasses	*Graminea family*
Horsetails	*Equisetum* spp.
Labrador tea	*Ledum palustre*
Common mountain juniper	*Juniperus communis*
Pineapple weed	*Matricaria matricarioides*
Rose hips	*Rosa acicularis*
Roseroot	*Sedum rosea*
Sour dock, wild rhubarb	*Rumex fenestratus*
Cinquefoil (tundra rose)	*Potentilla fruticosa*
Cow parsnip (wild celery)	*Heracleum lanatum*
Flag (wild iris)	*Iris setosa*
Chive (wild onion)	*Allium schoenoprasm*
Wild pea	*Hedysarum mackenzii*
Wooly lousewort	*Pedicularis kanei*
Wormwood	*Artemisia tilesii*
Yarrow	*Achillea borealis*
Fungi	Various spp.
Trees	
White spruce	*Picea glauca*
Paper birch	*Betula papyrifera*
Balsam poplar (cottonwood)	*Populus balsamifera*
Mountain ash	*Sorbus scopulina*
Alder	*Alnus incana*

Source ADF&G Division of Subsistence household surveys, 2011. See Appendix A.

a. This table lists species harvested and/or used by study community residents but may not be specifically discussed in this report.

b. The household survey specified Arctic char, Dolly Varden, and sea-run Dolly Varden.

STUDY OBJECTIVES

The project had the following objectives:

1. Design a survey instrument to produce updated baseline information for Dillingham residents about subsistence hunting, fishing, gathering, and other topics that is compatible with information collected in previous rounds of household interviews.
2. Train local residents in administration of the systematic household survey.
3. Conduct household surveys to record the following information:
    a. Demographic information
    b. Involvement in use, harvest, and sharing of fish, wildlife, and wild plants in 2010
    c. Estimates of amount of resources harvested in 2010
    d. Information about jobs and cash income in 2010
    e. Assessments of changes in subsistence harvest and use patterns
    f. Location of hunting and harvests of subsistence resources in 2010
4. Collaboratively review and interpret study findings with study community residents.
5. Produce a final report.
6. Communicate study findings to the project communities and the public.

RESEARCH METHODS

ETHICAL PRINCIPLES FOR THE CONDUCT OF RESEARCH

The project was guided by the research principles adopted by the Alaska Federation of Natives in 1993[4] and the Interagency Arctic Research Policy Committee, June 28, 1990.[5] These principles stress community approval of research designs, informed consent, anonymity of study participants, community review of draft study findings, and the provision of study findings to each study community upon completion of the research.

PROJECT PLANNING AND APPROVALS

After approval of the contract, project staff from ADF&G and SRB&A met in January 2010 to refine project objectives and methods, including sampling, schedules, and responsibilities. The researchers discussed what had been learned while administering the surveys during phases I–IV of the project in order to apply these observations to the upcoming round of household interviews. To meet the information needs of the participating organizations, coordinate research, and minimize respondent burden, the group reached the following decisions:

1. SRB&A would continue to conduct research on traditional knowledge and subsistence activities over the last 10 years using detailed interviews and mapping sessions; however, they are not included in this report.

4. ANKN (Alaska Native Knowledge Network). 2006. Alaska Federation of Natives Guidelines for Research. http://ankn.uaf.edu/IKS/afnguide.html. (Accessed 2012).
5. NSF (National Science Foundation). 2012. Arctic Research and Policy Act of 1984 (amended 1990). http://www.nsf.gov/od/opp/arctic/iarpc/arc_res_pol_act.jsp. (Accessed 2012).

2. The Division of Subsistence would use its standard household harvest survey instrument to meet the needs for updated baseline data. The survey instrument would be the same as the one used in phases I–IV, with the exception that the study year was updated to 2010.
3. The Division of Subsistence would also use the standard method of collecting subsistence map data, recording on a paper map the locations where members of participating households hunted, fished, and gathered subsistence resources during the 2010 study year.

SRB&A would also provide personnel to assist in ADF&G fieldwork in Dillingham and would prepare the maps for this report.

ADF&G researchers sent letters to introduce the project to the tribal government in Dillingham. Following this, ADF&G contacted the Curyung Tribal Council by phone to arrange a project scoping meeting. The community scoping meeting in Dillingham occurred April 12, 2011. The goal of this meeting was to introduce the project, solicit ideas on interview topics, and establish the background for community approval for the research. Ted Krieg and Sarah Evans from ADF&G made presentations at the meeting in Dillingham; 8 community members attended.

Following this meeting, Curyung Tribal Council passed a resolution in support of the project. The hiring of local research assistants (LRAs) was done by Evans. Seven LRAs were hired, and they were paid directly by ADF&G. On April 17, Davin Holen, the ADF&G project manager, traveled to Dillingham to facilitate the logistics for the project in Dillingham. A 1-day training session for the LRAs took place at the Bristol Inn in Dillingham on April 18. Together with the LRAs, Evans and Krieg, along with 6 staff members from SRB&A, conducted the surveys in Dillingham. The surveys were conducted between April 19 and May 30, 2011.

During the surveying effort, the surveys were checked daily by Evans, who served as the project lead, to minimize errors or omissions and to address potential problems in the field. Table 1-3 lists all project staff. The list includes those individuals involved in project management, field research, data entry, data analysis, map production, and report writing.

Table 1-3.–Project staff, Dillingham.

Task	Name	Organization
Project design and management	Davin Holen	ADF&G Division of Subsistence
Stephen R. Braund & Associates lead	Stephen R. Braund	Stephen R. Braund & Associates
Data management lead	David Koster	ADF&G Division of Subsistence
Field research leads	Davin Holen	ADF&G Division of Subsistence
	Sarah Evans	ADF&G Division of Subsistence
Programmer	Jacob Jawson	ADF&G Division of Subsistence
Data entry	Margaret Cunningham	ADF&G Division of Subsistence
	Hollie Wynne	ADF&G Division of Subsistence
Cartography	Iris A. Prophet	Stephen R. Braund & Associates
	Raena K. Schraer	Stephen R. Braund & Associates
	Stephen R. Braund	Stephen R. Braund & Associates
	Davin Holen	ADF&G Division of Subsistence
Editor	Lisa Ka'aihue	ADF&G Division of Subsistence
Field research staff	Davin Holen	ADF&G Division of Subsistence
	Sarah Evans	ADF&G Division of Subsistence
	Theodore Krieg	ADF&G Division of Subsistence
	Raena K. Schraer	Stephen R. Braund & Associates
	Peter Schnurr	Stephen R. Braund & Associates
	Kathryn Hohman-Billmeier	Stephen R. Braund & Associates
	Susan Lukowski	Stephen R. Braund & Associates
	Emily Benz	Stephen R. Braund & Associates
	Caleb Billmeier	Stephen R. Braund & Associates
	Susie Brito	Dillingham
	Petla Noden	Dillingham
	Bristy Larson	Dillingham
	Taryn Brito	Dillingham
	Melinda Gardner	Dillingham
	Natasha Nielsen	Dillingham
	Meredith Jaecks	Dillingham

Systematic Household Surveys

The primary method for collecting subsistence harvest and use information in this project was a systematic household survey. A key goal was to structure the survey instrument so as to collect demographic, resource harvest and use, and other economic data that were compatible with information collected in previous rounds of household surveys in the study community and with data in the CSIS.

Based on previous experience in communities of a similar size as Dillingham, the project team decided to use a stratified sample to ensure that an adequate number of high harvesters were included in the sample. The sample size for this survey was determined to be 20–25% of the households in Dillingham. The project team determined that in order to collect a balanced sample, including harvest information from a variety of households in Dillingham, project researchers needed to first compile information from ADF&G's subsistence salmon permit database and the ADF&G Division of Wildlife Conservation WinfoNet[6] moose survey database in order to identify households holding either a subsistence salmon permit or who had received a moose hunting permit in 2010. In addition, because some households might

6. WinfoNet is the ADF&G Division of Wildlife Conservation's intranet website. The site provides a wide variety of tools to allow users to access, update, and download different kinds of data, including moose permit data.

not participate in the subsistence salmon fishery in the summer because they are busy commercial fishing, and therefore retain a portion of their commercial harvest for their households' consumption or for sharing, researchers also compiled a list of Dillingham residents who participated in the commercial salmon fishery. Using these 3 variables, researchers compiled a list of Dillingham residents who met 2 of the 3 criteria in 2010—held a moose permit, held a subsistence salmon permit, and/or participated in the commercial fishery. Researchers identified 201 households that fit these criteria and these households became the high harvester strata for this survey. Based on experience from previous studies in similar communities, researchers concluded that the likelihood of these households being active subsistence harvest households was relatively high, while there might be a considerable variation of harvest activity in the remaining households in the community. The applied solution to ensure balanced sample collection was to create 2 household lists; one for the high harvester households, called "hunter households" in this report, and another for the rest of the households, or "other" households, which included all other households in the community. The households on the high harvester list were then removed from the "other" household list explained below. Each household on the high harvester list was assigned a number, and the list was randomized using a computer program. The list of high harvester households was then surveyed systematically, until a total of 100 households (approximately 50% of the list) were surveyed.

Evans worked with the City of Dillingham to obtain a map showing every dwelling unit in Dillingham. For the purposes of this study, each dwelling unit was then carefully assigned a home address number by the City of Dillingham. By using this map, Evans and Krieg were able to identify occupied and vacant dwellings by ground-truthing the map—checking to see if houses were indeed vacant or occupied. Researchers then verified that households on the high harvester list were removed from the "other" household list. Project researchers then assigned numbers the "other" households and used a computer program to randomize the list. The households on the second list were then systematically surveyed until a total of 100 surveys were complete.

Household Survey Implementation

To meet the information needs of the participating organizations and create continuity with previous research, project researchers used the same version of the survey instrument in Dillingham that had been used in other communities during phases I–IV. Appendix A is an example of the survey instrument used in this project. The study goal was to interview a representative random sample of 200 year-round households in Dillingham. Participation was voluntary and all individual and household level responses were confidential.

To complete the surveys, project researchers divided and assigned the household identification numbers on each list to the local LRAs, who were partnered with a researcher from ADF&G or SRB&A. The surveys were mainly conducted at respondents' homes or at the ADF&G office in Dillingham The first surveys were conducted on April 19, and all surveys were completed by May 30, 2011.

As shown in Table 1-4, the study team interviewed 200 households in Dillingham, which represents approximate 28% of the estimated total of 726 year-round resident households. The surveyers were not able to make contact with 87 households, and 39 households declined to be interviewed. On average, interviews (including mapping) took just over half an hour to complete. The longest interview took about 1 hour 40 minutes, and the shortest was about 5 minutes (Table 1-5).

Table 1-4.–Sample achievement for Dillingham comprehensive subsistence baseline update, 2010.

	Hunters	Other households	Total[b]
Initial estimate of housing units	187	874	1,061
New households	0	0	0
Initial estimate of vacant units	23	121	144
Interview goal	100	100	200
Households contacted	115	135	250
Interviewed	101	99	200
Nonresident[a]	0	11	11
Refused	14	25	39
Vacant	0	30	30
Moved	7	9	16
Deceased	0	0	0
No contact	35	52	87
Refusal rate	12.2%	20.2%	16.3%
Adjustment factors			
Vacancy		17.2%	
Non resident		8.1%	
Final households	164	562	726
Percent interviewed	61.6%	17.6%	27.6%
Interview weighting factor	1.62	5.67	

a. Nonresident households had not lived in the community for at least three months during the study year.

b. Total vacant and nonresident households were estimated using a proportion of selected households that were determined to be vacant or nonresident.

Table 1-5.–Average length of interviews, Dillingham, 2010.

Community	Number of surveys[a]	Length of interviews (hours)		
		Mean	Maximum	Minimum
Hunters	101	0.68	1.67	0.23
Other households	97	0.44	1.48	0.08
Total	**198**	**0.57**	**1.67**	**0.08**

a. There were 200 surveys completed for this study, however length of interviews was missing from 2 surveys.

Mapping of Locations of Subsistence Hunting, Fishing, and Gathering, 2010

During household interviews, researchers asked respondents to indicate the locations of their hunting, fishing, and gathering activities during the 2010 study year. In addition, interviewers asked the respondents to mark on the maps the sites of each harvest, the species harvested, the amounts harvested, and the months of harvest. ADF&G and SRB&A staff established a standard mapping method for the one-year harvesting effort. Points were used for harvest locations, and polygons (circled areas) were used for harvest effort areas. Some lines were also drawn in order to depict trap lines or courses taken during trolling for fish.

This information supplements and updates findings from earlier mapping studies, including a study of large land mammal hunting conducted by ADF&G and the Bristol Bay Native Association (BBNA) in 2001–2002 (Holen et al. 2005) and the mapping project conducted as part the ADF&G "Regional Habitat Management Guides" project in the early 1980s (Wright et al. 1985).

The maps used in Dillingham consisted of a set of 3 paper maps: 1) a map covering the larger Bristol Bay region, including the Kvichak River and the upper Alaska Peninsula, at a scale of 1:750,000; 2) a map covering the general area around Dillingham, at 1:500,000; and 3) a map covering the immediate area around Dillingham at a scale of 1:250,000. The maps were produced by Division of Subsistence staff using ArcGIS 10.1 software[7] on 11″ x 17″ paper. Each surveyed household recorded their subsistence activities for 2010 onto 2 sets of maps: subsistence fishing and marine mammal hunting (water-based) activities were recorded on one set of maps, while hunting, trapping, and plant gathering (land-based) activities were recorded on the second set. Maps were organized by writing the community identification number, the household's identification number, the survey date, and the interviewer's initials on each map.

For the most part, ADF&G and SRB&A researchers conducted all the mapping portions of the interviews. Division of Subsistence staff checked all maps for consistency by matching them to the survey forms at the end of each day.

DATA ANALYSIS AND REVIEW

SURVEY DATA ENTRY AND ANALYSIS

All data were coded for data entry by Division of Subsistence staff in Anchorage and Dillingham. Surveys were reviewed by the project lead for consistency. Responses were coded following standardized conventions used by Division of Subsistence to facilitate data entry. Information management staff within the Division of Subsistence set up database structures within Microsoft SQL Server at ADF&G in Anchorage to hold the survey data. The database structures included rules, constraints, and referential integrity to ensure that data were entered completely and accurately. Data entry screens were available on a secured internal network. Daily incremental backups of the database occurred, and transaction logs were backed up hourly. Full backups of the database occurred twice weekly. This ensured that no more than 1 hour of data entry would be lost in the unlikely event of a catastrophic failure. All survey data were entered twice and each set compared in order to minimize data entry errors.

7. Product names are given because they are established standards for the State of Alaska or for scientific completeness: they do not constitute product endorsement.

Once data were entered and confirmed, information was processed with Statistical Package for the Social Sciences (SPSS) software, version 20. Initial processing included the performance of standardized logic checks of the data. Logic checks are often needed in complex data sets where rules, constraints, and referential integrity do not capture all of the possible inconsistencies that may appear. Harvest data collected as numbers of animals, or in gallons or buckets, were converted to pounds usable weight using standard factors (see Appendix B for conversion factors).

ADF&G staff also used SPSS for analyzing the survey information. Analysis included review of raw data frequencies, cross tabulations, table generation, estimation of population parameters, and calculation of confidence intervals for the estimates. Missing information was dealt with on a case-by-case basis according to standardized practices, such as minimal value substitution or using an averaged response for similarly-characterized households. Typically, missing data are an uncommon, randomly-occurring phenomenon in household surveys conducted by the Divison of Subsistence. In unusual cases where a substantial amount of survey information is missing, the household survey was treated as a "non-response" and not included in community estimates. ADF&G researchers documented all adjustments.

Harvest estimates and responses to all questions were calculated based upon the application of weighted means (Cochran 1977). These calculations are standard methods for extrapolating sampled data. As an example, the formula for harvest expansion is

$$H = \sum_{i=1}^{r} \bar{h}_i S_i \qquad (1)$$

where:

$\bar{h}_i = \frac{h_i}{n_i}$ (mean harvest per returned survey) for strata *i,*

H = the total harvest (numbers of resource or pounds),

h_i = the total harvest reported in returned surveys,

n_i = the number of returned surveys,

r = total number of strata, and

S_i = the number of households in a strata.

As an interim step, the standard deviation (SD), or variance (V; which is the SD squared), was also calculated with the raw, unexpanded data. The standard error (SE) of the mean was also calculated for the community. This was used to estimate the relative precision of the mean, or the likelihood that an unknown value would fall within a certain distance from the mean. In this study, the relative precision of the mean is shown in the tables as a confidence limit (CL), expressed as a percentage. Once the standard error was calculated, the CL was determined by multiplying the SE by a constant that reflected the level of significance desired, based on a normal distribution. The constant for 95% confidence limits is 1.96. Though there are numerous ways to express the formula below, it contains the components of an SD, V, and SE.

Relative precision of the mean (CL%):

$$CL\%(\pm) = \frac{t_{\alpha/2} \times \sum_{i=1}^{r} N_i(1-\frac{n_i}{N_i})\frac{s_i^2}{\sqrt{n_i}}}{\overline{x}} \quad (2)$$

where:

s_i = sample standard deviation for strata *i*,

r = total number of strata,

n_i = households sampled in strata *i*,

N_i = total households in strata *i*, and

$t_{\alpha/2}$ = student's *t* statistic for alpha level (α=.95) with n–1 degrees of freedom.

Small CL percentages indicate that an estimate is likely to be very close to the actual mean of the sample. Larger percentages mean that estimates could be further from the mean of the sample.

The corrected final data from the household survey will be added to the Division of Subsistence CSIS. This publicly-accessible database includes community-level study findings.

MAP DATA ENTRY AND ANALYSIS

As noted, ADF&G staff checked maps for consistency with data recorded on the survey forms. They also removed extraneous marks from the maps to make sure the digitizing process would go as smoothly as possible. The maps were designed with tick marks marking geographical points that could be recorded for accuracy when digitizing occurred. Each map was registered by the GIS software using these points and then the SRB&A GIS team digitized the polygons, points, and lines that field staff had hand-drawn on the paper maps during the interviews. SRB&A used the map template that has been used since the first phase of this project and which was provided earlier by ADF&G. Using the template, SRB&A produced the maps for this report.

Final Report Organization

ADF&G researchers prepared this final report. It summarizes the results of systematic household surveys and mapping interviews conducted by staff from ADF&G and SRB&A, and local research assistants. It also includes information obtained at community meetings. This first chapter of the report introduces the project and provides the background for the study. Chapter 2 presents the study findings and compares them to previous research by ADF&G in Dillingham, and the final chapter of the report summarizes the study.

Because of the large number of maps of hunting, fishing, and gathering areas used Dillingham residents in 2010, all maps are published as Appendix C, "Harvest Use Area Maps" (included on a CD-ROM attached to the back cover of the printed reports).

ADF&G provided a draft report to SRB&A, local ADF&G area biologists, and to the study community for their review and comment. After receipt of comments, the report was finalized. ADF&G mailed a short (4 page) summary of the study findings to every household in Dillingham (Appendix D).

CHAPTER 2: DILLINGHAM

COMMUNITY BACKGROUND

Dillingham is located in Southwest Alaska on Nushagak Bay, at the confluence of the Wood and Nushagak rivers, which form an inlet of Bristol Bay. To the north of Dillingham is Wood–Tikchik State Park, which is the largest state park in the nation, at 1.6 million acres. Dillingham is only accessible by boat, plane, or winter road access, because there are no highway connections. The area contains productive river and lake systems that are a nursery for Bristol Bay salmon runs.

The Dillingham area is the traditional territory of the Central Yup'ik speaking people known as the *Aglurmiut*. There were recorded settlements during the early post-contact period at Kanakanak, Nushagak, and Snag Point, which are all now within Dillingham city limits (Dillingham High School 1974; VanStone 1967). In 1829, Russian explorer Ivan Vasilief arrived at Nushagak Bay and the Nushagak River in search of furs, and set up the first trading posts in the Nushagak area, which were later taken over by companies from San Francisco after the United States purchased Alaska in 1867. The local economy soon shifted to commercial salmon fishing and the first cannery was built in 1883 (Dillingham High School 1974).

Over the years more canneries were built in or near Dillingham, as more fishers came from all over the world, especially from Scandanavia, to fish the abundant salmon runs. Many of these fishers settled in Dillingham resulting in a diverse population. Because of the number of people coming into the Dillingham area for fishing, stores, trading posts, a larger post office, churches, and schools were built.

Today, the community of Dillingham has a paved runway with several flights a day to Anchorage. The Bristol Bay Native Association has its main office in Dillingham, along with the Bristol Bay Economic Development Corporation, both of which provide services to the larger Bristol Bay region. There are 2 main grocery stores in downtown Dillingham, along with a bulk foods store that also provides lumber and other supplies in the community. The downtown has hotels, a bank, and a post office as well as hardware and auto parts stores. Commercial fishing continues to be an important component to the economy and way of life, and this can be seen in the harbors both near downtown and the boat storage yards near the airport, along with Peter Pan Seafoods, Snopac Products, and several other smaller canneries. Dillingham is also the education center of the Bristol Bay region, hosting the Dillingham Campus of the University of Alaska Fairbanks. The campus has full-time faculty and is expanding the number of classrooms available. Residents can take class or use teleconferencing technology to achieve degrees from technical certificates to master's degrees. This opportunity attracts students from many of the smaller communities in Bristol Bay. In the past several years the campus has twice hosted the Western Interdisciplinary Science Conference as well as the American Association for the Advancement of Science Arctic Division. Dillingham continues to be a growing community and regional hub.

DEMOGRAPHY, CASH EMPLOYMENT, AND MONETARY INCOME

DEMOGRAPHY

According to the U.S. Census, Dillingham had 2,329 residents in 2010, of which 56% (1,301) were Alaska Native (U. S. Census Bureau 2011; Table 1-1). The household survey conducted for this study in 2010 found a similar population size of 2,294 residents, however, the survey found that 68% (1,553 residents) were Alaska Native (Table 1-1). Both the hunter households and random sample households showed a higher percentage of the Alaska Native residents than 2010 census; 60% of the hunter households were Alaska Native and 70% of the random sample were Alaska Native.

As noted above, a goal of the research was to collect demographic information for a sample of year-round households in Dillingham. Because not all households were interviewed, population estimates for Dillingham were calculated by multiplying the average household size of interviewed households by the total number of year-round households, as identified by Division of Subsistence researchers in consultation with community officials and other knowledgeable respondents. There may be several reasons for the differences between demographics for Dillingham from the division household survey findings and estimates by the U.S. Census Bureau (Table 1-1). The sampling method employed in this survey may have contributed to the difference in population estimates. The survey identified 2 types of households in Dillingham, "hunter" and "other households." This survey may have inadvertently selected for a higher sample of Alaska Native households through the hunter strata.

As discussed above in Chapter 1, it is likely that the differences in the composition of the sample upon which each population estimate was based accounts for the differences between the population estimates.

The household survey found an estimated 726 year-round households in Dillingham in 2010 (Table 2-1). For the total population, the mean number of years of residency in Dillingham was 6 years, with the maximum length of residence at 78 years (Table 2-1). The largest age cohort for both males and females was youths between 5 and 9 years of age and 10 and 14 years of age (Table 2-2 and Figure 2-1). Other age categories were fairly evenly distributed, especially between 25 and 64 years of age. People of age 65 or greater were not as well represented in the sample. At the time of the survey, the mean age of Dillingham population was 30 years (Table 2-1).

Of the Dillingham household heads interviewed, 59% were born in Alaska (Table 2-3). Thirty-five percent were born in Dillingham, with 46% born in Bristol Bay communities, 4% born in Anchorage and 2% in Bethel. In comparison, 39% were born outside the state of Alaska and 2% were foreign born.

Table 2-1.–Demographic characteristics of households, Dillingham, 2010.

Characteristics	Dillingham
Sampled households	200.0
Number of households in the community	726.0
Percentage of households sampled	27.5%
Household size	
Mean	3.16
Minimum	1
Maximum	8
Sample population	664
Estimated community population	2,294
Age	
Mean	30
Minimum[a]	0
Maximum	80
Median	29
Length of residency–population	
Mean	5.9
Minimum	1
Maximum	78
Length of residency–household heads	
Mean	29.0
Minimum	1
Maximum	78
Sex	
Males	
Number	1,160
Percentage	50.5%
Females	
Number	1,135
Percentage	49.5%
Alaska native	
Households (either head)	
Number	484
Percentage	66.7%
Estimated population	
Number	1,553
Percentage	67.7%

Source ADF&G Division of Subsistence household survey, 2011.

a. A minimum household age of zero indicates newborn in 2010.

Table 2-2.–Population profile, Dillingham, 2010.

	Male			Female			Total		
Age	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage	Number	Percentage	Cumulative percentage
0–4	68.3	6%	6%	99.1	9%	9%	167.5	7%	7%
5–9	153.5	13%	19%	121.0	11%	19%	274.4	12%	19%
10–14	134.9	12%	31%	108.9	10%	29%	243.9	11%	30%
15–19	95.2	8%	39%	107.3	9%	38%	202.5	9%	39%
20–24	65.2	6%	45%	42.4	4%	42%	107.5	5%	43%
25–29	54.5	5%	49%	83.6	7%	50%	138.1	6%	49%
30–34	67.5	6%	55%	83.7	7%	57%	151.2	7%	56%
35–39	72.4	6%	61%	83.6	7%	64%	156.0	7%	63%
40–44	49.6	4%	66%	44.8	4%	68%	94.3	4%	67%
45–49	77.4	7%	72%	78.1	7%	75%	155.4	7%	74%
50–54	82.1	7%	79%	87.8	8%	83%	169.9	7%	81%
55–59	57.7	5%	84%	44.8	4%	87%	102.5	4%	86%
60–64	73.9	6%	91%	45.5	4%	91%	119.4	5%	91%
65–69	27.6	2%	93%	24.3	2%	93%	52.0	2%	93%
70–74	19.5	2%	95%	25.2	2%	95%	44.8	2%	95%
75–79	13.0	1%	96%	18.7	2%	97%	31.7	1%	96%
80–84	3.3	0%	96%	0.0	0%	97%	3.3	0%	97%
85–89	0.0	0%	96%	0.0	0%	97%	0.0	0%	97%
90–94	0.0	0%	96%	0.0	0%	97%	0.0	0%	97%
95–99	0.0	0%	96%	0.0	0%	97%	0.0	0%	97%
100–104	0.0	0%	96%	0.0	0%	97%	0.0	0%	97%
Missing	44.0	4%	100%	35.8	3%	100%	79.8	3%	100%
Total	**1,159.5**	**100%**		**1,134.5**	**100%**		**2,294.1**	**100%**	

Source ADF&G Division of Subsistence household survey, 2011.

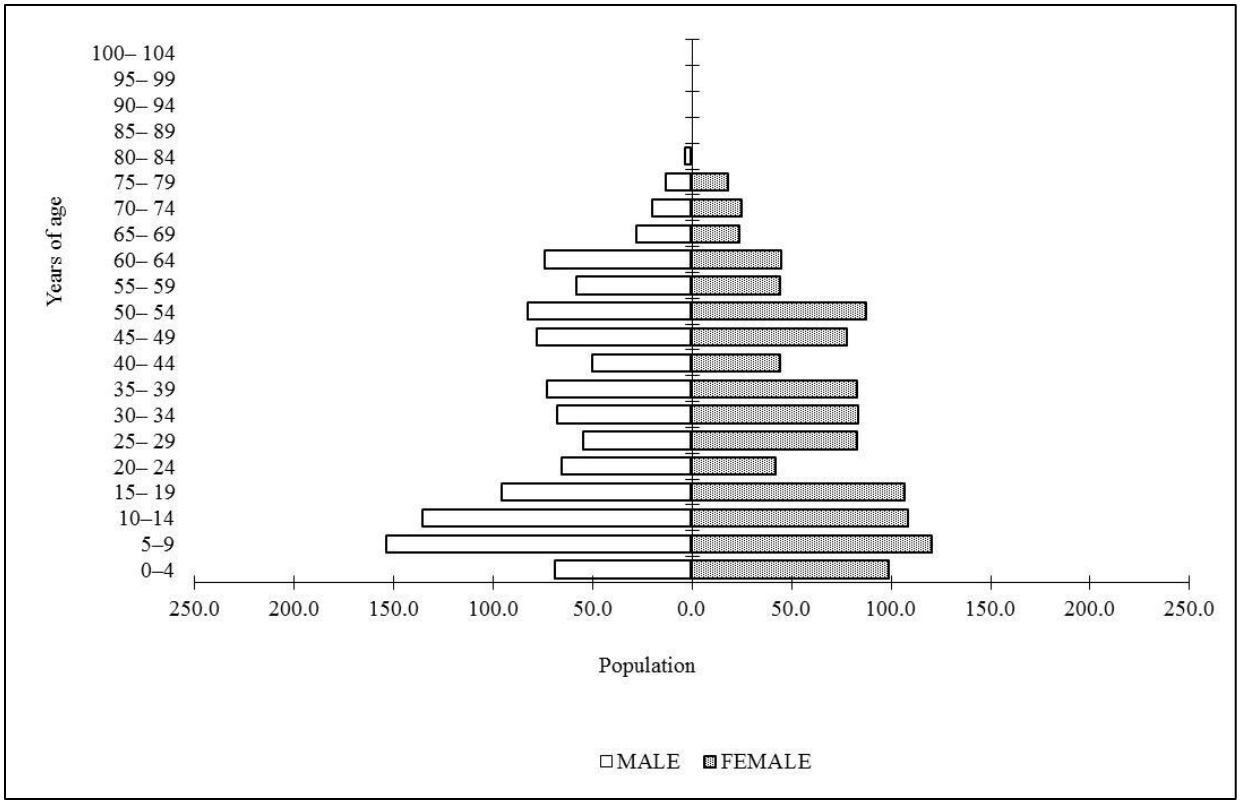

Figure 2-1.–Population profile, Dillingham, 2010.

Table 2-3.–Place of birth of household heads, Dillingham, 2010.

Birthplace[a]	Percentage of household heads, Dillingham
Dillingham	34.5%
Aleknagik	1.1%
Clarks Point	0.7%
Ekwok	0.5%
Koliganek	0.7%
Levelock	0.5%
Manokotak	1.0%
Naknek	1.0%
Portage Creek	1.0%
South Naknek	0.1%
Togiak	1.0%
Nushagak	1.2%
Ekuk	1.0%
Igushik	0.6%
Other Bristol Bay	0.5%
Bristol Bay subtotal	**45.5%**
Allakaket–Alatna	0.1%
Anchorage	4.4%
Barrow	0.5%
Bethel	2.2%
Chignik Lagoon	0.5%
Chignik Lake	0.5%
Clear	0.5%
Deadhorse	0.1%
Glennallen	0.1%
Goodnews Bay	0.6%
Kasigluk	0.1%
Kodiak City	0.1%
Kwethluk	0.1%
Mekoryuk	0.1%
Nenana	0.1%
New Stuyahok	0.7%
Noorvik	0.5%
North Pole	0.5%
Nunapitchuk	0.5%
Platinum	0.1%
Sleetmute	0.1%
Kodiak Island (general)	0.1%
Yukon	0.1%
Other Alaska	0.4%
Other U.S.	39.1%
Foreign	1.9%
Missing	0.1%

Source ADF&G Division of Subsistence household survey, 2011.

a. "Birthplace" means the residence of the parents of the individual when the individual was born.

CASH EMPLOYMENT CHARACTERISTICS AND MONETARY INCOME

Dillingham is the economic, transportation, and public service center for western Bristol Bay. In 2010 there were an estimated 1,457 jobs in Dillingham held by an estimated 1,133 people (Table 2-4). Although employment with local and tribal goverments provided 25% of the income for households (22% of jobs) in Dillingham in 2010, a prime component of the community's economy is the commercial fishing industry. The commercial fishing industry (including support services such as fish processing and cold storage) provides seasonal employment opportunities for the region. In 2010, 26% of Dillingham households participated in commercial fishing (Table 2-4). In 2010, 227 residents held commercial fishing licenses (Alaska Commercial Fisheries Entry Commission 2011). As noted above, jobs in local government were also important, producing 25% of overall income, and 22% of jobs were in local government, which includes tribal organizations. One such tribal organization is the Bristol Bay Native Association headquartered in Dillingham, which provides services to communities throughout the Bristol Bay region. The city's role as a regional service center for government and various services helps to balance seasonal employment variations.[8]

The largest category of earned income (34%) in the community came from jobs in the service sector across a diversity of industries, with a similar percentage (30%) of service sector jobs in the community (Table 2-4). Of all jobs, most (92%) were located in Dillingham (Table 2-5).

On the household level in 2010, Dillingham had a high level of employment; about 86% of households had at least one working adult member and an estimated 77% of adults were employed sometime during the study year (Table 2-6). The mean number of months of employment for employed adults in Dillingham was about 10 months, with 71% of adults employed year-round (Table 2-6).

8. Alaska Community Database, Community Information Summaries (CIS): http://www.commerce.state.ak.us/dca/commdb/CIS.cfm. (Accessed April 2012).

Table 2-4.–Employment by industry, Dillingham, 2010.

Industry	Jobs	Households	Individuals	Percentage of Income
Estimated total number[a]	**1,457.0**	**626.1**	**1,132.5**	
Federal government	**1.5%**	**2.7%**	**1.9%**	**2.2%**
Executive, administrative, managerial	0.6%	1.4%	0.8%	0.9%
Natural scientists and mathematicians	0.4%	0.8%	0.6%	0.7%
Mechanics and repairers	0.1%	0.3%	0.1%	0.2%
Transportation and material moving occupations	0.1%	0.3%	0.1%	0.2%
Handlers, equipment cleaners, helpers, and laborers	0.2%	0.3%	0.3%	0.2%
State government	**4.8%**	**11.7%**	**6.4%**	**5.7%**
Executive, administrative, managerial	1.1%	2.6%	1.4%	1.2%
Natural scientists and mathematicians	0.5%	1.3%	0.7%	1.0%
Social scientists, social workers, religious workers, and lawyers	0.5%	1.2%	0.6%	0.9%
Technologists and technicians, except health	1.3%	3.3%	1.8%	0.7%
Administrative support occupations, including clerical	0.4%	0.9%	0.5%	0.1%
Service occupations	0.4%	0.9%	0.5%	1.3%
Mechanics and repairers	0.5%	1.2%	0.6%	0.3%
Transportation and material moving occupations	0.1%	0.3%	0.1%	0.2%
Local government, including tribal	**21.6%**	**43.9%**	**27.9%**	**25.4%**
Executive, administrative, managerial	3.9%	9.3%	5.2%	6.4%
Natural scientists and mathematicians	1.2%	3.0%	1.6%	1.0%
Social scientists, social workers, religious workers, and lawyers	1.6%	3.8%	2.1%	2.5%
Teachers, librarians, and counselors	4.2%	9.1%	5.4%	4.8%
Technologists and technicians, except health	0.6%	1.4%	0.8%	0.5%
Marketing and sales occupations	0.4%	0.9%	0.5%	0.3%
Administrative support occupations, including clerical	5.2%	12.4%	6.9%	5.6%
Service occupations	1.5%	2.7%	2.0%	1.0%
Agricultural, forestry, and fishing occupations	0.1%	0.3%	0.1%	0.0%
Mechanics and repairers	0.7%	1.7%	0.9%	1.1%
Construction and extractive occupations	1.8%	4.2%	2.4%	1.8%
Transportation and material moving occupations	0.4%	0.9%	0.5%	0.3%
Commercial fishing	**15.9%**	**26.1%**	**21.2%**	**10.5%**
Agricultural, forestry, and fishing occupations	15.9%	26.1%	21.2%	10.5%
Hunting–trapping	**0.4%**	**0.8%**	**0.6%**	**0.4%**
Agricultural, forestry, and fishing occupations	0.4%	0.8%	0.6%	0.4%
Other agricultural, forestry, and fishing	**1.0%**	**2.4%**	**1.3%**	**0.4%**
Service occupations	0.4%	0.9%	0.5%	0.1%
Agricultural, forestry, and fishing occupations	0.5%	1.2%	0.6%	0.3%
Handlers, equipment cleaners, helpers, and laborers	0.1%	0.3%	0.1%	0.0%
Mining	**0.2%**	**0.5%**	**0.3%**	**0.2%**
Mechanics and repairers	0.1%	0.3%	0.1%	0.2%
Handlers, equipment cleaners, helpers, and laborers	0.1%	0.3%	0.1%	0.1%

-continued-

Table 2-4.–Page 2 of 3.

Industry	Jobs	Households	Individuals	Percentage of Income
Construction	**4.1%**	**8.6%**	**4.9%**	**3.7%**
Executive, administrative, managerial	0.1%	0.3%	0.1%	0.2%
Mechanics and repairers	0.4%	0.9%	0.5%	0.1%
Construction and extractive occupations	1.8%	4.3%	2.4%	0.9%
Transportation and material moving occupations	0.5%	1.2%	0.6%	0.4%
Handlers, equipment cleaners, helpers, and laborers	0.6%	1.2%	0.8%	0.1%
Occupation not indicated	0.7%	0.9%	0.5%	2.1%
Manufacturing	**0.8%**	**1.7%**	**1.1%**	**0.4%**
Precision production occupations	0.4%	0.8%	0.6%	0.4%
Handlers, equipment cleaners, helpers, and laborers	0.4%	0.9%	0.5%	0.0%
Transportation, communication, and utilities	**7.6%**	**16.3%**	**10.2%**	**7.9%**
Executive, administrative, managerial	1.3%	3.3%	1.8%	1.5%
Technologists and technicians, except health	0.5%	1.2%	0.6%	0.4%
Marketing and sales occupations	2.3%	5.8%	3.2%	1.8%
Administrative support occupations, including clerical	0.6%	1.4%	0.8%	0.8%
Service occupations	0.5%	1.2%	0.6%	0.5%
Mechanics and repairers	0.7%	1.7%	0.9%	1.1%
Precision production occupations	0.5%	1.2%	0.6%	0.4%
Transportation and material moving occupations	0.8%	2.0%	1.1%	1.1%
Handlers, equipment cleaners, helpers, and laborers	0.4%	0.9%	0.5%	0.3%
Retail trade	**8.3%**	**15.5%**	**11.1%**	**4.8%**
Executive, administrative, managerial	0.5%	1.2%	0.6%	0.5%
Marketing and sales occupations	5.7%	11.3%	7.7%	3.1%
Administrative support occupations, including clerical	0.4%	0.9%	0.5%	0.1%
Service occupations	0.1%	0.3%	0.1%	0.0%
Mechanics and repairers	0.4%	0.9%	0.5%	0.6%
Handlers, equipment cleaners, helpers, and laborers	0.9%	1.2%	1.1%	0.5%
Occupation not indicated	0.4%	0.9%	0.5%	0.1%
Finance, insurance, and real estate	**1.3%**	**3.3%**	**1.8%**	**1.8%**
Executive, administrative, managerial	1.1%	2.8%	1.5%	1.2%
Marketing and sales occupations	0.1%	0.3%	0.1%	0.5%
Service occupations	0.1%	0.3%	0.1%	0.1%
Services	**29.7%**	**52.8%**	**36.6%**	**34.2%**
Executive, administrative, managerial	5.7%	13.3%	7.7%	8.6%
Social scientists, social workers, religious workers, and lawyers	0.7%	1.7%	0.9%	0.6%
Teachers, librarians, and counselors	1.1%	2.5%	1.5%	1.1%
Health diagnosing and treating practitioners	1.1%	2.6%	1.4%	3.8%
Registered nurses, pharmacists, dietitians, therapists, and physician assistants	1.6%	4.0%	2.1%	3.4%
Health technologists, and technicians	2.5%	6.1%	3.3%	3.0%
Marketing and sales occupations	0.9%	2.1%	1.1%	0.7%
Administrative support occupations, including clerical	2.9%	7.3%	3.9%	3.0%
Service occupations	10.0%	21.9%	13.1%	6.0%
Mechanics and repairers	1.4%	3.4%	1.9%	2.5%

-continued-

Table 2-4.–Page 3 of 3.

Industry	Jobs	Households	Individuals	Percentage of Income
Services, continued				
Construction and extractive occupations	0.1%	0.3%	0.1%	0.1%
Precision production occupations	0.1%	0.3%	0.1%	0.2%
Transportation and material moving occupations	0.1%	0.3%	0.1%	0.0%
Handlers, equipment cleaners, helpers, and laborers	0.9%	2.1%	1.1%	0.5%
Miscellaneous occupations	0.1%	0.3%	0.1%	0.2%
Occupation not indicated	0.5%	1.2%	0.6%	0.3%
Industry not indicated	**2.8%**	**5.7%**	**3.6%**	**2.4%**
Construction and extractive occupations	0.1%	0.3%	0.1%	0.1%
Handlers, equipment cleaners, helpers, and laborers	0.1%	0.3%	0.1%	0.1%
Occupation not indicated	2.6%	5.1%	3.3%	2.3%

Source ADF&G Division of Subsistence household survey, 2011.

Table 2-5.–Location of jobs, Dillingham, 2010.

	Dillingham	
Location of job	Number	Percentage
Dillingham	1,345.0	92.3%
Study area subtotal	**1,345.0**	**92.3%**
Aleknagik	5.4	0.4%
Anchorage	10.2	0.7%
Bethel	1.6	0.1%
Deadhorse	1.6	0.1%
Naknek	12.5	0.9%
Togiak	7.0	0.5%
Nushagak	12.5	0.9%
Ekuk	26.8	1.8%
Bristol Bay	1.6	0.1%
Bering Sea	1.6	0.1%
North Slope	1.6	0.1%
Other U.S.	1.6	0.1%
Missing	28.1	1.9%
Total	**1,457.0**	**100.0%**

Source ADF&G Division of Subsistence household survey, 2011.

Table 2-6.–Employment characteristics, Dillingham, 2010.

Characteristics	Dillingham
All adults	
Number	1,469.9
Mean weeks employed	33.2
Employed adults	
Number	1,132.5
Percentage	77.0%
Jobs	
Number	1,457.0
Mean	1.3
Minimum	1.0
Maximum	5.0
Months employed	
Mean	9.9
Minimum	0.0
Maximum	12.0
Percent employed year-round	71.1%
Mean weeks employed	43.2
Households	
Number	726.0
Employed	
Number	626.1
Percentage	86.2%
Jobs per employed household	
Mean	2.0
Minimum	1.0
Maximum	11.0
Employed adults	
Minimum	1.0
Maximum	5.0
Mean	
Employed households	1.8
Total households	1.6
Mean person-weeks of employment	47.8

Source ADF&G Division of Subsistence household survey, 2011.

LEVELS OF PARTICIPATION IN THE HARVESTS AND USES OF WILD RESOURCES

Table 2-7 and Figure 2-2 report the expanded levels of individual participation in the harvest and processing of wild resources by all Dillingham residents in 2010. The study found that 84% of residents attempted to harvest resources in 2010. With reference to specific resource categories, 69% gathered plants (mainly berries), 69% fished, and 40% hunted large and small land mammals and/or marine mammals, or harvested birds and eggs. Relatively few residents were involved in harvesting furbearers (14%). In comparison, about 86% of the community members processed a resource in 2010 (Table 2-7). Most residents (77%) participated in processing fish, followed by approximately 69% of the population participating in processing plants. Fewer residents (47%) participated in processing large and small land mammals and/or marine mammals, game or birds, and about 16% participated in processing furbearers (Table 2-7).

Table 2-7.–Individual levels of participation in subsistence harvesting and processing activities, Dillingham, 2010.

			Dillingham
Total number of people			**2,294**
Birds/mammals			
	Hunt	Number	921.5
		Percentage	40.2%
		Missing	0.0
		Missing percentage	0.0%
	Process	Number	1,074.6
		Percentage	46.8%
		Missing	0.0
		Missing percentage	0.0%
Fish			
	Fish	Number	1,585.0
		Percentage	69.1%
		Missing	0.0
		Missing percentage	0.0%
	Process	Number	1,761.0
		Percentage	76.8%
		Missing	0.0
		Missing percentage	0.0%
Furbearers			
	Hunt or trap	Number	320.9
		Percentage	14.0%
		Missing	0.0
		Missing percentage	0.0%
	Process	Number	355.0
		Percentage	15.5%
		Missing	0.0
		Missing percentage	0.0%
Plants			
	Gather	Number	1,588.9
		Percentage	69.3%
		Missing	0.0
		Missing percentage	0.0%
	Process	Number	1,577.5
		Percentage	68.8%
		Missing	0.0
		Missing percentage	0.0%
Any resource			
	Attempt	Number	1,928.3
		Percentage	84.1%
	Process	Number	1,976.1
		Percentage	86.1%

Source ADF&G Division of Subsistence household survey, 2011.

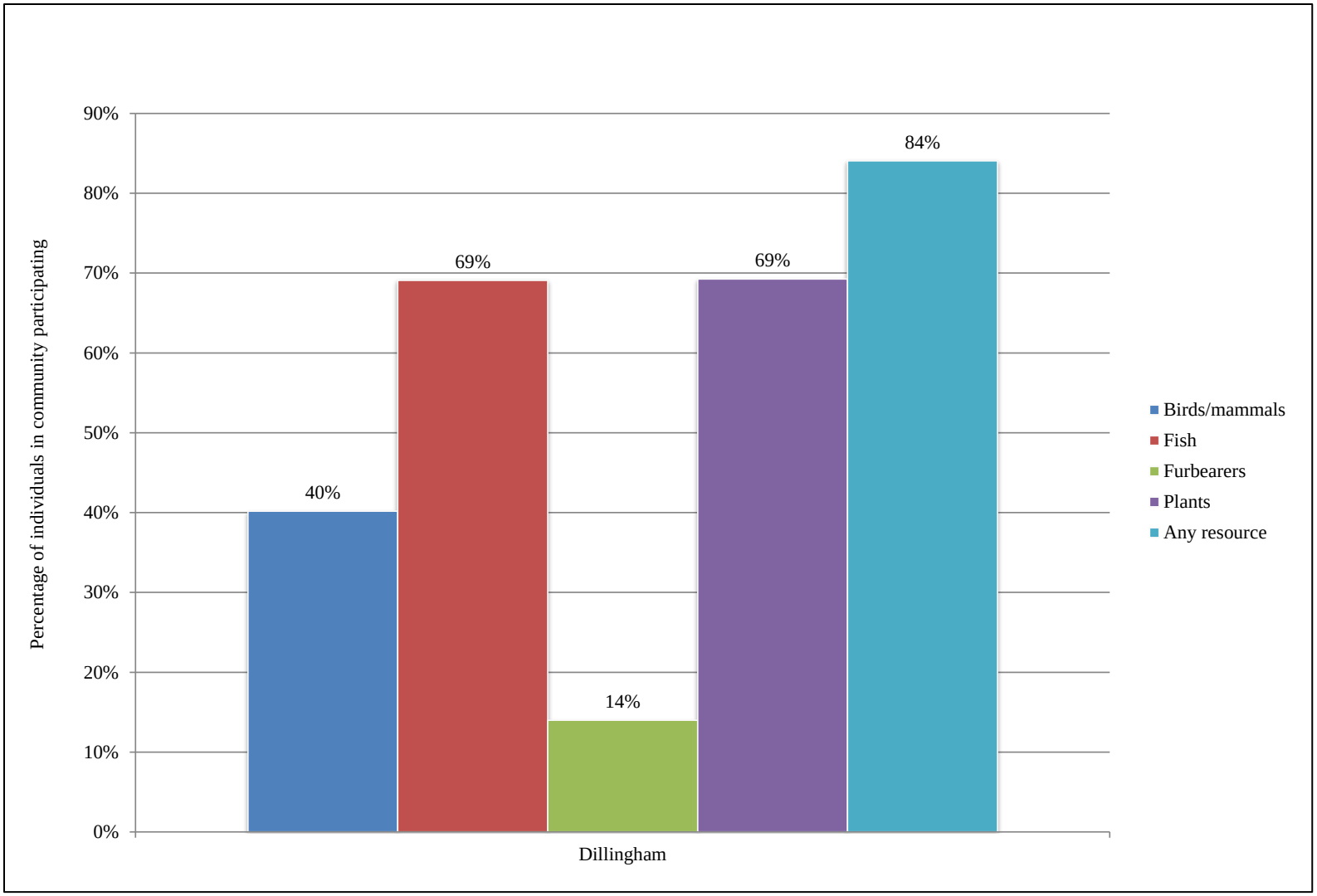

Figure 2-2.–Individual level of participation rates in harvesting activities, Dillingham, 2010.

RESOURCE HARVEST AND USE PATTERNS

Table 2-8 summarizes resource harvest and use characteristics for Dillingham in 2010, at the household level for the entire community. The table includes corresponding values for the 2 types of households surveyed in the sample. At the community level, approximately 97% of households used a resource, and 94% attempted to harvest and harvested a wild resource in 2010.

When comparing the community level estimates for the 2 strata, the corresponding percentages are only slightly different: all households identified as hunters attempted to harvest, harvested, and used a wild resource, while 96% of households identified as other used a resource, and a little less (92%) attempted to harvest and harvested a resource (Table 2-8).

At the community level, the average household harvest was an estimated 670 lb usable weight or 212 lb per capita. During the 2010 study year, Dillingham households attempted to harvest an average of 9 kinds of resources, harvested an average of 8 types, and used an average of 12 different resources. The maximum number of resources used by any household was 49 and the maximum number of resources harvested by any one household was 36. In addition, households gave away an estimated average of 4 kinds of resources, and received 6 types. This pattern shows that residents shared resources with others in the community. The total number of resources identified as available for use in the area during the study year was 134 (Table 2-8).

When comparing the community level estimates for the 2 strata, the corresponding numbers are quite different; the total average harvest of wild resources for hunter households was 1,473 lb usable weight, or 409 lb per capita while other households harvested a total of 436 lb or 144 lb per capita (Table 2-8 and Figure 2-3). The hunter households attempted to harvest 16 kinds of resources, harvested 13 types, and used 17 different kinds of resources. In comparison, the other households attempted to harvest 7 kinds of resources, harvested 6 types, and used 11 kinds of resources (Figure 2-4). The hunter households gave away an average of 8 kinds of resources and received 6 types, while the other households gave away an average of 3 kinds of resources and received 6 types (Table 2-8). Although there are differences in the harvest amounts and participation between the 2 categories of households, the study findings show that wild resources are shared widely in the community through social networks.

Table 2-8.–Resource harvest and use characteristics, Dillingham 2010.

	Dillingham		
	Hunters	Other households	All
Mean number of resources used per household	16.7	10.8	12.1
Minimum	3.0	0.0	0.0
Maximum	49.0	44.0	49.0
95 % confidence limit (±)	6.6%	11.7%	8.3%
Median	15.0	9.0	12.0
Mean number of resources attempted to harvest per household	15.5	6.8	8.8
Minimum	4.0	0.0	0.0
Maximum	50.0	32.0	50.0
95% confidence limit (±)	7.6%	14.4%	9.1%
Median	12.0	6.0	9.0
Mean number of resources harvested per household	13.1	5.9	7.6
Minimum	2.0	0.0	0.0
Maximum	36.0	19.0	36.0
95% confidence limit (±)	6.5%	13.2%	8.4%
Median	11.0	5.0	8.0
Mean number of resources received per household	5.7	6.4	6.3
Minimum	0.0	0.0	0.0
Maximum	41.0	43.0	43.0
95% confidence limit (±)	12.5%	18.3%	14.7%
Median	4.0	5.0	4.0
Mean number of resources given away per household	7.8	3.2	4.3
Minimum	1.0	0.0	0.0
Maximum	41.0	18.0	41.0
95% confidence limit (±)	0.1	0.2	12.6%
Median	6.0	3.0	4.0
Mean household harvest, pounds	1,472.8	435.9	670.2
Minimum	184.1	0.0	0.0
Maximum	8,134.6	2,376.4	8,134.6
Estimated pounds harvested	241,535.3	244,997.4	486,532.7
Community per capita harvest, pounds	408.7	143.9	212.1
Percent using any resource	100.0%	96.0%	96.9%
Percent attempting to harvest any resource	100.0%	91.9%	93.7%
Percent harvesting any resource	100.0%	91.9%	93.7%
Percent receiving any resource	93.1%	89.9%	90.6%
Percent giving away any resource	100.0%	72.7%	78.9%
Number of households in sample	101	99	200
Number of resources available	134	134	134

Source ADF&G Division of Subsistence household survey, 2011.

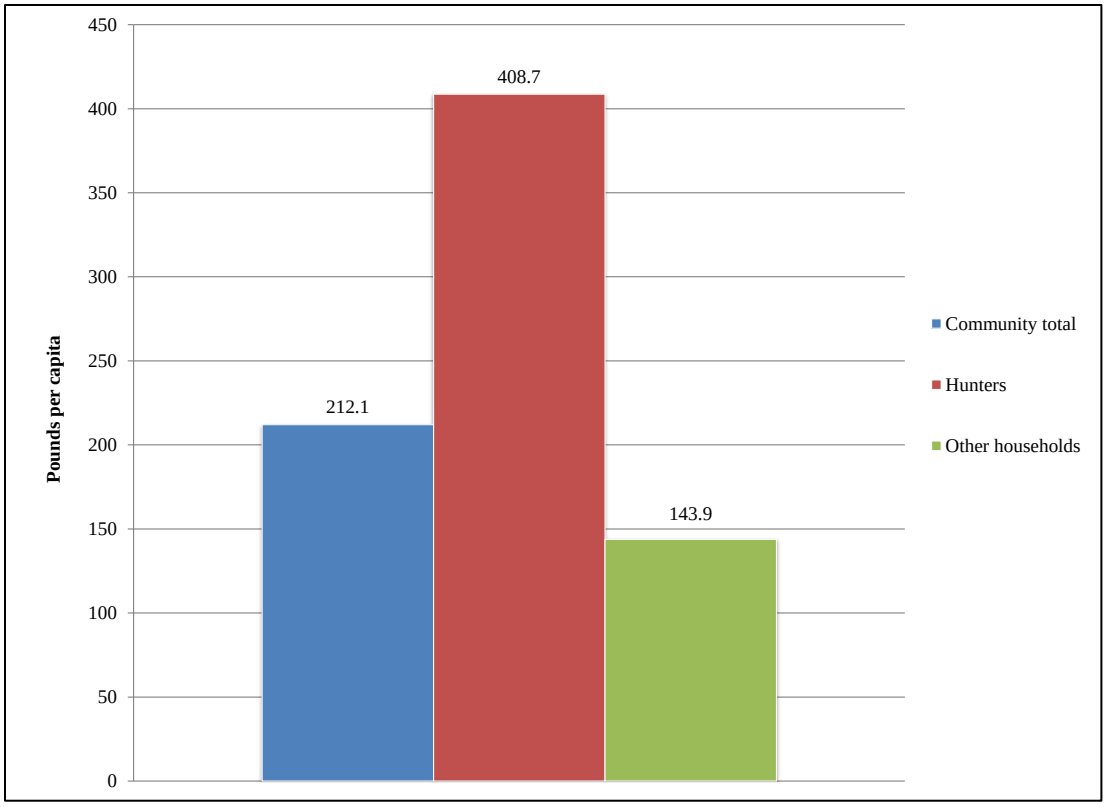

Figure 2-3.–Comparison of per capita harvests, Dillingham, 2010.

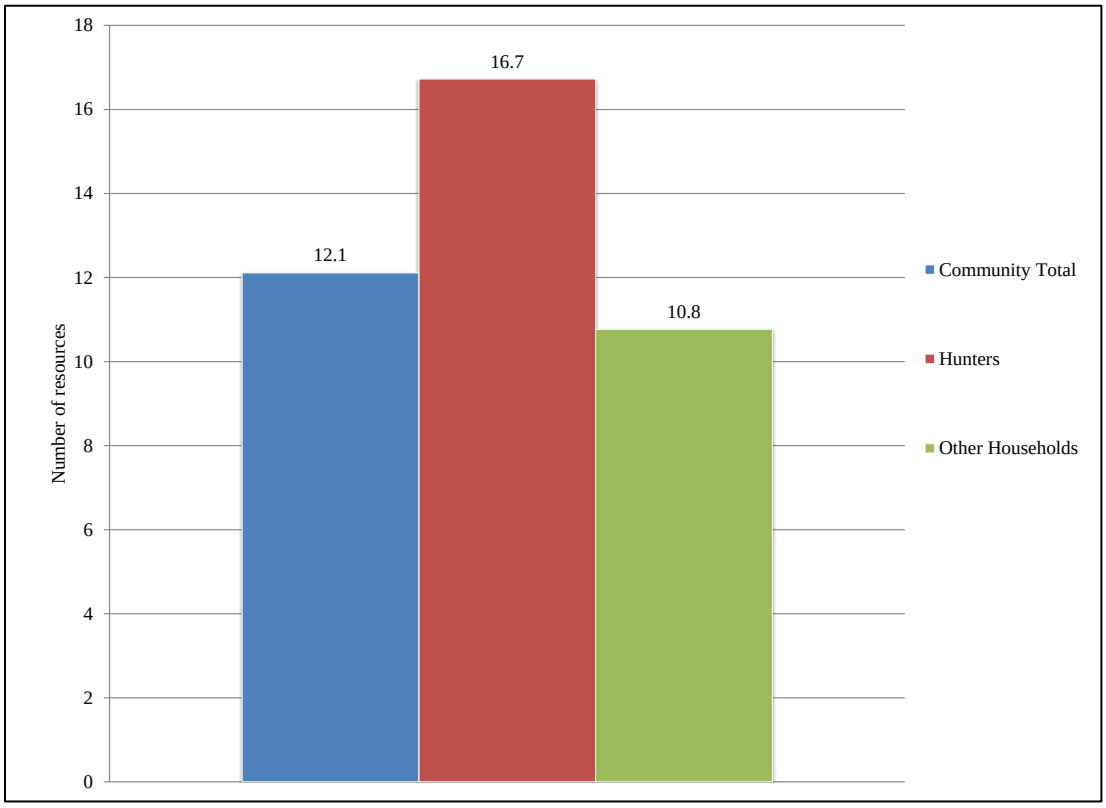

Figure 2-4.–Average number of resources used per household, Dillingham, 2010.

Species Used and Seasonal Round

Residents of Dillingham harvest a wide variety of species throughout the year and they usually target specific species during certain seasons of the year, following a cyclical harvest pattern. Many Dillingham residents are highly mobile, traveling around the Nushagak and Kvichak bays, and the Wood–Tikchik lakes to harvest resources. Residents use motorized vehicles, such as boats, highway vehicles, snowmachines, and four-wheelers, to access their hunting, fishing, and gathering areas. Table 2-9 summarizes the estimated harvests and uses of fish, game, and plant resources in the 2010 study year. Residents of Dillingham harvested an estimated total of 486,533 lb, or 212 lb per capita of wild resources (Table 2-9).

Although residents did not relate that there was a beginning or end to a cycle, this report starts with salmon because spring begins the most active harvesting time of the year with the return of salmon to the region's bays and river. In 2010, an estimated 91% of the households in Dillingham used salmon while 70% harvested salmon (Table 2-9). In the spring, community residents set gillnets along Kanakanak, Snag Point, and Scandinavian beaches, along the shore of the Wood River, and Aleknagik Lake to harvest the early-run Chinook (king) salmon (Figure 2-5). Sockeye (red) salmon, which arrive soon after, are also harvested with setnets—the same for chum salmon which arrive at about the same time as sockeye (Figure 2-6). Coho (silver) salmon are harvested in late July and early August, and during odd years, pink salmon are harvested with setnets at the same time as coho salmon. Some Dillingham residents are commercial fishing during the salmon runs and will therefore remove salmon from their commercial harvest for home use. Many residents also fish in the Wood River just northeast of the community with rod and reel gear as well as in Lake Aleknagik, especially for coho salmon during mid to late summer. Spawning sockeye salmon, or "spawnouts," are harvested in the fall along the shores of Lake Aleknagik and Lake Nerka; an estimated 9% of households were involved in harvesting spawning sockeye salmon (Table 2-9 and Figure 2-6).

Lake Aleknagik and the Nushagak River were popular locations for harvesting northern pike, Dolly Varden, rainbow trout, and Arctic grayling (figures 2-7, 2-8, 2-9, and 2-10). These nonsalmon fish were harvested during the summer and fall by boat with rod and reel gear or by jigging through the ice in the winter. Smelt were also harvested mainly off Kanakanak Beach, near Lewis Point on the Nushagak River, and also along the Wood River in the winter and fall months by seine, gillnet, or rod and reel.

Large land mammal hunting is a traditional and popular fall activity in Dillingham that often stretches into the winter. During the study year, 52% of households attempted to harvest large land mammals while 37% were successful. Figure 2-11 shows the area used for hunting moose in 2010 by Dillingham residents and figure 2-12 shows the area for hunting caribou. Many residents traveled by boat along the Nushagak River as well as the lakes within the Wood–Tikchik State Park in search of moose.

Fewer households (27%) participated in small land mammal harvesting in 2010, and a smaller number (25%) were successful. Most small land mammal hunting took place during the winter because the majority of the harvest was accomplished by trappers who work their trap lines in the winter months by snowmachine. Beavers, which represent the highest harvest in terms of pounds harvested, were trapped for their meat and fur (Table 2-9). Species often harvested while traveling or nearby homes include hares and porcupines.

Migratory birds travel through the area in fall and spring, stopping to rest on the marsh and tundra areas that surround the Wood River and Nushagak Bay where they are harvested (Figure 2-13). In 2010, an estimated 25% of Dillingham households reported hunting migratory waterfowl during the fall and spring hunts (Table 2-9). Residents traveled to Bristol Bay to harvest eider ducks. During the study year, approximately 48% of Dillingham households reported harvesting upland birds (Table 2-9). Upland game birds, specifically grouse and ptarmigan, were harvested by Dillingham residents along the Igushik River, throughout the Wood–Tikchik State Park, the Wood River, and up the Nushagak River throughout the

year (Figure 2-14). Dillingham households also harvested bird eggs, with approximately 16% engaged in this activity (Table 2-9).

In 2010, Dillingham residents hunted seals in Bristol Bay from Protection Point well up into the mouth of the Nushagak River, including Nushagak Bay (Figure 2-15). Seal and other marine mammal meat was widely distributed, with approximately 33% of households using marine mammals, while only 5% attempted to harvest and 4% harvesting marine mammals (Table 2-9).[9]

Harvesting vegetation, particularly berries in the summer, is an important activity for Dillingham residents. During the study year, approximately 84% of households reported harvesting berries. Another commonly used vegetation resource is firewood, which, especially due to high heating fuel costs, has become more common in recent years for heating homes. During the study year, 57% of households harvested firewood (Table 2-9).

9. Under the terms of the Marine Mammal Protection Act, only Alaska Natives may hunt and harvest marine mammals.

Table 2-9.–Estimated harvests and uses of fish, game, and plant resources, Dillingham, 2010.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total	Unit	Mean household	
All resources	**96.9%**	**93.7%**	**93.7%**	**90.6%**	**78.9%**	**486,532.7**	**670.2**	**212.1**	**89,517.4**		**123.3**	**12.2%**
Fish	**93.7%**	**75.5%**	**74.8%**	**73.7%**	**63.6%**	**316,260.2**	**435.6**	**137.9**	**59,927.7**		**82.5**	**15.6%**
Salmon	91.2%	72.0%	70.4%	55.9%	57.1%	299,567.5	412.6	130.6	52,904.9		72.9	16.3%
Chum salmon	46.6%	36.1%	35.9%	14.4%	19.2%	17,420.1	24.0	7.6	3,866.0	ind	5.3	26.1%
Coho salmon	50.8%	38.4%	38.4%	15.6%	20.2%	44,681.8	61.5	19.5	8,877.8	ind	12.2	34.6%
Chinook salmon	82.1%	66.8%	62.5%	39.9%	43.1%	125,124.2	172.3	54.5	12,311.7	ind	17.0	15.8%
Pink salmon	17.5%	15.4%	14.2%	3.4%	6.7%	6,828.6	9.4	3.0	2,835.8	ind	3.9	88.1%
Sockeye salmon	85.3%	64.4%	61.8%	40.9%	43.6%	103,075.5	142.0	44.9	23,827.0	ind	32.8	18.9%
Spawning sockeye salmon	19.3%	9.1%	8.6%	10.9%	5.3%	2,339.2	3.2	1.0	1,169.6		1.6	36.1%
Unknown salmon	1.8%	0.8%	0.8%	0.8%	0.8%	98.0	0.1	0.0	17.0	ind	0.0	180.8%
Nonsalmon fish	68.7%	41.9%	41.5%	52.7%	28.6%	16,692.7	23.0	7.3	7,022.8		9.7	23.2%
Herring	5.1%	0.0%	0.0%	5.1%	0.9%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring roe	15.2%	0.4%	0.4%	14.7%	2.9%	352.4	0.5	0.2	50.3		0.1	118.3%
Herring sac roe	3.7%	0.0%	0.0%	3.7%	0.4%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Herring spawn on kelp	13.4%	0.4%	0.4%	12.7%	2.7%	352.4	0.5	0.2	50.3	gal	0.1	118.3%
Smelt	48.4%	21.0%	20.8%	36.0%	18.1%	7,815.9	10.8	3.4	2,017.7		2.8	35.9%
Capelin (grunion)	1.0%	0.0%	0.0%	1.0%	0.2%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown smelt	48.4%	21.0%	20.8%	36.0%	18.1%	7,815.9	10.8	3.4	2,017.7	gal	2.8	35.9%
Cods	4.9%	1.6%	1.6%	4.9%	0.7%	224.8	0.3	0.1	51.1		0.1	143.4%
Pacific cod (gray)	2.1%	0.0%	0.0%	2.1%	0.4%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Pacific tomcod	2.0%	0.8%	0.8%	2.0%	0.2%	170.3	0.2	0.1	34.1	ind	0.0	180.8%
Walleye pollock (whiting)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown cod	1.0%	0.8%	0.8%	1.0%	0.2%	54.5	0.1	0.0	17.0	ind	0.0	180.8%
Flounders	1.8%	1.3%	1.3%	0.2%	0.4%	233.8	0.3	0.1	77.9		0.1	61.9%
Starry flounder	1.8%	1.3%	1.3%	0.2%	0.4%	233.8	0.3	0.1	77.9	ind	0.1	61.9%
Pacific halibut	19.0%	1.0%	1.0%	18.8%	3.7%	88.4	0.1	0.0	88.4	lb	0.1	174.2%
Sablefish (black cod)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%

-continued-

Table 2-9.–Page 2 of 7.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total		Mean household	
Fish, continued												
Sculpin	0.2%	0.0%	0.0%	0.2%	0.2%	0.0	0.0	0.0	0.0		0.0	0.0%
Unknown sculpin	0.2%	0.0%	0.0%	0.2%	0.2%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%
Salmon shark	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Sole	0.9%	0.9%	0.7%	0.0%	0.2%	26.0	0.0	0.0	26.0		0.0	85.3%
Yellowfin sole	0.9%	0.9%	0.7%	0.0%	0.2%	26.0	0.0	0.0	26.0	ind	0.0	85.3%
Alaska blackfish	1.5%	0.2%	0.0%	1.5%	0.4%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Burbot	2.5%	0.4%	0.4%	2.0%	0.0%	22.7	0.0	0.0	22.7	ind	0.0	93.7%
Char	26.3%	20.7%	20.0%	8.3%	7.3%	2,217.2	3.1	1.0	1,583.7		2.2	34.4%
Arctic char	1.1%	1.1%	1.1%	0.0%	0.7%	97.8	0.1	0.0	69.8	ind	0.1	65.3%
Dolly Varden	23.4%	18.4%	17.8%	7.6%	5.7%	1,797.8	2.5	0.8	1,284.2		1.8	41.3%
Dolly Varden–freshwater	19.3%	16.8%	16.3%	4.8%	5.3%	1,681.9	2.3	0.7	1,201.4	ind	1.7	44.0%
Dolly Varden–saltwater	2.7%	2.1%	1.7%	0.8%	0.4%	115.9	0.2	0.1	82.8	ind	0.1	74.1%
Dolly Varden–Togiak trout	2.0%	0.0%	0.0%	2.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Lake trout	5.3%	4.2%	3.6%	1.5%	2.1%	321.6	0.4	0.1	229.7	ind	0.3	45.9%
Arctic grayling	10.1%	7.4%	6.7%	3.9%	2.3%	346.5	0.5	0.2	495.1	ind	0.7	54.4%
Northern pike	27.8%	18.0%	17.8%	10.7%	9.4%	3,637.9	5.0	1.6	1,299.2	ind	1.8	31.9%
Longnose sucker	0.2%	0.2%	0.2%	0.0%	0.2%	14.6	0.0	0.0	9.7	ind	0.0	122.2%
Trout	14.2%	11.8%	11.4%	2.6%	1.1%	848.9	1.2	0.4	606.4		0.8	67.3%
Rainbow trout	13.2%	10.8%	10.4%	2.6%	1.1%	776.2	1.1	0.3	554.4	ind	0.8	73.1%
Unknown trout	1.2%	1.5%	1.2%	0.0%	0.0%	72.7	0.1	0.0	51.9	ind	0.1	79.1%
Whitefishes	13.9%	4.6%	4.6%	10.7%	3.4%	863.6	1.2	0.4	694.6		1.0	64.1%
Cisco	1.0%	1.0%	0.8%	0.2%	0.0%	9.1	0.0	0.0	22.7		0.0	180.8%
Least cisco	1.0%	1.0%	0.8%	0.2%	0.0%	9.1	0.0	0.0	22.7	ind	0.0	180.8%
Humpback whitefish	6.4%	1.3%	1.3%	5.0%	1.1%	426.2	0.6	0.2	243.6	ind	0.3	52.3%
Round whitefish	8.0%	2.5%	2.5%	6.8%	2.2%	428.3	0.6	0.2	428.3	ind	0.6	118.5%
Unknown whitefish	0.2%	0.0%	0.0%	0.2%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown nonsalmon fish	0.8%	0.0%	0.0%	0.8%	0.0%	0.0	0.0	0.0	0.0	lb	0.0	0.0%

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Table 2-9.–Page 3 of 7.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total		Mean household	
Land mammals	80.7%	52.2%	36.7%	70.2%	40.3%	118,362.1	163.0	51.6	1,979.3		2.7	21.7%
Large land mammals	77.3%	44.7%	22.0%	68.4%	31.7%	113,241.3	156.0	49.4	258.1		0.4	22.0%
Black bear	0.2%	2.7%	0.2%	0.2%	0.2%	94.2	0.1	0.0	1.6	ind	0.0	122.2%
Brown bear	1.5%	3.9%	0.4%	1.0%	0.0%	1,104.2	1.5	0.5	3.2	ind	0.0	86.0%
Caribou	35.8%	14.8%	5.1%	28.7%	9.2%	9,495.2	13.1	4.1	63.3	ind	0.1	52.0%
Moose	76.5%	41.7%	20.1%	65.6%	30.5%	102,547.8	141.3	44.7	189.9	ind	0.3	22.4%
Dall sheep	0.2%	0.2%	0.0%	0.2%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Small land mammals	32.9%	27.0%	24.9%	14.1%	17.0%	5,120.8	7.1	2.2	1,721.3		2.4	34.1%
Beaver	13.9%	5.4%	4.7%	9.8%	5.5%	2,066.6	2.8	0.9	262.2	ind	0.4	61.1%
Coyote	0.7%	0.7%	0.4%	0.2%	0.2%	0.0	0.0	0.0	9.7	ind	0.0	0.0%
Fox	4.7%	5.1%	4.7%	0.2%	0.0%	0.0	0.0	0.0	285.7		0.4	0.0%
Arctic fox	0.0%	0.4%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red fox	4.7%	5.1%	4.7%	0.2%	0.0%	0.0	0.0	0.0	285.7		0.4	0.0%
Red fox–cross phase	0.2%	0.7%	0.2%	0.0%	0.0%	0.0	0.0	0.0	3.2	ind	0.0	0.0%
Red fox–red phase	4.7%	4.9%	4.7%	0.2%	0.0%	0.0	0.0	0.0	282.5	ind	0.4	0.0%
Hare	13.9%	14.2%	12.1%	2.5%	8.2%	1,507.8	2.1	0.7	569.6		0.8	38.9%
Arctic hare	2.3%	4.5%	2.3%	0.2%	0.9%	468.1	0.6	0.2	83.6	ind	0.1	69.8%
Snowshoe hare	8.2%	9.8%	7.9%	0.7%	5.4%	722.2	1.0	0.3	361.1	ind	0.5	42.7%
Alaska hare (jackrabbit)	1.1%	2.6%	0.9%	0.2%	0.7%	48.7	0.1	0.0	24.4	ind	0.0	84.6%
Unknown hare	4.1%	3.6%	2.6%	1.6%	2.3%	268.7	0.4	0.1	100.6	ind	0.1	111.8%
River (land) otter	2.3%	2.3%	2.3%	0.0%	0.2%	0.0	0.0	0.0	71.4	ind	0.1	0.0%
Lynx	0.7%	0.7%	0.4%	0.2%	0.2%	0.0	0.0	0.0	4.9	ind	0.0	0.0%
Marmot	0.0%	0.2%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marten	1.9%	1.9%	1.9%	0.8%	0.8%	0.0	0.0	0.0	206.1	ind	0.3	0.0%
Mink	1.7%	1.7%	1.7%	0.0%	0.0%	0.0	0.0	0.0	35.7	ind	0.0	0.0%
Muskrat	0.2%	0.4%	0.2%	0.0%	0.0%	0.0	0.0	0.0	1.6	ind	0.0	0.0%
Porcupine	18.3%	15.2%	15.0%	5.1%	6.5%	1,538.3	2.1	0.7	195.5	ind	0.3	37.2%
Squirrel	1.1%	1.1%	1.1%	0.0%	0.0%	8.1	0.0	0.0	30.9		0.0	87.7%
Arctic ground (parka) squirrel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Red (tree) squirrel	1.1%	1.1%	1.1%	0.0%	0.0%	8.1	0.0	0.0	30.9	ind	0.0	87.7%

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Table 2-9.–Page 4 of 7.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total		Mean household	
Land mammals, continued												
Weasel	0.9%	0.9%	0.9%	0.2%	0.2%	0.0	0.0	0.0	22.7	ind	0.0	0.0%
Gray wolf	0.8%	2.1%	0.8%	0.0%	0.0%	0.0	0.0	0.0	5.7	ind	0.0	0.0%
Wolverine	1.2%	1.9%	1.2%	0.0%	0.0%	0.0	0.0	0.0	19.5	ind	0.0	0.0%
Marine mammals	32.7%	5.1%	3.5%	29.2%	7.7%	10,108.4	13.9	4.4	33.4		0.0	43.8%
Porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%
Harbor porpoise	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seal	30.4%	4.0%	2.1%	27.5%	5.7%	2,012.3	2.8	0.9	23.5		0.0	93.9%
Bearded seal	1.0%	1.2%	1.0%	0.0%	1.0%	1,284.9	1.8	0.6	7.3	ind	0.0	143.2%
Harbor and spotted seals[b]	5.1%	1.9%	0.9%	3.7%	2.2%	545.6	0.8	0.2	13.0		0.0	69.9%
Ringed seal	1.2%	0.4%	0.2%	1.0%	0.2%	181.9	0.3	0.1	3.2	ind	0.0	122.2%
Unknown seal	25.4%	1.1%	0.0%	24.4%	2.2%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Steller sea lion	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Walrus	2.1%	0.0%	0.0%	2.1%	0.7%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Whale	14.5%	2.0%	1.6%	11.4%	2.8%	8,096.1	11.2	3.5	9.8		0.0	48.9%
Beluga	14.5%	2.0%	1.6%	11.4%	2.8%	8,096.1	11.2	3.5	9.8	ind	0.0	48.9%
Birds and eggs	**72.7%**	**53.1%**	**50.4%**	**42.2%**	**34.6%**	**13,052.0**	**18.0**	**5.7**	**15,975.0**		**22.0**	**19.2%**
Migratory birds	47.7%	24.9%	23.7%	28.8%	16.8%	4,679.5	6.4	2.0	3,840.6		5.3	27.1%
Ducks	32.2%	18.2%	18.0%	16.2%	11.8%	1,386.9	1.9	0.6	2,019.0		2.8	33.2%
Bufflehead	0.4%	1.7%	0.2%	0.2%	0.0%	29.2	0.0	0.0	73.1	ind	0.1	122.2%
Canvasback	1.2%	2.5%	1.0%	0.2%	0.2%	9.8	0.0	0.0	8.9	ind	0.0	123.3%
Eider	0.2%	0.2%	0.0%	0.2%	0.2%	0.0	0.0	0.0	0.0		0.0	0.0%
Common eider	0.2%	0.2%	0.0%	0.2%	0.2%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
King eider	0.0%	0.2%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Gadwall	0.0%	1.9%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Goldeneye	0.4%	3.1%	0.4%	0.0%	0.2%	5.2	0.0	0.0	6.5		0.0	96.3%
Unknown goldeneye	0.4%	3.1%	0.4%	0.0%	0.2%	5.2	0.0	0.0	6.5	ind	0.0	96.3%
Harlequin	0.0%	1.5%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mallard	16.7%	11.7%	10.8%	7.4%	5.6%	521.1	0.7	0.2	521.1	ind	0.7	31.5%
Merganser	1.5%	1.7%	1.5%	0.2%	0.4%	16.6	0.0	0.0	27.6		0.0	149.7%
Common merganser	1.0%	1.2%	1.0%	0.2%	0.2%	15.6	0.0	0.0	26.0	ind	0.0	158.9%

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Table 2-9.–Page 5 of 7.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total		Mean household	
Birds and eggs, continued												
Red-breasted merganser	0.0%	0.2%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Unknown merganser	0.4%	0.7%	0.4%	0.0%	0.2%	1.0	0.0	0.0	1.6	ind	0.0	121.6%
Long-tailed duck	0.0%	1.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Northern pintail	9.8%	9.3%	7.6%	2.5%	3.9%	401.8	0.6	0.2	502.3	ind	0.7	66.4%
Scaup	0.7%	1.7%	0.7%	0.0%	0.4%	35.1	0.0	0.0	39.0		0.1	102.9%
Unknown scaup	0.7%	1.7%	0.7%	0.0%	0.4%	35.1	0.0	0.0	39.0	ind	0.1	102.9%
Scoter	0.7%	0.7%	0.4%	0.2%	0.7%	5.9	0.0	0.0	6.6		0.0	121.6%
Black scoter	0.7%	0.7%	0.4%	0.2%	0.7%	5.9	0.0	0.0	6.6	ind	0.0	121.6%
Northern shoveler	2.7%	2.8%	1.9%	1.0%	1.5%	28.2	0.0	0.0	47.1	ind	0.1	70.8%
Teal	9.3%	8.7%	7.3%	3.0%	3.5%	171.3	0.2	0.1	571.1		0.8	90.2%
Green-winged teal	9.3%	8.7%	7.3%	3.0%	3.5%	171.3	0.2	0.1	571.1	ind	0.8	90.2%
Wigeon	2.1%	3.8%	2.1%	0.2%	1.7%	50.0	0.1	0.0	71.4		0.1	93.5%
Unknown wigeon	2.1%	3.8%	2.1%	0.2%	1.7%	50.0	0.1	0.0	71.4	ind	0.1	93.5%
Unknown ducks	10.1%	4.4%	2.1%	7.9%	3.0%	112.7	0.2	0.0	144.5	ind	0.2	82.2%
Geese	39.3%	21.8%	18.9%	21.8%	11.6%	3,070.5	4.2	1.3	1,792.4		2.5	31.7%
Brant	2.7%	4.0%	1.9%	0.2%	0.7%	142.2	0.2	0.1	118.5	ind	0.2	87.0%
Canada geese	26.0%	14.3%	11.4%	15.5%	7.9%	1,539.0	2.1	0.7	1,095.4		1.5	35.3%
Cacklers	7.7%	7.8%	4.7%	3.5%	4.2%	507.0	0.7	0.2	422.5	ind	0.6	77.5%
Lesser Canada geese	9.3%	8.4%	5.0%	3.9%	2.5%	452.9	0.6	0.2	377.4	ind	0.5	47.4%
Unknown Canada geese	12.0%	5.0%	2.6%	8.6%	1.7%	579.1	0.8	0.3	295.5	ind	0.4	57.0%
Emperor geese	1.2%	2.9%	0.2%	0.2%	0.2%	24.4	0.0	0.0	9.7	ind	0.0	122.2%
Snow geese	1.0%	2.9%	0.2%	0.0%	0.0%	3.7	0.0	0.0	1.6	ind	0.0	122.2%
White-fronted geese	12.4%	10.5%	7.0%	5.0%	3.4%	779.0	1.1	0.3	324.6	ind	0.4	56.1%
Unknown geese	8.8%	5.1%	1.9%	5.6%	1.7%	582.2	0.8	0.3	242.6	ind	0.3	110.4%
Swan	2.3%	2.5%	1.1%	1.9%	0.9%	58.5	0.1	0.0	9.7		0.0	56.6%
Trumpeter swan	0.0%	0.7%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Tundra swan (whistling)	0.9%	2.0%	0.7%	0.4%	0.7%	29.2	0.0	0.0	4.9	ind	0.0	69.9%
Unknown swan	1.5%	1.1%	0.4%	1.5%	0.2%	29.2	0.0	0.0	4.9	ind	0.0	90.7%
Crane	2.7%	2.7%	2.0%	0.9%	1.1%	163.7	0.2	0.1	19.5		0.0	44.1%
Sandhill crane	2.7%	2.7%	2.0%	0.9%	1.1%	163.7	0.2	0.1	19.5	ind	0.0	44.1%
Shorebirds	0.0%	0.2%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%

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Table 2-9.–Page 6 of 7.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total		Mean household	
Birds and eggs, continued												
Common snipe	0.0%	0.2%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Other birds	59.6%	48.9%	47.5%	21.2%	27.0%	5,403.5	7.4	2.4	7,719.2		10.6	19.0%
Upland game birds	59.6%	48.9%	47.5%	21.2%	27.0%	5,403.5	7.4	2.4	7,719.2		10.6	19.0%
Grouse	51.2%	43.7%	41.7%	14.2%	21.7%	2,989.1	4.1	1.3	4,270.2	ind	5.9	21.0%
Ptarmigan	39.1%	28.4%	26.8%	17.8%	15.4%	2,414.3	3.3	1.1	3,449.0		4.8	24.4%
Unknown ptarmigan	39.1%	28.4%	26.8%	17.8%	15.4%	2,414.3	3.3	1.1	3,449.0	ind	4.8	24.4%
Bird eggs	36.7%	16.2%	15.3%	23.1%	14.2%	2,969.0	4.1	1.3	4,415.1		6.1	39.0%
Duck eggs	0.7%	0.4%	0.4%	0.0%	0.2%	9.3	0.0	0.0	61.7		0.1	95.3%
Unknown duck eggs	0.7%	0.4%	0.4%	0.0%	0.2%	9.3	0.0	0.0	61.7	ind	0.1	95.3%
Geese eggs	1.0%	0.2%	0.2%	0.8%	0.0%	1.0	0.0	0.0	3.2		0.0	122.2%
Unknown geese eggs	1.0%	0.2%	0.2%	0.8%	0.0%	1.0	0.0	0.0	3.2	ind	0.0	122.2%
Swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%
Unknown swan eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Shorebird eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%
Common snipe eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Seabird and loon eggs	35.9%	16.2%	15.3%	22.3%	14.2%	2,958.8	4.1	1.3	4,350.2		6.0	39.0%
Cormorant eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%
Unknown cormorant eggs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Gull eggs	35.4%	16.0%	15.3%	21.9%	14.2%	2,915.1	4.0	1.3	3,475.0		4.8	39.3%
Unknown gull eggs	35.4%	16.0%	15.3%	21.9%	14.2%	2,915.1	4.0	1.3	3,475.0	ind	4.8	39.3%
Murre eggs	1.3%	0.9%	0.4%	0.9%	0.9%	40.9	0.1	0.0	818.4		1.1	116.5%
Unknown murre eggs	1.3%	0.9%	0.4%	0.9%	0.9%	40.9	0.1	0.0	818.4	ind	1.1	116.5%
Tern eggs	0.8%	0.8%	0.8%	0.0%	0.0%	2.8	0.0	0.0	56.8		0.1	180.8%
Unknown tern eggs	0.8%	0.8%	0.8%	0.0%	0.0%	2.8	0.0	0.0	56.8	ind	0.1	180.8%
Unknown eggs	0.2%	0.0%	0.0%	0.2%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Marine invertebrates	**29.6%**	**26.9%**	**26.1%**	**24.4%**	**7.8%**	**2,590.0**	**3.6**	**1.1**	**1,464.0**		**2.0**	**61.8%**
Clams	7.9%	5.5%	4.7%	6.1%	2.0%	459.3	0.6	0.2	153.1		0.2	136.0%
Butter clams	0.2%	0.2%	0.2%	0.2%	0.0%	9.7	0.0	0.0	3.2	gal	0.0	122.2%
Pacific littleneck clams (steamers)	0.2%	0.2%	0.2%	0.0%	0.2%	48.7	0.1	0.0	16.2	gal	0.0	122.2%

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Table 2-9.–Page 7 of 7.

Resource name	Percentage of households					Pounds harvested			Amount harvested[a]			95% confidence limit (±) harvest
	Use	Attempt	Harvest	Receive	Give	Total	Mean household	Per capita	Total		Mean household	
Marine invertebrates, continued												
Razor clams	4.0%	0.8%	0.0%	4.0%	1.0%	0.0	0.0	0.0	0.0	gal	0.0	0.0%
Softshell clams	1.6%	1.6%	1.6%	0.8%	0.0%	51.6	0.1	0.0	17.2	gal	0.0	179.9%
Unknown clams	2.7%	2.7%	2.7%	1.9%	0.8%	349.2	0.5	0.2	116.4	gal	0.2	177.3%
Cockles	17.8%	17.8%	17.0%	15.4%	5.3%	976.6	1.3	0.4	325.5		0.4	42.2%
Unknown cockles	17.8%	17.8%	17.0%	15.4%	5.3%	976.6	1.3	0.4	325.5	gal	0.4	42.2%
Crabs	10.1%	7.7%	7.7%	8.5%	1.5%	1,144.2	1.6	0.5	978.8		1.3	124.7%
Dungeness crab	3.0%	0.0%	0.0%	3.0%	0.2%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
King crab	8.2%	7.0%	7.0%	6.6%	1.2%	1,131.0	1.6	0.5	970.6		1.3	126.2%
Red king crab	7.2%	6.3%	6.3%	6.4%	1.2%	847.1	1.2	0.4	847.1	ind	1.2	163.0%
Unknown king crab	1.0%	0.8%	0.8%	0.2%	0.0%	283.8	0.4	0.1	123.4	ind	0.2	180.8%
Tanner crab	1.5%	0.7%	0.7%	1.5%	0.0%	13.3	0.0	0.0	8.3		0.0	119.8%
Unknown tanner crab	1.5%	0.7%	0.7%	1.5%	0.0%	13.3	0.0	0.0	8.3	ind	0.0	119.8%
Unknown crab	0.8%	0.0%	0.0%	0.8%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Mussels	2.2%	0.7%	0.7%	1.0%	0.2%	9.8	0.0	0.0	6.6		0.0	85.6%
Blue mussels	2.2%	0.7%	0.7%	1.0%	0.2%	9.8	0.0	0.0	6.6	gal	0.0	85.6%
Octopus	0.4%	0.0%	0.0%	0.4%	0.0%	0.0	0.0	0.0	0.0	ind	0.0	0.0%
Scallops	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0		0.0	0.0%
Unknown scallops	0.0%	0.0%	0.0%	0.0%	0.0%	0.0	0.0	0.0	0.0	lb	0.0	0.0%
Shrimp	1.0%	0.0%	0.0%	1.0%	0.8%	0.0	0.0	0.0	0.0	lb	0.0	0.0%
Vegetation	**88.9%**	**88.9%**	**88.9%**	**48.6%**	**44.2%**	**26,159.9**	**36.0**	**11.4**	**10,137.9**		**14.0**	**16.3%**
Berries	85.4%	83.8%	83.8%	42.7%	34.0%	24,373.3	33.6	10.6	6,093.3	gal	8.4	17.3%
Plants/greens/mushrooms	45.5%	45.3%	45.3%	13.6%	17.1%	1,786.6	2.5	0.8	1,786.6	gal	2.5	33.3%
Wood	57.9%	57.1%	57.1%	17.0%	12.1%	0.0	0.0	0.0	2,258.0	cord	3.1	0.0%

Source ADF&G Division of Subsistence household survey, 2011.

a. Summary rows that include incompatible units of measure have been left blank.

b. Alaska Native residents of Dillingham and other Central Yup'ik-speaking communities of Bristol Bay do not distinguish between adult harbor seals and spotted seals; both are called *issuriq* (Wolfe and Mishler 1993:61–69). Therefore, these species are combined in harvest estimates in this report. In the annual harvest assessment program jointly administered by ADF&G and the Alaska Native Harbor Seal Commission, the species were separated based on their harvest in association with sea ice. Seals taken in the spring in association with ice were assumed to be spotted seals and seals taken in open water conditions in the fall were assumed to be harbor seals. These assumptions were based on the Yup'ik seal taxonomy recorded in Togiak and Manokotak as well as other traditional knowledge of Togiak and Manokotak seal hunters (Wolfe and Mishler 1993:61–69).

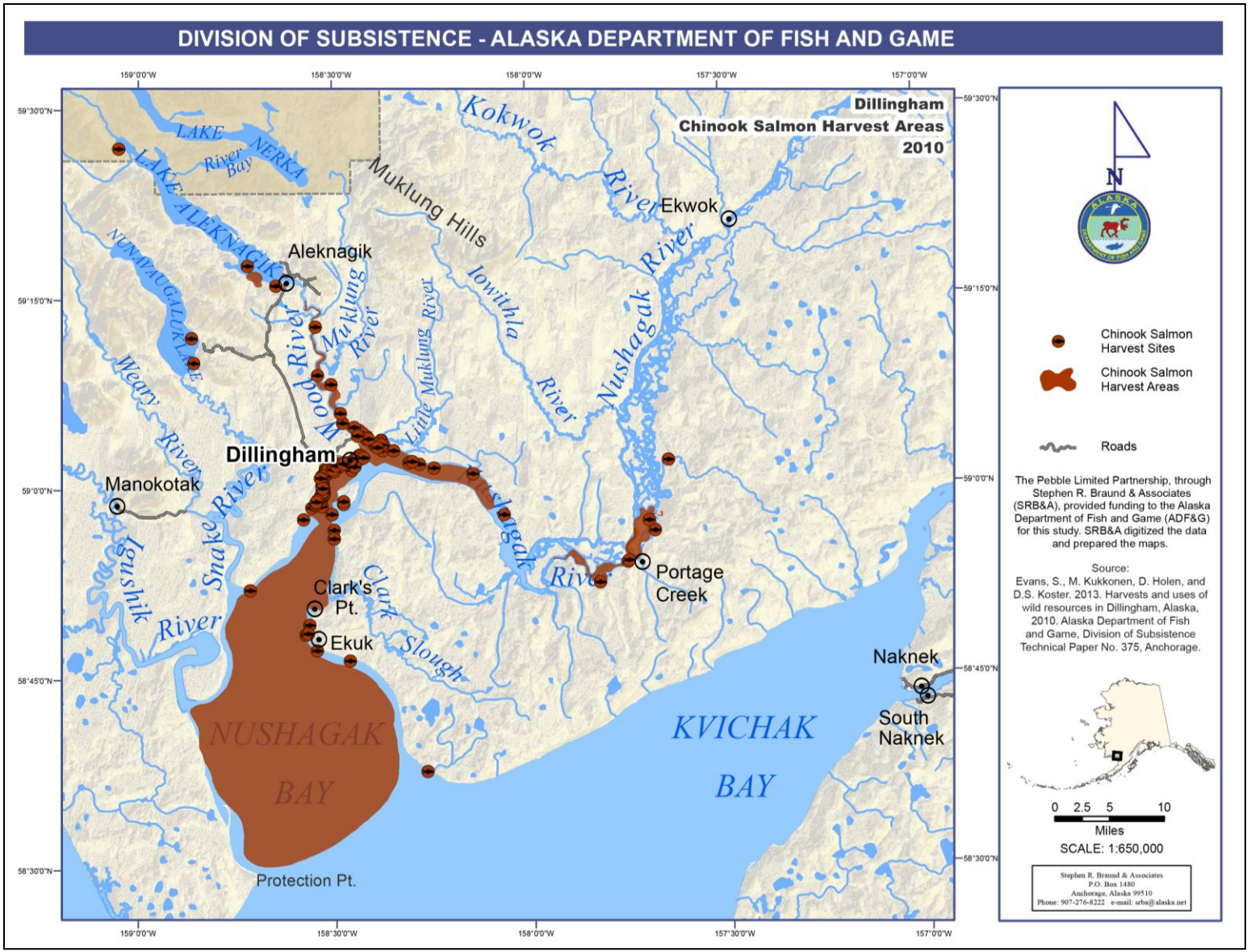


Figure 2-5.–Chinook salmon harvest locations, Dillingham, 2010.

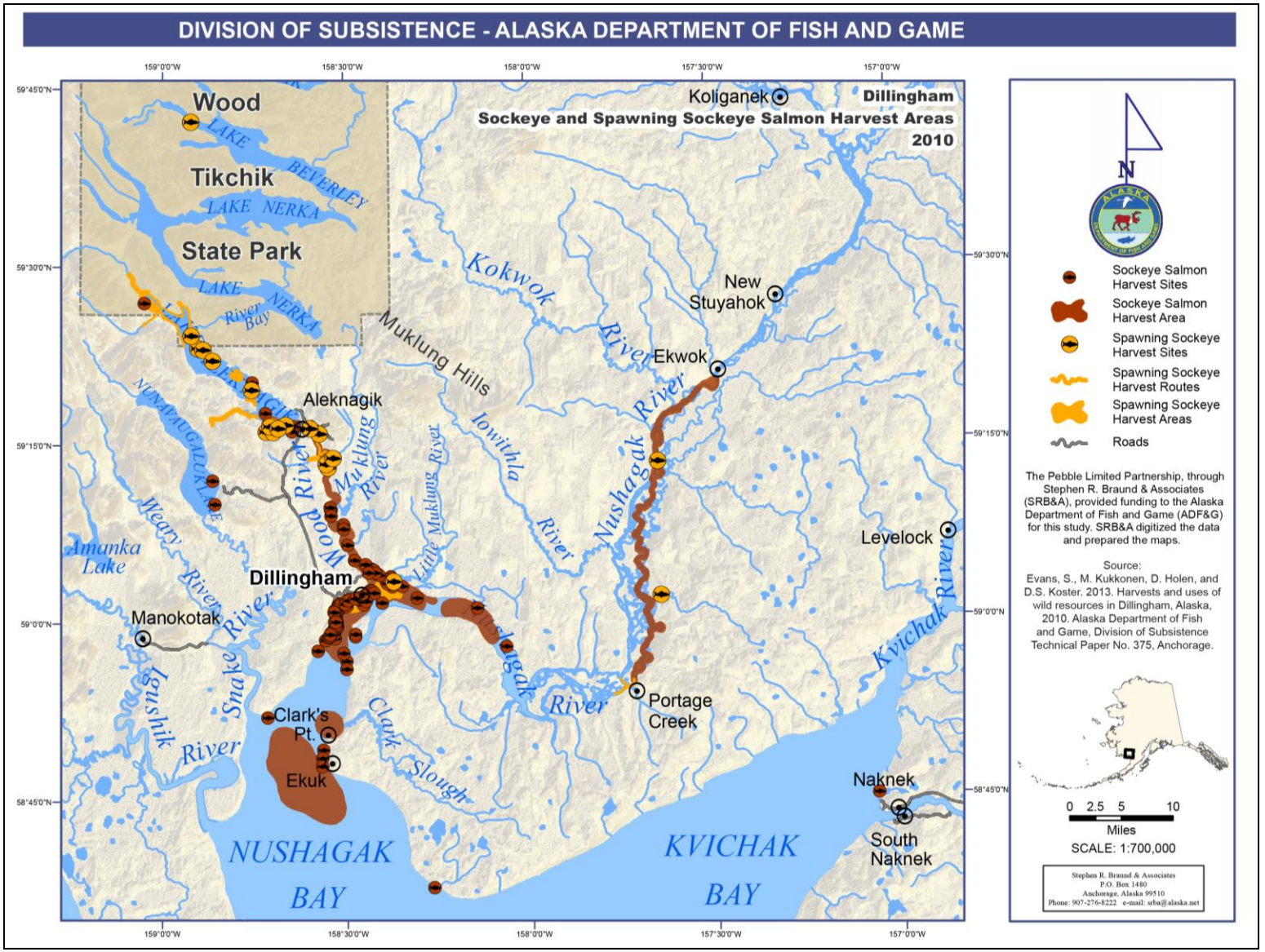


Figure 2-6.–Sockeye and spawning sockeye salmon harvest locations, Dillingham, 2010.

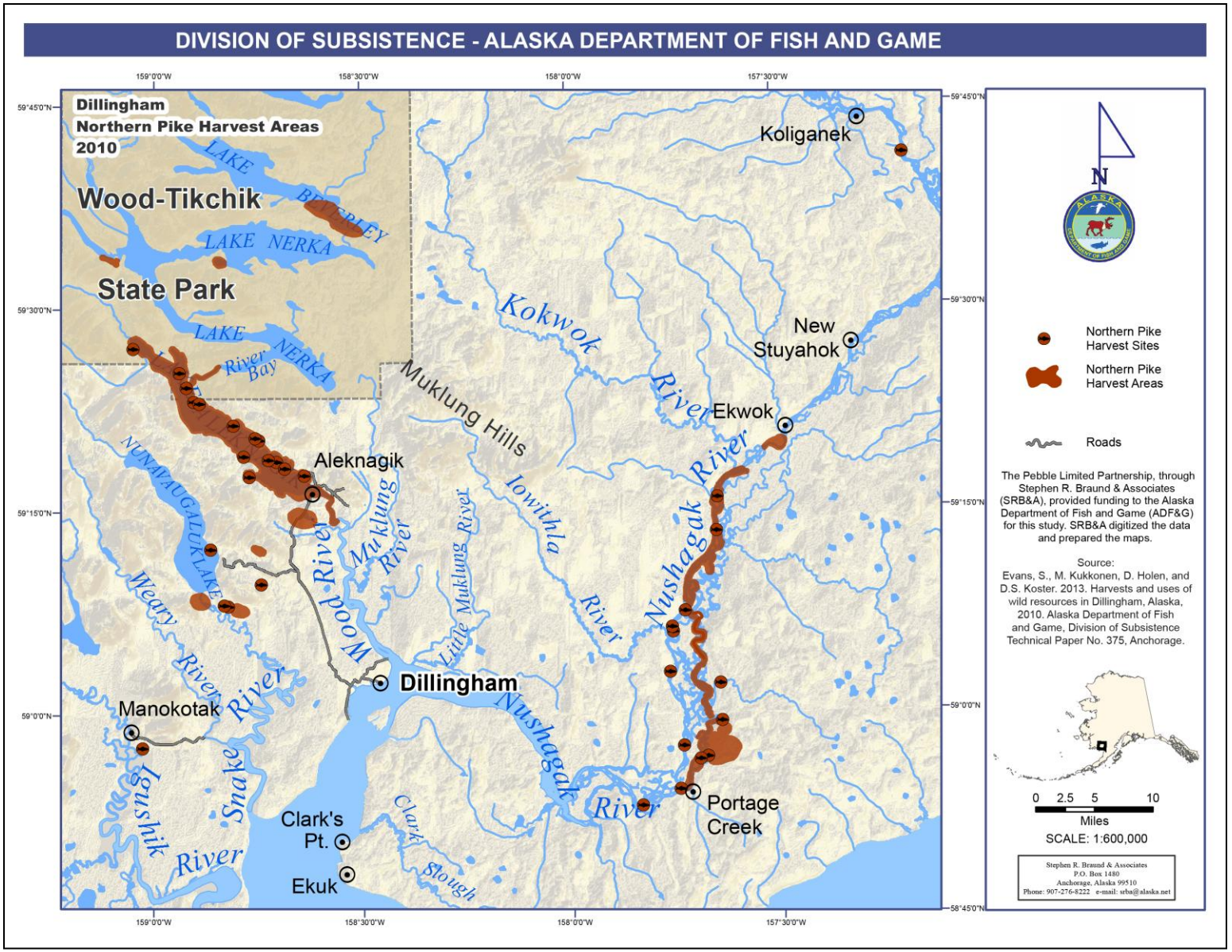


Figure 2-7.–Northern pike harvest locations, Dillingham, 2010.

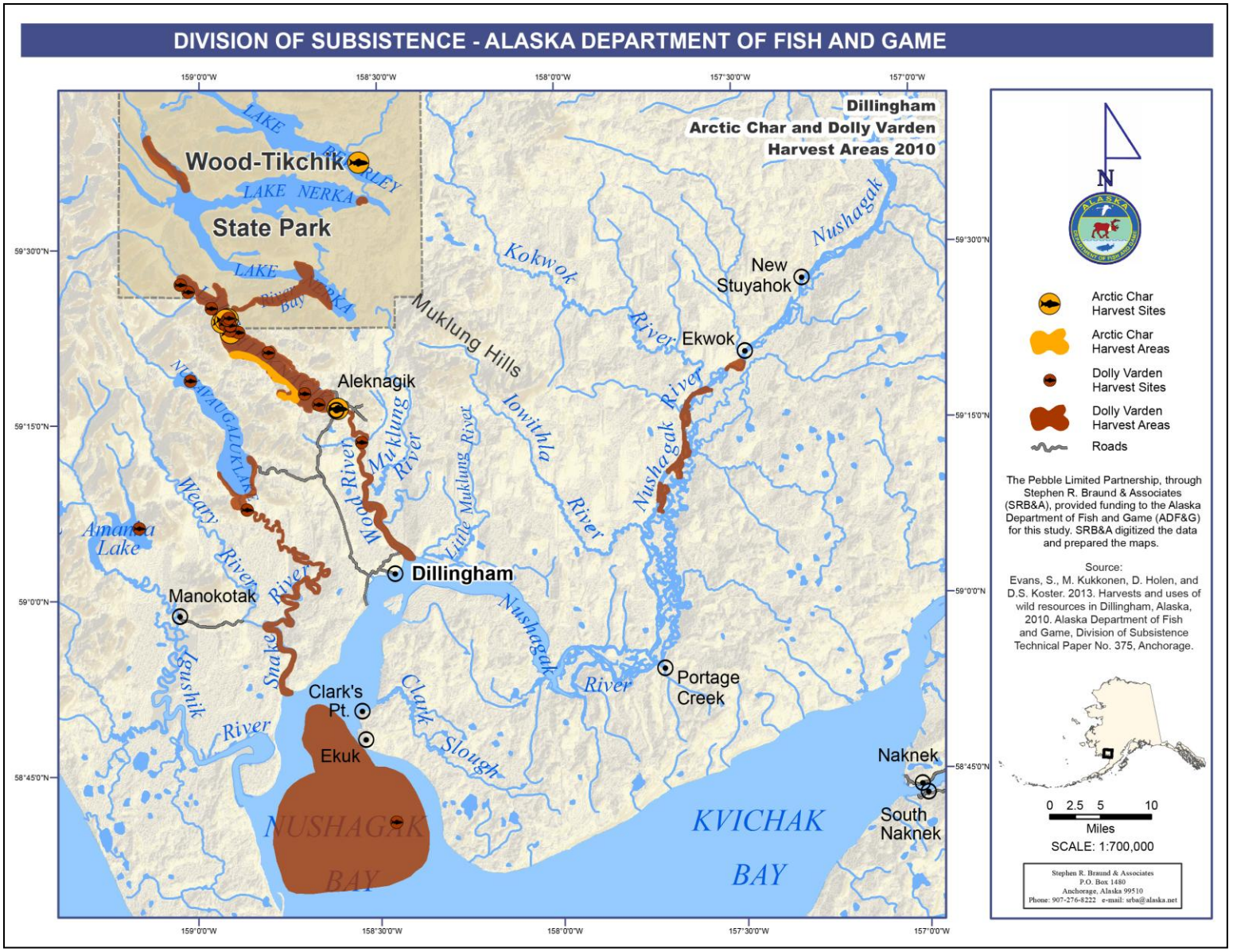


Figure 2-8.–Arctic char and Dolly Varden harvest locations, Dillingham, 2010.

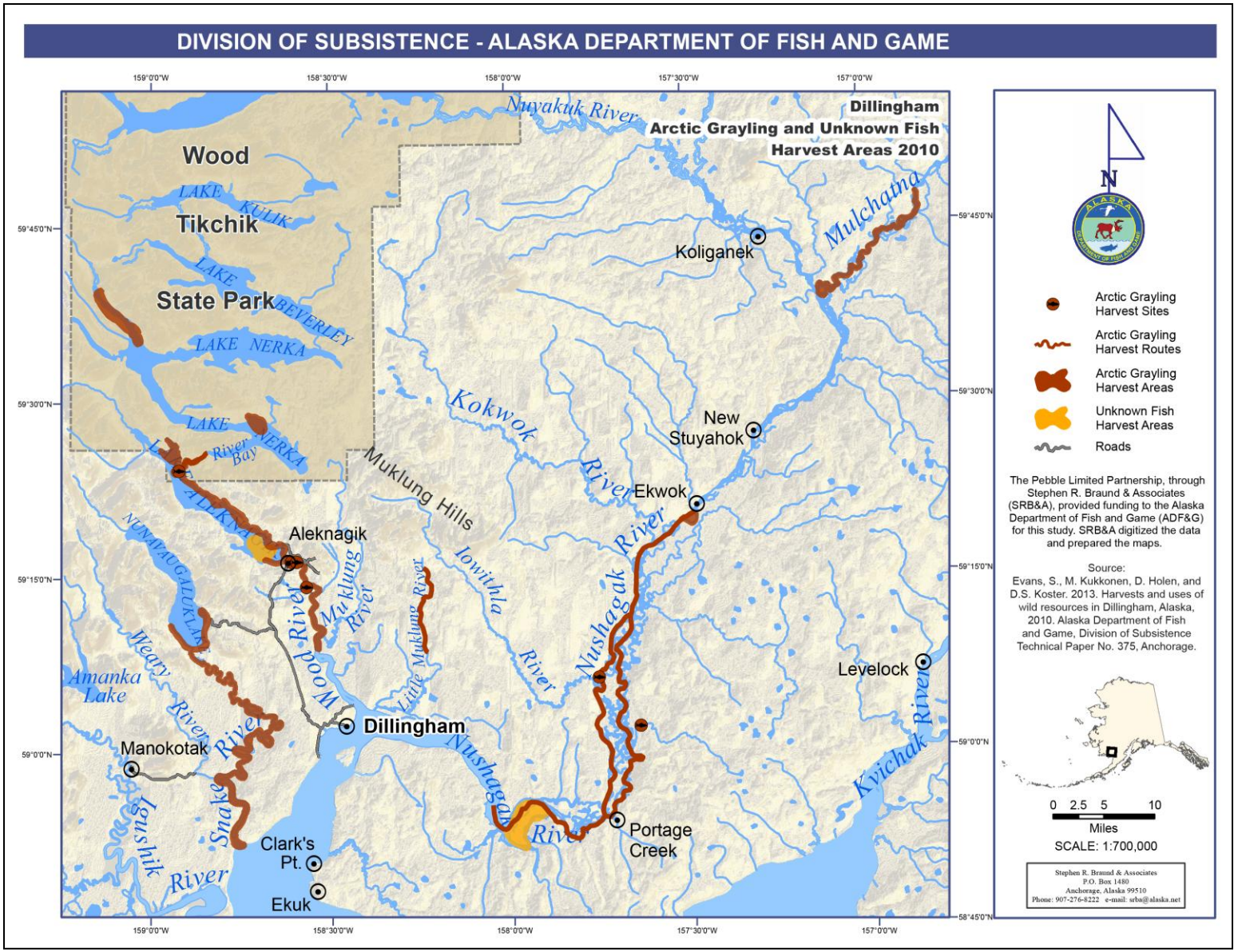


Figure 2-9.–Arctic grayling and unknown fish harvest locations, Dillingham, 2010.

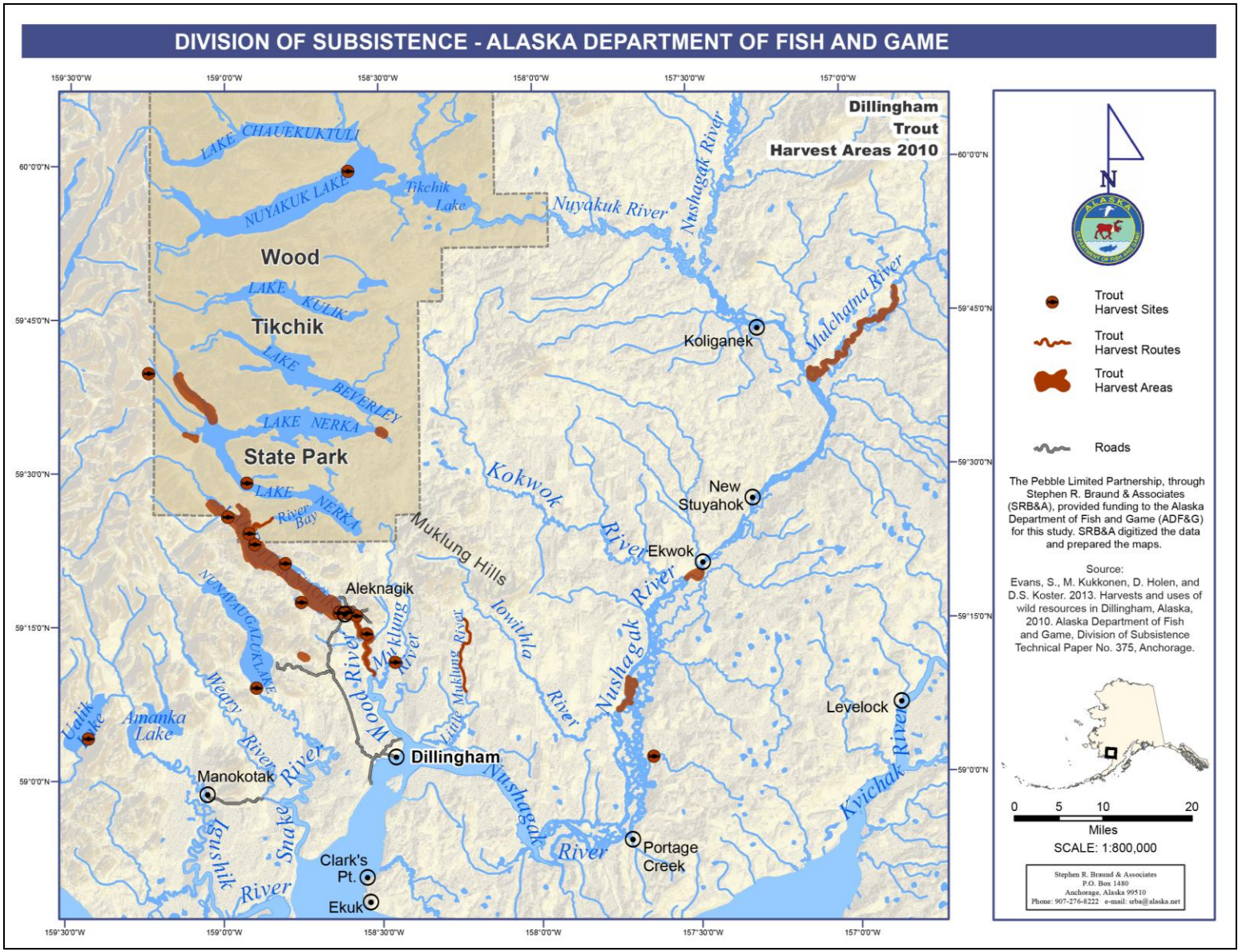


Figure 2-10.–Trout harvest locations, Dillingham, 2010.

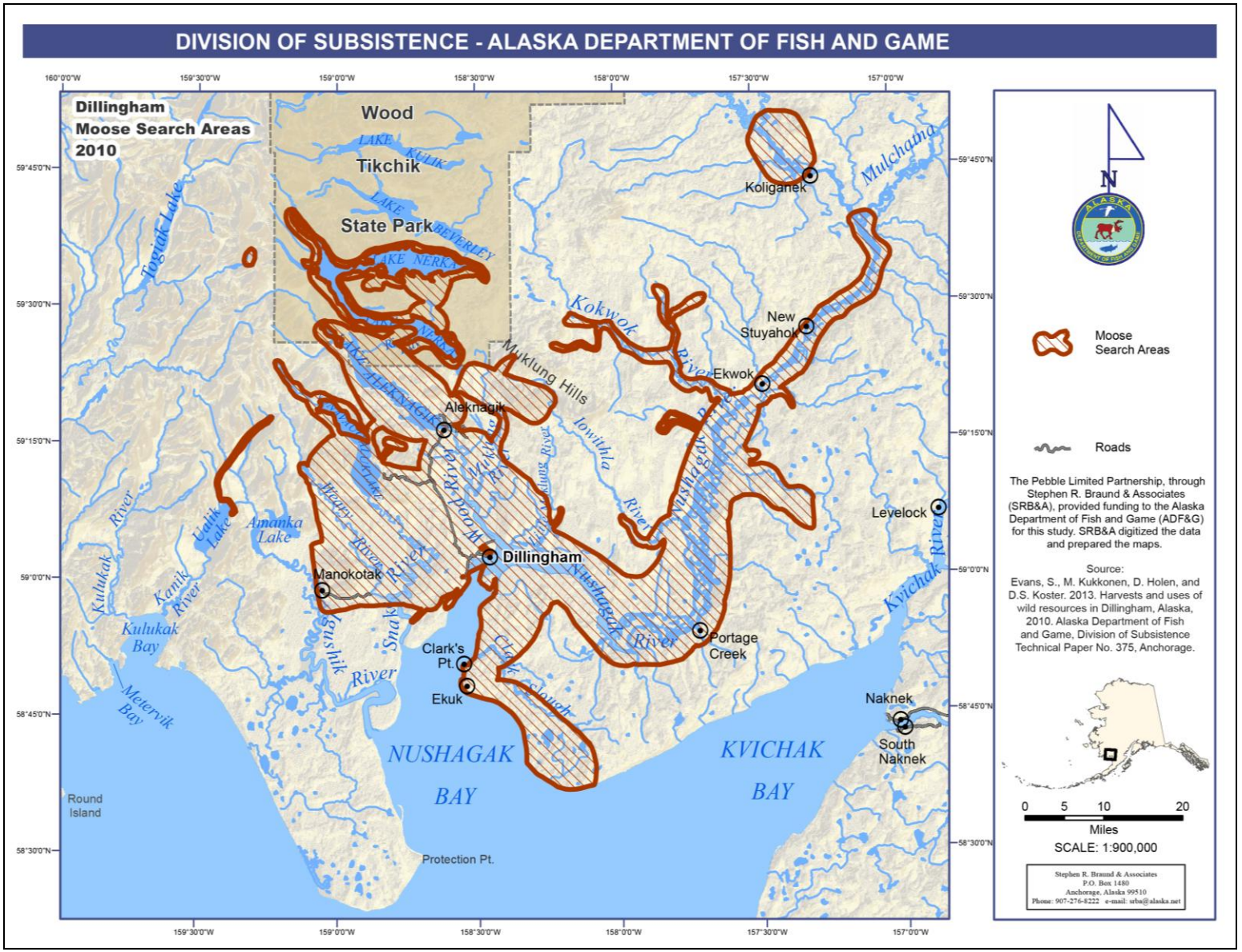


Figure 2-11.–Moose search areas, Dillingham, 2010.

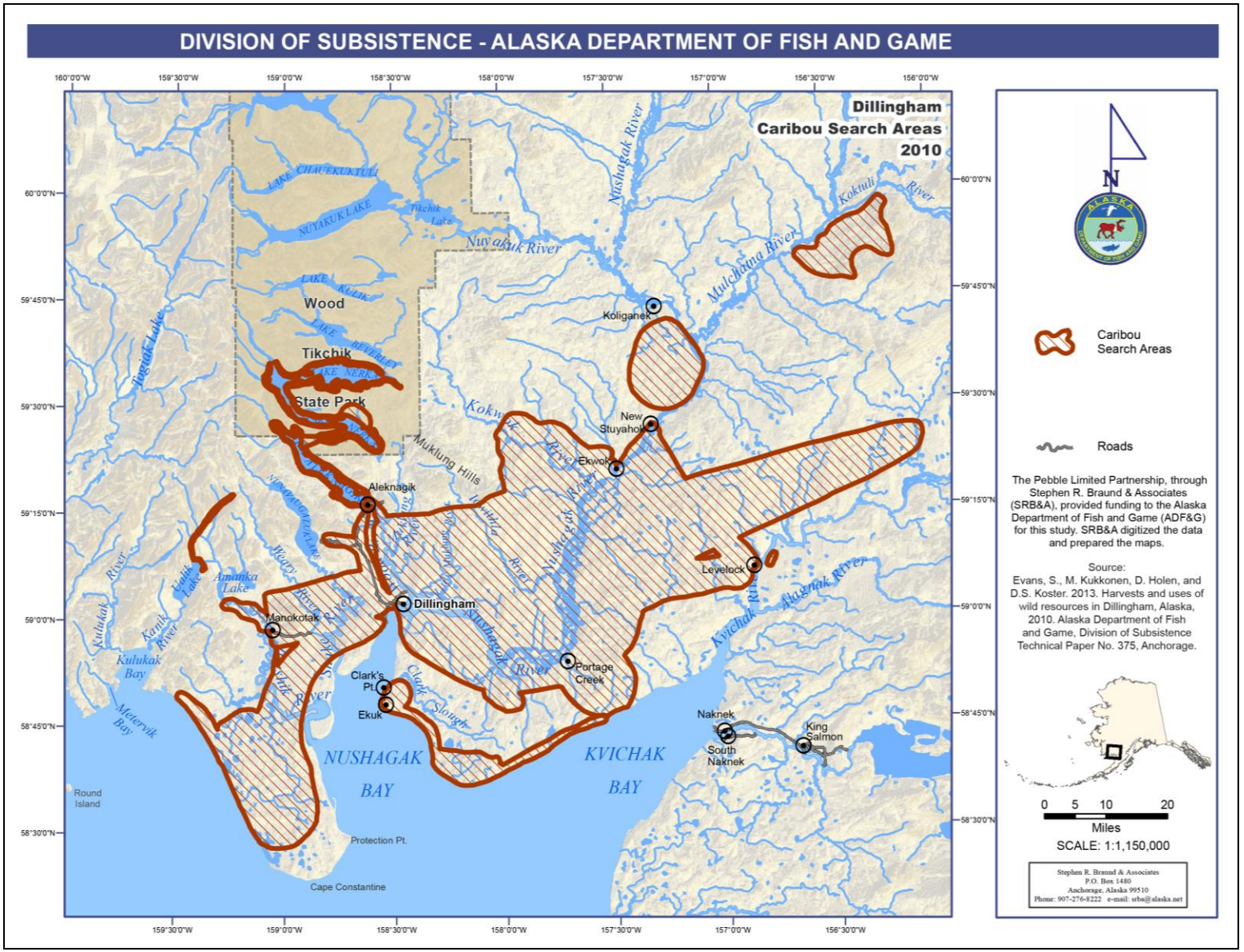


Figure 2-12.–Caribou search areas, Dillingham, 2010.

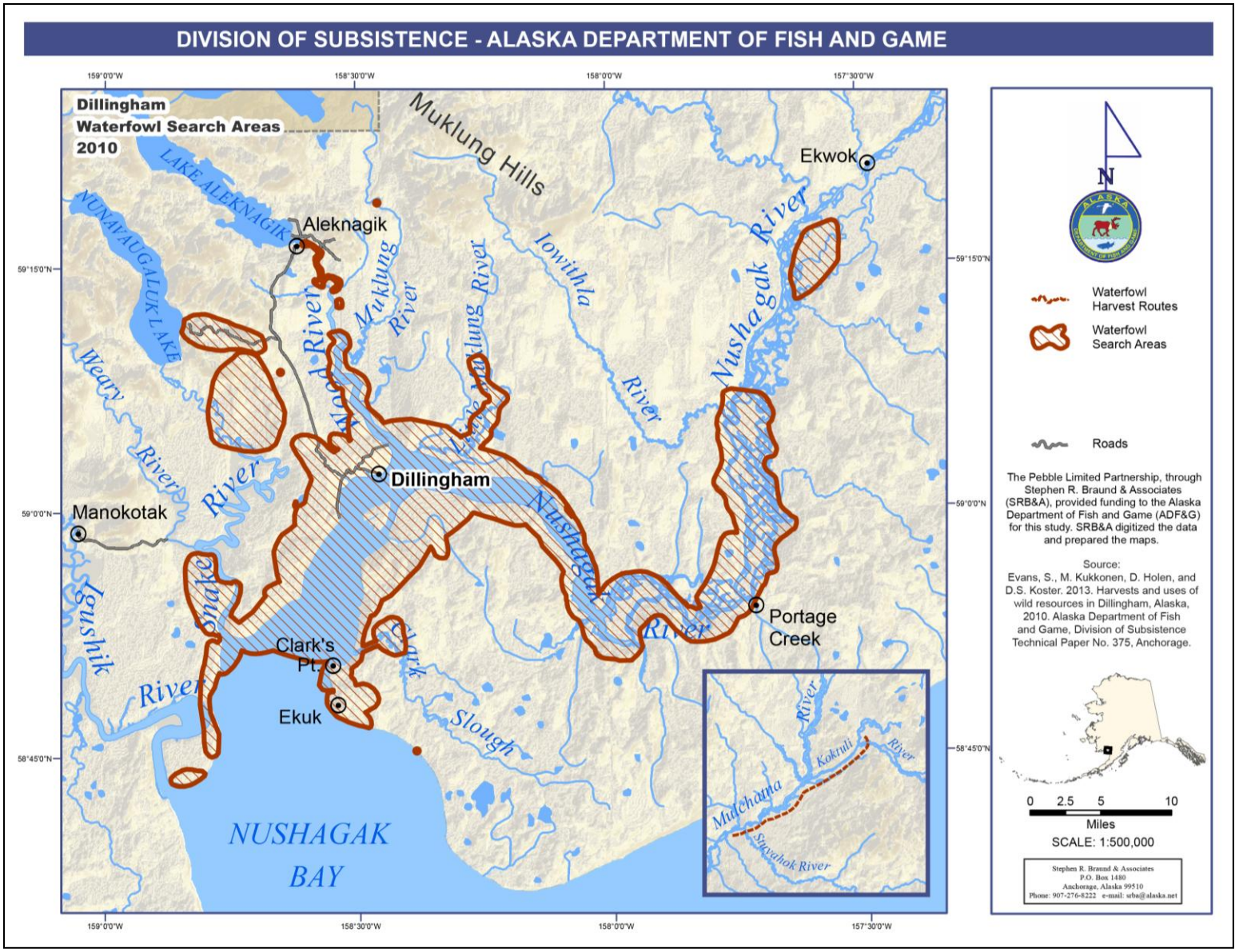


Figure 2-13.–Waterfowl harvest and search areas, Dillingham, 2010.

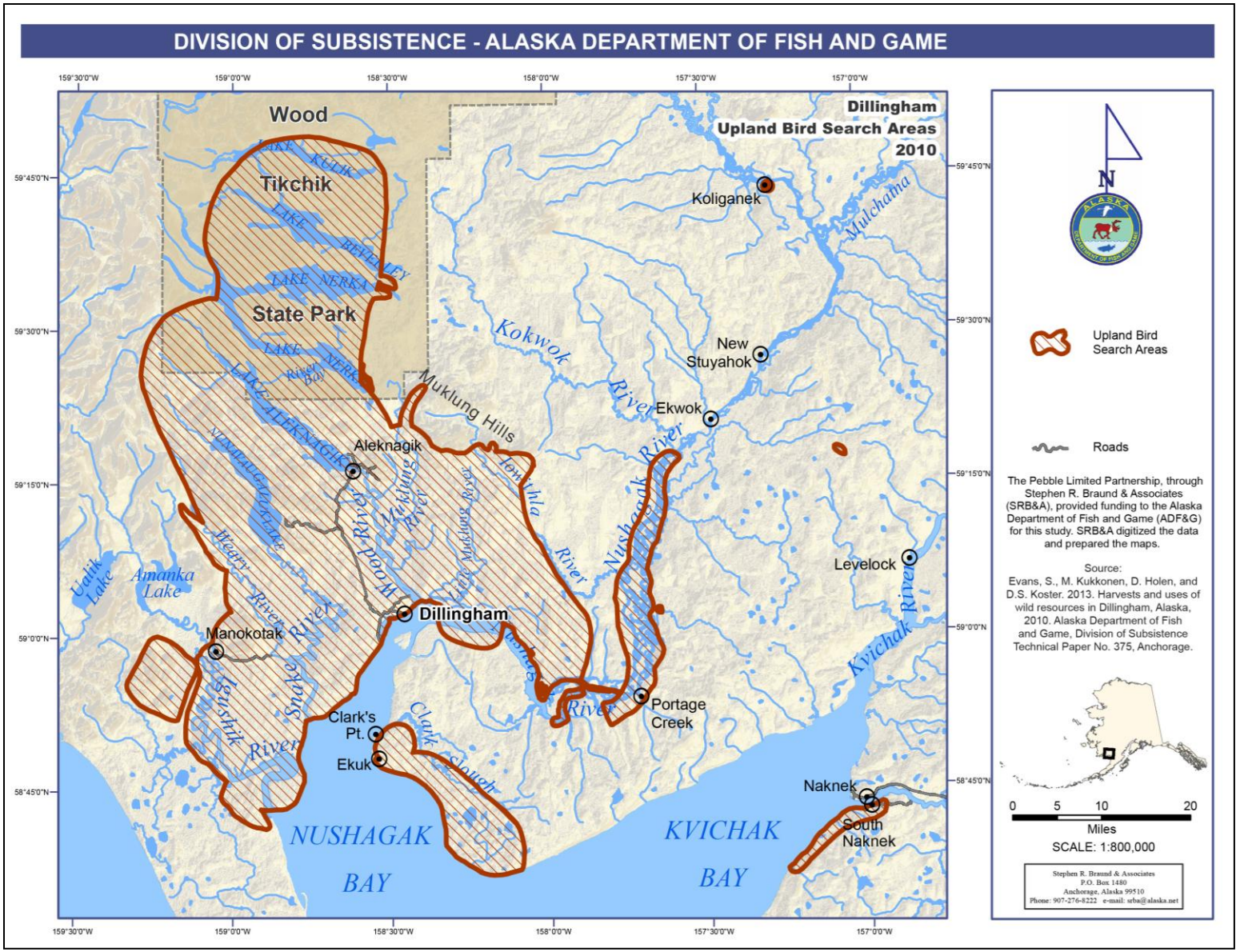


Figure 2-14.–Upland game birds search areas, Dillingham, 2010.

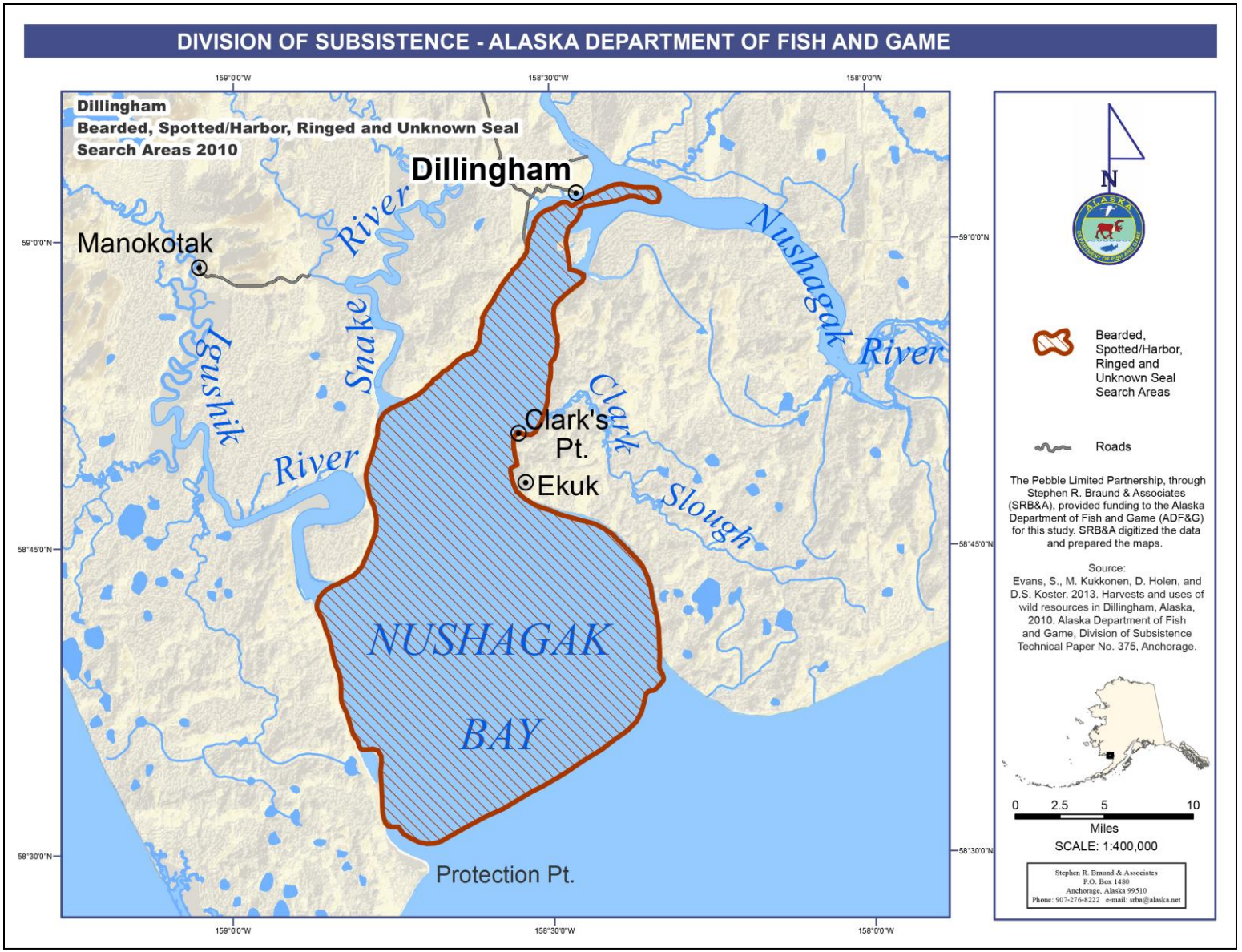


Figure 2-15.–Seal search areas, Dillingham, 2010.

Harvest Quantities

Table 2-9 reports estimated wild resource harvests and uses by Dillingham residents in 2010 and is organized first by general category and then by species. All resources are reported in pounds usable weight (see Appendix B for conversion factors; resources that are not eaten, such as firewood and most furbearers, are not included in edible weight). The use category includes all resources harvested and given away by a household, and resources acquired from other harvesters, including gifts, by barter or trade, through hunting partnerships, or meat given to hunting guides by their clients. Purchased foods are not included. Differences between harvest and use percentages reflect sharing between households, which results in a wider distribution of wild foods.

The total estimated harvest for all subsistence resources during 2010 for Dillingham was approximately 486,533, lb, or 212 lb per capita (Table 2-9). In terms of pounds harvested, salmon constituted the largest portion of the subsistence harvest, which totaled approximately 299,568 lb, or 131 lb per capita (Table 2-9 and Figure 2-16). The resource harvested in the largest quantity was Chinook salmon, at an estimated 125,124 lb, or 55 lb per capita (Table 2-9). Chinook salmon are an important source of wild food because they arrive early in the spring when wild food supplies are running low, and because they provide a high caloric value per unit. As noted earlier, Chinook salmon were mainly harvested along Kanakanak, Snag Point, and Scandinavian beaches, along the shore of the Wood River, and Aleknagik Lake. Other important salmon resources were fresh sockeye and coho salmon (Figure 2-17). In 2010, Dillingham residents harvested an estimated 103,076 lb or 45 lb per capita of fresh sockeye salmon and 44,682 lb or 20 lb per capita of coho salmon (Table 2-9).

Large land mammals, particularly moose, were the other major source of wild foods in Dillingham in 2010, with an estimated 118,362 lb harvested, or 52 lb per capita (Table 2-9 and Figure 2-16). Most of this harvest was moose (91%), with 102,548 lb harvested, or 45 lb per capita (Figure 2-18). In 2010, many Dillingham residents were active moose hunters, with approximately 42% of households involved in this activity (Table 2-9), mainly from Snake River up to Lake Beverly. Residents also traveled up the Nushagak River by boat to hunt moose in the fall or by snowmachine in the winter. Overall, an estimated 20% of households successfully harvested moose. Additionally, 66% of households received moose, and 77% reported using moose during the study year (Table 2-9).

After moose, caribou were the next important large land mammal in terms of total harvest by weight, with 9,495 lb harvested, or approximately 4 lb per capita (Table 2-9). Caribou hunting is an opportunistic activity that lasts from fall into the winter, depending on caribou availability within reach of the community. During the study year, an estimated 15% of households reported hunting caribou, but only 5% were successful in their harvests. At the same time, 36% of households said they used caribou, and 29% reported receiving caribou.

Vegetation, particularly berries, were the third most harvested wild resource category in terms of total pounds in the community during 2010. The total estimated vegetation harvest was 26,160 lb, or 11 lb per capita, of which 24,373 lb (or approximately 11 lb per capita) were berries (Table 2-9 and Figure 2-16).

Nonsalmon fish and birds and eggs each contributed about 3% to the total pounds harvested in 2010 (Figure 2-16). Dillingham households have access to both riverine and estuary waters, and respondents reported harvesting a large variety of nonsalmon fish. During the 2010 study year, the total estimated harvest of nonsalmon fish was 16,693 lb, or approximately 7 lb per capita (Table 2-9). In terms of weight, most of the harvest was smelt (7,816 lb or 3 lb per capita), followed by northern pike (3,638 lb or 2 lb per capita) and char, particularly fresh-water Dolly Varden (1,682 lb, or less than 1 lb per capita) (Table 2-9 and Figure 2-19).

As mentioned above, residents of Dillingham were also active in harvesting birds and eggs. In 2010, Dillingham residents harvested an estimated 13,052 lb or 6 lb per capita of birds and eggs (Table 2-9). The community harvest of migratory birds was an estimated 4,680 lb or approximately 2 lb per capita and

upland game birds were 5,404 lb or 2 lb per capita. The estimated harvest of bird eggs was 2,969 lb or 1 lb per capita (Table 2-9).

Out of all the resource categories, marine mammals, small land mammals and marine invertebrates contributed the smallest amounts in usable pounds in Dillingham during the study year 2010 (Figure 2-16). Marine mammals contributed an estimated 10,108 lb or 4 lb per capita. In terms of weight, the majority of the marine mammal harvest was beluga whales at 8,096 lb or approximately 4 lb per capita followed by bearded seals at 1,285 lb or less than 1 pound per capita. However, in terms of numbers, Dillingham residents harvested more harbor/spotted seals (an estimated 13 individuals) than bearded seals (an estimated 7 individuals). The total number of beluga whales harvested was an estimated 10 individuals (Table 2-9).

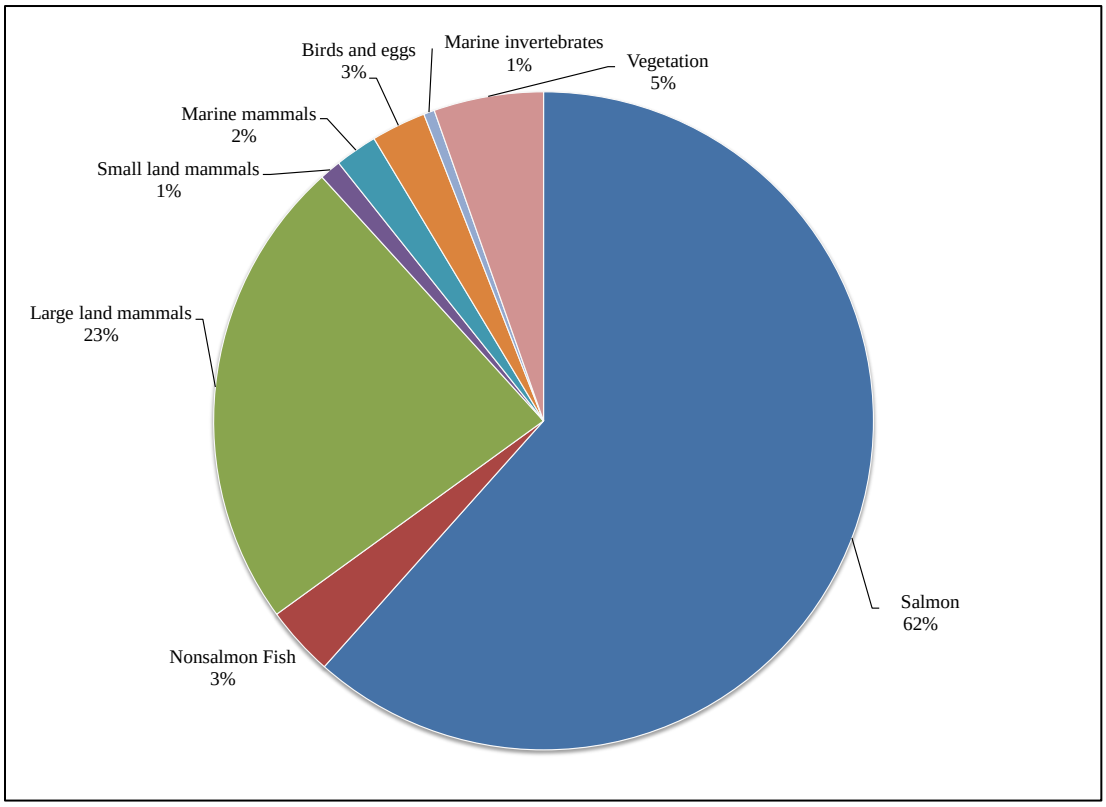


Figure 2-16.–Composition of wild resource harvests, pounds usable weight, Dillingham, 2010.

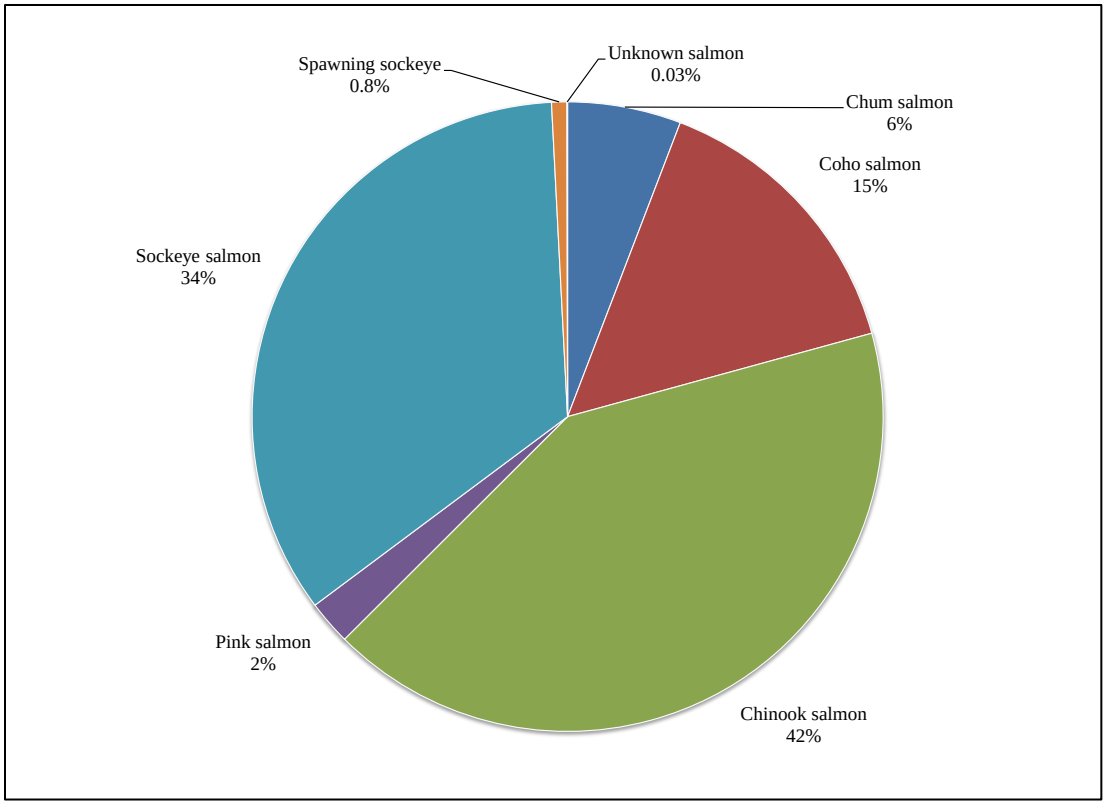


Figure 2-17.–Composition of salmon harvests, pounds usable weight, Dillingham, 2010.

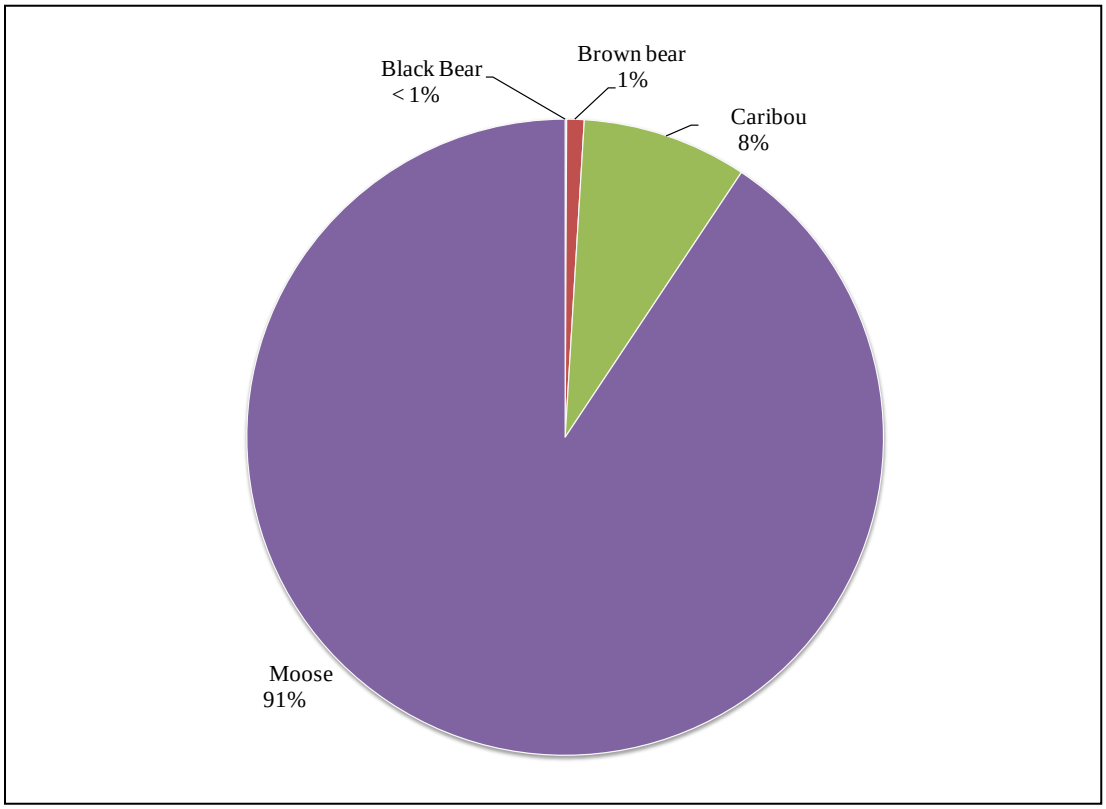


Figure 2-18.–Composition of large land mammal harvests, pounds usable weight, Dillingham, 2010.

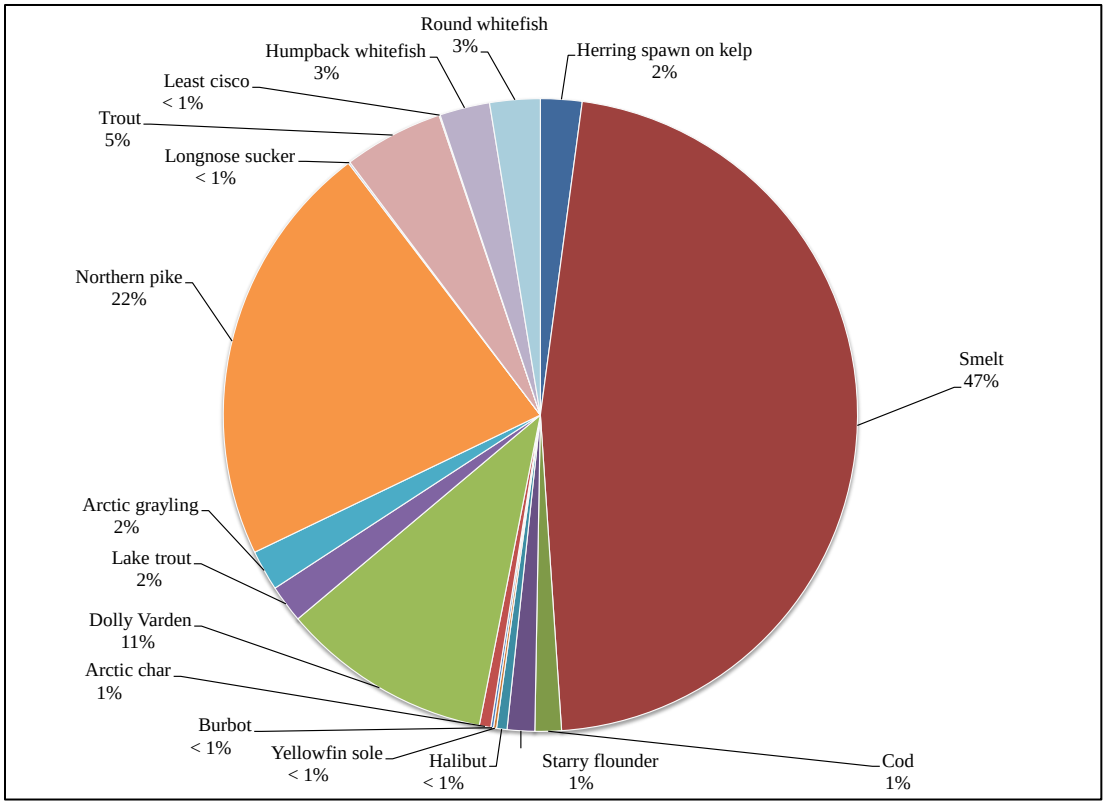


Figure 2-19.–Composition of nonsalmon fish harvests, pounds usable weight, Dillingham, 2010.

SHARING AND RECEIVING WILD RESOURCES

In Dillingham in 2010, estimates of sharing at the community level indicated that approximately 91% of all households received wild resources from other households and 79% of households gave resources away (Table 2-8). Furthermore, households received 6 kinds of resources and gave away an average of 4 types. The corresponding numbers for the 2 household strata, hunting households and other households, are similar regarding the number of resources received; both household types received approximately 6 kinds of resources in 2010. However, the average number of types of resources given away were quite different: the hunter households gave away approximately 8 kinds of resources while the other households gave away only 3 types (Table 2-8). This demonstrates that high harvesting households are more frequently distributing their harvest, which, as noted above, was on average over twice as high as those of households in the "other" category.

At the community level, fish were the most used resource as well as the most commonly shared resource, with 64% of Dillingham households giving away fish and approximately 74% of households receiving fish (Table 2-9). Moose was also highly used and shared, with approximately 31% of households giving away moose, and 66% of households receiving moose. Dillingham households also frequently shared berries, with 34% of households giving away berries and approximately 43% receiving them. Bird eggs are a specialty resource category, which are often harvested in large quantities by Alaska Native families in Dillingham and then widely shared; an estimated 14% of households gave away bird eggs and 23% of households received bird eggs. Migratory and upland game birds were commonly shared—approximately 29% of households received migratory birds and 17% gave them away, and an estimated 21% of households received upland game birds and 27% gave them away.

In Dillingham, as in many other rural Alaska communities, marine mammal hunting is a highly specialized activity undertaken by individuals who have been trained by knowledgeable hunters. Marine mammal harvests are usually widely shared with other households. During the study year, an estimated 4% of Dillingham households harvested marine mammals, approximately 8% of households gave away marine mammals, and 29% of households received marine mammals (Table 2-9). This percentage of households receiving marine mammals demonstrates that Dillingham residents are widely distributing the marine mammal harvest. Residents also received marine mammal meat and oil from other communities, including neighboring Clark's Point (Holen et al. 2012:88).

USE AND HARVEST CHARACTERISTICS BY RESOURCE CATEGORY

SALMON

Salmon comprised an estimated 62% of the wild resource harvest by pounds by Dillingham residents in 2010 (Figure 2-16). Overall, Chinook salmon ranked first in terms of pounds per capita harvest of all resources, sockeye salmon ranked second, coho salmon fourth, chum salmon sixth, and pink salmon tenth (Table 2-10). Chinook salmon was the largest component of the salmon harvest in terms of pounds harvested (42%), fresh or "bright" sockeye salmon made up 34% of the harvest, coho salmon 15% of the harvest, chum salmon 6%, pink salmon 2%, and spawning sockeye salmon or "spawnouts" were an estimated 1% of the harvest (Figure 2-17).

Table 2-10.–Top 10 resources harvested and used, Dillingham, 2010.

Harvest			Use		
Rank	Resource	Pounds per capita	Rank	Resource	Percentage of households using
1	Chinook salmon	54.5	1	Berries	85%
2	Sockeye salmon	44.9	2	Sockeye Salmon	85%
3	Moose	44.7	3	Chinook Salmon	82%
4	Coho salmon	19.5	3	Moose	77%
5	Berries	10.6	5	Wood	58%
6	Chum salmon	7.6	6	Grouse	51%
7	Caribou	4.1	7	Coho Salmon	51%
8	Beluga whale	3.5	8	Unknown Smelt	48%
9	Unknown smelt	3.4	9	Chum Salmon	47%
10	Pink Salmon	3.0	10	Plants/greens/mushrooms	45%

Source ADF&G Division of Subsistence household survey, 2011.

Dillingham residents brought home an estimated 15% of their salmon for home use by removing it from their commercial harvests (Table 2-11). As estimated in usable pounds, Dillingham residents obtained 15% of their Chinook salmon by retaining fish from their commercial harvests, while 52% of the Chinook salmon was harvested using setnets in the subsistence fishery (Table 2-11). For the overall harvest of salmon, 84% was harvested in the subsistence fishery (Table 2-11). Harvest locations for the subsistence fishery include setting nets in the Wood River, along beaches near Dillingham, and in the Nushagak River (figures 2-5 and 2-6). Of the 5 Pacific salmon species found in Bristol Bay, Chinook salmon is the first to return each season. By then, residents have often run out of salmon from the previous year; therefore, Chinook salmon are an important source of fresh fish. Chinook salmon are fat and provide a large caloric value per fish, per unit of effort. Therefore participation in the subsistence fishery for Chinook salmon is important before the commercial fishery starts in earnest and residents become focused on this important cash-earning activity. Sockeye salmon are another important resource mostly harvested using setnets. In 2010, Dillingham residents harvested an estimated 85% of their sockeye salmon harvest with setnets, and

brought home another 15% from their commercial harvests (Table 2-11). Rod and reel gear was also used for some species, especially coho salmon (7% of the harvest) and spawning sockeye salmon (12% of the harvest).

Table 2-11.–Estimated percentages of salmon harvest by gear type, resource, and total salmon harvest, Dillingham, 2010.

Resource	Percent base	Removed from commercial catch		Subsistence methods											
				Setnet		Seine		Other		Subsistence gear, any method		Rod and reel		Any method	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
Salmon															
	Gear type	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Resource	14.4%	14.6%	83.7%	83.8%	0.0%	0.0%	0.0%	0.0%	83.7%	83.8%	1.9%	1.6%	100.0%	100.0%
	Total	14.4%	14.6%	83.7%	83.8%	0.0%	0.0%	0.0%	0.0%	83.7%	83.8%	1.9%	1.6%	100.0%	100.0%
Chum salmon															
	Gear type	4.4%	3.5%	8.0%	6.3%	0.0%	0.0%	0.0%	0.0%	8.0%	6.3%	0.3%	0.3%	7.3%	5.8%
	Resource	8.7%	8.7%	91.2%	91.2%	0.0%	0.0%	0.0%	0.0%	91.2%	91.2%	0.1%	0.1%	100.0%	100.0%
	Total	0.6%	0.5%	6.7%	5.3%	0.0%	0.0%	0.0%	0.0%	6.7%	5.3%	0.0%	0.0%	7.3%	5.8%
Coho salmon															
	Gear type	22.5%	19.7%	14.8%	13.1%	0.0%	0.0%	25.0%	45.6%	14.8%	13.1%	62.5%	66.2%	16.8%	14.9%
	Resource	19.2%	19.2%	73.6%	73.6%	0.0%	0.0%	0.0%	0.0%	73.6%	73.6%	7.1%	7.1%	100.0%	100.0%
	Total	3.2%	2.9%	12.3%	11.0%	0.0%	0.0%	0.0%	0.0%	12.4%	11.0%	1.2%	1.1%	16.8%	14.9%
Chinook salmon															
	Gear type	23.0%	40.7%	23.7%	42.5%	0.0%	0.0%	0.0%	0.0%	23.7%	42.5%	7.2%	15.4%	23.3%	41.8%
	Resource	14.2%	14.2%	85.2%	85.2%	0.0%	0.0%	0.0%	0.0%	85.2%	85.2%	0.6%	0.6%	100.0%	100.0%
	Total	3.3%	5.9%	19.8%	35.6%	0.0%	0.0%	0.0%	0.0%	19.8%	35.6%	0.1%	0.2%	23.3%	41.8%
Pink salmon															
	Gear type	4.5%	1.9%	5.5%	2.3%	0.0%	0.0%	0.0%	0.0%	5.5%	2.3%	7.4%	3.7%	5.4%	2.3%
	Resource	12.1%	12.1%	85.2%	85.2%	0.0%	0.0%	0.0%	0.0%	85.2%	85.2%	2.6%	2.6%	100.0%	100.0%
	Total	0.7%	0.3%	4.6%	1.9%	0.0%	0.0%	0.0%	0.0%	4.6%	1.9%	0.1%	0.1%	5.4%	2.3%
Sockeye salmon															
	Gear type	45.6%	34.3%	45.8%	35.0%	0.0%	0.0%	0.0%	0.0%	45.8%	35.0%	7.3%	6.6%	45.0%	34.4%
	Resource	14.5%	14.5%	85.1%	85.1%	0.0%	0.0%	0.0%	0.0%	85.1%	85.1%	0.3%	0.3%	100.0%	100.0%
	Total	6.6%	5.0%	38.3%	29.3%	0.0%	0.0%	0.0%	0.0%	38.3%	29.3%	0.1%	0.1%	45.0%	34.4%
Spawning sockeye															
	Gear type	0.0%	0.0%	2.3%	0.8%	0.0%	0.0%	75.0%	54.4%	2.3%	0.8%	13.7%	5.8%	2.2%	0.8%
	Resource	0.0%	0.0%	87.7%	87.7%	0.0%	0.0%	0.4%	0.4%	88.1%	88.1%	11.9%	11.9%	100.0%	100.0%
	Total	0.0%	0.0%	1.9%	0.7%	0.0%	0.0%	0.0%	0.0%	1.9%	0.7%	0.3%	0.1%	2.2%	0.8%
Unknown salmon															
	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	2.0%	0.0%	0.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%
	Total	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%

Source ADF&G Division of Subsistence household survey, 2011.

NONSALMON FISH

Nonsalmon fish only comprised 3% of the overall harvest in terms of pounds edible weight by Dillingham residents in 2010. However, nonsalmon harvests were diverse and residents of Dillingham used a wide variety of methods to harvest nonsalmon fish. Figure 2-19 shows the percentage of the total nonsalmon fish harvest by species, as estimated in usable pounds. Overall, 47% of the harvest was smelt, 22% was northern pike, and 11% was Dolly Varden, with many other species harvested.

Table 2-12 lists the estimated percentage of all nonsalmon fish species harvested by Dillingham residents in 2010, by gear type. Overall, 24% of nonsalmon fish were harvested using setnets, 27% by ice fishing, and 30% with rod and reel gear under sport fishing regulations (Table 2-12). Smelt was an important resource, ranking eighth overall in terms of pounds per capita. Of the total harvest of smelt, 45% was taken by ice fishing while 27% was harvested using setnets (tables 2-12 and 2-10). Most northern pike were harvested using rod and reel (52%) and 30% were caught in setnets. As noted above, Dolly Varden were also an important species, especially those caught in salt water. Harvest methods were diverse, with 39% of salt-water Dolly Varden caught using setnets, and 39% harvested with rod and reel gear, and 22% removed from the commercial fishery. For fresh-water Dolly Varden, 79% were harvested by rod and reel and 18% by ice fishing. Trout species were caught in many locations throughout the area (Figure 2-10), using a variety of gear types; however some species were harvested using primarily 1 or 2 specific gear types. Lake trout, for instance, were harvested mostly using rod and reel gear (46%) and ice fishing (25%).

Table 2-12.–Estimated percentages of nonsalmon harvest by gear type, resource, and total salmon harvest, Dillingham, 2010.

Resource	Percent base	Removed from commercial gear	Subsistence gear								
			Setnet	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear	Rod and reel	Any method
Nonsalmon fish	Gear type	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Resource	1.0%	24.4%	2.9%	1.1%	6.0%	27.4%	7.0%	68.8%	30.1%	100.0%
	Total	1.0%	24.4%	2.9%	1.1%	6.0%	27.4%	7.0%	68.8%	30.1%	100.0%
Herring spawn on kelp	Gear type	6.6%	0.0%	0.0%	0.0%	0.0%	0.0%	29.4%	3.0%	0.0%	2.1%
	Resource	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	96.8%	96.8%	0.0%	100.0%
	Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	2.0%	0.0%	2.1%
Unknown smelt	Gear type	0.0%	51.7%	96.6%	90.0%	100.0%	77.0%	47.2%	68.0%	0.0%	46.8%
	Resource	0.0%	27.0%	5.9%	2.1%	12.9%	45.1%	7.0%	100.0%	0.0%	100.0%
	Total	0.0%	12.6%	2.8%	1.0%	6.0%	21.1%	3.3%	46.8%	0.0%	46.8%
Pacific tomcod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	1.0%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	1.0%
Unknown cod	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.3%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%
Starry flounder	Gear type	64.8%	1.4%	0.0%	0.0%	0.0%	0.0%	4.2%	0.9%	0.3%	1.4%
	Resource	47.9%	25.0%	0.0%	0.0%	0.0%	0.0%	20.8%	45.8%	6.3%	100.0%
	Total	0.7%	0.4%	0.0%	0.0%	0.0%	0.0%	0.3%	0.6%	0.1%	1.4%
Halibut	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.5%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%
Yellowfin sole	Gear type	14.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.2%
	Resource	93.8%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	6.3%	0.0%	100.0%
	Total	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Burbot	Gear type	0.0%	0.0%	3.4%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%
	Resource	0.0%	0.0%	71.4%	0.0%	0.0%	28.6%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Arctic char	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	1.7%	0.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	11.6%	0.0%	11.6%	88.4%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.5%	0.6%

-continued-

Table 2-12.–Page 2 of 2.

Resource	Percent base	Removed from commercial gear	Subsistence gear							Rod and reel	Any method
			Setnet	Seine	Hand line gear	Dip net	Ice fishing	Other subsistence gear	Any subsistence gear		
Dolly Varden–freshwater	Gear type	0.0%	0.9%	0.0%	10.0%	0.0%	6.4%	0.0%	3.1%	26.4%	10.1%
	Resource	0.0%	2.3%	0.0%	1.1%	0.0%	17.6%	0.0%	20.9%	79.1%	100.0%
	Total	0.0%	0.2%	0.0%	0.1%	0.0%	1.8%	0.0%	2.1%	8.0%	10.1%
Dolly Varden–saltwater	Gear type	14.5%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.9%	0.7%
	Resource	21.6%	39.2%	0.0%	0.0%	0.0%	0.0%	0.0%	39.2%	39.2%	100.0%
	Total	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.7%
Lake trout	Gear type	0.0%	1.1%	0.0%	0.0%	0.0%	1.7%	4.3%	1.5%	2.9%	1.9%
	Resource	0.0%	14.1%	0.0%	0.0%	0.0%	24.7%	15.6%	54.4%	45.6%	100.0%
	Total	0.0%	0.3%	0.0%	0.0%	0.0%	0.5%	0.3%	1.0%	0.9%	1.9%
Arctic grayling	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.9%	2.1%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	2.1%
Northern pike	Gear type	0.0%	26.2%	0.0%	0.0%	0.0%	13.2%	7.4%	15.3%	37.3%	21.8%
	Resource	0.0%	29.4%	0.0%	0.0%	0.0%	16.6%	2.4%	48.3%	51.7%	100.0%
	Total	0.0%	6.4%	0.0%	0.0%	0.0%	3.6%	0.5%	10.5%	11.3%	21.8%
Longnose sucker	Gear type	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
	Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Rainbow trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	15.3%	4.6%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.9%	99.1%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	4.6%
Unknown trout	Gear type	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	0.4%
	Resource	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%	0.4%
Least cisco	Gear type	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
	Resource	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Humpback whitefish	Gear type	0.0%	7.7%	0.0%	0.0%	0.0%	0.0%	7.3%	3.5%	0.6%	2.6%
	Resource	0.0%	73.3%	0.0%	0.0%	0.0%	0.0%	20.0%	93.3%	6.7%	100.0%
	Total	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%	0.5%	2.4%	0.2%	2.6%
Round whitefish	Gear type	0.0%	9.3%	0.0%	0.0%	0.0%	1.1%	0.0%	3.7%	0.0%	2.6%
	Resource	0.0%	88.2%	0.0%	0.0%	0.0%	11.8%	0.0%	100.0%	0.0%	100.0%
	Total	0.0%	2.3%	0.0%	0.0%	0.0%	0.3%	0.0%	2.6%	0.0%	2.6%

Source ADF&G Division of Subsistence household survey, 2011.

LARGE LAND MAMMALS

In 2010, large land mammals made up an estimated 23% of the total Dillingham harvest (Figure 2-16). The majority of the large land mammal harvest, in terms of pounds usable weight, was moose (91%), with caribou contributing 8% of the large land mammal harvest (Figure 2-18). Moose ranked third overall for pounds per capita harvest and caribou seventh (Table 2-10). Respondents reported considerable effort invested in hunting moose, mainly from boats while traveling along the shores of Lake Aleknagik and Lake Nerka, as well as along the Nushagak River. Respondents also hunted for moose along the road from Dillingham to Aleknagik (Figure 2-11). Caribou were hunted in the same area as moose, but also toward the villages of Manokotak and Togiak (Figure 2-12). Table 2-13 lists the month and sex of large land mammal harvests. An estimated 163 moose were harvested during the fall hunt, with most harvested in August before the rut started. Twenty-four moose were harvested during the winter hunt, and 3 in unknown months. All harvests of moose during 2010 were bull moose. The total estimated moose harvest was 190 animals (±22%) (Table 2-9).

Caribou were mostly harvested in January–March, and an estimated 63 caribou (±52%) were harvested in 2010. This total by Dillingham residents, of which an estimated 41 were male, 10 were female, and 13 were of unknown sex (Table 2-13).

An estimated 3 brown bears and 2 black bears were also harvested by residents of Dillingham in 2010 (Table 2-13). All were harvested in the spring. Early spring and fall are the optimal times for hunting bears for food.

Table 2-13.–Estimated large land mammal harvests by month and sex, Dillingham, 2010.

	Black bears				Brown bears			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.6
May	0.0	0.0	1.6	1.6	0.0	1.6	0.0	1.6
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
October	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
November	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
December	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
Total harvest	**0.0**	**0.0**	**1.6**	**1.6**	0.0	**3.2**	0.0	**3.2**
	Caribou				Moose			
Harvest month	Unknown	Male	Female	Total	Unknown	Male	Female	Total
January	0.0	3.2	0.0	3.2	0.0	0.0	0.0	0.0
February	9.7	1.6	0.0	11.4	0.0	0.0	0.0	0.0
March	0.0	19.5	4.9	24.3	0.0	0.0	0.0	0.0
April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
June	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
July	1.6	0.0	0.0	1.6	0.0	0.0	0.0	0.0
August	0.0	11.4	0.0	11.4	0.0	103.9	0.0	103.9
September	0.0	0.0	0.0	0.0	0.0	57.6	0.0	57.6
October	0.0	0.0	0.0	0.0	0.0	1.6	0.0	1.6
November	1.6	0.0	0.0	1.6	0.0	0.0	0.0	0.0
December	0.0	1.6	3.2	4.9	0.0	23.5	0.0	23.5
Unknown	0.0	3.2	1.6	4.9	0.0	3.2	0.0	3.2
Total harvest	**13.0**	**40.6**	**9.7**	**63.3**	**0.0**	**189.9**	**0.0**	**189.9**

Source ADF&G Division of Subsistence household survey, 2011.

SMALL LAND MAMMALS/FURBEARERS

As listed in Table 2-9, the total estimated harvest of small land mammals by Dillingham residents in 2010 for wild food was 5,121 lb, or approximately 2 lb per capita. Small land mammals used for food included beavers (2,067 lb or 0.9 lb per capita), hares (1,508 lb or 0.7 lb per capita), and porcupines (1,538 or 0.7 lb per capita). The wild food harvest of small land mammals comprised approximately 1% of the total harvest in 2010 (Figure 2-16). Residents of Dillingham also trapped small land mammals for furs, including red foxes, land otters, coyotes, lynx, martens, minks, muskrats, red squirrels, weasels, wolves, and wolverines. For hunting and trapping areas for small land mammals and furbearers, see Appendix C.

MARINE MAMMALS

An estimated 5% Dillingham residents attempted to harvest marine mammals in 2010, and 4% successfully harvested marine mammals (Table 2-9). Marine mammals comprised 2% of the overall harvest of wild foods in 2010 (Figure 2-16). This harvest was widely dispersed within the community with 33% of households reporting the use of marine mammals in 2010. The total estimated marine

mammal harvest in 2010 was 10,108 lb or approximately 4 lb per capita. An estimated 24 seals (2,012 lb or 0.9 lb per capita), were harvested in 2010, which included 13 harbor/spotted seals (546 lb or 0.2 lb per capita), 7 bearded seals (1,285 lb or 0.6 lb per capita), and 3 ringed seals (182 lb or 0.1 lb per capita). Dillingham residents hunting for seals focused their efforts along the shorelines of Nushagak Bay (Figure 2-15). In addition to seals, an estimated 10 beluga whales were harvested (8,096 lb or 4 lb per capita). No walrus were harvested in 2010 although a trip was planned, but never conducted. Dillingham residents usually make an annual trip to Round Island or an area nearby to hunt walrus each year with residents of Manokotak, Togiak, or Twin Hills.

MARINE INVERTEBRATES

An estimated 26% of Dillingham residents harvested marine invertebrates in 2010, while 24% received marine invertebrates, and 30% used them (Table 2-9). Marine invertebrate harvests were approximately 1% of the overall harvest in terms of edible weight (Figure 2-16). The estimated marine invertebrate harvest in 2010 was 2,590 lb or 1 lb per capita. This included 459 lb or 0.2 lb per capita of several kinds of clams, 977 lb or 0.4 lb per capita of cockles, and 1,144 lb or 0.5 lb per capita of crabs (Table 2-9).

BIRDS AND EGGS

In 2010, Dillingham residents harvested migratory waterfowl along the shores of the Wood River, Nushagak River, and Nushagak Bay (Figure 2-13). Gathering of bird eggs also took place along the shores and islands of Snake Lake, Aleknagik Lake, and Lake Nerka, as well as on an island at the mouth of the Wood River (see Appendix C). Dillingham residents harvested an estimated 4,680 lb of migratory birds, or 2 lb per capita, and 5,404 lb of upland birds, or 2 lb per capita (Table 2-9). Residents were active hunters in both categories of birds, with 24% of households reporting harvesting migratory birds and 48% of households harvesting upland birds. Residents also harvested approximately 2,969 lb of bird eggs, or 1 lb per person, with 15% of households engaged in this activity. Although birds and eggs do not weigh as much as other subsistence foods, such as large land mammals and fish, they still comprised 3% of the overall harvest in terms of edible weight (Figure 2-16). Bird eggs were also widely shared—37% of households reported using bird eggs, 14% of households gave away eggs, and 23% of households received eggs (Table 2-9).

VEGETATION

In 2010, most wild plants were harvested close to Dillingham and near the village of Aleknagik, as well as on the shores of Nushagak Bay (see Appendix C). Vegetation made up 5% of the overall harvest in terms of edible weight (Figure 2-16). The harvest of berries ranked first in terms of percentage of households using the resource and fifth in terms of pounds per capita (Table 2-10). An estimated 84% of households harvested berries, which totaled an estimated 24,373 lb, or 11 lb per capita (Table 2-9). Households also harvested an additional 1,787 lb of plants, greens, and mushrooms, or 1 lb per capita. Dillingham residents were also active in harvesting firewood in 2010. Due to the high cost of fuel, many households were receiving or purchasing high efficiency wood stoves. An estimated 57% of households reported harvesting firewood, which totaled 2,258 cords (Table 2-9).

COMPARING HARVESTS AND USES IN 2010 WITH PREVIOUS YEARS

Table 2-14 and Figure 2-20 portray Dillingham residents' assessments of wild resource harvests and uses for each major resource category in 2010 compared to other recent years (defined as approximately the last 5 years). In 2010, salmon were an important resource for residents of Dillingham in terms of both harvest and use (Table 2-10). About 48% of respondents said that their use of salmon was the same as recent years, 40% reported using less salmon, and about 13% said they used more salmon in 2010. Large land mammals, especially moose, were also important in terms of harvest and use, and show a similar response rate, with approximately 47% of households reporting using the same, about 43% less, and

about 10% more. A little over one-half (54%) of surveyed households reported using the same amount of vegetation in 2010, while 40% said they had used less, and about 6% reported using more during the study year 2010 (Table 2-14 and Figure 2-20).

In addition, interviewed households were asked to assess their overall harvests and uses of wild resources in 2010. Slightly less than half (about 47%) of the interviewed Dillingham households reported that, overall, their harvests and uses of wild resources in 2010 were less than in the recent past (Table 2-14 and Figure 2-20). On the other hand, 39% said their uses and harvests were the same, and approximately 14% said they had used more wild resources in 2010 than in previous years. Table 2-14 also reports the estimated number of households that used any resource category in higher, lower, or approximately the same amounts in 2010 as in other recent years. Approximately 98% of Dillingham households reported using the same amount of at least 1 resource category, while 79% said they had used less of at least 1 resource category, and about 33% reported using more of at least 1 resource category during the study year 2010 (Table 2-14 and Figure 2-20). During the interviews, some respondents provided reasons for harvesting more during the study year, such as growing families or the need to be able to share their wild resources with more family members.

Table 2-15 lists the reasons residents of Dillingham gave for changes in harvests and uses by resource category. This was an open-ended question, and respondents could provide more than one reason for changes. Project staff grouped the responses into categories, such as competition for resources, regulations hindering or helping residents to harvest resources, sharing of harvests, effects of weather on animals and subsistence activities, changes in animal populations, personal reasons (such as work and health), and other outside effects (such as inoperable equipment) on residents' opportunities to engage in subsistence activities.

Personal reasons as a category was by far the major reason given for less harvest and use for all resource categories except marine mammals (Table 2-15). The main reason given for less harvest and use of marine mammals was people were sharing less. During interviews, respondents, for example, noted that they have growing families with small children, and therefore they had less time and opportunity to harvest wild resources. Another reason that was often cited for a reduced harvest effort was time constrictions due to work, or other obligations. With regard to the top 3 major resources categories harvested in terms of total pounds usable weight (Table 2-10) in Dillingham in 2010 (salmon, land mammals, plants), the 2 most common reasons for less harvest and use for all 3 categories were personal reasons and negative changes in animal populations.

Table 2-14.–Comparison of household harvests and uses in recent years, Dillingham, 2010.

Resource	Estimated households	Valid responses		No response		Less		Same		More	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Salmon	726	690.3	95.1%	24.3	3.4%	275.0	39.8%	329.4	47.7%	86.0	12.5%
Nonsalmon fish	726	705.7	97.2%	8.9	1.2%	219.0	31.0%	425.9	60.3%	60.8	8.6%
Marine invertebrates	726	661.1	91.1%	53.5	7.4%	118.4	17.9%	507.0	76.7%	35.7	5.4%
Large land mammals	726	694.4	95.6%	20.3	2.8%	298.5	43.0%	329.3	47.4%	66.5	9.6%
Furbearers	726	661.9	91.2%	52.7	7.3%	80.3	12.1%	550.8	83.2%	30.8	4.7%
Marine mammals	726	657.9	90.6%	56.8	7.8%	85.2	12.9%	558.1	84.8%	14.6	2.2%
Birds and eggs	726	700.0	96.4%	14.6	2.0%	165.5	23.6%	449.4	64.2%	85.2	12.2%
Wild plants	726	688.7	94.9%	26.0	3.6%	278.2	40.4%	369.1	53.6%	41.4	6.0%
Overall	726	711.4	98.0%	3.2	0.4%	336.6	47.3%	277.4	39.0%	97.3	13.7%
Any resource	726	714.6	98.4%	180.9	24.9%	565.4	79.1%	703.3	98.4%	234.4	32.8%

Source ADF&G Division of Subsistence household survey, 2011.

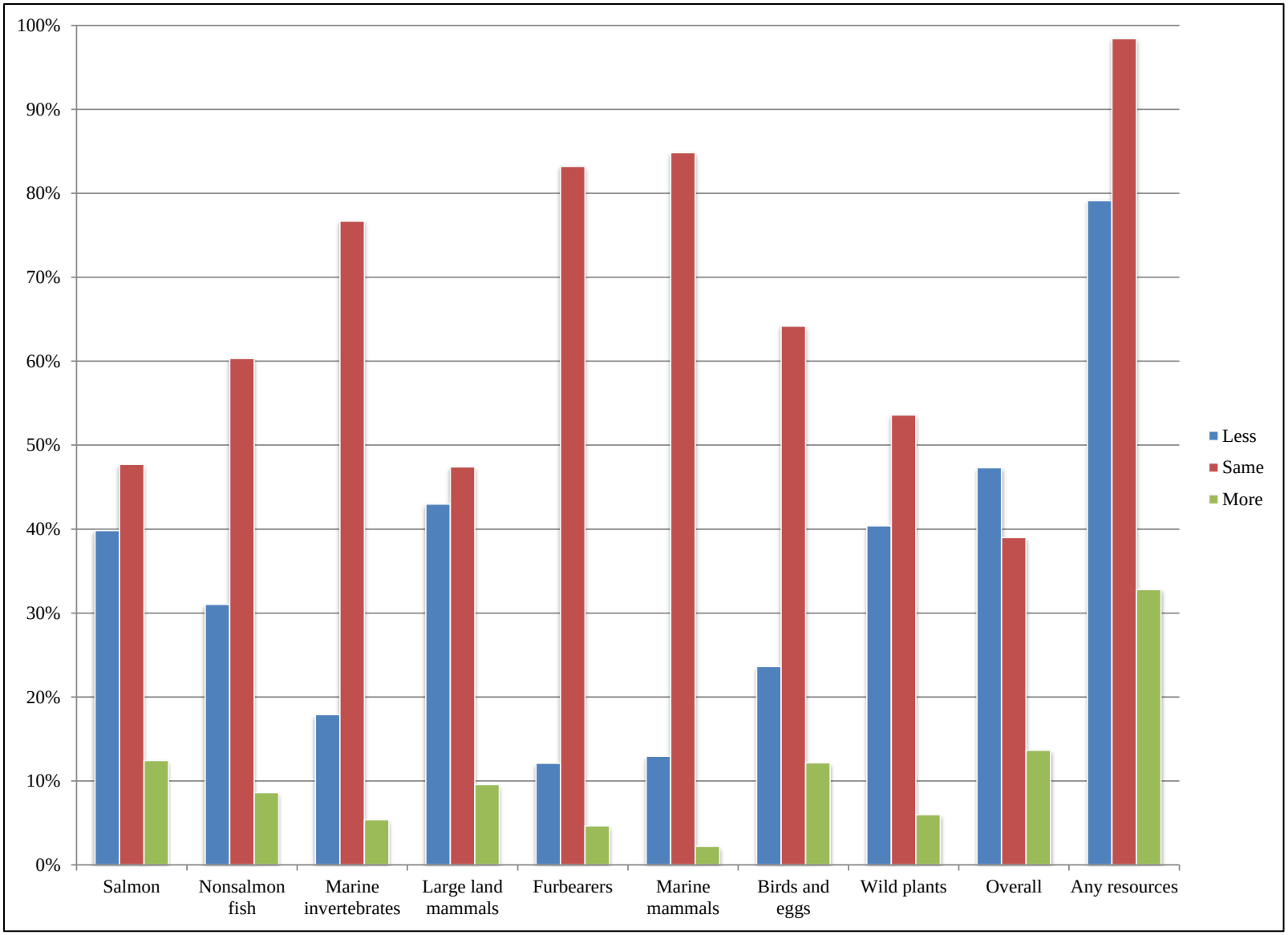


Figure 2-20.–Household use of resources compared to recent years, Dillingham, 2010.

Table 2-15.–Reasons for change in harvests and uses in recent years, Dillingham, 2010.

Resource category	Use less or more	Estimated number of households[b]	Percentage of responses by category[a]							
			No reason given	Competition	Regulations	People are sharing less/more	Weather	Animal population changes[c]	Personal reasons (work/health)	Other outside effects
Salmon	Less	263.6	4.3%	0.0%	0.0%	7.1%	7.7%	20.0%	77.8%	2.2%
Salmon	More	80.3	7.1%	0.0%	0.0%	30.3%	0.0%	13.1%	67.7%	0.0%
Nonsalmon fish	Less	207.7	5.5%	0.0%	2.7%	17.2%	15.6%	7.0%	74.6%	0.0%
Nonsalmon fish	More	60.8	0.0%	0.0%	0.0%	33.3%	0.0%	0.0%	66.7%	0.0%
Marine invertebrates	Less	99.8	18.7%	0.0%	0.0%	39.0%	0.0%	1.6%	61.0%	0.0%
Marine invertebrates	More	35.7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Large land mammals	Less	292.8	1.9%	0.0%	0.0%	19.9%	2.5%	41.6%	56.8%	0.6%
Large land mammals	More	59.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Furbearers	Less	78.7	2.1%	0.0%	0.0%	0.0%	4.1%	13.4%	82.5%	9.3%
Furbearers	More	30.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marine mammals	Less	85.2	0.0%	0.0%	0.0%	60.0%	0.0%	0.0%	48.6%	1.9%
Marine mammals	More	8.9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Birds and eggs	Less	152.5	8.5%	0.0%	0.0%	14.9%	5.9%	19.7%	60.6%	3.7%
Birds and eggs	More	85.2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wild plants	Less	257.9	7.9%	2.2%	0.0%	5.0%	12.0%	32.4%	67.0%	0.0%
Wild plants	More	26.8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overall	Less	313.9	7.2%	0.0%	0.0%	8.3%	9.6%	31.3%	74.2%	7.8%
Overall	More	94.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Any resource	Less	546.7	3.4%	1.0%	1.0%	32.2%	15.7%	44.8%	85.6%	6.4%
Any resource	More	227.1	3.2%	0.0%	0.0%	43.2%	5.0%	28.9%	61.1%	2.1%

Source ADF&G Division of Subsistence household survey, 2011.

a. Percentage of estimated number of households that reported less or more uses of the resource category who cited this reason.

b. Estimated number of households citing a change in uses. For number of valid responses, see Table 2-14. Estimated total households in community = 582.

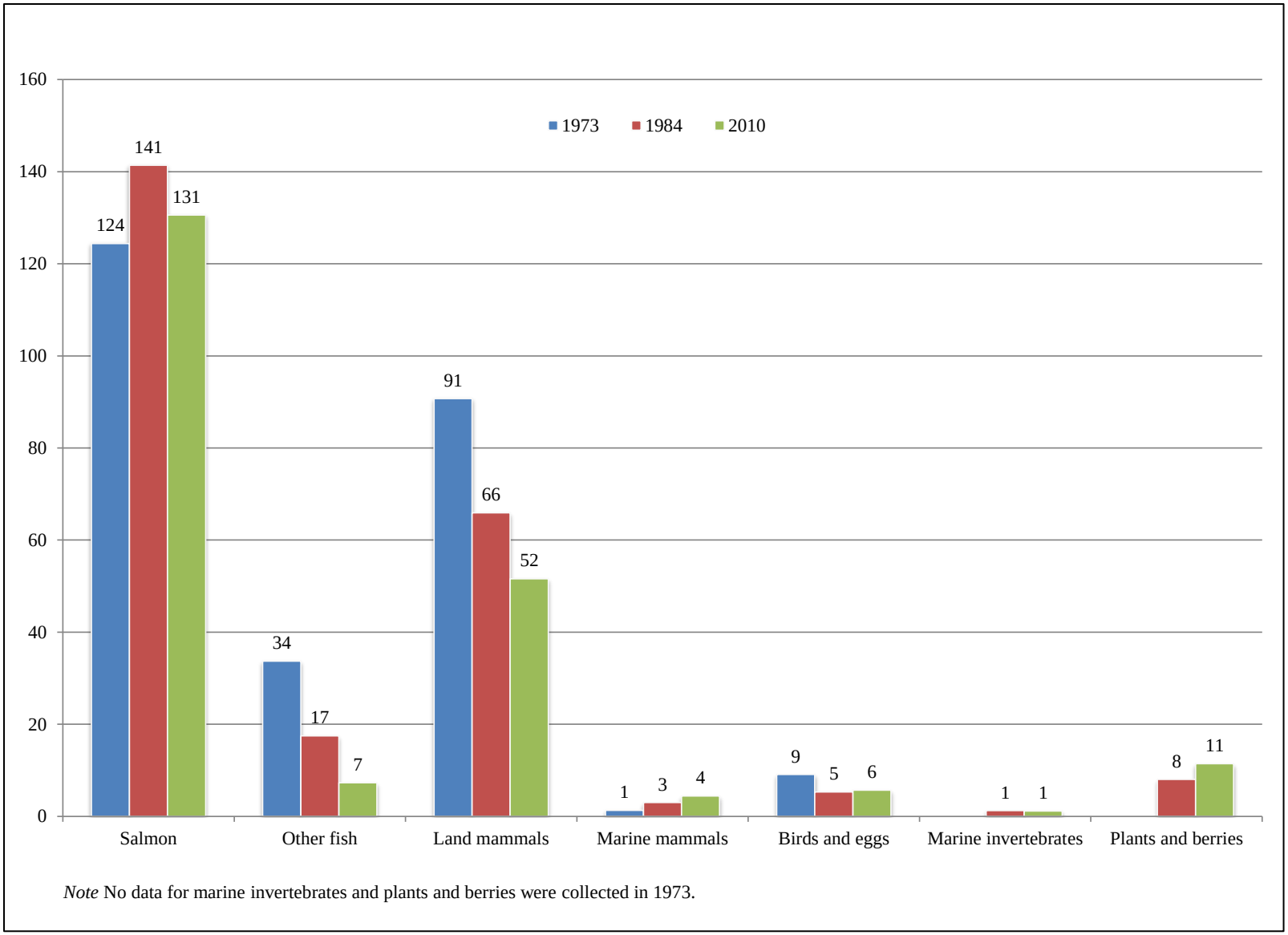
c. Includes changes in size of population and/or changes in geographic distribution of animals during hunting seasons that affected harvest opportunities and success.

Changes in resource harvests by Dillingham residents can also be discerned through comparisons with findings from other study years. The University of Alaska administered comprehensive household harvest surveys in Dillingham for the data year of 1973/74[10], and ADF&G conducted a household harvest survey for study year 1984 (Fall et al. 1986), as well as for the 2010 data year for this study. The 1973 study did not document the harvests of marine invertebrates or vegetation. Figure 2-21 summarizes the estimated per capita harvests in pounds usable weight for each major resource category from the 3 comprehensive studies and Figure 2-22 shows the percentage of the total harvest by resource category over time.

The total harvests of major resource categories in terms of pounds usable weight have varied over time. For some resource categories there has been only a slight variation. For example, the estimated harvest of salmon per capita has remained fairly constant, with an estimated per capita harvest of 124 lb in 1973, 141 lb in 1984, and 131 lb in 2010 (Figure 2-21).

Another source of information for understanding trends over time for salmon are the subsistence salmon harvest permit data. As shown in Table 2-16 and Figure 2-23, the per person harvest of salmon, in terms of numbers of fish, for Dillingham residents between 2001–2010 has ranged from 8.9 salmon per person in 2005 to 12.9 salmon per person in 2009. As shown in Table 2-17, the differences between the 2 estimates not only vary by total numbers, but by species as well. For example, there was a much higher reported harvest of coho salmon from the survey estimate compared to the permit returns. Households often return their permits to the department early although they continue to fish for species such as coho salmon, which arrive later. Working with harvesters in Dillingham during the fishing season, researchers found that another reason for the discrepancy in the survey and permit numbers was that some households were not receiving permits, but were still harvesting and sharing salmon with other households. In addition, researchers have found that households that do receive permits are not always documenting the shared harvest on the permits. Additionally, in reviewing the harvest permits, it is found that residents often estimate their harvest at the end of the season instead of recording daily activity leading to errors in reporting. Outreach efforts have been undertaken starting in 2010 to encourage residents of Dillingham to obtain permits and accurately record their harvest. Follow-up harvest surveys in Dillingham, as well as in other Bristol Bay communities, could lead to a more robust analysis of harvest reporting and provide opportunity for more outreach.

10. Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.



Note No data for marine invertebrates and plants and berries were collected in 1973.

Figure 2-21.–Estimated harvests in pounds usable weight per person, Dillingham, 1973, 1984, and 2010.

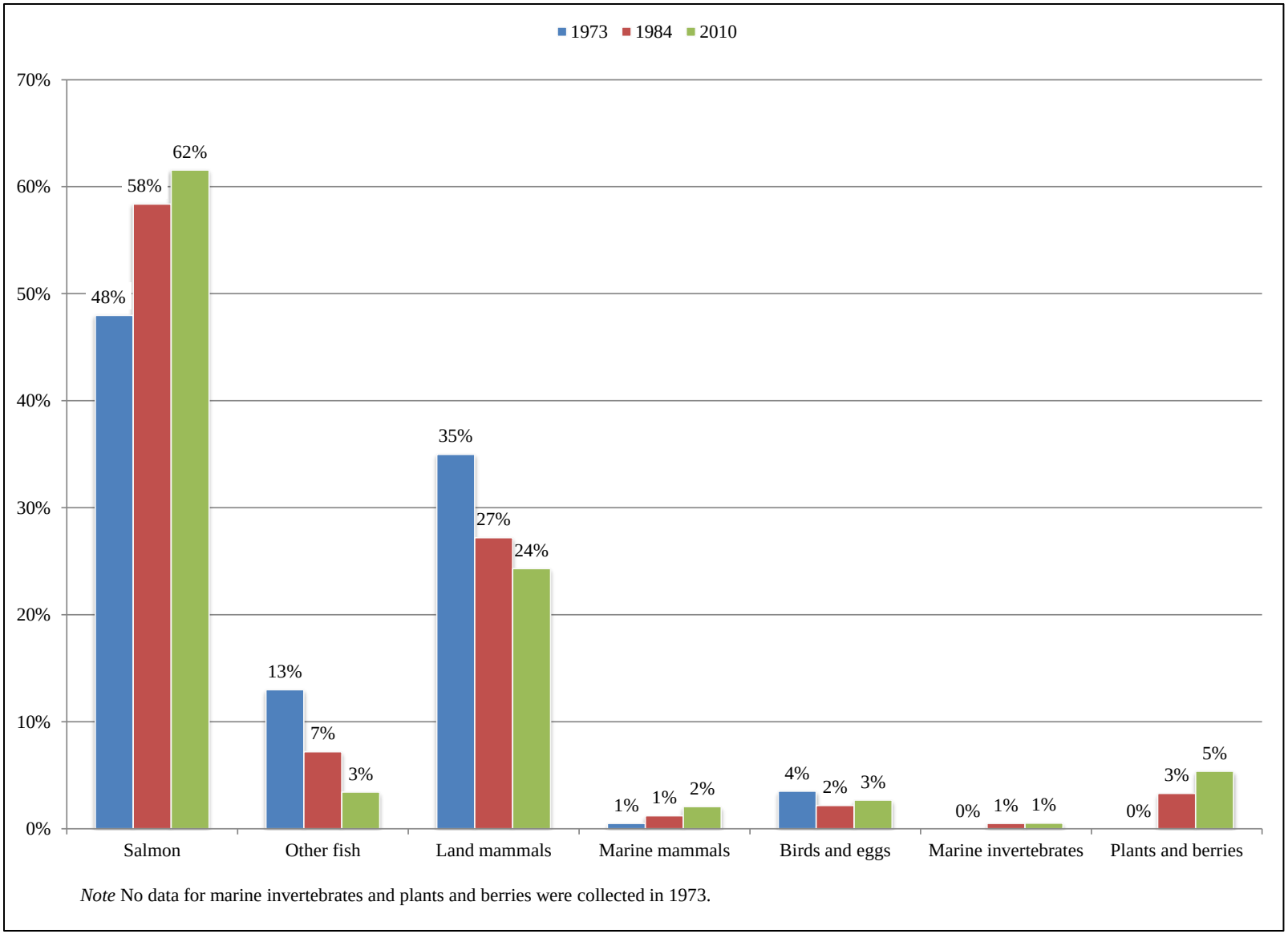


Figure 2-22.–Percentage of harvest by resource category, Dillingham, 1973, 1984, and 2010.

Table 2-16.–Estimated total and per capita salmon harvests, Dillingham, 2001–2010.

Year	Estimated population	Estimated harvest (ASFDB)	Fish per person (ASFDB)
2001	2,452.0	25,357.1	10.3
2002	2,457.0	24,375.5	9.9
2003	2,374.0	25,955.0	10.9
2004	2,396.0	22,308.0	9.3
2005	2,364.0	20,942.0	8.9
2006	2,389.0	21,397.0	9.0
2007	2,379.0	24,747.0	10.4
2008	2,309.0	25,908.0	11.2
2009	2,245.0	28,934.0	12.9
2010	2,329.0	21,732.0	9.3
5-year average	2,330.2	24,543.6	10.6
10-year average	2,369.4	24,165.6	10.2

Source ADF&G Division of Subsistence, Alaska subsistence fishery database (ASFDB) 2010[11]; ADLWD 2011.

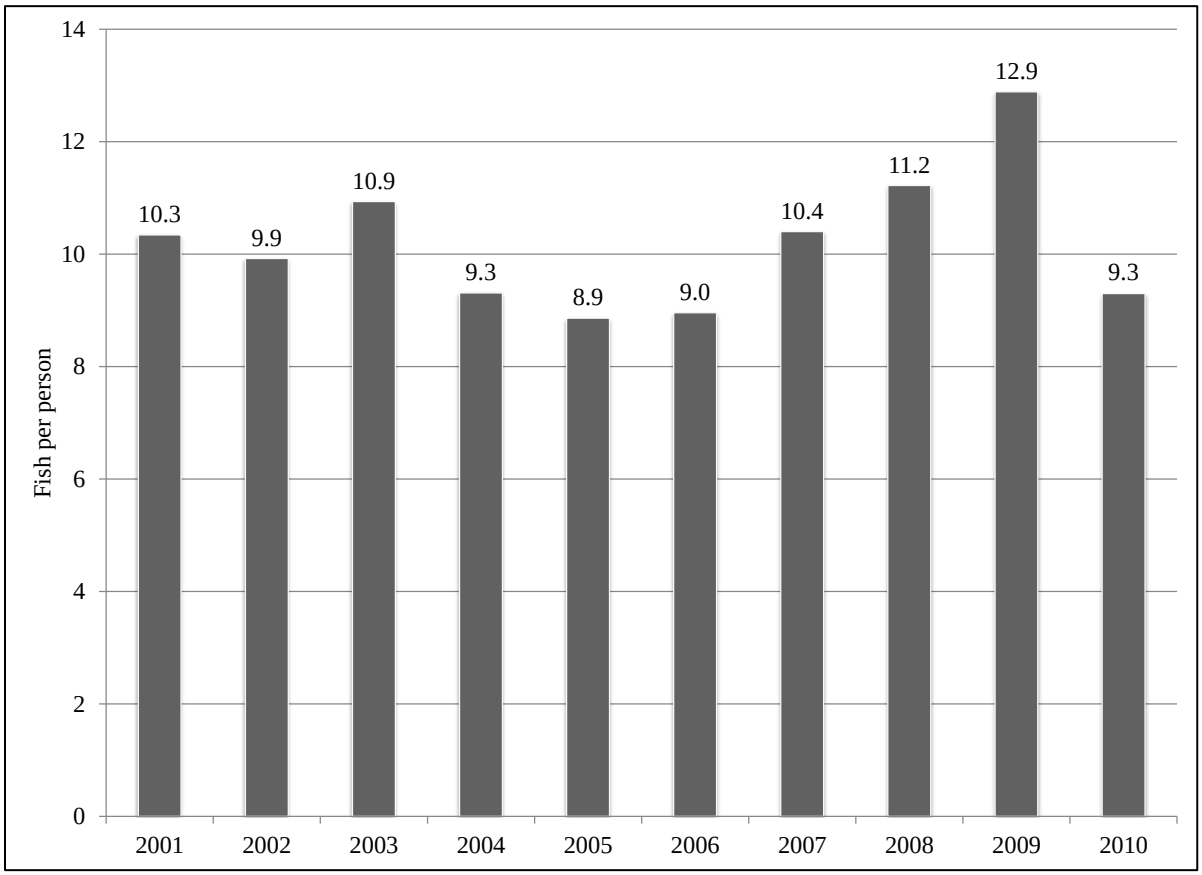


Figure 2-23.–Estimated per capita salmon harvests, Dillingham, 2001–2010.

11. ADF&G. 2010. Alaska Subsistence Fisheries Database (ASFDB). (Accessed 2012.)

Table 2-17.–Estimated number of salmon harvested in the subsistence setnet fishery, Dillingham, 2010 survey and permit returns.

Resource	Harvest survey	Permit returns
Chum salmon	3,527	1,467
Coho salmon	6,534	1,979
Chinook salmon	10,489	4,878
Pink salmon	2,417	1,125
Sockeye salmon	21,314	12,284
Total	**44,281**	**21,733**

Sources ADF&G Division of Subsistence household survey, 2011; AFSDB 2010.

The per capita harvest of land mammals by Dillingham residents in 1973 was approximately 91 lb, decreasing to roughly 66 lb per capita in 1984 and to 52 lb in 2010. Tables 2-18 and 2-19 report the number of moose and caribou harvested over time and tables 2-20 and 2-21report the per capita harvests of moose and caribou over time. As shown in Table 2-18, the estimated harvest of moose has gone up in Dillingham over time (78 moose in 1973 to 190 moose in 2010). However, the community has grown considerably in the past 40 years from 228 households in 1973 to an estimated 726 in 2010.[12] The estimated harvest of caribou increased from a harvest of 242 caribou in 1973 to 344 in 2001, but dropped substantially to 63 caribou in 2010. Caribou harvests have declined due to the drop in the population of the Mulchatna herd (Woolington 2009). In 2010, the per capita harvest of caribou was 4 lb per person (63 caribou total), and there was considerable hunting effort expended to harvest these animals (Figure 2-12). Researchers also compared data obtained from harvest tickets and the household survey for moose and caribou. In 2010, the reported harvest from returned harvest tickets was 137 moose and 18 caribou. This is compared to an estimated harvest of 190 moose and 63 caribou based on the survey (Figure 2-24).

Although the harvest of salmon has remained steady over time, Dillingham's harvest of other fish has declined. The per capita harvest of nonsalmon fish dropped from 34 lb per capita in 1973 to 17 lb per capita in 1984, and 7 lb per capita in 2010. Marine mammal harvests, in terms of pounds per capita, increased slightly over time from 1 lb per capita in 1973 to 4 lb per capita in 2010. Harvests of birds and eggs and plants and berries have remained relatively steady over time with a slight decline in harvest of birds and eggs since 1973 but a similar pounds per capita harvest in 1984 and 2010 (Figure 2-21).

In terms of the composition of the overall harvest in 1973 compared to later survey years, harvests of some resource categories, such as nonsalmon fish, land mammals, and birds and eggs dropped over time (Figure 2-22). In contrast, the portion of the total harvest composed of salmon increased: salmon comprised 48% of the total harvest in 1973, growing to 58% in 1984, and totaling approximately 62% in 2010. Land mammals, in comparison, exhibit an opposite trend, declining from approximately 35% in 1973 to about 27% in 1984, and 23% in 2010. Although information for plants and berries was not collected in 1973, the portion of the total harvest increased from approximately 3% in 1984 to roughly 5% in 2010. The harvest of marine invertebrates has remained steady at approximately 1% over these 2 study years (Figure 2-22).

Table 2-18.–Estimated harvests of moose, Dillingham, 1973, 1984, 2001, and 2010.

12. Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.

Estimated harvests of moose			
1973	1984	2001	2010
78	113	208	190

Sources ADF&G Community Subsistence Information System (CSIS); Fall et al. 1986; Holen et al. 2005; ADF&G Division of Subsistence household survey, 2011.

Table 2-19.–Estimated harvests of caribou, Dillingham, 1973, 1984, 2001, and 2010.

Estimated harvests of caribou			
1973	1984	2001	2010
242	379	344	63

Sources ADF&G Community Subsistence Information System (CSIS) Fall et al. 1986; Holen et al. 2005; ADF&G Division of Subsistence household survey, 2011.

Table 2-20.–Estimated per capita harvests of moose, Dillingham, 1973, 1984, 2001, and 2010.

Pounds per person			
1973	1984	2001	2010
43	30	46	45

Sources ADF&G Community Subsistence Information System (CSIS); Fall et al. 1986; Holen et al. 2005; ADF&G Division of Subsistence household survey, 2011.

Table 2-21.–Estimated per capita harvests of caribou, Dillingham, 1973, 1984, 2001, and 2010.

Pounds per person			
1973	1984	2001	2010
37	28	21	4

Sources ADF&G Community Subsistence Information System (CSIS); Fall et al. 1986; Holen et al. 2005; ADF&G Division of Subsistence household survey, 2011.

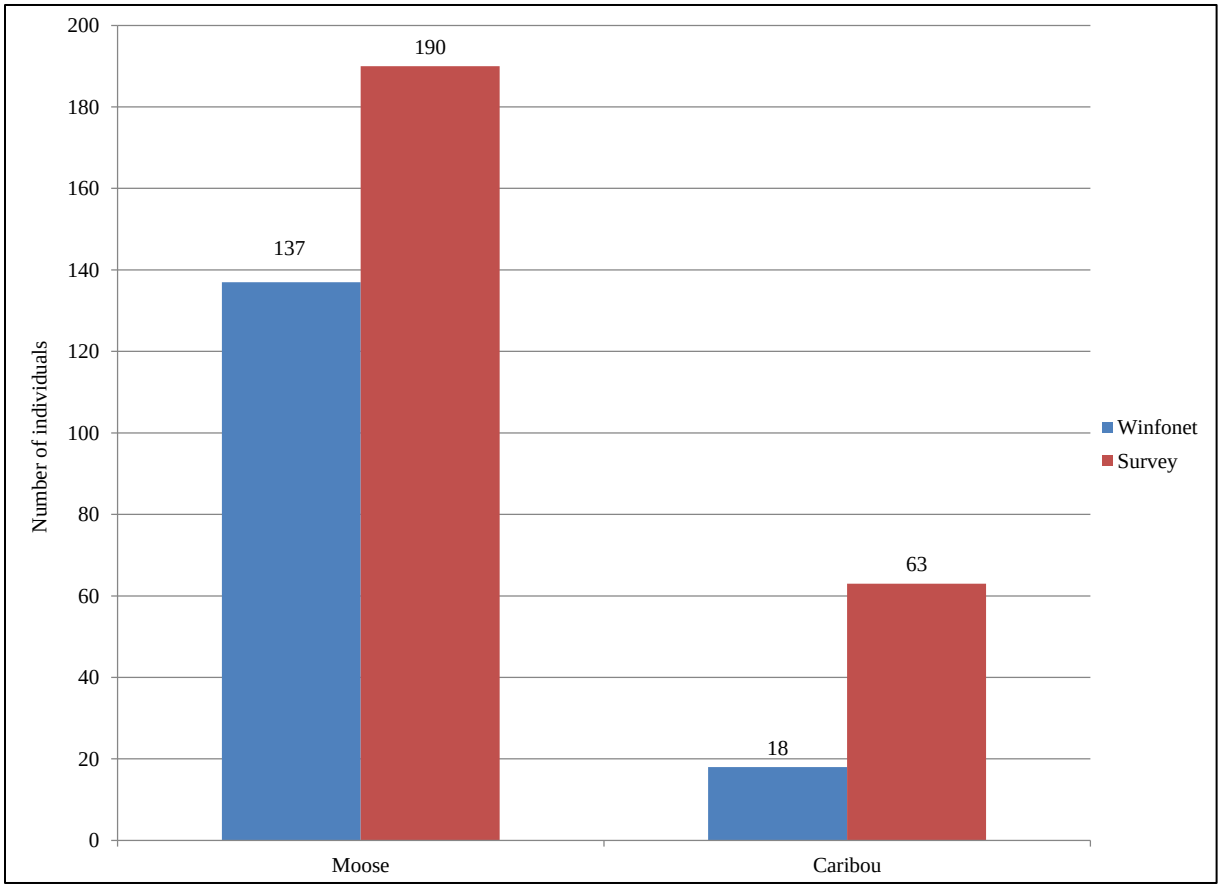


Figure 2-24.–Estimated per capita salmon harvests, Dillingham, 2001–2010.

LOCAL CONCERNS REGARDING RESOURCES

During household surveys and the community meetings organized for this project, respondents and attendees voiced their concerns related to the harvest of wild resources. By far the greatest concern expressed by surveyed households in Dillingham during the 2010 study year was the development of the Pebble Project. At the end of each survey residents were asked if they had and comments or concerns about wild resources. Out of the 250 surveys conducted, almost 50% (124 respondents) provided comments. Comments ranged from how important subsistence is, the cost of fuel, competition with nonlocal sport hunters, hunting and fishing regulations, to the proposed Pebble Project. Out of the 124 comments provided, 60 directly addressed the Pebble Project, of which none were positive comments. A number of comments about the project are included here in their entirety.

One respondent stated:

> There is no guarantee that Pebble will not pollute. How can they guarantee that it's not ever going to happen? Fishing is our primary source of income and subsistence is more than half of my personal food source. Pebble is not worth the risk of future generations. It can change the rest of our lives if that mine goes through, and most of us are happy with what is already provided to use with fish and game. Pebble jeopardizes everything!

Another respondent offered:

> I don't think the Pebble Mine would be any good for our region. [If] there was ever an event that would cause the toxins to get into the streams and rivers I think it would wipe out our subsistence way of life, the way we are used to living.

Another respondent said:

> Subsistence is really important to this area because people wouldn't survive without it. If the Pebble Mine happened this area wouldn't exist, the whole Bristol Bay wouldn't exist!

Other comments related to concerns about the Pebble Project offered by Dillingham survey respondents included the following:

> History shows that mining in sensitive areas has no good results, let's keep Pebble out!
>
> I'm worried that Pebble Mine says they will offer jobs to locals, but I don't believe they will follow through with that promise after they start construction or the mine.
>
> I believe we must protect the Bristol Bay from the hazards of mining exploration and offshore drilling.
>
> I hope the Pebble Mine doesn't happen because this is a very subsistence and commercial fish dependent area, and we cannot afford and damage to our salmon runs.

Regulations

After the topic of the Pebble Project, concerns about regulations governing the harvest subsistence resources were often most mentioned by Dillingham survey respondents. Comments included the following:

> Having subsistence salmon fishing [by setnet on the Nushagak River] closed over the weekend is a crummy deal for people who have full time jobs and need the weekend to go and harvest salmon for subsistence.

> I'd rather subsistence fish for my kings with a rod and reel because at least that way I can help to conserve the species by throwing [back] hens [female fish] and only taking what my family needs.
>
> Pretty good resources management, but would like to see the king numbers come back up, and better predator control.
>
> Moose resource seems to be doing well, but I worry that the money available to manage the resource is too low. We need to have good data and surveys done so the board [boards of Fisheries and Game] can make the best decisions on managing the populations.

Dillingham survey respondents also emphasized the importance of being able to harvest subsistence foods, and why resources need protection. Here are some of the comments:

> Subsistence is so priceless and so valuable; it gives you the best feeling in the world.
>
> Subsistence is very important to use as food and as a cultural identity; it ties us to the land.
>
> If I didn't have subsistence foods to harvest and eat, I'd be a lot less healthy!
>
> Manage for sustainability, please!
>
> Subsistence resources are very important to us economically and for our health; we need to continue to protect them!
>
> A lot of people rely on subsistence foods because they cannot afford store bought food, and because subsistence foods are more healthy.

Dillingham survey respondents expressed concerns about the effects of "sport hunters" who, in the view of local residents, targeted animals not so much for their meat but for their trophy-sized antlers. A concern regarding sport fishers was that they were overharvesting Chinook salmon. Residents gave the following comments:

> Locals should be able to keep a larger number of fish caught on rod and reel than others because we are using them for subsistence.
>
> There are too many outsider sport fishermen that are targeting and taking our kings.
>
> Please encourage trophy hunters to use the meat of the bulls [moose] they kill, even if they are small.
>
> Too many outsiders coming into hunt in our area.

Rising Fuel Costs

Dillingham residents expressed concerns regarding the rising costs of fuel. One common concern was that it was too expensive to reach subsistence harvest areas due to higher gas prices. Another concern was that due to the high cost of heating fuel, more residents were forced to harvest firewood to heat their homes.

Here are some comments from Dillingham residents:

> We are running out of trees to harvest for firewood because the fuel costs keep rising and more people are harvesting wood to heat their homes. Subsistence is also costing us more due to fuel increases. Fuel prices are a big problem here.

As population in the area continues to grow and more people are using our resources, [this] cause[s] more competition, especially with firewood.

Every year it’s getting harder to do subsistence because of fuel costs.

CHAPTER 3: DISCUSSION AND CONCLUSIONS

SUBSISTENCE HARVEST PATTERNS AND TRENDS

OVERVIEW OF FINDINGS FOR DILLINGHAM, 2010.

Table 3-1 summarizes selected findings regarding demography, cash economy, and wild resource uses in Dillingham in 2010. The study found the population of Dillingham to be 2,826 with the majority of residents being Alaska Native (68%). Most of the household heads (59%) were born in Alaska. The residents of Dillingham rely on subsistence hunting, fishing, and gathering for nutrition and to support their way of life. As shown in the harvest section of Table 3-1, they continue to use, harvest, and share a variety of resources, including salmon and other fish, large land mammals, small land mammals, birds, marine invertebrates, and wild plants in their diet. Alaska Native families in Dillingham harvest several kinds of marine mammals. Sharing of resources is an important component of subsistence economies and in 2010, when averaging the 2 strata 32% of Dillingham households harvested 70% of all resources. This is consistent with other rural communities in Alaska (Wolfe et al. 2010).

Table 3-1.–Comparison of selected study findings for Dillingham comprehensive subsistence update, 2010.

	Hunters	Other households	All Dillingham
Demography			
Population	591	1703	2294
Percentage Alaska Native	60.2%	70.3%	67.7%
Percentage of household heads born in Alaska	55.3%	60.3%	59.0%
Average length of residency, household heads (years)	27	30	29
Cash economy			
Percentage of jobs located in community	90.5%	93.1%	92.3%
Average number of months employed, all adults	7.7	7.6	7.7
Percentage of all adults working year-round	50.4%	55.9%	54.4%
Average household income	$111,063	$55,658	$68,174
Per capita income	$30,817	$18,367	$21,575
Resource harvest and use			
Per capita harvest, pounds usable weight	408.7	143.9	212.1
Average household harvest, pounds usable weight	1,472.8	435.9	670.2
Number of resources used by 50% or more of households	12.0	5.0	7.0
Average number of resources used per household	16.7	10.8	12.1
Average number of resources attempted to harvest per household	15.5	6.8	8.8
Average number of resources harvested per household	13.1	5.9	7.6
Average number of resources received per household	5.7	6.4	6.3
Average number of resources given away per household	7.8	3.2	4.3
Percentage of total harvest taken by top 25% of harvesters	53.7%	68.0%	62.3%
Percentage of households taking 70% of harvest	40.6%	25.8%	31.8%
Per capita harvest of lowest 50% of households, pounds usable weight	91.0	8.7	37.5
Percentage of total harvest taken by lowest 50% of households	22.3%	6.1%	13.0%
Average number of resources used by lowest 50% of households	12.2	8.7	10.4

-continued-

Table 3-1.–Page 2 of 2.

	Hunters	Other households	All Dillingham
Average number of resources used by top 25% of households	21.1	15.9	20.9

Source ADF&G Division of Subsistence household survey, 2011.

During the 2010 study year, 54% of adults in Dillingham were employed year-round in the cash sectors of the local economy (Table 3-1). For all adults, the average number of employment during 2010 was 7 months. At the household level 86% of households had at least one employed adult during the study year (Tables 2-6). In 2010, the largest category of earned income (34%) in Dillingham came from jobs in the service sector; moreover, 30% of the jobs in Dillingham were in the service sector (Table 2-4). Most of the jobs (92%) were located in Dillingham (Table 2-5). In 2010 the average household income in Dillingham was $68,174 (Table 3-1). The average household spent $10,450, or 18% of their income on purchasing food. Hunting households spent less of their income (10%) on purchasing food, whereas the other households category—not represented in the sample of high harvesting households—spent 24% of their income on purchasing food (Table 3-2). Interestingly, both categories of households spent around the same amount on purchasing food, but hunter households earned more in the wage labor economy, hence the portion spent on food was lower (Table 3-2).

Table 3-2.–Estimated annual cost of purchasing food, Dillingham, 2010.

Households	Mean household cost of annual food purchase	Cost of food per capita	Percent of annual cash income spent on food
Hunters	$10,916	$3,029	10.3%
Other households	$10,315	$3,404	24.1%
All households	**$10,450**	**$3,307**	**18.3%**

Source ADF&G Division of Subsistence household survey, 2011.

In terms of pounds useable weight harvested per household, the total subsistence harvest estimates for Dillingham in 2010 were lower than in 1973 and 1984. The same applies for the per capita harvest estimates that declined from 259 lb in 1973 to 242 lb in 1984, and further to 212 lb in 2010 (Table 3-3). Despite of the decline in the per capita harvest, the percentage of Dillingham residents engaged in attempting to harvest, harvesting or process any wild resource continues to be very high (Table 2-7).

One interesting finding is that harvest amount of wild foods (mainly meat including game, fish, and birds) by Dillingham residents is not much less than that which the average American family purchases (218 lb of meat, fish, and poultry per person per year)[13]. In comparison to other communities in Alaska, Wolfe and Fall (2012) estimated that the 2010 average rural resident wild resource harvest in Alaska was 316 lb per person, and the average harvest in rural Southwest–Aleutian Alaska communities was 212 lb per person. During the study year 2010, Dillingham residents on average harvested about one-third less wild resources than the rural Alaska average and harvested roughly the same amount as the estimated per capita average for rural Southwest–Aleutian areas. The rural location of Dillingham, the availability of most wild resources relatively close to the community, and traditional subsistence way of life are likely explanations for the continuing reliance on wild foods.

13. U.S. Census Bureau, Statistical Abstract of the United States: 2012. http://www.census.gov/compendia/statab/cats/health_nutrition/food_consumption_and_nutrition.html. (Accessed March 2, 2012.)

Table 3-3.–Dillingham wild resource harvests by resource category, pounds usable weight per capita harvests, 1973, 1984 and 2010.

	Estimated per capita harvests, pounds		
Resource category	1973[a]	1984	2010
Salmon	124.4	141.4	130.6
Other fish	33.7	17.5	7.3
Land mammals	90.7	65.9	51.6
Marine mammals	1.3	3.0	4.4
Birds and eggs	9.1	5.3	5.7
Marine invertebrates	ND	1.2	1.1
Plants	ND	8.0	11.4
Total	**259.2**	**242.2**	**212.1**

Sources Gasbarro and Utermohle *Unpublished*[14]; Fall et al. 1986:81; CSIS; ADF&G Division of Subsistence household survey, 2011.

a. Harvest data for eggs, marine invertebrates, and plants are not available for data year 1973.

ND = Data not available.

Wild resource harvests in Dillingham were also diverse: on average, households harvested a total of 8 different kinds of resources and used an average of 12 different kinds of resources (Table 3-1). The 3 most important resource categories for Dillingham residents continue to be salmon, large land mammals, and vegetation (Figure 2-16). Harvesting birds and eggs, as well as marine mammals, are also important subsistence activities for Dillingham residents. Households also gave away or shared an average of 4 different kinds of resources with other households, while receiving an average of 6 different types (Table 3-1). Nearly all (approximately 97%) Dillingham households used wild resources during the study year 2010, and roughly 94% of households harvested a resource (Table 2-9). In comparison, 94% of Dillingham residents attempted to harvest a resource, while roughly 86% of individuals participated in processing a wild resource (Table 2-7).

CONCLUSION

This study documented the continuing importance of subsistence hunting, fishing, and gathering to the residents of Dillingham. In the 2010 data year, approximately 94% Dillingham households participated in subsistence activities and 97% used wild resources. In terms of total pounds harvested per household during 2010, subsistence harvests were lower than previous study years, but the harvests continue to be diverse and contributed a considerable portion of the community's food supply. In usable pounds, Chinook and sockeye salmon, moose, vegetation, and marine mammals were the primary subsistence foods, but many households also used both migratory and upland birds. The harvest and use of firewood was notable in the community during the study year 2010. In addition to their own harvests, most households also received subsistence resources through sharing networks.

Results of the household survey suggest a long-term trend in Dillingham toward lower subsistence harvests of large land mammals as estimated in per capita pounds. According to the respondents, this is due to decreased resource abundance and the timing of hunting seasons, not because of decreased hunting effort. Harvests of moose and caribou by Dillingham households were generally lower in 2010 than in

14. Gasbarro, A. F., and G. Utermohle, 1974, unpublished field data, Bristol Bay subsistence survey, Division of Subsistence, Alaska Department of Fish and Game, Anchorage.

recent years and when compared to earlier study years (Holen et al. 2005). Reasons local households cited for these changes included reduced resource abundance (including changes in the location especially of caribou), less sharing, work interference, competition, and regulations. Causes of changes in subsistence harvests and uses are complex and require additional research in collaboration with communities. Although harvests of large land mammals have declined, most households in Dillingham related that their overall harvest and reliance on wild resources has remained constant over time.

Given the importance of subsistence resources and observations of changing harvest and use patterns, it is not surprising that residents of Dillingham expressed concerns about their future opportunities to hunt, fish, and gather wild resources in a manner consistent with their traditions and at levels that meet their harvest goals. Subsistence uses of healthy fish and wildlife populations meaningfully link people to their past, are vital to the present health of the community, and encourage optimism about the future. In addition, providing opportunities for subsistence hunting and fishing is a mandate of state and federal laws. Community residents expressed a desire to continue subsistence activities, not only for themselves, but also for their children and other future generations.

ACKNOWLEDGMENTS

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APPENDIX A: SURVEY INSTRUMENT

DILLINGHAM	118	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

HH ID: _____ START TIME: _____ INTERVIEWER: _____

ID # OF RESPONDENT BELOW _____ STOP TIME: _____ DATE: _____

CODER: _____

FIELD SUPERVISOR: _____

HOUSEHOLD INFORMATION - WHO WERE MEMBERS OF THIS HOUSEHOLD BETWEEN JANUARY 1 AND DECEMBER 31, 2010 ?

PERSON ID#	M/F	RELATION TO HH HEAD	BIRTHDATE (MM/DD/YR)	RESIDENCE OF PARENT WHEN BORN	TOTAL YEARS IN COMM.	ALASKA NATIVE	IN THE STUDY YEAR, DID YOU FISH/HUNT/PROCESS:							
							LM/MM/BIRDS*		FISH/MI**		FURBEARERS		PLANTS	
							HUNT?	PROCESS?	FISH?	PROCESS?	HUNT/TRAP?	PROCESS?	GATHER?	PROCESS?
HEAD 1	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
1		1												
HEAD 2	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
2		2												
3	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
3														
4	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
4														
5	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
5														
6	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
6														
7	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
7														
8	M F					Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N	Y N
8														

* LM/MM/BIRDS - should include harvesting/attempting to harvest large and small game, birds, and marine mammals.

** FISH/MI - should include harvesting/attempting to harvest marine invertebrates, eg., clam digging, etc.

DEMOGRAPHY (0,1)

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

COMMERCIAL FISHING - SALMON.

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL SALMON FISHING BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF **YES:** PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS, IF POUNDS THEN EDIBLE WEIGHT):

IF **NO:** DID YOU INCIDENTALLY HARVEST SALMON WHILE COMMERCIAL FISHING OTHER SPECIES?

	COMMERCIAL FISHED?		REMOVED FOR OWN USE	GAVE AWAY TO CREW	GAVE AWAY TO OTHERS		ID # FROM PAGE 1	
SPECIES	Y/N	INCIDENTAL*	#	#	#	UNITS	PERMIT HOLDER	CREW
CHINOOK SALMON *TARYAQVAK*	Y N					IND		
113000001						1		
CHUM SALMON *KANGITNEQ*	Y N					IND		
111000001						1		
SOCKEYE SALMON *SAYAK*	Y N					IND		
115000001						1		
PINK SALMON *AMAQAAYAK*	Y N					IND		
114000001						1		
COHO SALMON *QAKIIYAQ*	Y N					IND		
112000001						1		
UNKNOWN SALMON	Y N					IND		
119000001						1		
	Y N					IND		
						1		

* Incidental harvest - Check only if household was not engaged in commercial salmon fishing for that specific resource.

NOTES:

COMMERCIAL FISHING - NON-SALMON FISH

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL FISHING (OTHER THAN SALMON) BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF **YES:** PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT):

IF **NO:** DID YOU INCIDENTALLY HARVEST OTHER FISH WHILE COMMERCIAL FISHING FOR SALMON?

	COMMERCIAL FISHED?		FOR OWN USE	TO CREW	TO OTHERS		ID # FROM PAGE 1	
SPECIES	Y/N	INCIDENTAL	#	#	#	UNITS	PERMIT HOLDER	CREW
HALIBUT *NATERNARPAK* 121800001	Y N					LBS 2		
HERRING *IQALLUARPAK* 120200001	Y N					GAL 4		
HERRING SPAWN ON KELP *MELUCUAQ* 120306001	Y N					GAL 4		
CAPELIN *CIKAAQ* 120402001	Y N					IND 1		
SEA RUN DOLLIES *ANGYUK* 125006021	Y N					IND 1		
PACIFIC "GRAY" COD *CETURRNAQ* 121001001	Y N					IND 1		
SCULPIN (UNKNOWN) *KAYUTAK* 123099001	Y N					IND 1		
STARRY FLOUNDER *NATERNAQ* 121406001	Y N					IND 1		
SALMON SHARK 123204001	Y N					IND 1		
YELLOWFIN SOLE *SAGIK* 123606001	Y N					IND 1		
	Y N							

NOTES:

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

COMMERCIAL FISHING - MARINE INVERTEBRATES

DID MEMBERS OF YOUR HOUSEHOLD PARTICIPATE IN COMMERCIAL FISHING FOR MARINE INVERTEBRATES BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF **YES:** PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD BE EDIBLE WEIGHT):

IF **NO:** DID YOU INCIDENTALLY HARVEST MARINE INVERTEBRATES WHILE COMMERCIAL FISHING FOR OTHER SPECIES?

	COMMERCIAL FISHED?		FOR OWN USE	TO CREW	TO OTHERS		SHELLS ON?	ID # FROM PAGE 1	
SPECIES	Y/N	INCIDENTAL	#	#	#	UNITS	Y/N	PERMIT HOLDER	CREW
RAZOR CLAMS *ALIRUAQ*	Y N					GAL	Y N		
500612001						4			
PACIFIC LITTLENECK CLAMS (STEAMERS)	Y N					GAL	Y N		
500608001						4			
DUNGENESS CRAB *PUPSULEK*	Y N					IND	Y N		
501004001						1			
KING CRAB *PUPSULEGPAK*	Y N					IND	Y N		
501008991						1			
TANNER CRAB *PUPSULEK*	Y N					IND	Y N		
501012991						1			
OCTOPUS *AMIKUQ*	Y N					IND	Y N		
502200001						1			
SHRIMP *CUNGARALUKVAK*	Y N					LBS	Y N		
503400001						2			
SCALLOPS	Y N					LBS	Y N		
502699001						2			
	Y N						Y N		

NOTES:

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

NON-COMMERCIAL FISHING: SALMON.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SALMON BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE

(UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

			NUMBER HARVESTED BY:							
	USED?	TRIED TO HARVEST	SET NET	SEINE	ROD & REEL	OTHER GEAR			RECEIVED	GAVE AWAY
SPECIES	Y/N	Y/N	#	#	#	TYPE	#	UNITS	Y/N	Y/N
CHINOOK (KING) SALMON *TARYAQVAK*	Y N	Y N						IND	Y N	Y N
113000000								1		
SOCKEYE (RED) SALMON *SAYAK*	Y N	Y N						IND	Y N	Y N
115000000								1		
CHUM (DOG) SALMON *KANGITNEQ*	Y N	Y N						IND	Y N	Y N
111000000								1		
PINK SALMON *AMAQAAYAK*	Y N	Y N						IND	Y N	Y N
114000000								1		
COHO (SILVER) SALMON *QAKIIYAQ*	Y N	Y N						IND	Y N	Y N
112000000								1		
SPAWNING REDS *SAYALLEQ*	Y N	Y N						IND	Y N	Y N
117050000								1		
UNKNOWN SALMON	Y N	Y N						IND	Y N	Y N
119000000								1		
	Y N	Y N						IND	Y N	Y N
								1		

* 'ROD & REEL' INCLUDES TROLLING IN OPEN WATER

Was your household's harvest and use of salmon typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different? _____

_____

_____

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

NON-COMMERCIAL FISHING: NON-SALMON FINFISH.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE FISH OTHER THAN SALMON BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	ROD & REEL #	DIP NET #	HAND LINE* #	SET NET #	ICE FISHING #	SEINE #	OTHER GEAR TYPE	OTHER GEAR #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N
SMELT *IQALLUAQ*	Y N	Y N									GAL	Y N	Y N
120499002											4		
HERRING *IQALLUARPAK*	Y N	Y N									GAL	Y N	Y N
120200002											4		
HERRING SAC ROE *MELUK*	Y N	Y N									GAL	Y N	Y N
120304002											4		
HERRING SPAWN-ON-KELP *MELUCUAQ*	Y N	Y N									GAL	Y N	Y N
120306002											4		
CAPELIN *CIKAAQ*	Y N	Y N									IND	Y N	Y N
120402002											1		
ROUND WHITEFISH "CANDLEFISH" *CINGIKEGGLIQ*	Y N	Y N									IND	Y N	Y N
126412002											1		
HUMPBACK WHITEFISH *URARUQ*	Y N	Y N									IND	Y N	Y N
126408002											1		
LEAST CISCO *CAVIRUTNNAQ*	Y N	Y N									IND	Y N	Y N
126406062											1		
PIKE *CUUKVAK*	Y N	Y N									IND	Y N	Y N
125400002											1		
GRAYLING *NAKRULLUGPAK*	Y N	Y N									IND	Y N	Y N
125200002											1		
RAINBOW TROUT *TALAARIQ*	Y N	Y N									IND	Y N	Y N
126204002											1		

LAKE TROUT *CIKIGNAQ* 125010002	Y N	Y N									IND 1	Y N	Y N
TOGIAK TROUT *ANERRLUAQ* 125006010	Y N	Y N									IND 1	Y N	Y N
TROUT - UNKNOWN 126299002	Y N	Y N									IND 1	Y N	Y N
DOLLY VARDEN *YUGYAQ* 125006012	Y N	Y N									IND 1	Y N	Y N
SEA RUN DOLLIES *ANGYUK* 125006022	Y N	Y N									IND 1	Y N	Y N
BURBOT "LING COD" *ATGIAQ* 124800002	Y N	Y N									IND 1	Y N	Y N
BLACK FISH *CANGIIQ* 124600002	Y N	Y N									IND 1	Y N	Y N
PACIFIC "GRAY" COD *CETURRNAQ* 121004002	Y N	Y N									IND 1	Y N	Y N
PACIFIC TOM COD 121008002	Y N	Y N									IND 1	Y N	Y N
SCULPIN (UNKNOWN) *KAYUTAQ* 123099002	Y N	Y N									IND 1	Y N	Y N
STARRY FLOUNDER *NATERNAQ* 121406002	Y N	Y N									IND 1	Y N	Y N
HALIBUT *NATERNARPAK* 121800002	Y N	Y N									LBS 2	Y N	Y N
YELLOWFIN SOLE *SAGIQ* 123606002	Y N	Y N									IND 1	Y N	Y N
	Y N	Y N										Y N	Y N

* Hand line used in open water.

Was your household's harvest and use of non-salmon fish typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

NON-SALMON FINFISH (6A)

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

NON-COMMERCIAL FISHING: MARINE INVERTEBRATES [SHELLFISH].

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE INVERTEBRATES BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N IF YES, PLEASE COMPLETE THE FOLLOWING TABLE

(UNITS SHOULD INDICATE INDIVIDUALS UNLESS NOTED OTHERWISE. POUNDS SHOULD BE EDIBLE WEIGHT):

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	HARVESTED #	HARVESTED UNITS	RECEIVED Y/N	GAVE AWAY Y/N
RAZOR CLAMS *ALIRUAQ*	Y N	Y N		GAL	Y N	Y N
500612002				4		
SOFT SHELL CLAMS	Y N	Y N		GAL	Y N	Y N
500614002				4		
UNKNOWN CLAMS	Y N	Y N		GAL	Y N	Y N
500699002				4		
COCKLES (UNKNOWN) *TAVTAAQ*	Y N	Y N		GAL	Y N	Y N
500899002				4		
BLUE MUSSELS *AMYAK*	Y N	Y N		GAL	Y N	Y N
502002002				4		
SHRIMP *CUNGARALUKVAK*	Y N	Y N		LBS	Y N	Y N
503400002				2		
DUNGENESS CRAB	Y N	Y N		IND	Y N	Y N
501004002				1		
RED KING CRAB *PUPSULEGPAK*	Y N	Y N		IND	Y N	Y N
501008082				1		
TANNER CRAB (UNKNOWN) *PUPSULEK*	Y N	Y N		IND	Y N	Y N
501012992				1		
	Y N	Y N			Y N	Y N

Was your household's harvest and use of marine invertebrates typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

LARGE LAND MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE LARGE LAND MAMMALS BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD BE INDIVIDUALS):

	IN 2007 DID MEMBERS OF YOUR HH...		SEX	HARVEST													UNITS	FOR FOOD (MEAT/FAT)	FOR FAT ONLY	HIDE ONLY	TOTAL	RECEIVED	GAVE AWAY
	USED?	HARVEST		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	UNKNOWN							
	(circle)	*(circle)*		*(enter number by sex and month of take)*													*(ind...)*					Y/N	Y/N
CARIBOU *TUNTUQ*	Y N	Y N	M														ind	DO NOT FILL OUT FOR MOOSE AND CARIBOU				Y N	Y N
			F																				
			?																				
																	1						
MOOSE *TUNTUVAK*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						
BLACK BEAR *TAN'GERLIQ*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						
BROWN BEAR *TAQUKAQ*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						
DALL SHEEP *PENAIQ*	Y N	Y N	M														ind					Y N	Y N
			F																				
			?																				
																	1						

Was your household's harvest and use of large land mammals typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

MARINE MAMMALS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE MARINE MAMMALS BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS ARE INDIVIDUALS. POUNDS SHOULD BE EDIBLE WEIGHT.):

				NUMBER HARVESTED					
	USED*?	TRIED TO HARVEST?	SALVAGE?**	FOR FOOD	FOR HIDE ONLY	TOTAL		RECEIVED	GAVE AWAY
SPECIES	Y/N	Y/N	Y/N	#	#	#	UNITS	Y/N	Y/N
RINGED SEAL *NAYIQ*	Y N	Y N	Y N				IND	Y N	Y N
300810000							1		
BEARDED SEAL *MAKLAK*	Y N	Y N	Y N				IND	Y N	Y N
300802000							1		
SEAL (UNKNOWN)	Y N	Y N	Y N				IND	Y N	Y N
300899000							1		
WALRUS *ASVEQ*	Y N	Y N	Y N				IND	Y N	Y N
301400000							1		
BELUKHA *CETUAQ*	Y N	Y N	Y N				IND	Y N	Y N
301602000							1		
HARBOR PORPOISE *MANGAYAAQ*	Y N	Y N	Y N				IND	Y N	Y N
300604000							1		

FOR HARBOR (SPOTTED) SEAL AND SEA LION FILL OUT NEXT PAGE

HARBOR (SPOTTED) SEAL *ISSURIQ*	Y N	Y N	Y N				IND	Y N	Y N
300806040							1		
SEA LION *UGINAQ*	Y N	Y N	Y N				IND	Y N	Y N
301200000							1		

* Use includes meat and/or oil, and/or fur.

** For animal found dead or incidently caught in a subsistence net.

Was your household's harvest and use of marine mammals typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

SMALL LAND MAMMALS/FURBEARERS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE SMALL LAND MAMMALS/FURBEARERS BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD INDICATE INDIVIDUALS).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED FOOD #	FUR ONLY #	FOOD & FUR #	TOTAL #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NUMBER SOLD	AVERAGE PRICE
BEAVER *PALUQTAQ*	Y N	Y N					IND	Y N	Y N		
220200000							1				
PORCUPINE *ISSALUQ*	Y N	Y N					IND	Y N	Y N		
222600000							1				
RED FOX *KAVIAQ*	Y N	Y N					IND	Y N	Y N		
220804000							1				
CROSS FOX *TUNGULIAYAAQ*	Y N	Y N					IND	Y N	Y N		
220804020							1				
ARCTIC FOX *ULIIQ*	Y N	Y N					IND	Y N	Y N		
220802000							1				
COYOTE *KAYU*	Y N	Y N					IND	Y N	Y N		
220400000							1				
LAND OTTER *CUIGNILNGUQ*	Y N	Y N					IND	Y N	Y N		
221200000							1				
LYNX *TERTULI*	Y N	Y N					IND	Y N	Y N		
221600000							1				
MARMOT *CIKIK*	Y N	Y N					IND	Y N	Y N		
221800000							1				
MARTEN *QAVCICUAR*	Y N	Y N					IND	Y N	Y N		
222000000							1				
MINK *IMARMIUTAQ*	Y N	Y N					IND	Y N	Y N		
222200000							1				

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	NUMBER HARVESTED FOOD #	FUR ONLY #	FOOD & FUR #	TOTAL #	UNITS	RECEIVED Y/N	GAVE AWAY Y/N	NUMBER SOLD	AVERAGE PRICE
MUSKRAT *KANAQLAK*	Y N	Y N					IND	Y N	Y N		
222400000							1				
WEASEL *NARULLGIQ*	Y N	Y N					IND	Y N	Y N		
223000000							1				
WOLF *KEGLUNEQ*	Y N	Y N					IND	Y N	Y N		
223200000							1				
WOLVERINE *TERIKAANIAQ*	Y N	Y N					IND	Y N	Y N		
223400000							1				
ARCTIC HARE *TUNDRA*	Y N	Y N					IND	Y N	Y N		
221002000							1				
SNOWSHOE HARE *CIRIIQ / NULLUTUUYAK*	Y N	Y N					IND	Y N	Y N		
221004000							1				
JACK RABBIT QAYUQUEGGLIQ	Y N	Y N					IND	Y N	Y N		
221006000							1				
UNKNOWN HARE	Y N	Y N					IND	Y N	Y N		
221099000							1				
TREE SQUIRREL (RED) *QIGUIQ*	Y N	Y N					IND	Y N	Y N		
222804000							1				
PARKA SQUIRREL (GROUND) *QANGANAQ*	Y N	Y N					IND	Y N	Y N		
222802000							1				

Was your household's harvest and use of small land mammals typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

BIRDS AND EGGS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE BIRDS OR EGGS BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N [ ] IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (UNITS SHOULD BE INDIVIDUALS).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	# HARVESTED BY SEASON (MONTHS) SPRING A M J	SUMMER J A	FALL S O N	WINTER D J F M	UNIT	RECEIVED Y/N	GAVE AWAY Y/N
GROUSE (SPRUCE HEN) *EGTUK* 421802000	Y N	Y N					IND 1	Y N	Y N
PTARMIGAN (UNKNOWN) *QANGIIG* 421804990	Y N	Y N					IND 1	Y N	Y N
CANADA GEESE- LITTLE "CACKLERS" *LAGIQ* 410404040	Y N	Y N					IND 1	Y N	Y N
CANADA GEESE - BIG "LESSER" *LAGIRPAK* 410404080	Y N	Y N					IND 1	Y N	Y N
CANADA GEESE - UNKNOWN 410404990	Y N	Y N					IND 1	Y N	Y N
WHITE-FRONTED GEESE "SPECKLEBELLY" *NEQLEQ* 410410000	Y N	Y N					IND 1	Y N	Y N
BRANT "SEA GEESE" *NEQLERNAQ* 410402000	Y N	Y N					IND 1	Y N	Y N
EMPEROR GEESE *NACAULLEK* 410406000	Y N	Y N					IND 1	Y N	Y N
SNOW GEESE *KANGUQ* 410408000	Y N	Y N					IND 1	Y N	Y N
GEESE - UNKNOWN 410499000	Y N	Y N					IND 1	Y N	Y N
TUNDRA SWANS *QUGYUK* 410604000	Y N	Y N					IND 1	Y N	Y N
TRUMPETER SWANS 410602000	Y N	Y N					IND 1	Y N	Y N
SWANS - UNKNOWN 410699000	Y N	Y N					IND 1		
SANDHILL CRANES *QUCILLGAQ* 410802000	Y N	Y N					IND 1	Y N	Y N
MALLARDS *UQULKATAGPAK* 410214000	Y N	Y N					IND 1	Y N	Y N

SPECIES	USED?	TRIED TO HARVEST	# HARVESTED BY SEASON (MONTHS)					RECEIVED	GAVE AWAY
			SPRING	SUMMER	FALL	WINTER			
	Y/N	Y/N	A M J	J A	S O N	D J F M	UNIT	Y/N	Y/N
NORTHERN PINTAILS *UQULKATAQ* 410220000	Y N	Y N					IND 1	Y N	Y N
GOLDENEYES (UNKNOWN) *ANARNISSAKAQ* 410210990	Y N	Y N					IND 1	Y N	Y N
NORTHERN SHOVELERS *SUGG'ERPAK* 410230000	Y N	Y N					IND 1	Y N	Y N
GADWALLS 410208000	Y N	Y N					IND 1	Y N	Y N
GREEN-WINGED TEALS *TENGESQAAR* 410232060	Y N	Y N					IND 1	Y N	Y N
BUFFLEHEADS 410202000	Y N	Y N					IND 1	Y N	Y N
HARLEQUINS *CETUSQAAR* 410212000	Y N	Y N					IND 1	Y N	Y N
SCAUPS (UNKNOWN) *KIP'ALEK* 410226990	Y N	Y N					IND 1	Y N	Y N
WIGEON (UNKNOWN) *QATKEGALIQ* 410236990	Y N	Y N					IND 1	Y N	Y N
OLD SQUAW *AARRAANGIIQ* 410218000	Y N	Y N					IND 1	Y N	Y N
CANVASBACK 410204000	Y N	Y N					IND 1	Y N	Y N
COMMON MERGANSER 410216020	Y N	Y N					IND 1	Y N	Y N
RED-BREASTED MERGANSER 410216040	Y N	Y N					IND 1	Y N	Y N
MERGANSER (UNKNOWN) *PAYIQ* 410216990	Y N	Y N					IND 1	Y N	Y N
BLACK SCOTERS "BLACK DUCK" *KUKUMYAR* 410228020	Y N	Y N					IND 1	Y N	Y N
COMMON EIDERS *METRAG* 410206020	Y N	Y N					IND 1	Y N	Y N

BIRDS (15A)

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	# HARVESTED BY SEASON (MONTHS) SPRING A M J	SUMMER J A	FALL S O N	WINTER D J F M	UNIT	RECEIVED Y/N	GAVE AWAY Y/N
KING EIDERS *QENALLEK*	Y N	Y N					IND	Y N	Y N
410206040							1		
DUCKS - UNKNOWN	Y N	Y N					IND	Y N	Y N
410299000							1		
COMMON SNIPE *KUKUKUAQ*	Y N	Y N					IND	Y N	Y N
411002000							1		
GULL EGGS *NARU'YAQ*	Y N	Y N					IND	Y N	Y N
431212990							1		
MURRE EGGS *ALPAK*	Y N	Y N					IND	Y N	Y N
431218990							1		
GEESE EGGS *NEQLEQ*	Y N	Y N					IND	Y N	Y N
430499000							1		
DUCK EGGS *YAQULEK*	Y N	Y N					IND	Y N	Y N
430299000							1		
SWAN EGGS *QUGYUK*	Y N	Y N					IND	Y N	Y N
430699000							1		
TERN EGGS *TEKIYAAR*	Y N	Y N					IND	Y N	Y N
431226990							1		
SNIPE EGGS *KUKUKUAQ*	Y N	Y N					IND	Y N	Y N
431002000							1		
CORMORANT EGGS *UYALEK*	Y N	Y N					IND	Y N	Y N
431204990							1		
UNKNOWN EGGS *KAYANGUQ*	Y N	Y N					IND	Y N	Y N
439900000							1		
	Y N	Y N						Y N	Y N

Was your household's harvest and use of birds and eggs typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

BIRDS (15A)

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

WILD PLANTS.

DID MEMBERS OF YOUR HOUSEHOLD TRY TO HARVEST OR USE WILD PLANTS (INCLUDING FIREWOOD) BETWEEN JANUARY 1 AND DECEMBER 31, 2010?

Y N

IF YES, PLEASE COMPLETE THE FOLLOWING TABLE (POUNDS SHOULD INDICATE EDIBLE WEIGHT).

SPECIES	USED? Y/N	TRIED TO HARVEST Y/N	AMOUNT HARVESTED #	AMOUNT HARVESTED UNIT	RECEIVED Y/N	GAVE AWAY Y/N	WHAT KIND WERE USED (EITHER HARVESTED OR RECEIVED) FOR BOTH BERRIES AND PLANTS IN 2007
BERRIES *ACSAQ*				GAL			
601000000				4			
PLANTS/GREENS/MUSHROOMS *PALURUTAQ*				GAL			
602000000				4			
WOOD *PUYURKAQ*				CORDS			
604000000				6			

Was your household's harvest and use of wild plants typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

OVERALL ASSESSMENT.

Was your household's overall harvest and use of subsistence resources typical of recent years? LESS SAME MORE

If different (less or more), how and why was it different?

DILLINGHAM	118	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

EMPLOYMENT.

PLEASE INDICATE THE FOLLOWING INFORMATION FOR ALL JOBS HELD BY THE EMPLOYED PERMANENT HOUSEHOLD MEMBERS 16 OR OLDER LISTED ON PAGE 1 BETWEEN JANUARY 1 AND DECEMBER 31, 2010.

FOR THOSE OVER 16 NOT EMPLOYED, PLEASE SPECIFY RETIRED, UNEMPLOYED, DISABLED, STUDENT, OR HOMEMAKER.

REMINDER: INCLUDE COMMERCIAL FISHING HERE COMMERCIAL FISHING AND BUSINESS OWNERS - ADJUSTED GROSS AFTER EXPENSES. IF LESS THAN ZERO, ENTER 0.

PERSON ID # FROM FIRST PAGE OF SURVEY	JOB #	JOB TITLE	EMPLOYER TYPE	LOCATION city/town	WHICH MONTHS WORKED IN 2008 circle each month worked	FULL TIME	PART TIME	SHIFT - FULL TIME	ON CALL - VARIES	PERSONAL GROSS INCOME
						circle one				
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							
					J F M A M J J A S O N D	FT	PT	SF	OC	
		SOC	SIC							

WORK SCHEDULE: FT - Fulltime (35+ hours/week)
PT - Parttime (<35 hours/week)
Shift Fulltime (2 weeks on/off, etc.)
Oncall - Irregular, on call, comm. fishing

NOTES:

DILLINGHAM	113	BRISTOL BAY COMPREHENSIVE SUBSISTENCE BASELINE UPDATE 2010	HHID:

OTHER INCOME.

ANSWER ALL THAT APPLY. INDICATE ANNUAL AMOUNT FOR THE PERIOD OF JANUARY 1 AND DECEMBER 31, 2010.
IT IS OKAY TO LEAVE BLANK IF NOT APPLICABLE OR TO STATE SOME AMOUNT. MARK A -8 IF AMOUNT IS UNKNOWN AND IT EXISTED.

AK PERMANENT FUND* (32)	$	/YR		ADULT TEMPORARY ASSISTANCE PROGRAM (02)	$	/YR		DIVIDENDS/INTEREST (14)	$	/YR	
SOCIAL SECURITY (07)	$	/YR		PENSION/RETIREMENT (05)	$	/YR		ADULT PUBLIC ASSISTANCE (03)	$	/YR	
SUPP. SECURITY INCOME (SSI) (10)	$	/YR		WORK COMP/INSURANCE (08)	$	/YR		ENERGY ASSISTANCE (09)	$	/YR	
NATIVE CORP. DIVIDEND (13)	$	/YR		FOOD STAMPS (11)	$	/YR		UNEMPLOYMENT (12)	$	/YR	
								OTHER: _____ (____)	$	/YR	

*[AK PERMANENT FUND 2010: $1,281 2- $2562 3- $3843 4- $5124 5- $6405 6- $7686 7- $8967 8- $10248 9- $11529 10- $12810

FOOD:

PLEASE ESTIMATE YOUR MONTHLY EXPENSES TO PURCHASE FOOD: $_____/MONTH

WHAT PERCENTAGE OF ALL THE MEAT, FISH, AND BIRDS THAT YOU ATE IN THE LAST YEAR WAS FROM WILD RESOURCES? [33]
____ (1) NONE ____ (2) 1-25% ____ (3) 26-50% ____ (4) 51-75% ____ (5) 76-99% ____ (6) ALL

BBNC DIVIDENDS ARE PAID OUT QUARTERLY	
2010 Dividend	$3.45 SHARE
TOTAL PER SHARE 2010: 3.45 X 4 = $13.80	
100 SHARES=	$1,380.00
200 SHARES=	$2,760.00
300 SHARES=	$4,140.00
400 SHARES=	$5,520.00

DO YOU HAVE ANY OTHER QUESTIONS, COMMENTS, OR CONCERNS?

BE SURE TO FILL IN THE STOP TIME ON THE FIRST PAGE!!!!

INTERVIEW SUMMARY:

COMMUNITY ID:_____ HH ID:_____ SUMMARY (30B)

APPENDIX B: CONVERSION FACTORS

Resource	Units as reported	Reported units to pounds	Default units	Pounds to default units
Chum salmon	Individual	4.5	Individual	0.2
Coho salmon	Individual	5.0	Individual	0.2
Coho salmon	Pounds	1.0	Individual	0.2
Chinook salmon	Individual	10.2	Individual	0.1
Pink salmon	Individual	2.4	Individual	0.4
Sockeye salmon	Individual	4.3	Individual	0.2
Sockeye salmon	Pounds	1.0	Individual	0.2
Spawning sockeye	Individual	2.0	Individual	0.5
Unknown salmon	Individual	5.8	Individual	0.2
Herring	Gallons	6.0	Gallons	0.2
Herring sac roe	Gallons	7.0	Gallons	0.1
Herring spawn on kelp	Gallons	7.0	Gallons	0.1
Capelin (grunion)	Individual	3.3	Individual	0.3
Unknown smelt	Individual	0.3	Gallons	0.2
Unknown smelt	5-Gallon bucket	16.3	Gallons	0.2
Unknown smelt	Gallons	3.3	Gallons	0.3
Pacific cod (gray)	Individual	3.2	Individual	0.3
Pacific tomcod	Individual	5.0	Individual	0.2
Walleye pollock (whiting)	Individual	1.4	Individual	0.7
Unknown cod	Individual	3.2	Individual	0.3
Flounder	Individual	3.0	Individual	0.3
Starry flounder	Individual	3.0	Individual	0.3
Halibut	Pounds	1.0	Pounds	1.0
Sablefish (black cod)	Individual	3.1	Individual	0.3
Unknown sculpin	Individual	0.5	Individual	2.0
Salmon shark	Individual	9.0	Individual	0.1
Yellowfin sole	Individual	1.0	Individual	1.0
Alaska blackfish	Individual	0.1	Gallons	0.2
Alaska blackfish	Gallons	6.0	Gallons	0.2
Burbot	Individual	1.0	Individual	1.0
Arctic char	Individual	1.4	Individual	0.7
Dolly Varden–freshwater	Individual	1.4	Individual	0.7
Dolly Varden–saltwater	Individual	1.4	Individual	0.7
Dolly Varden–Togiak trout	Individual	1.4	Individual	0.7
Lake trout	Individual	1.4	Individual	0.7
Arctic grayling	Individual	0.7	Individual	1.4
Northern Pike	Individual	2.8	Individual	0.4
Longnose sucker	Individual	1.5	Individual	0.7
Rainbow trout	Individual	1.4	Individual	0.7
Unknown trout	Individual	1.4	Individual	0.7
Least cisco	Individual	0.4	Individual	2.5
Humpback whitefish	Individual	1.8	Individual	0.6

-continued-

Resource	Units as reported	Reported units to pounds	Default units	Pounds to default units
Round whitefish	Individual	1.0	Individual	1.0
Black bear	Individual	58.0	Individual	0.02
Brown bear	Individual	340.0	Individual	0.003
Caribou	Individual	150.0	Individual	0.01
Moose	Individual	540.0	Individual	0.002
Dall sheep	Individual	104.0	Individual	0.01
Beaver	Individual	8.8	Individual	0.1
Coyote	Individual	*Not eaten*	Individual	*Not eaten*
Arctic fox	Individual	*Not eaten*	Individual	*Not eaten*
Red fox	Individual	*Not eaten*	Individual	*Not eaten*
Red fox–cross phase	Individual	*Not eaten*	Individual	*Not eaten*
Red fox–red phase	Individual	*Not eaten*	Individual	*Not eaten*
Arctic hare	Individual	5.6	Individual	0.2
Snowshoe hare	Individual	2.0	Individual	0.5
Alaska hare (jackrabbit)	Individual	2.0	Individual	0.5
Unknown hare	Individual	2.7	Individual	0.4
River (land) otter	Individual	*Not eaten*	Individual	*Not eaten*
Lynx	Individual	4.0	Individual	0.3
Marmot	Individual	5.0	Individual	0.2
Marten	Individual	*Not eaten*	Individual	*Not eaten*
Mink	Individual	*Not eaten*	Individual	*Not eaten*
Muskrat	Individual	0.8	Individual	1.3
Porcupine	Individual	8.0	Individual	0.1
Arctic ground (parka) squirrel	Individual	0.5	Individual	2.0
Red (tree) squirrel	Individual	0.5	Individual	2.0
Weasel	Individual	*Not eaten*	Individual	*Not eaten*
Gray wolf	Individual	*Not eaten*	Individual	*Not eaten*
Wolverine	Individual	*Not eaten*	Individual	*Not eaten*
Harbor porpoise	Individual	*Not eaten*	Individual	*Not eaten*
Bearded seal	Individual	176.0	Individual	0.01
Harbor seal (saltwater)	Individual	56.0	Individual	0.02
Ringed seal	Individual	56.0	Individual	0.02
Unknown seal	Individual	56.0	Individual	0.02
Steller sea lion	Individual	200.0	Individual	0.01
Walrus	Individual	560.0	Individual	0.002
Beluga	Individual	831.0	Individual	0.001
Bufflehead	Individual	0.4	Individual	2.5
Canvasback	Individual	1.1	Individual	0.9
Common eider	Individual	1.6	Individual	0.6
King eider	Individual	2.7	Individual	0.4
Gadwall	Individual	0.8	Individual	1.3
Unknown goldeneye	Individual	0.8	Individual	1.3
Harlequin	Individual	0.5	Individual	2.0
Mallard	Individual	1.0	Individual	1.0

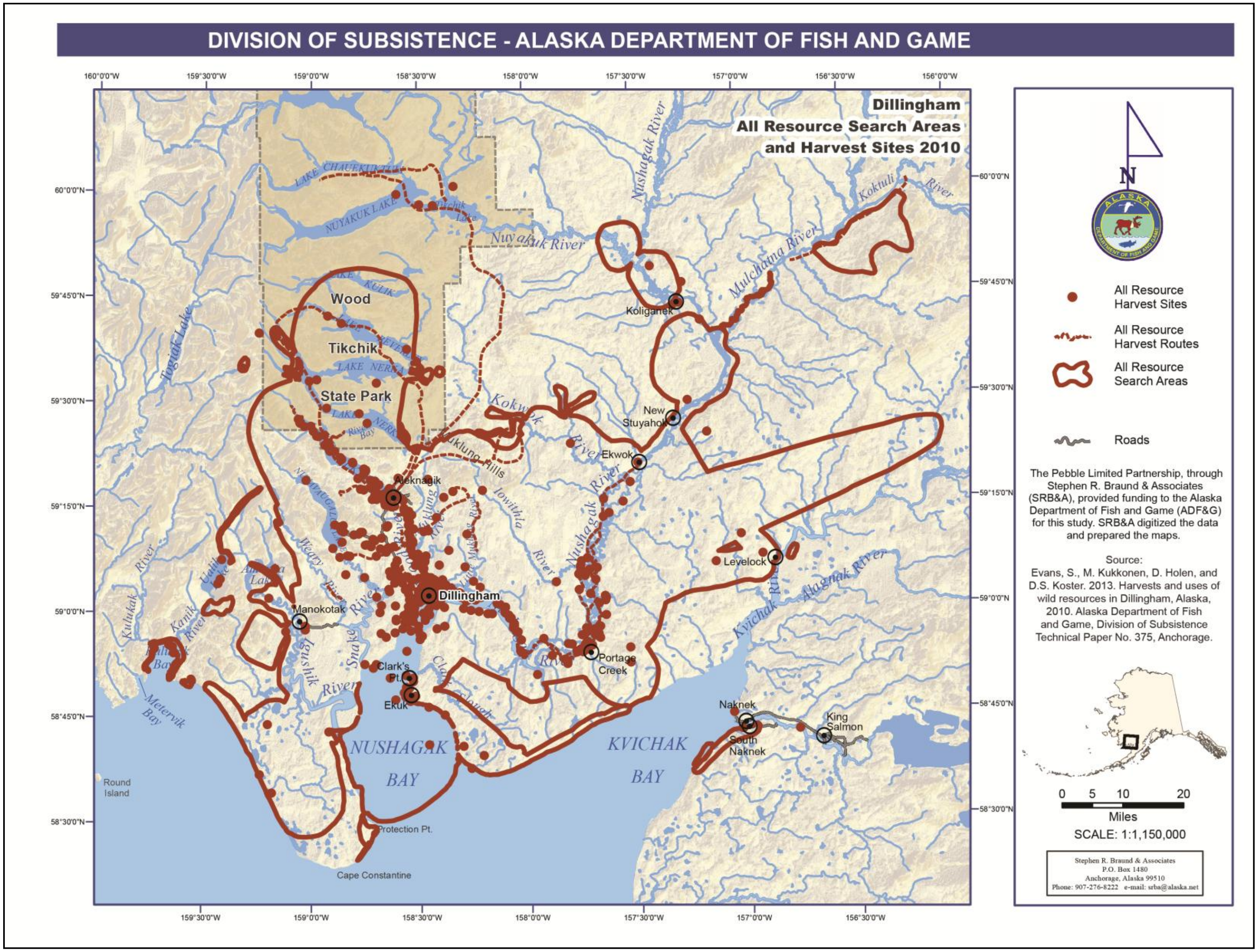
-continued-

Resource	Units as reported	Reported units to pounds	Default units	Pounds to default units
Common merganser	Individual	0.6	Individual	1.7
Red-breasted merganser	Individual	0.9	Individual	1.1
Unknown merganser	Individual	0.6	Individual	1.7
Long-tailed duck	Individual	0.8	Individual	1.3
Northern pintail	Individual	0.8	Individual	1.3
Unknown scaup	Individual	0.9	Individual	1.1
Black scoter	Individual	0.9	Individual	1.1
Northern shoveler	Individual	0.6	Individual	1.7
Green-winged teal	Individual	0.3	Individual	3.3
Unknown wigeon	Individual	0.7	Individual	1.4
Unknown ducks	Individual	0.8	Individual	1.3
Brant	Individual	1.2	Individual	0.8
Cackling Canada geese	Individual	1.2	Individual	0.8
Lesser Canada geese	Individual	1.2	Individual	0.8
Unknown Canada geese	Individual	2.0	Individual	0.5
Emperor geese	Individual	2.5	Individual	0.4
Snow geese	Individual	2.3	Individual	0.4
White-fronted geese	Individual	2.4	Individual	0.4
Unknown geese	Individual	2.4	Individual	0.4
Trumpeter swan	Individual	10.1	Individual	0.1
Tundra swan (whistling)	Individual	6.0	Individual	0.2
Unknown swan	Individual	6.0	Individual	0.2
Sandhill crane	Individual	8.4	Individual	0.1
Common snipe	Individual	0.1	Individual	10.0
Grouse	Individual	0.7	Individual	1.4
Unknown ptarmigan	Individual	0.7	Individual	1.4
Unknown duck eggs	Individual	0.2	Individual	6.7
Unknown geese eggs	Individual	0.3	Individual	3.3
Unknown swan eggs	Individual	0.3	Individual	3.3
Common snipe eggs	Individual	0.1	Individual	20.0
Unknown cormorant eggs	Individual	0.2	Individual	6.7
Unknown gull eggs	Individual	0.3	Individual	3.3
Unknown gull eggs	Gallons	6.8	Individual	0.1
Unknown murre eggs	Individual	0.1	Individual	20.0
Unknown murre eggs	Gallons	6.0	Individual	20.0
Unknown tern eggs	Individual	0.1	Individual	20.0
Unknown eggs	Individual	0.2	Individual	6.7
Butter clams	Gallons	3.0	Gallons	0.3
Butter clams	Quarts	0.8	Gallons	0.3
Pacific littleneck clams (steamers)	Gallons	3.0	Gallons	0.3
Razor clams	Gallons	3.0	Gallons	0.3
Softshell clams	Gallons	3.0	Gallons	0.3
Unknown clams	Gallons	3.0	Gallons	0.3
Cockles	Gallons	3.0	Gallons	0.3

-continued-

Resource	Units as reported	Reported units to pounds	Default units	Pounds to default units
Unknown cockles	Gallons	3.0	Gallons	0.3
Dungeness crab	Individual	0.7	Individual	1.4
King crab	Individual	2.3	Individual	0.4
Red king crab	Individual	1.0	Individual	1.0
Red king crab	Pounds	1.0	Individual	1.0
Unknown king crab	Individual	2.3	Individual	0.4
Unknown king crab	Pounds	1.0	Individual	0.4
Unknown tanner crab	Individual	1.6	Individual	0.6
Unknown crab	Individual	1.6	Individual	0.6
Blue mussels	Gallons	1.5	Gallons	0.7
Octopus	Individual	4.0	Individual	0.3
Unknown scallops	Pounds	1.0	Pounds	1.0
Shrimp	Pounds	1.0	Pounds	1.0
Berries	Gallons	4.0	Gallons	0.3
Berries	Quarts	1.0	Gallons	0.3
Plants/greens/mushrooms	Pounds	1.0	Gallons	1.0
Plants/greens/mushrooms	Gallons	1.0	Gallons	1.0
Plants/greens/mushrooms	Quarts	0.3	Gallons	1.0
Wood	Cords	*Not eaten*	Cords	*Not eaten*

APPENDIX C: ADDITIONAL HARVEST AND SEARCH AREA MAPS


DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
All Resource Search Areas
and Harvest Sites 2010
All Resource Harvest Sites
All Resource Harvest Routes
All Resource Search Areas
Roads
The Pebble Limited Partnership, through Stephen R. Braund & Associates (SRB&A), provided funding to the Alaska Department of Fish and Game (ADF&G) for this study. SRB&A digitized the data and prepared the maps.
Source:
Evans, S., M. Kukkonen, D. Holen, and D.S. Koster. 2013. Harvests and uses of wild resources in Dillingham, Alaska, 2010. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 375, Anchorage.
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Miles
SCALE: 1:1,150,000
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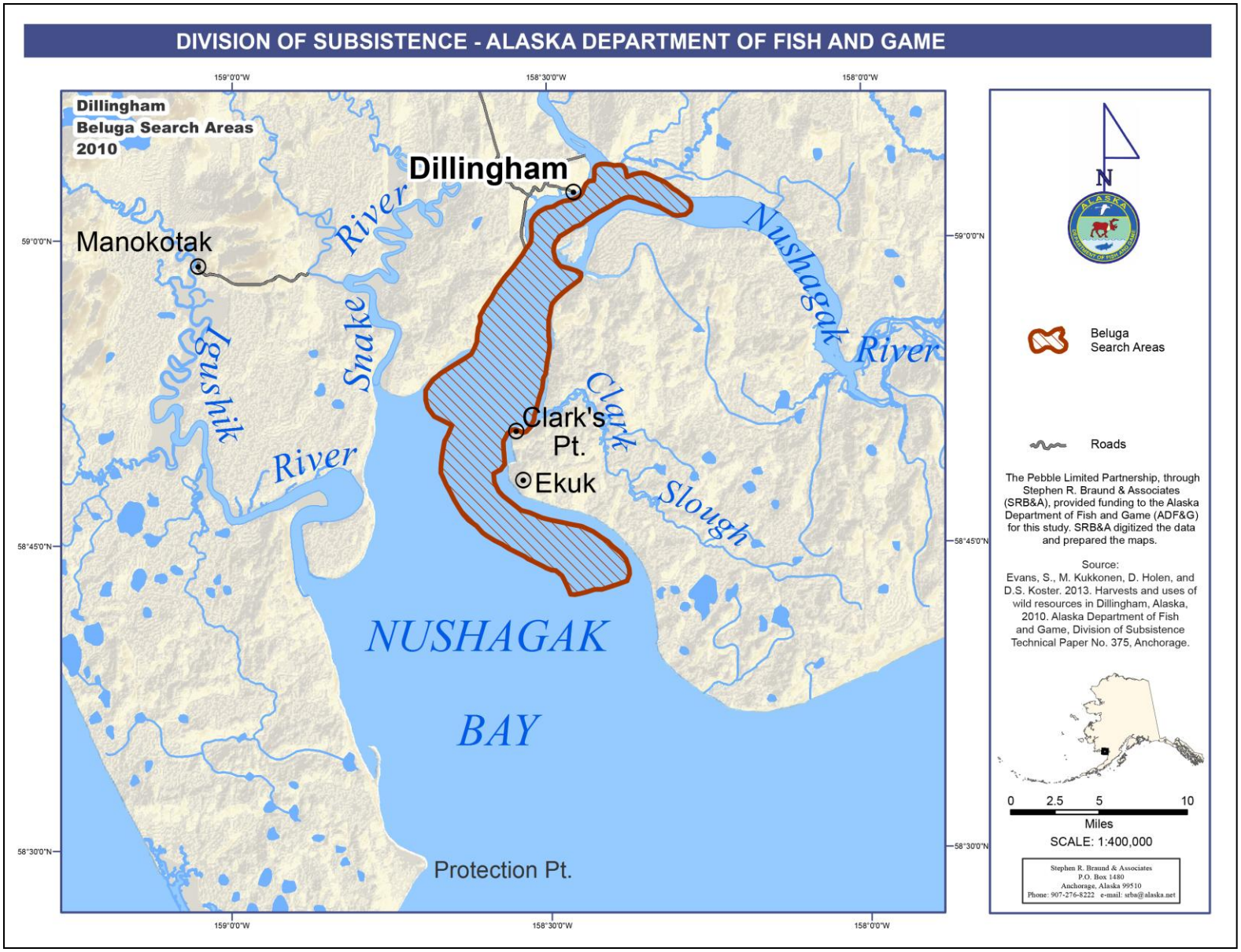
Wood
Tikchik
State Park
Aleknagik
Dillingham
Manokotak
Clark's Pt.
Ekuk
Koliganek
New Stuyahok
Ekwok
Levelock
Portage Creek
Naknek
South Naknek
King Salmon
NUSHAGAK BAY
KVICHAK BAY
Round Island
Protection Pt.
Cape Constantine
Nushagak River
Mulchatna River
Nuyakuk River
Kokwok River
Alagnak River
Kvichak River
Togiak Lake
Igushik River
Snake River
Meterwik Bay
160°0'0"W
159°30'0"W
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
157°0'0"W
156°30'0"W
156°0'0"W
60°0'0"N
59°45'0"N
59°30'0"N
59°15'0"N
59°0'0"N
58°45'0"N
58°30'0"N


DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Beluga Search Areas
2010
Dillingham
Manokotak
Igushik River
Snake River
Nushagak River
Clark's Pt.
Ekuk
Clark Slough
NUSHAGAK BAY
Protection Pt.
159°0'0"W
158°30'0"W
158°0'0"W
59°0'0"N
58°45'0"N
58°30'0"N
N
Beluga Search Areas
Roads
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Miles
SCALE: 1:400,000
Stephen R. Braund & Associates
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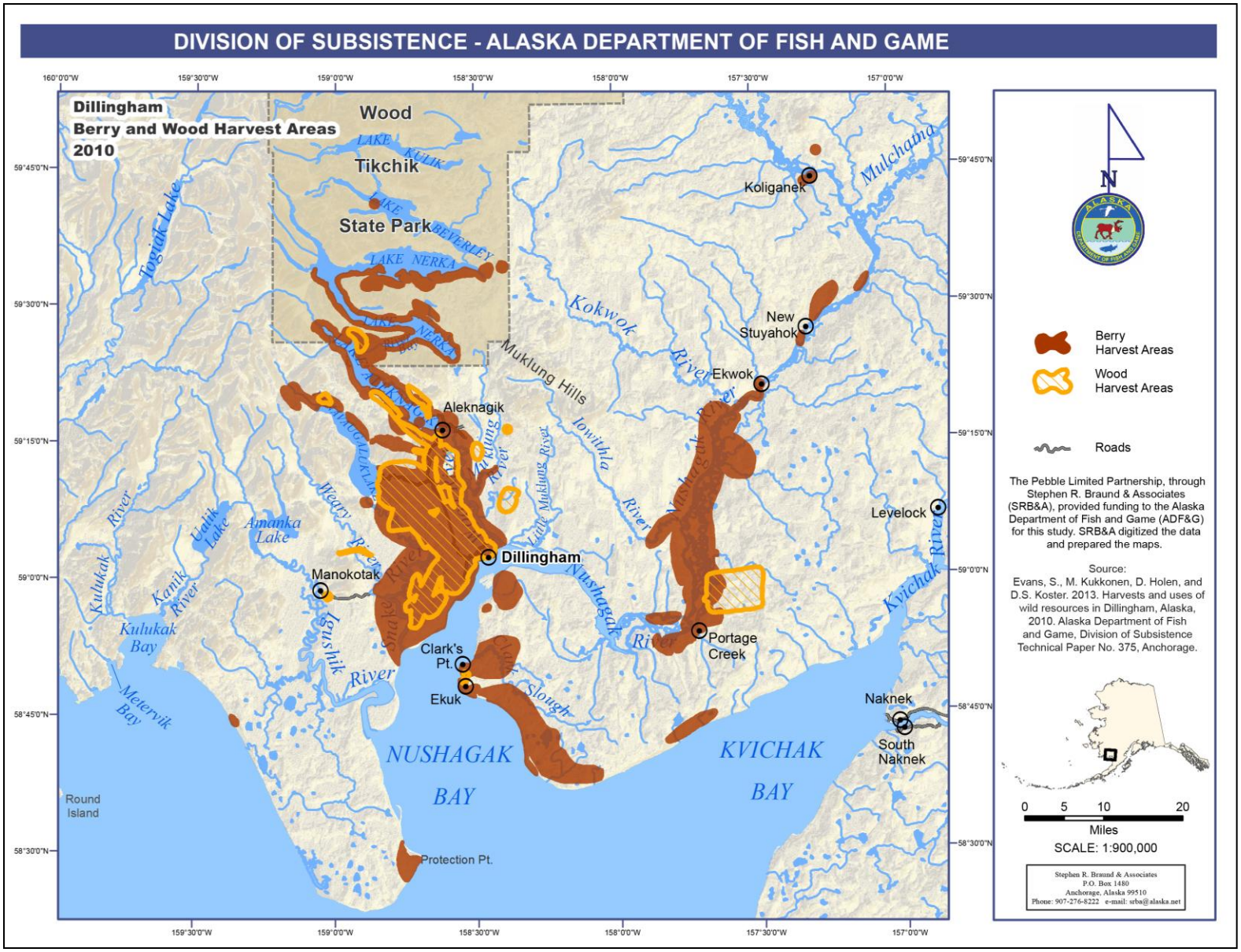
Anchorage, Alaska 99510
Phone: 907-276-8222 e-mail: srba@alaska.net


DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Berry and Wood Harvest Areas
2010
Wood
Tikchik
State Park
Togiak Lake
Lake Kulik
Lake Beverley
Lake Nerka
Kokwok River
Muklung Hills
Mulchatna
Koliganek
New Stuyahok
Ekwok
Aleknagik
Muklung River
Little Muklung River
Iowithla River
Nushagak River
Levelock
Kvichak River
Dillingham
Manokotak
Weary River
Snake River
Igushik River
Kulukak River
Kanik River
Kulukak Bay
Ualik Lake
Amanka Lake
Meteryik Bay
Clark's Pt.
Ekuk
Slough
Portage Creek
Naknek
South Naknek
NUSHAGAK BAY
KVICHAK BAY
Round Island
Protection Pt.
160°0'0"W
159°30'0"W
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
157°0'0"W
59°45'0"N
59°30'0"N
59°15'0"N
59°0'0"N
58°45'0"N
58°30'0"N
N
Berry Harvest Areas
Wood Harvest Areas
Roads
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Miles
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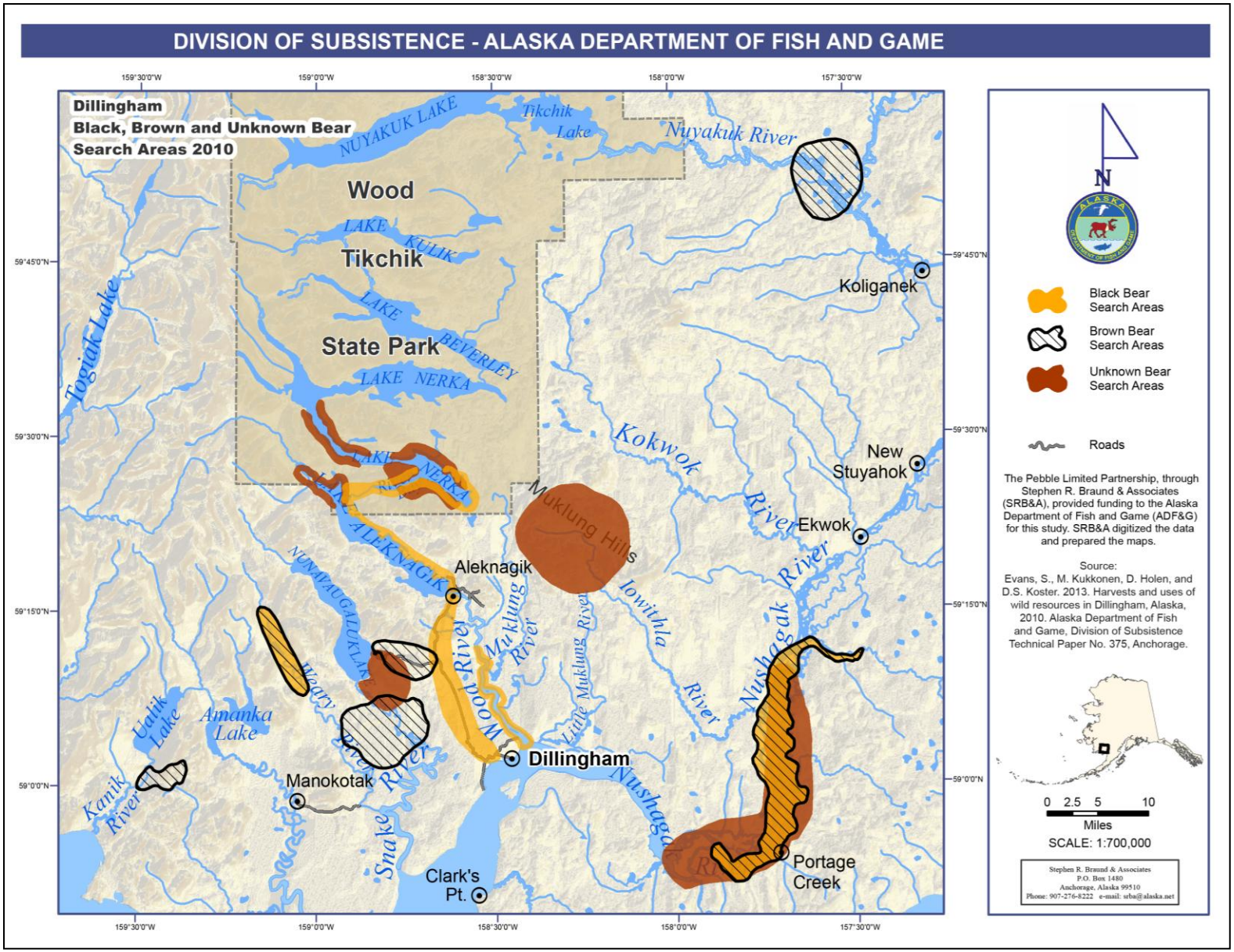
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Black, Brown and Unknown Bear
Search Areas 2010
159°30'0"W
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
59°45'0"N
59°30'0"N
59°15'0"N
59°0'0"N
NUYAKUK LAKE
Tikchik Lake
Nuyakuk River
Wood
LAKE
KULIK
Tikchik
LAKE
State Park
BEVERLEY
LAKE NERKA
Togiak Lake
Koliganek
Kokwok River
New Stuyahok
Ekwok
Muklung Hills
Aleknagik
NUNAVAUGALUKLAK
Muklung River
Wood River
Iowithla River
Little Muklung River
Nushagak River
Wary River
Ualik Lake
Amanka Lake
Kanik River
Manokotak
Snake River
Dillingham
Clark's Pt.
Portage Creek
Black Bear Search Areas
Brown Bear Search Areas
Unknown Bear Search Areas
Roads
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SCALE: 1:700,000
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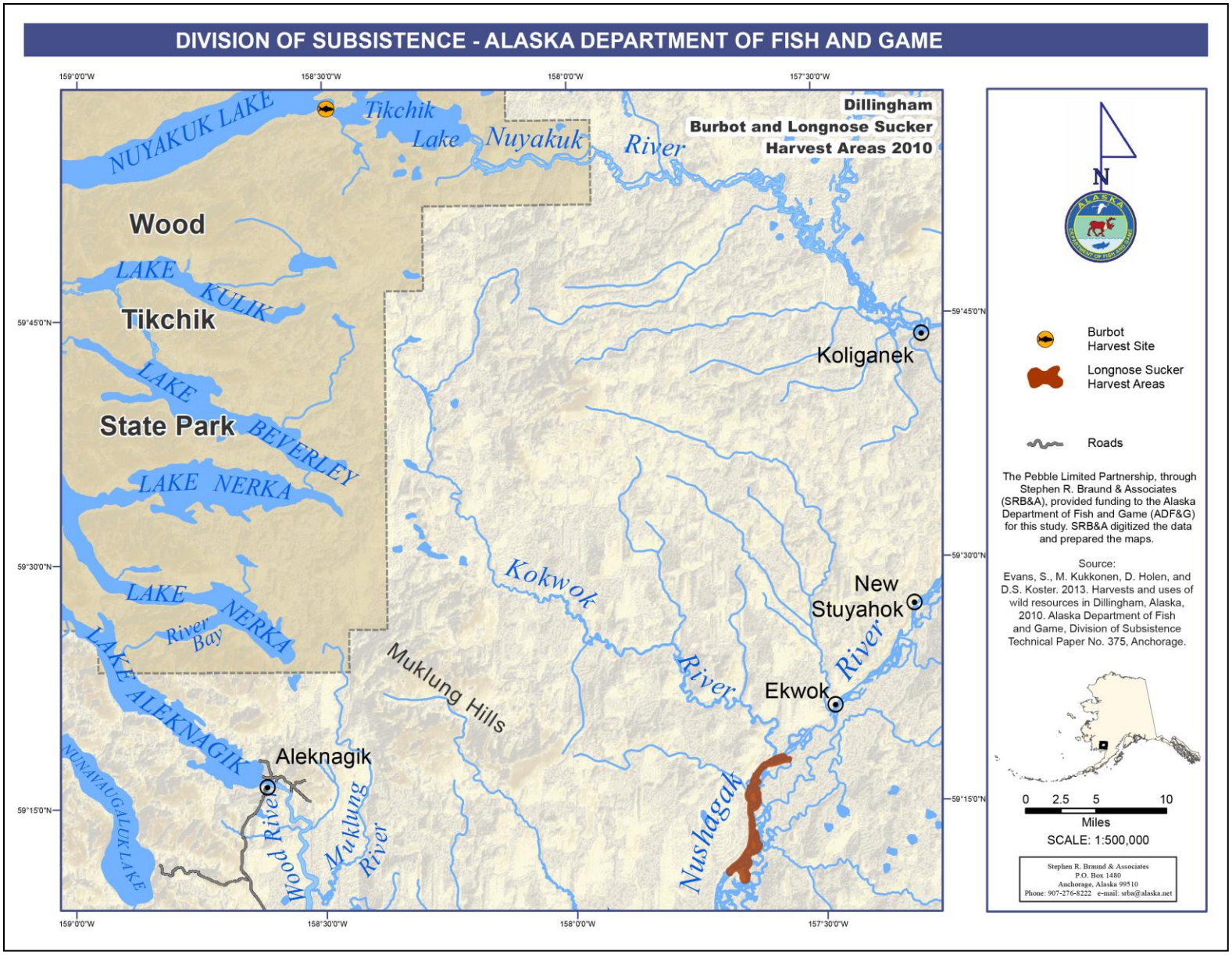
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Burbot and Longnose Sucker
Harvest Areas 2010
NUYAKUK LAKE
Tikchik Lake
Nuyakuk River
Wood
LAKE KULIK
Tikchik
LAKE BEVERLEY
State Park
LAKE NERKA
LAKE NERKA
River Bay
LAKE ALEKNAGIK
NUNAVAUGALUK LAKE
Aleknagik
Wood River
Muklung River
Muklung Hills
Kokwok River
Koliganek
New Stuyahok
Ekwok
Nushagak River
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
59°45'0"N
59°30'0"N
59°15'0"N
N
Burbot Harvest Site
Longnose Sucker Harvest Areas
Roads
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Miles
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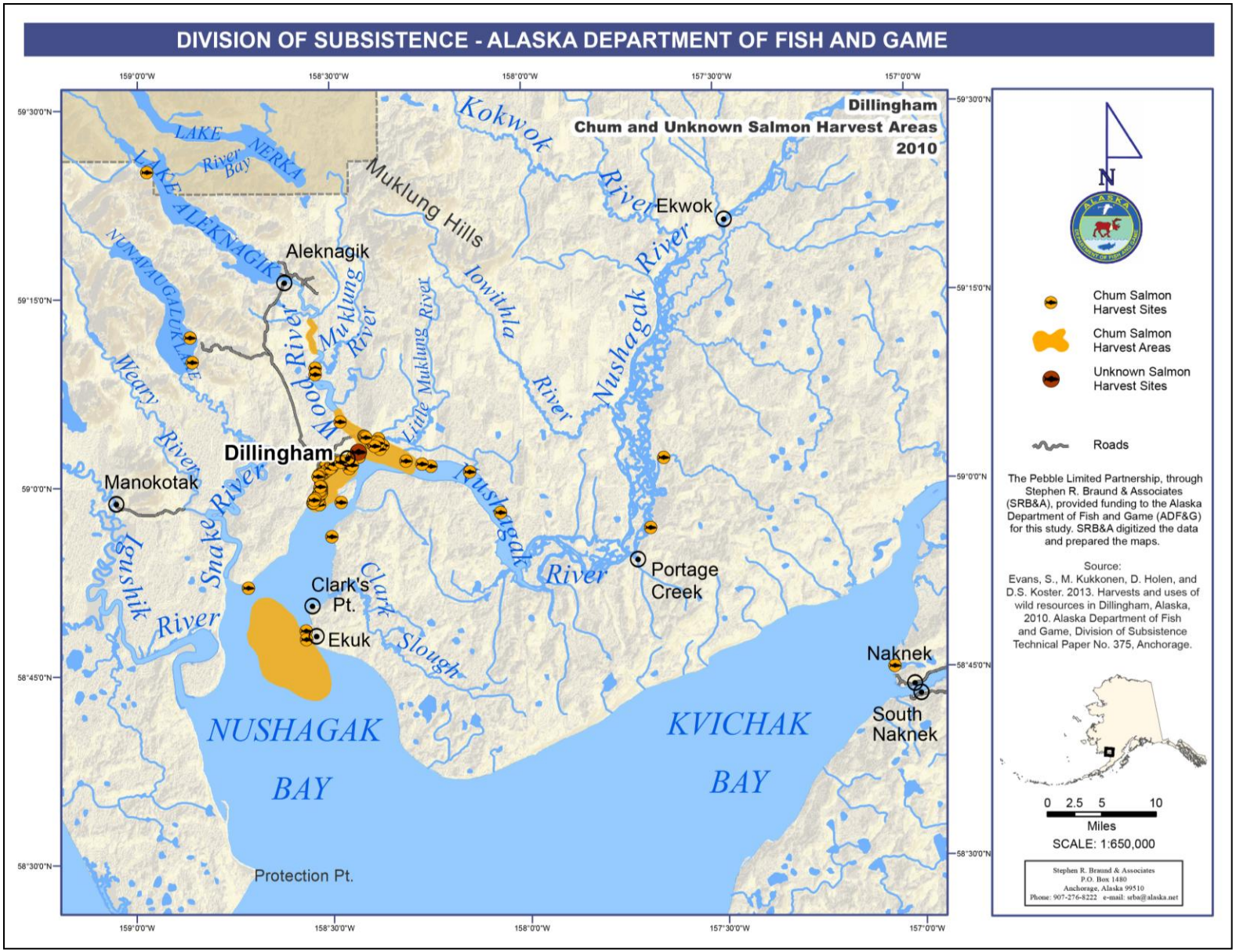
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Chum and Unknown Salmon Harvest Areas
2010
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
157°0'0"W
59°30'0"N
59°15'0"N
59°0'0"N
58°45'0"N
58°30'0"N
LAKE NERKA
River
Bay
LAKE ALEKNAGIK
NUNAVAUGALUKLAK
Weary River
Snake River
Igushik River
Aleknagik
Dillingham
Manokotak
Wood River
Muklung River
Muklung Hills
Kokwok River
Ekwok
Iowithla River
Little Muklung River
Nushagak River
Nushagak River
Clark's Pt.
Ekuk
Clark Slough
Portage Creek
Naknek
South Naknek
NUSHAGAK BAY
KVICHAK BAY
Protection Pt.
N
Chum Salmon Harvest Sites
Chum Salmon Harvest Areas
Unknown Salmon Harvest Sites
Roads
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Miles
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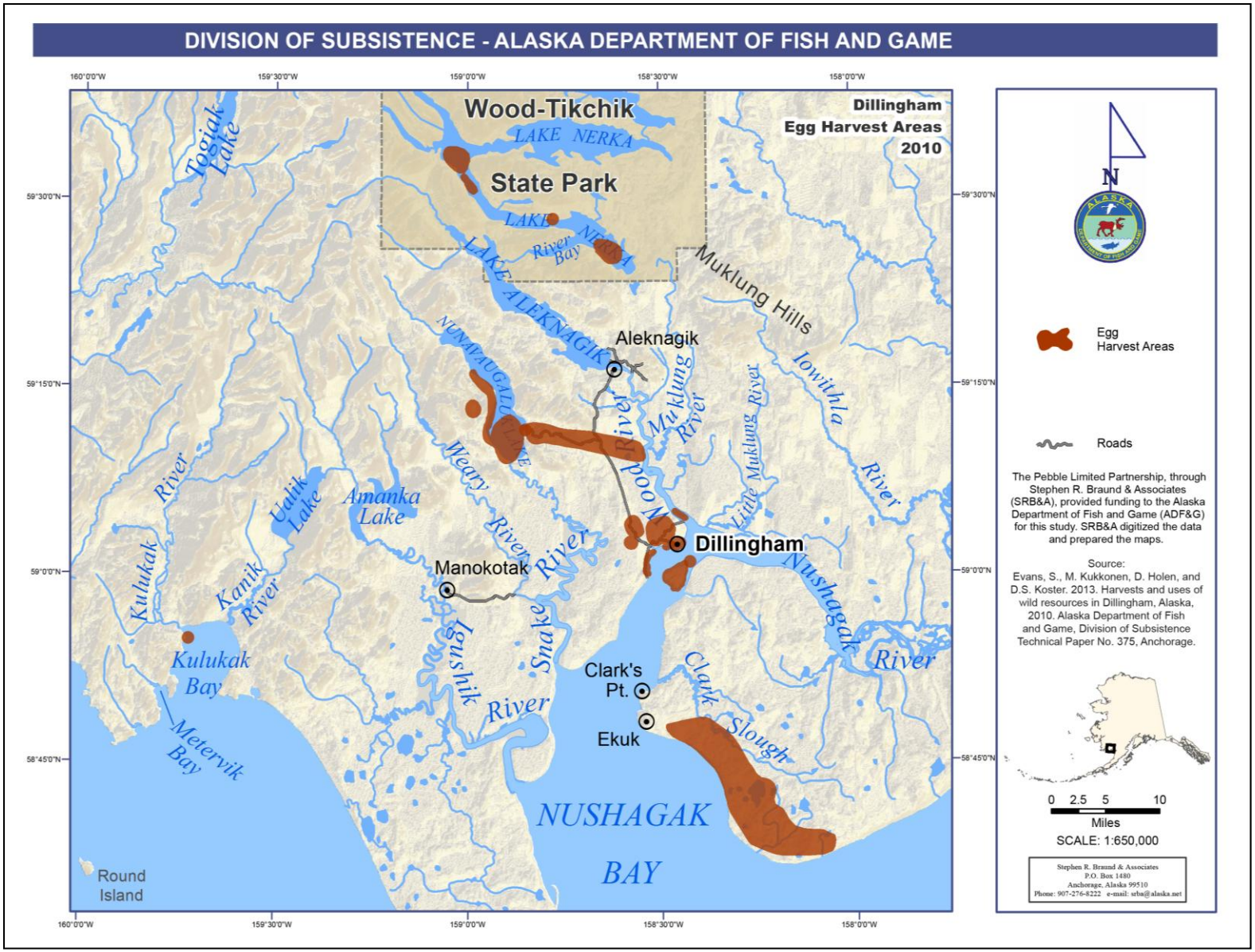
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Egg Harvest Areas
2010
Wood-Tikchik
State Park
LAKE NERKA
LAKE ALEKNAGIK
Togiak Lake
Muklung Hills
Aleknagik
Dillingham
Manokotak
Kulukak Bay
Metervik Bay
Round Island
NUSHAGAK BAY
Clark's Pt.
Ekuk
Amanka Lake
Ualik Lake
Kanik River
Kulukak River
Igushik River
Snake River
Weary River
Nushagak River
Clark Slough
Little Muklung River
Iowithla River
Egg Harvest Areas
Roads
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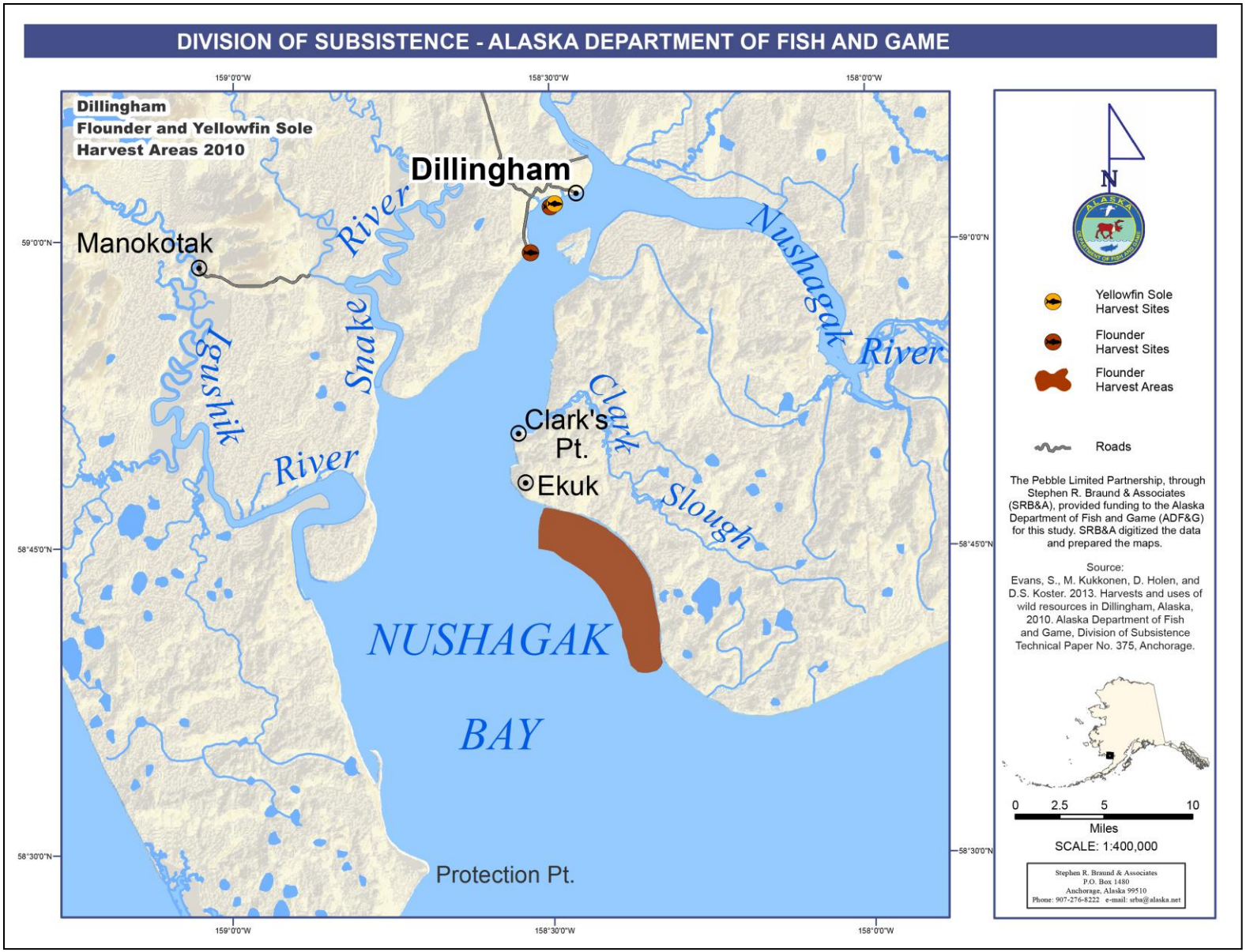
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Flounder and Yellowfin Sole
Harvest Areas 2010
Dillingham
Manokotak
Nushagak River
Snake River
Igushik River
Clark's Pt.
Ekuk
Clark Slough
NUSHAGAK BAY
Protection Pt.
159°0'0"W
158°30'0"W
158°0'0"W
59°0'0"N
58°45'0"N
58°30'0"N
N
Yellowfin Sole Harvest Sites
Flounder Harvest Sites
Flounder Harvest Areas
Roads
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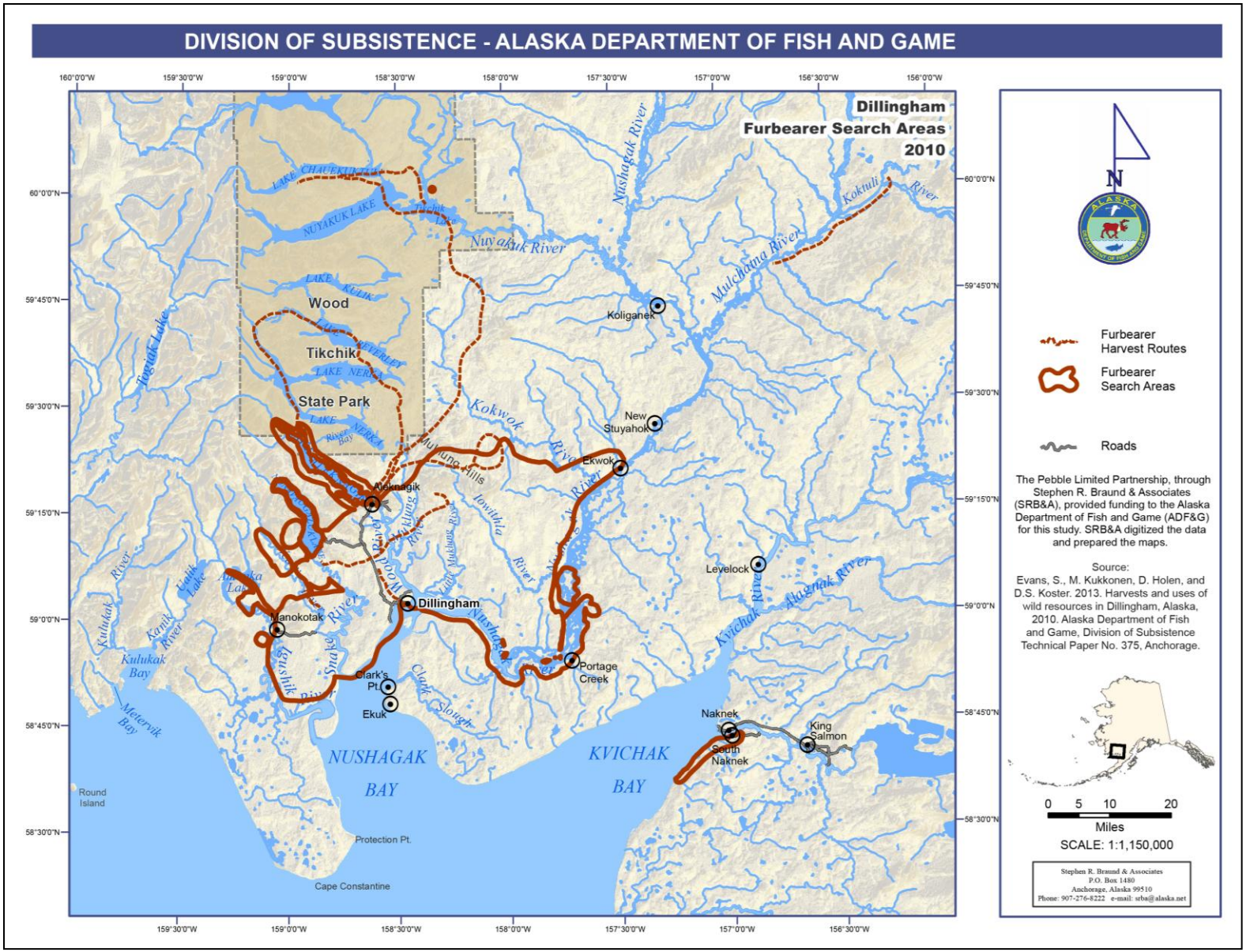
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Furbearer Search Areas
2010
Wood
Tikchik
State Park
Nuyakuk Lake
Lake Chauekuktuk
Lake Kulik
Lake Nerka
Togiak Lake
Nuyakuk River
Nushagak River
Koktuli River
Mulchatna River
Koliganek
New Stuyahok
Kokwok River
Ekwok
Aleknagik
Wood River
Agulowak River
Nerka River
Tikchik River
Nuyakuk River
Autumn Hills
Iowithla River
Snake River
Dillingham
Manokotak
Togiak River
Kulukak River
Kanik River
Kulukak Bay
Meteryik Bay
Round Island
Clark's Pt.
Ekuk
Clark Slough
Portage Creek
Nushagak River
NUSHAGAK BAY
KVICHAK BAY
Protection Pt.
Cape Constantine
Levelock
Kvichak River
Alagnak River
Naknek
South Naknek
King Salmon
N
Furbearer Harvest Routes
Furbearer Search Areas
Roads
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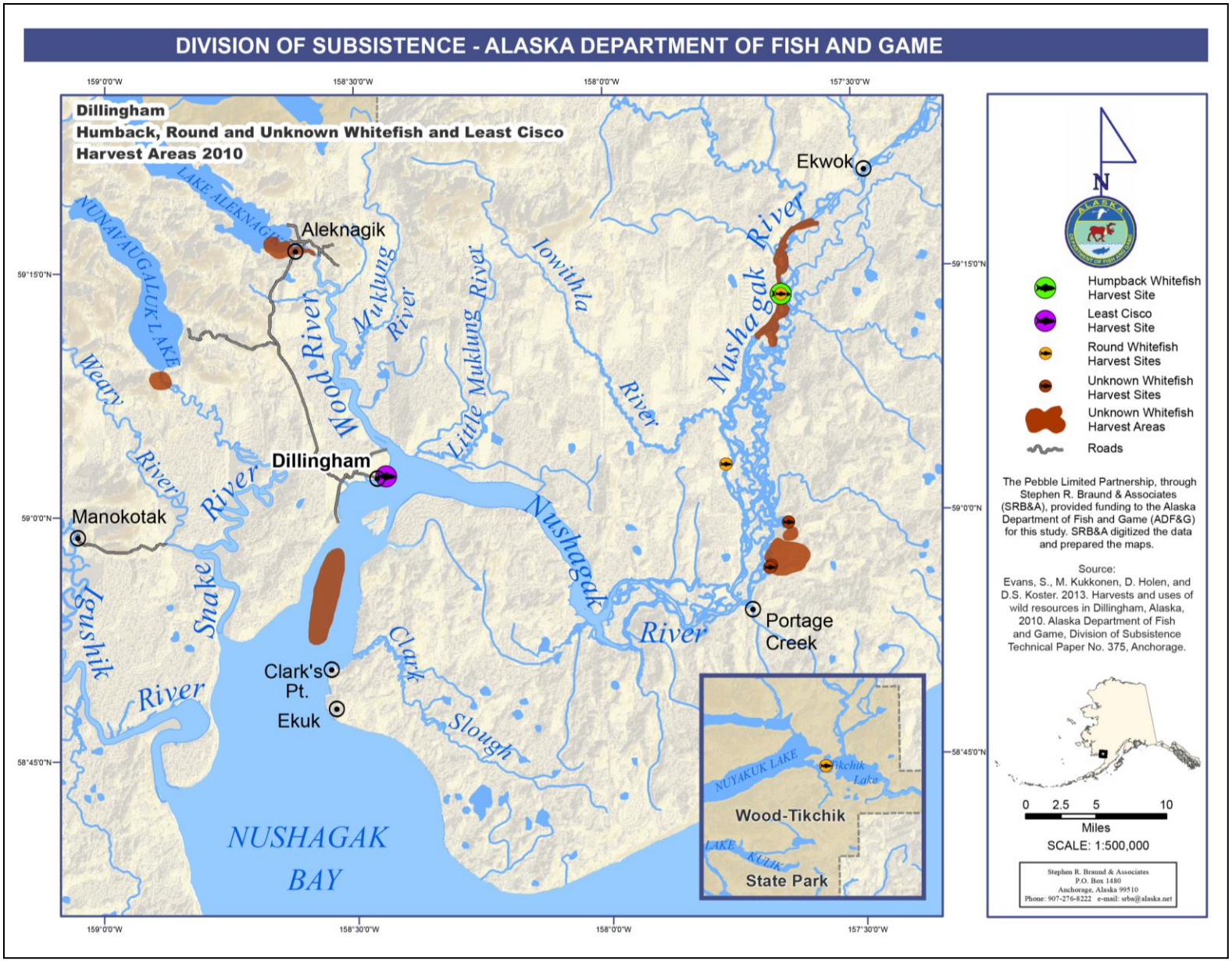
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Humback, Round and Unknown Whitefish and Least Cisco
Harvest Areas 2010
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
59°15'0"N
59°0'0"N
58°45'0"N
Aleknagik
Ekwok
Dillingham
Manokotak
Clark's Pt.
Ekuk
Portage Creek
Wood-Tikchik State Park
NUSHAGAK BAY
LAKE ALEKNAGIK
NUNAVAUGALUK LAKE
Weary River
Wood River
Muklung River
Little Muklung River
Iowithla River
Nushagak River
Snake River
Igushik River
Clark Slough
NUYAKUK LAKE
Tikchik Lake
LAKE KULIK
N
Humpback Whitefish Harvest Site
Least Cisco Harvest Site
Round Whitefish Harvest Sites
Unknown Whitefish Harvest Sites
Unknown Whitefish Harvest Areas
Roads
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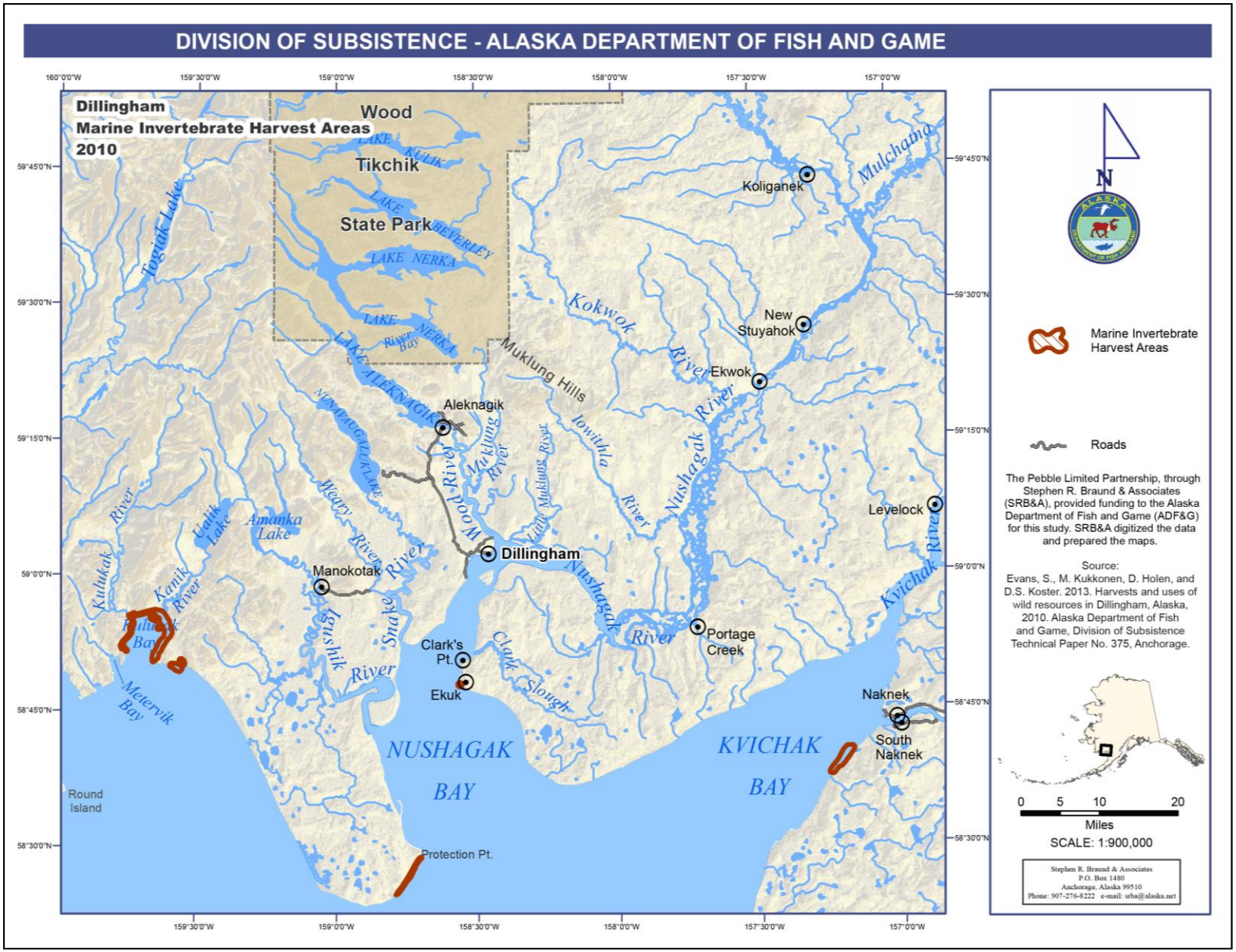
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Marine Invertebrate Harvest Areas
2010
Wood
Tikchik
State Park
LAKE KULIK
LAKE BEVERLEY
LAKE NERKA
LAKE NERKA
River Bay
LAKE ALEKNAGIK
Togiak Lake
Koliganek
Mulchatna
Kokwok River
New Stuyahok
Ekwok
Muklung Hills
Nushagak River
Aleknagik
Wood River
Muklung River
Little Muklung River
Iowithla River
Levelock
Kvichak River
Nunapaq Lake
Weary River
Dillingham
Manokotak
Snake River
Igushik River
Kulukak River
Kanik River
Kulukak Bay
Meyervik Bay
Ualik Lake
Amanka Lake
Clark's Pt.
Ekuk
Clark Slough
Portage Creek
Naknek
South Naknek
NUSHAGAK BAY
KVICHAK BAY
Round Island
Protection Pt.
160°0'0"W
159°30'0"W
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
157°0'0"W
59°45'0"N
59°30'0"N
59°15'0"N
59°0'0"N
58°45'0"N
58°30'0"N
N
Marine Invertebrate Harvest Areas
Roads
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Miles
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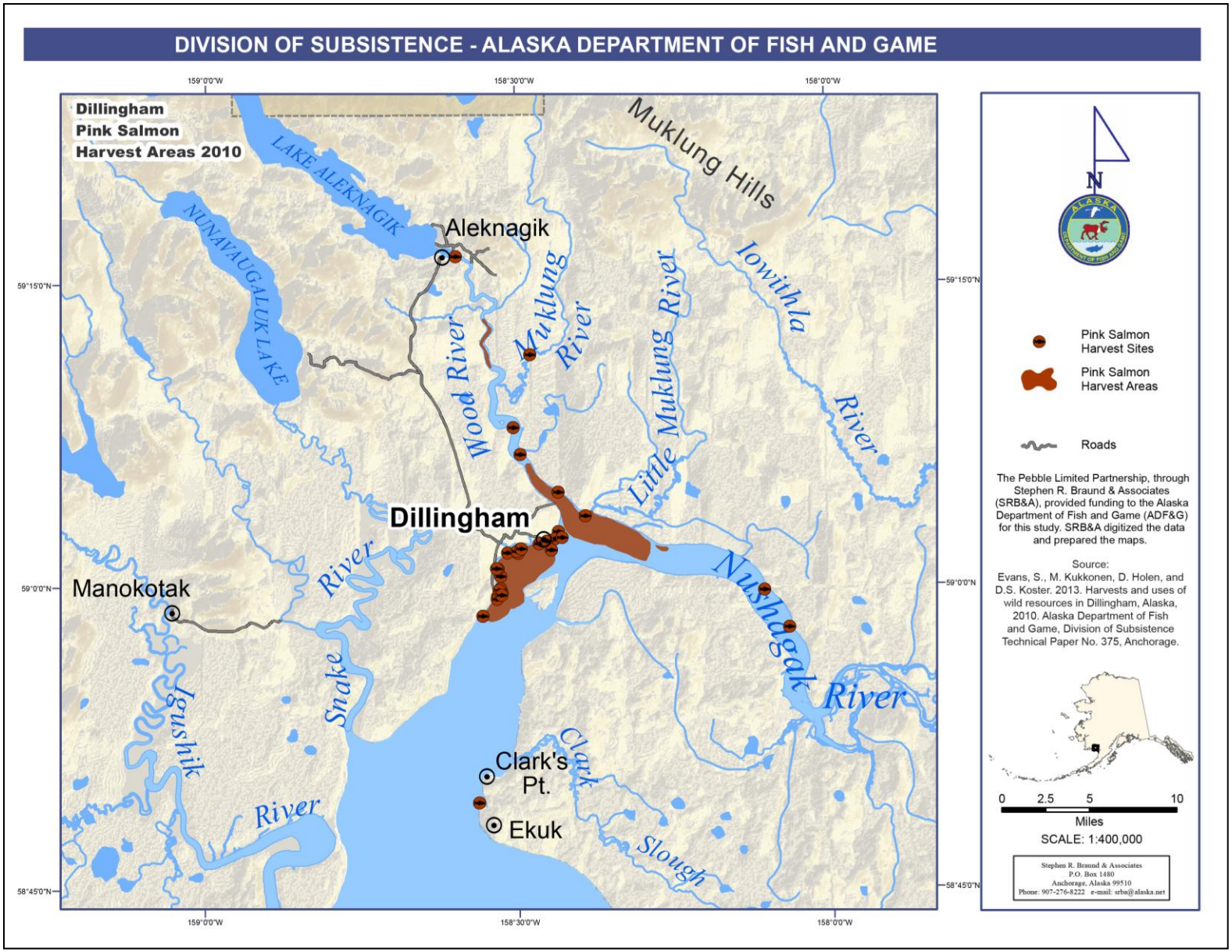
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Pink Salmon
Harvest Areas 2010
159°0'0"W
158°30'0"W
158°0'0"W
59°15'0"N
59°0'0"N
58°45'0"N
LAKE ALEKNAGIK
NUNAVAUGALUK LAKE
Aleknagik
Muklung Hills
Wood River
Muklung River
Little Muklung River
Iowithla River
Dillingham
Manokotak
River
Snake River
Igushik River
Nushagak River
Clark's Pt.
Ekuk
Clark Slough
N
Pink Salmon Harvest Sites
Pink Salmon Harvest Areas
Roads
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Miles
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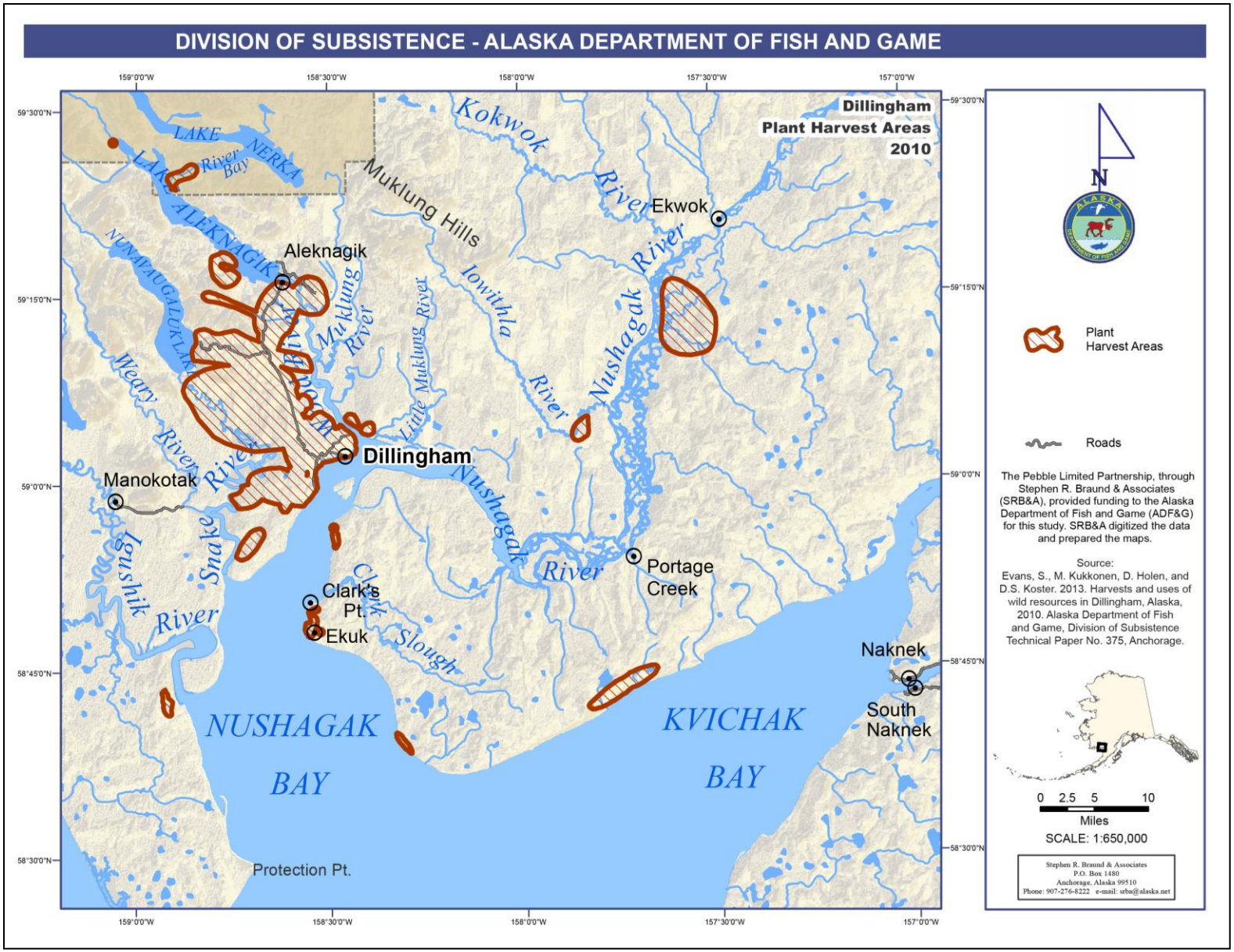
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Plant Harvest Areas
2010
Aleknagik
Dillingham
Manokotak
Ekwok
Clark's Pt.
Ekuk
Portage Creek
Naknek
South Naknek
Protection Pt.
NUSHAGAK BAY
KVICHAK BAY
Kokwok River
Muklung Hills
Nushagak River
Iowithla River
Little Muklung River
Weary River
Snake River
Igushik River
Clark Slough
Plant Harvest Areas
Roads
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Miles
SCALE: 1:650,000
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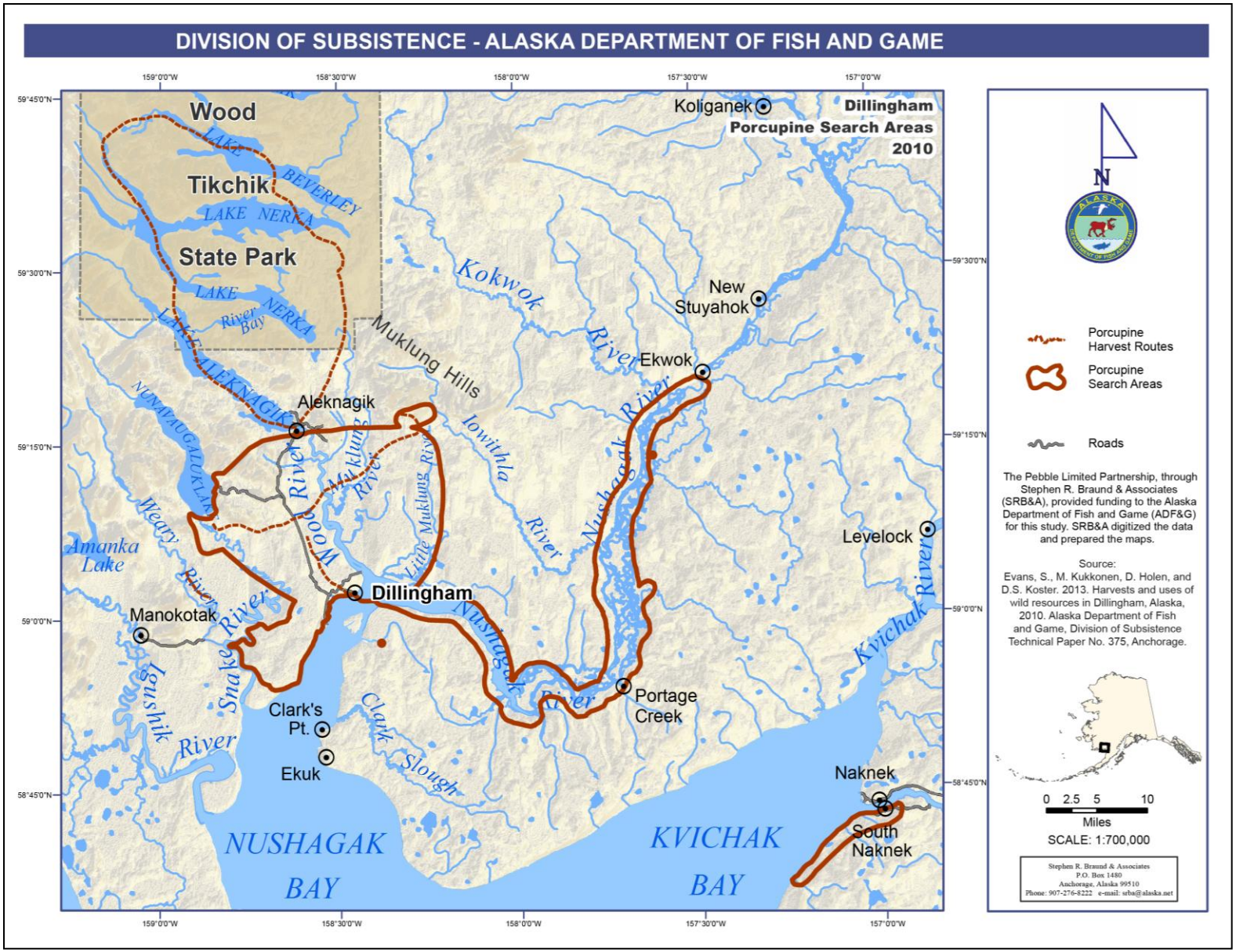
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Porcupine Search Areas
2010
Wood
Tikchik
State Park
LAKE NERKA
BEVERLEY
LAKE
River Bay
LAKE ALEKNAGIK
NUNAVAUGALUKLAK
Aleknagik
Muklung Hills
Kokwok River
New Stuyahok
Ekwok
Nushagak River
Iowithla River
Muklung River
Little Muklung River
Wood River
Weary River
Amanka Lake
Dillingham
Manokotak
Snake River
Togiak River
Nushagak River
Portage Creek
Levelock
Kvichak River
Clark's Pt.
Ekuk
Clark Slough
Naknek
South Naknek
NUSHAGAK BAY
KVICHAK BAY
Koliganek
159°0'0"W
158°30'0"W
158°0'0"W
157°30'0"W
157°0'0"W
59°45'0"N
59°30'0"N
59°15'0"N
59°0'0"N
58°45'0"N
N
Porcupine Harvest Routes
Porcupine Search Areas
Roads
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Miles
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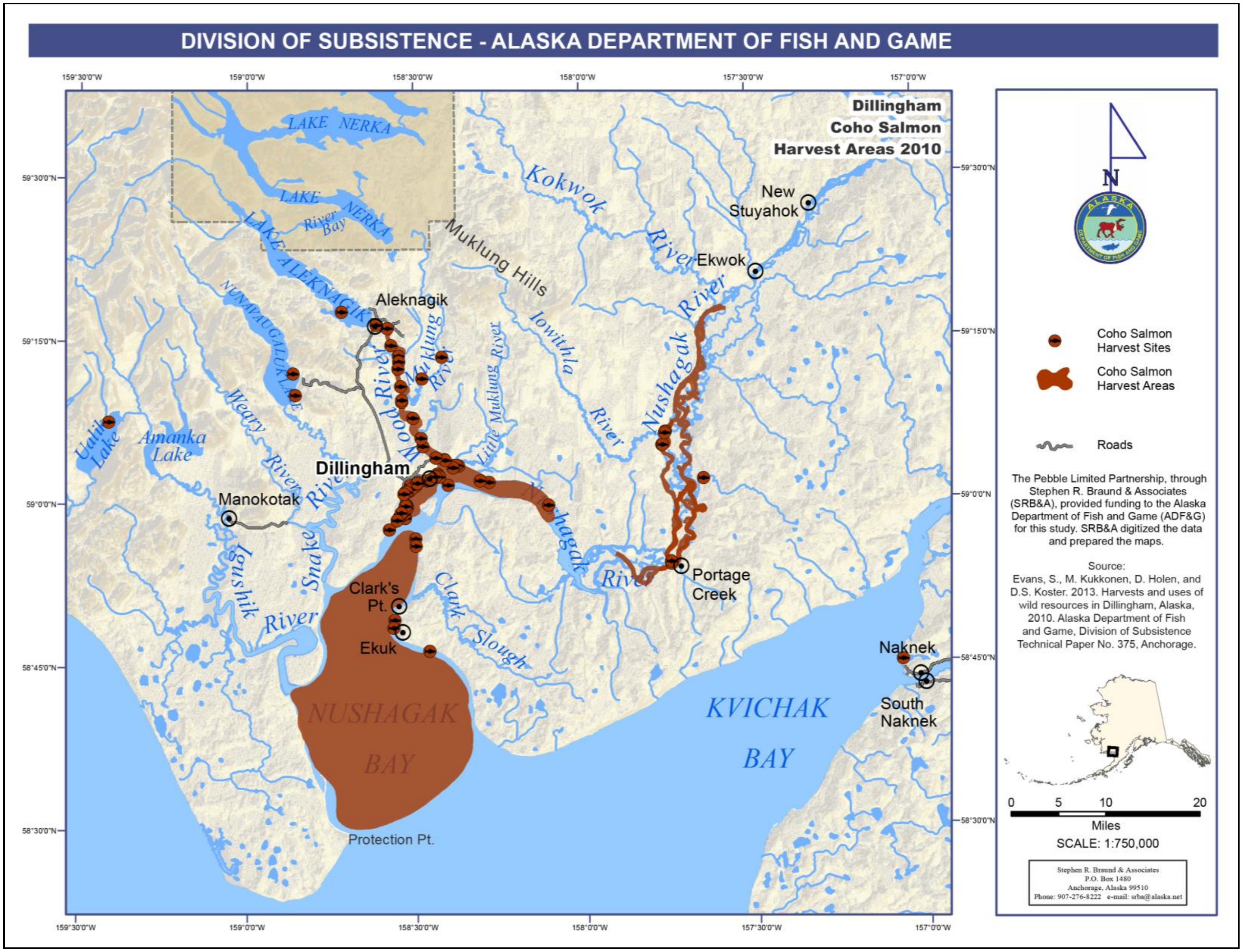
Phone: 907-276-8222 e-mail: srba@alaska.net


DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Coho Salmon
Harvest Areas 2010
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157°30'0"W
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59°30'0"N
59°15'0"N
59°0'0"N
58°45'0"N
58°30'0"N
LAKE NERKA
LAKE NERKA
River Bay
LAKE ALEKNAGIK
NUNAVAUGALUK LAKE
Muklung Hills
Kokwok River
New Stuyahok
Ekwok
Aleknagik
Wood River
Muklung River
Little Muklung River
Iowithla River
Nushagak River
Uallik Lake
Amanka Lake
Weary River
Dillingham
Manokotak
Snake River
Igushik River
Nushagak River
Portage Creek
Clark's Pt.
Ekuk
Clark Slough
Naknek
South Naknek
NUSHAGAK BAY
KVICHAK BAY
Protection Pt.
N
Coho Salmon Harvest Sites
Coho Salmon Harvest Areas
Roads
The Pebble Limited Partnership, through Stephen R. Braund & Associates (SRB&A), provided funding to the Alaska Department of Fish and Game (ADF&G) for this study. SRB&A digitized the data and prepared the maps.
Source:
Evans, S., M. Kukkonen, D. Holen, and D.S. Koster. 2013. Harvests and uses of wild resources in Dillingham, Alaska, 2010. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 375, Anchorage.
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Stephen R. Braund & Associates
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Anchorage, Alaska 99510
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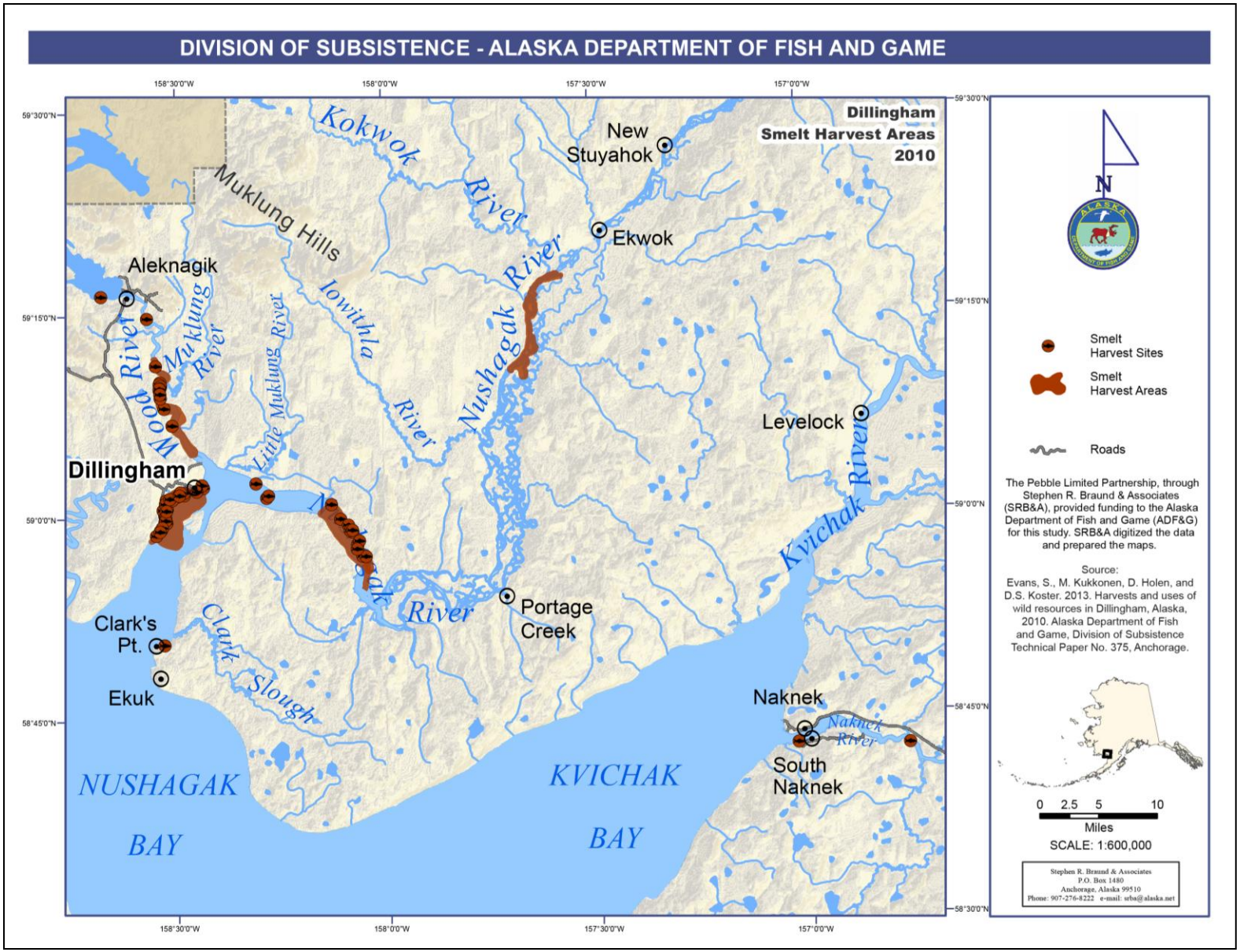
DIVISION OF SUBSISTENCE - ALASKA DEPARTMENT OF FISH AND GAME
Dillingham
Smelt Harvest Areas
2010
Kokwok River
New Stuyahok
Ekwok
Muklung Hills
Aleknagik
Wood River
Muklung River
Little Muklung River
Iowithla River
Nushagak River
Levelock
Kvichak River
Dillingham
Portage Creek
Clark's Pt.
Ekuk
Clark Slough
Naknek
Naknek River
South Naknek
NUSHAGAK BAY
KVICHAK BAY
Smelt Harvest Sites
Smelt Harvest Areas
Roads
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APPENDIX D: OVERVIEW OF STUDY FINDINGS

Subsistence Harvests and Uses of Wild Resources in Dillingham, Alaska, 2010

An Overview of Study Findings

Division of Subsistence
Alaska Department of Fish and Game

April 2013

Background

The following is a brief overview of research conducted by the Division of Subsistence of the Alaska Department of Fish and Game (ADF&G) to provide baseline harvest and use data of all wild resources by residents of Dillingham. The study period covers January 1 to December 31, 2010. Funding for this project was provided by Stephen R. Braund and Associates (ADF&G Agreement Number IHP-11-080). This project is part of a larger project documenting wild resource use and harvest in the area near the potential development of the Pebble Project (Figure 1). Phase I of the project examined the subsistence baseline information in Iliamna, Newhalen, Nondalton, Pedro Bay, and Port Alsworth in 2005 for the 2004 study year. Phase II expanded the study to 5 additional communities within the Kvichak and Nushagak watersheds: Igiugig, Kokhanok, Koliganek, Levelock, and New Stuyahok for the 2005 study year. Phase III expanded the study to communities in Bristol Bay, including King Salmon, Naknek, and South Naknek in 2008 for the 2007 study year, as well as the interior community of Lime Village. Phase IV included Aleknagik, Clark's Point, and Manokotak for the 2008 study year. This report documents the final phase of this project (V) which was completed in April 2011 in Dillingham. This completes the subsistence baseline studies for Bristol Bay communities near the proposed Pebble Project.

Methods

The primary data gathering method was systematic household surveys using the ADF&G Division of Subsistence standard data-gathering instrument. The surveys were conducted face-to-face in residents' homes. The goal was to interview a 20–25% sample of Dillingham residents. In total 200 surveys were completed in Dillingham. With the help of community liasions, household interviews were conducted to collect harvest and use information for all wild resources. Each household had accompanying mapping conducted as well for each resource including use area and/or harvest location, amount of harvest, and month of harvest. Participation was voluntary, and individual and household-level data are confidential as well as mapped harvest locations for large land mammal and marine mammal species. In addition, subsistence users were asked to discuss their observations about resource use and abundance and their concerns relating to subsistence resources and their continuing opportunities to harvest subsistence resources.

Findings

During the 2010 study year residents of Dillingham harvested an estimated 486,533 lb of wild foods in pounds usable weight, or 212 lb per capita. Figure 2 shows the composition by resource category. Both salmon and large land mammals were important sources of food for residents of Dilligham in 2010. In 2010 residents harvested an estimated 55 lb of Chinook salmon per capita, 45 lb of sockeye salmon per capita, and 52 lb of moose per capita.

In the 2010 study year, virtually every household in Dillingham (97%) used wild resources, and 94% harvested wild resources. At the individual level most residents engaged in subsistence activities (see Figure 3), with a majority of residents participating in harvesting fish and wild plants, mainly berries. Residents also traveled extensively to harvest resources as shown in Figure 4. Although the bulk of the harvest was salmon and large

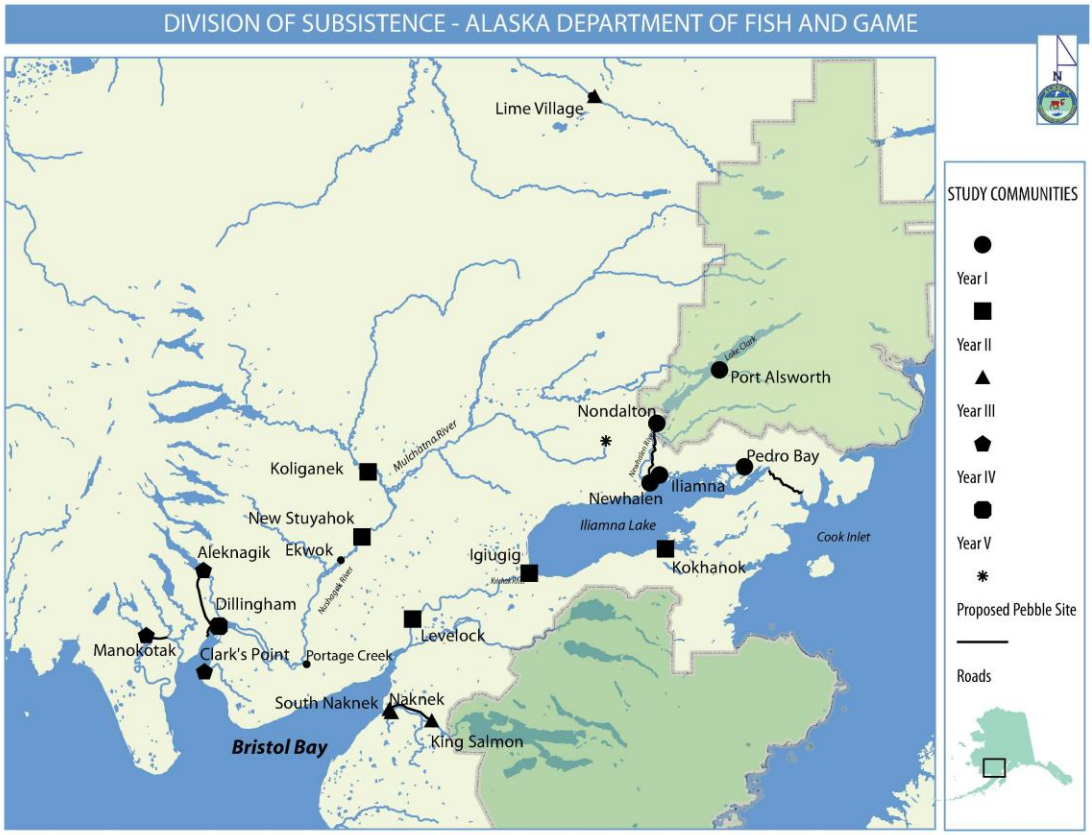

Figure 1. All study communities

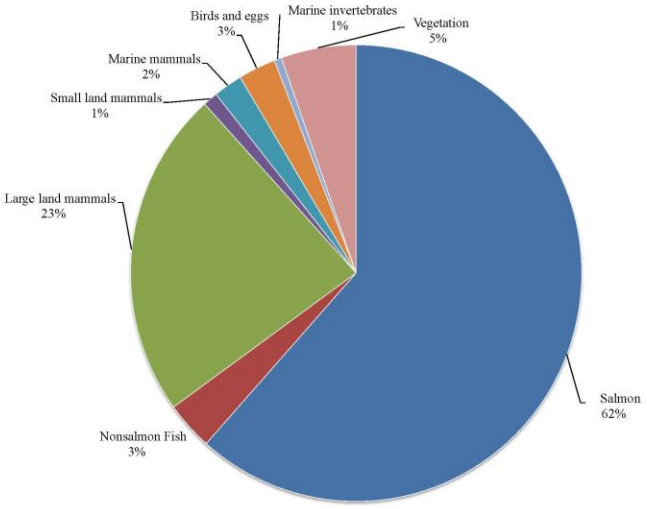

Figure 2. Harvest of wild resources by resource category, Dillingham, 2010

land mammals, almost all households used other fish, wild plants, and many used birds, bird eggs, small game, marine invertebrates, and marine mammals. Sharing of these resources bound families together in networks of mutual support and obligation. Further, subsistence activities and uses created a context in which people shared traditional knowledge about harvest locations, fish and wildlife populations and behavior, and respectful relationships with the natural world. In short, subsistence hunting, fishing, and gathering were vital components of the economy and way of life for Dillingham in 2010, as they have been for centuries.

For More Information:

Complete results for this project appear in: *Evans, S., M. Kukkonen, D. Holen, and D. S. Koster. 2013. Harvests and uses of wild resources in Dillingham, Alaska, 2010. Alaska Department of Fish and Game, Division of Subsistence Technical Paper No. 375, Anchorage.* Technical Paper series reports are available through the Alaska State Library and on the Internet:
www.subsistence.adfg.state.ak.us.

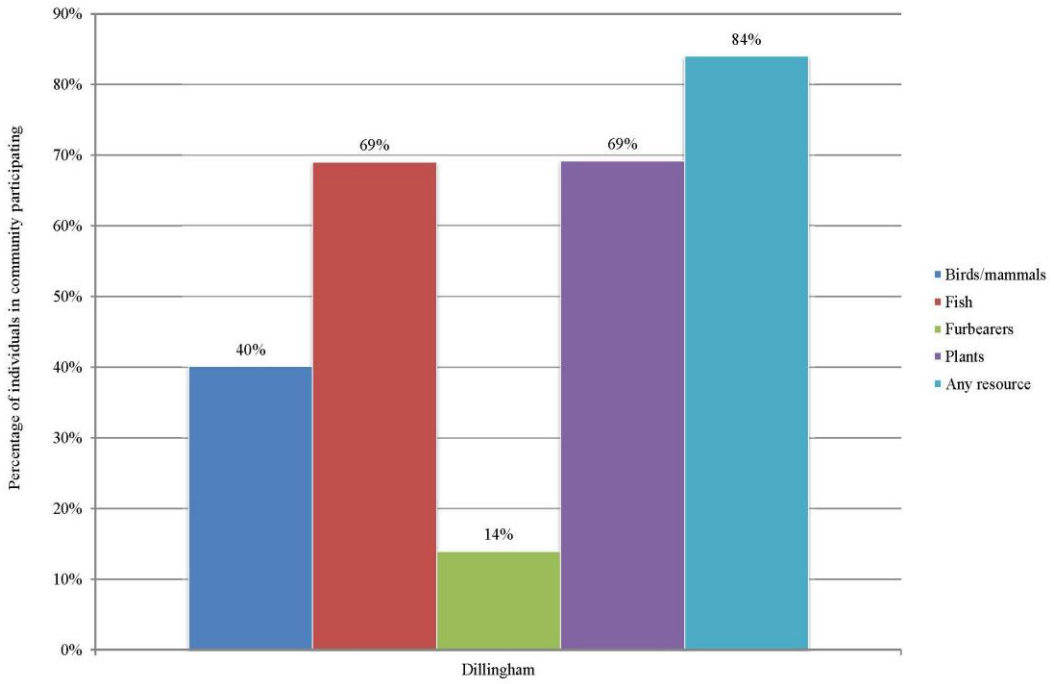

Figure 3. Individual participation in harvesting activities, Dillingham, 2010

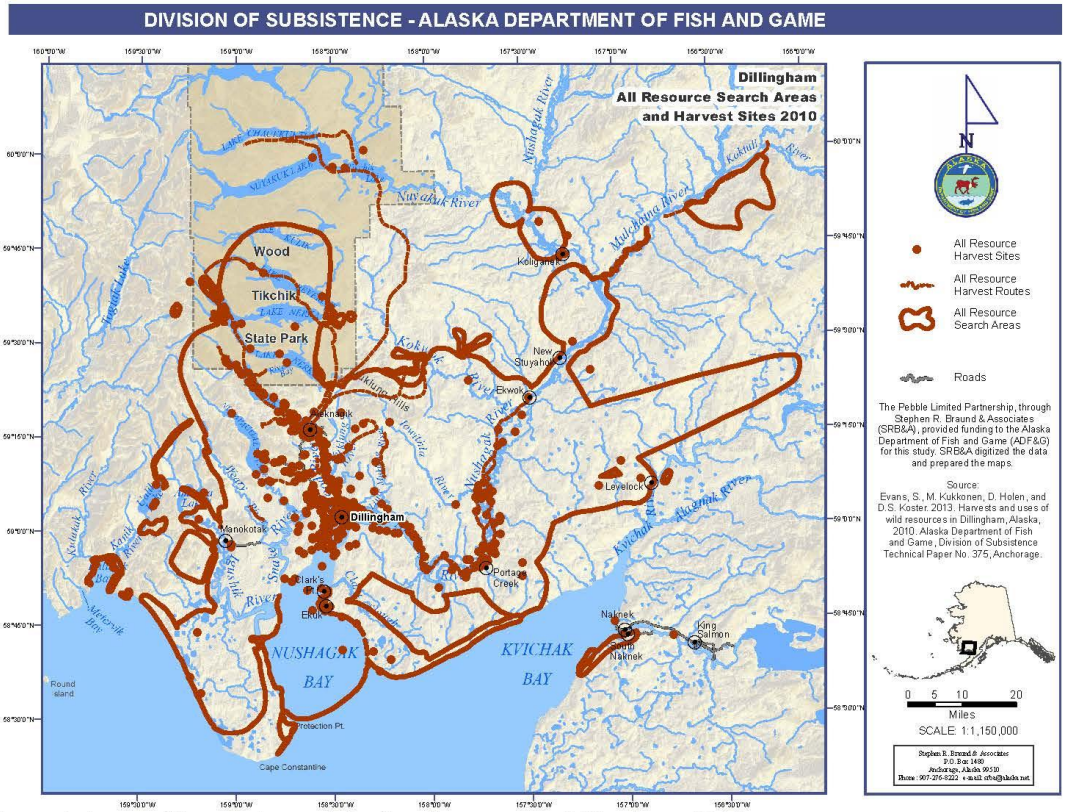

Figure 4. Areas of harvesting activity for all resources, Dillingham, 2010