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Customary and Traditional Use Worksheet, King Crab and Tanner Crab, Prince William Sound Management Area; and other Background Information

Prepared by

Alaska Department of Fish and Game,

Division of Subsistence

for the March 2008 Anchorage Board of Fisheries meeting

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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

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
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, etc.)
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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CUSTOMARY AND TRADITIONAL USE WORKSHEET, KING CRAB AND TANNER CRAB, PRINCE WILLIAM SOUND MANAGEMENT AREA; AND OTHER BACKGROUND INFORMATION

by

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ABSTRACT

This worksheet was prepared for the Alaska Board of Fisheries (Board) as background for consideration of changes to the noncommercial harvest regulations for crabs in the Prince William Sound Management Area of Alaska, with a primary focus on the communities of Chenega Bay, Cordova, Tatitlek, Valdez, and Whittier. This worksheet presents the 8 criteria that the Board of Fisheries is required to consider under Joint Board of Fisheries and Game regulations (5 AAC 99.010) in order to identify fish stocks that are customarily and traditionally taken or used by Alaska residents for subsistence uses. Shellfish played an important role in the diets of the indigenous Chugach and Eyak peoples of Prince William Sound and the Copper River Delta area. The last year that subsistence harvest of various species of crab was open in Prince William Sound was 1999. In Cordova, the estimated king crab (*Lithodes* and/or *Paralithodes spp*.) harvest was 934 crabs in 1988 and 859 crabs in 1991, but 36 crabs in 1993 and 98 in 1997. In 1997-1998, the estimated combined king crab harvest for Chenega Bay, Cordova, and Tatitlek was 121 crabs. The estimated Tanner crab (*Chionoecetes bairdi*) harvest for these three communities in 1997-98 was 4,869 crabs. From the early 1980s until 1999, the noncommercial king and Tanner crab fishing in eastern Prince William Sound was closed by emergency order due to poor stock status.

Key words: Prince William Sound, Chenega Bay, Cordova, Tatitlek, Whittier, king crab, *Paralithodes camtschaticus*, *Lithodes aequispinus*, *Paralithodes platypus*, Tanner crab, *Chionoecetes bairdi*, subsistence shellfish.

BACKGROUND

At its meeting in March 2008, the Alaska Board of Fisheries will consider Proposals 360, 361, 362, 363, 364, and 365, which address re-opening noncommercial harvest opportunities for various species of king crabs (*Lithodes* and/or *Paralithodes spp.*) and/or Tanner crabs (*Chionoecetes bairdi*) in the Prince William Sound Management Area (Figure 1). In March 1999, Board of Fisheries' action on Proposals 349 and 350 closed subsistence, personal use, and sport fisheries for king and Tanner crabs in the Prince William Sound Management Area due a lack of a harvestable surplus.

Under the Alaska subsistence law (AS 16.05.258(a)), the Board of Fisheries is required to identify the fish stocks or portions of stocks that are customarily and traditionally taken or used for subsistence (a "C&T finding"). In March 1999, the Board made a positive customary and traditional use finding for shrimps (various *spp*.), Dungeness crabs (*Cancer magister*), and miscellaneous shellfish in the Prince William Sound Management Area (5 AAC 02.208). The Board postponed action on a C&T finding on king and Tanner crabs until a harvestable surplus was available. This worksheet provides background information on noncommercial harvests and uses of king and Tanner crabs in the Prince William Sound Management Area, within the larger context of uses of marine invertebrates, with a primary focus on the Prince William Sound communities of Chenega Bay, Cordova, Tatitlek, Valdez, and Whittier. (See Table 1 for population data for these communities.) The information is organized according to the 8 criteria for identifying customary and traditional uses as defined in the Joint Board of Fisheries and Game Subsistence Procedures (5 AAC 99.010). This information may be supplemented during public testimony and board deliberations.

Most of the harvest and use data reported in this worksheet derive from systematic household surveys conducted by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence. Table 2 reports study years and sample achievements for these surveys.

Table 3 provides a summary of the subsistence, personal use, and sport fishing regulations for king crabs in 1999 (the last year these fisheries were open to harvesting) and Table 4 provides the same for Tanner crabs. The area within the Valdez city limits, and areas near Whittier are classified as nonsubsistence areas under regulations of the Joint Board (5 AAC 99.015(a)(5)) and are closed to all subsistence fishing (Figure 2 and Figure 3). Personal use and sport fishing may be permitted in nonsubsistence areas.

THE EIGHT CRITERIA

CRITERION 1.

A long-term, consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

Shellfish played an important role in the diets of the indigenous Chugach (Birket-Smith 1953:18, 23; de Laguna 1956:6, 193) and Eyak (Birket-Smith and de Laguna 1938) peoples of Prince William Sound and the Copper River Delta area. Although the archaeological record does not document the use of crabs by the Chugach, this is likely due to poor preservation of remains. The ethnohistorical record shows that crabs, especially Dungeness, were an important spring resource for the Eyak, when crabs could be speared in shallow water. Descendents of the Chugach and Eyak people presently live in Chenega Bay, Cordova, Tatitlek, and Valdez.

The estimated population of the Prince William Sound Area Management Area in 2006, excluding the inland communities of the Copper River Basin (which do not harvest shellfish in substantial numbers) was 6,393 in and around five communities (Chenega Bay, Cordova, Tatitlek, Valdez, and Whittier). In 2000, 13.8% of the population of these communities was Alaska Native (Table 1). Residents of other Alaska communities also engage in the noncommercial harvest of marine invertebrates in the Prince William Sound Area.

Former residents of the community of Chenega (destroyed by a tsunami generated by the Great Alaska Earthquake of 1964) recalled that marine invertebrates used in the community included butter clams (*Saxidomus giganteus*), littleneck clams (*Protothaca staminea*), cockles (*Clinocardium spp.* and *Serripes spp.*), chitons (Class *Polyplacophora*), sea urchins (*Strongylocentrotus spp*.), sea cucumbers (*Parastichopus californicus*), marine snails (Class *Gastropoda*), octopi (*Octopus vulgaris*), crabs, and mussels (*Mytilus spp*.) (Stratton and Chisum 1986:34-37). Use of crabs in the Prince William Sound communities of Chenega and Tatitlek prior to 1960, while occurring, was relatively limited. Crabs were used when caught incidentally in salmon gillnets. In the 1960s, Prince William Sound area residents began using pots for subsistence crab fishing (Stratton 1990:44).

Subsistence harvests of marine invertebrates in Prince William Sound are not monitored annually by ADF&G. Harvest estimates for crabs are available for years in which the Division of Subsistence conducted household surveys (Table 2). Table 5 reports household survey data for harvests and uses of crabs, with all species combined. Prior to the *Exxon Valdez* oil spill, the majority of households in Chenega Bay, Cordova, and Tatitlek used crabs. In the most recent survey year before the closure of subsistence fishing for king and Tanner crabs (1997-98), 26.7% of households in Chenega Bay used crabs, as did 28.4% in Cordova and 68.8% in Tatitlek. About 25% of Valdez households used crabs in the period 1991 to 1993. In Whittier, 32.3% of households used crabs in the single study year of 1990-91.

Table 6 and Table 7 summarize household survey data for king crabs and Tanner crabs, respectively. Harvests and uses of both types of crab have varied widely, which is likely related to relative abundance and stock status. For example, in Cordova, the estimated king crab harvest was 934 crabs in 1988 and 859 crabs in 1991, but 36 crabs in 1993 and 98 in 1997. In 1997-1998, the estimated combined king crab harvest for Chenega Bay, Cordova, and Tatitlek was 121 crabs. The estimated Tanner crab harvest for these three communities in 1997-98 was 4,869 crabs. Since 1988, Tanner crab stocks in Prince William Sound have been judged to be too low for commercial harvests. All commercial fishing for king crabs has been closed since 1995-1996; there has been no commercial blue (*P. platypus*) or red (*P. camtschaticus*) king crab fishery since 1991-1992. From the early 1980s until 1999, the noncommercial king and Tanner crab fishing in eastern Prince William Sound was closed by emergency order due to poor stock abundance status.

The estimate for sport harvests of king crabs in Prince William Sound, based on the ADF&G Statewide Harvest Survey (SWHS) annual mail survey, was 58 king crabs for 1997, and no harvests for any year from 1977 to 1996. For Tanner crabs, the SWHS reports 333 were harvested in 1994, 304 in 1995, 430 in 1996, and 729 in 1997 (Howe 2001).

CRITERION 2.

A pattern of taking or use recurring in specific seasons of each year.

Harvest of marine invertebrates occurs year-round in Prince William Sound communities. At Tatitlek, Tanner crabs were harvested from September through April, although little harvest occurred from November through March, when boating was difficult and crabs were found in deeper water. At Cordova, crabs were taken year-round (Stratton 1989:52).

CRITERION 3.

A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.

For marine invertebrates in general, harvest areas are reached by skiff, commercial fishing vessel, all-terrain vehicle (ATV), or on foot. Noncommercial pots are used for crabs and shrimps (e.g. Stratton 1990:106-107 for Tatitlek; Stratton 1989:102-104 for Cordova). Some Dungeness crabs are caught in salmon nets (Stratton 1990:107).

Marine invertebrates, such as crabs, shrimps, and octopi, are also removed for home use from commercial catches or taken incidentally while people are engaged in other commercial fisheries. Table 8 reports the estimated harvests of king crabs (in numbers of crabs) and Tanner crabs (in numbers of crabs) that were removed from commercial harvests for home use or taken under noncommercial regulations, by community and study year, based on household harvest surveys. Table 9 shows, of the total king crab harvests and Tanner crab harvests in Prince William Sound communities, the percentage that was removed from commercial catches for home use and the percentage that was harvested under noncommercial regulations. It should be noted that these harvests may have occurred anywhere in the state, not just in Prince William Sound, which accounts in part for the occurrence of harvests in years when Prince William Sound commercial or noncommercial crab fisheries were closed. While harvests under noncommercial regulations accounted for most of the crab harvest in almost every case, in some years, commercial removal was a substantial source of king and/or Tanner crab harvests in Cordova.

CRITERION 4.

The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Harvest of marine invertebrates occurs throughout Prince William Sound, although areas of concentrated effort are near each community. Maps of areas used for harvesting marine invertebrates by Chenega Bay residents appear in the Division of Subsistence's Technical Paper No. 139 (Stratton and Chisum 1986). Maps of harvest areas used by Cordova, Valdez, and Whittier residents are available in Division of Subsistence project files.

According to interviews conducted in the mid-1980s, areas used for crab fishing by Cordova residents included Orca Inlet, Orca Bay, Simpson Bay, Gravina Bay, as well as areas in the Copper River Flats (Stratton 1989:102, 104). The major areas for noncommercial crabbing for Cordova residents, Orca Bay and Orca Inlet, were closed to Dungeness harvesting for most of the 1980s and closed to king and Tanner fishing for several seasons as well (e.g. Trowbridge 1992:27), and all seasons have been closed since 1999.

CRITERION 5.

A means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

Today, most harvests of marine invertebrates, including crabs, are eaten fresh; some are frozen for later use.

CRITERION 6.

A pattern of taking or use that includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

Tatitlek and Cordova are long-established Prince William Sound communities. Most of the residents of Chenega Bay are former residents, or descendents of former residents, of the village of Chenega, which was destroyed by a tsunami generated by the 1964 Great Alaska Earthquake. The village was re-established in 1984. In all these communities, subsistence harvesting activities are often family activities. Marine invertebrate gathering especially involves family members of all ages.

CRITERION 7.

A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

In the past, fishing for crabs was a fairly specialized activity. For example, crabs were typically harvested by only a few residents of Chenega Bay and Tatitlek because this required ownership of pots and of a boat from which to set and pull them. These fishers shared their catches widely. This pattern also occurred in Cordova and Valdez (Stratton 1990:106-107).

As shown in Table 5, Table 6, and Table 7, a large percentage of households interviewed during Division of Subsistence surveys reported receiving or giving away harvests of king crabs or Tanner crabs when these resources were available to community members.

CRITERION 8.

A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

As shown in Table 10, harvests of wild foods in Chenega Bay and Tatitlek have ranged from 275 to 577 pounds per person. On average, households in these communities use about 20 different types of resources annually (Fall 2006). Noncommercial resource harvests are also relatively large in Cordova, ranging from about 128 to 234 pounds in study years from 1985 to 2003. In 2003, households in Cordova used an average of 12.4 types of wild resources. As also shown in Table 10, harvests in Valdez and Whittier are lower than in the other three Prince William Sound communities, at around 100 pounds per person in Valdez to 80 pounds per person in Whittier, per year. Use diversity is also moderate in Valdez and Whittier, at about 6 to 8 types of wild foods used per household annually.

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TABLES AND FIGURES

Table 1. – Population of communities in the Prince William Sound Area, 2000 and 2006.

	2000			2006
Community	Total population	Alaska Native population	% Alaska Native	Total population
Chenega Bay	86	67	77.9%	69
Cordova	2,454	368	15.0%	2,211
Tatitlek	107	91	85.0%	117
Valdez	4,036	410	10.2%	3,690
Whittier	182	23	12.6%	189
Balance of census area	99	NA	NA	117
Totals	**6,964**	**959**	**13.8%**	**6,393**

Sources: U.S. Bureau of the Census 2001; Alaska Department of Labor and Workforce Development 2008.

Table 2. – Study years and sample sizes of Division of Subsistence household surveys.

Community	Study year	Sample type	Number of households		Percentage interviewed
			Interviewed	Community total	
Chenega Bay	1984 - 85	Census	16	16	100%
	1985 - 86	Census	16	17	94%
	1989 - 90	Census	18	21	86%
	1990 - 91	Census	18	21	86%
	1991 - 92	Census	18	22	82%
	1992 - 93	Census	23	26	89%
	1993 - 94	Census	23	28	82%
	1997 - 98	Census	15	21	71%
	2003	Census	16	20	80%
Cordova	1985	Random	206	853	24%
	1988	Stratified random	101	872	12%
	1991	Random	101	784	13%
	1992	Random	41	784	5%
	1993	Random	104	946	11%
	1997 - 98	Stratified random	152	831	18%
	2003	Stratified random	148	910	16%
Tatitlek	1987 - 88	Census	19	31	61%
	1988 - 89	Census	21	28	75%
	1989 - 90	Census	22	28	79%
	1990 - 91	Census	17	28	61%
	1991 - 92	Census	19	27	70%
	1993 - 94	Census	20	28	71%
	1997 - 98	Census	16	27	59%
	2003	Census	25	27	93%
Valdez	1991	Random	100	1,231	8%
	1992	Random	100	1,257	8%
	1993	Random	35	1,257	3%
Whittier	1990 - 91	Stratified random	56	103	54%

Table 3. – Regulations for noncommercial harvest of king crabs, Prince William Sound, 1999.

	Subsistence	Personal use	Sport
Limits on participation	Any Alaska resident.	Any Alaska resident.	No restrictions.
License requirement	None.	Alaska resident sport fishing license.	Sport fishing license.
Permit requirement	None.	None.	None.
Season	No closed season.	No closed season.	No closed season.
Daily bag and possession limits; bag and possession limits are not additive	6 male crabs per person.	6 male crabs per person.	6 male crabs per person.
Size limits	Blue king crabs: 5.9 inches or greater; Brown and red king crabs: 7 inches or greater.	Blue king crabs: 5.9 inches or greater; Brown and red king crabs: 7 inches or greater.	Blue king crabs: 5.9 inches or greater; Brown and red king crabs: 7 inches or greater.
Pot limits	Five per person, 10 per vessel.	No more than 5 per person, 10 per vessel.	Five per person, 10 per vessel.
Other	Crab pots left in saltwater unattended for more than two weeks must have bait and bait containers removed and all doors secured fully open; escape mechanism required.	Escape mechanism required.	Escape mechanism required.

Table 4. – Regulations for noncommercial harvest of Tanner crabs in Prince William Sound, 1999.

	Subsistence	Personal use	Sport
Limits on participation	Any Alaska resident.	Any Alaska resident.	No restrictions.
License requirement	None.	Alaska resident sport fishing license.	Sport fishing license.
Permit requirement	None.	None.	None.
Season	No closed season.	No closed season.	No closed season.
Daily bag and possession limits; daily bag and possession limits are not additive	20 male crabs per person.	20 male crabs per person.	20 male crabs per person.
Size limits	5.3 inches in width of shell or greater.	5.3 inches in width of shell or greater.	5.5 inch minimum size.
Pot limit	Five per person, 10 per vessel.	No more than 5 per person, 10 per vessel.	Five per person, 10 per vessel.
Other	Escape mechanism required.	Escape mechanism required.	Escape mechanism required.

Table 5. – Harvests and uses of crabs (any species), Prince William Sound communities.

		Percentage of households					Estimated harvests				
Community	Study year	Using	Trying	Harvesting	Receiving	Giving	Community total harvest, numbers	Community total harvest, usable pounds	Average pounds per household	Per capita pounds	95% confidence limit (+/-%)[1]
Chenega Bay	1984	6.3	0.0	0.0	6.3	0.0	0	0	0.0	0.0	
Chenega Bay	1985	87.5	18.8	12.5	87.5	25.0	23	47	2.8	0.8	39
Chenega Bay	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1990	0.0	16.7	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1991	55.6	22.2	16.7	50.0	11.1	209	333	15.2	4.1	73
Chenega Bay	1992	21.7	8.7	8.7	21.7	4.3	124	193	7.4	2.1	50
Chenega Bay	1993	8.7	4.3	4.3	8.7	4.3	15	23	0.8	0.2	80
Chenega Bay	1997	26.7	26.7	6.7	26.7	20.0	27	57	2.7	1.0	115
Chenega Bay	2003	31.3	6.3	0.0	31.3	12.5	0	0	0.0	0.0	
Cordova	1985	62.6	20.4	17.5	53.4	14.6	7,503	7,771	9.1	3.4	58
Cordova	1988	72.8	30.5	30.5	55.4	22.4	7,437	9,054	10.4	3.8	51
Cordova	1991	37.6	12.9	10.9	30.7	7.9	1,636	2,808	3.6	1.2	106
Cordova	1992	39.0	14.6	14.6	29.3	12.2	1,646	1,528	1.9	0.6	85
Cordova	1993	50.0	11.5	10.6	45.2	14.4	3,802	4,734	5.0	1.6	113
Cordova	1997	28.4	8.3	7.5	24.1	7.1	4,909	7,656	9.2	3.1	79
Cordova	2003	25.7	7.4	7.4	19.6	10.8	1,405	1,509	1.7	0.6	77
Tatitlek	1987	68.4	15.8	15.8	57.9	15.8	307	472	15.2	3.8	90
Tatitlek	1988	71.4	9.5	9.5	61.9	23.8	580	856	30.6	8.5	73
Tatitlek	1989	13.6	0.0	0.0	13.6	4.5	0	0	0.0	0.0	
Tatitlek	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Tatitlek	1991	31.6	0.0	0.0	31.6	15.8	0	0	0.0	0.0	
Tatitlek	1993	40.0	20.0	20.0	35.0	25.0	188	302	10.8	3.1	57
Tatitlek	1997	68.8	31.3	31.3	56.3	18.8	407	652	24.1	8.1	98
Tatitlek	2003	24.0	0.0	0.0	24.0	8.0	0	0	0.0	0.0	
Valdez	1991	25.0	8.0	5.0	21.0	3.0	9,232	14,728	12.0	3.6	128

-continued-

Table 5. – Page 2 of 2.

Community	Study year	Percentage of households					Estimated harvests				
		Using	Trying	Harvesting	Receiving	Giving	Community total harvest, numbers	Community total harvest, usable pounds	Average pounds per household	Per capita pounds	95% confidence limit (+/-%)[1]
Valdez	1992	22.0	4.0	3.0	20.0	4.0	1,634	2,332	1.9	0.6	110
Valdez	1993	25.7	8.6	8.6	20.0	5.7	2,658	4,123	3.3	1.1	145
Whittier	1990	32.3	10.0	10.0	23.4	9.9	446	674	6.5	2.4	32

[1] Blank cells indicate no harvest; therefore, a confidence limit cannot be generated.

Sources: ADF&G 2007; Fall 2006.

Table 6. – Harvests and uses of king crabs, Prince William Sound communities.

		Percentage of households					Estimated harvests				
Community	Study year	Using	Trying	Harvesting	Receiving	Giving	Community total, numbers	Community total, pounds	Average pounds per household	Per capita pounds	95% confidence interval (+/-%)[1]
Chenega Bay	1984	6.3	0.0	0.0	6.3	0.0	0	0	0.0	0.0	
Chenega Bay	1985	87.5	12.5	6.3	81.3	18.8	19	44	2.6	0.7	47
Chenega Bay	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1990	0.0	5.6	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1991	5.6	5.6	0.0	5.6	0.0	0	0	0.0	0.0	
Chenega Bay	1992	8.7	0.0	0.0	8.7	0.0	0	0	0.0	0.0	
Chenega Bay	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1997	20.0	20.0	6.7	20.0	13.3	21	48	2.3	0.8	115
Chenega Bay	2003	25.0	6.3	0.0	25.0	6.3	0	0	0.0	0.0	
Cordova	1985	23.3	2.9	2.9	20.4	3.4	340	781	0.9	0.3	90
Cordova	1988	32.5	7.0	7.0	25.6	7.0	934	2,147	2.5	0.9	110
Cordova	1991	15.8	3.0	3.0	12.9	2.0	859	1,976	2.5	0.9	147
Cordova	1992	22.0	2.4	2.4	19.5	2.4	33	77	0.1	0.0	190
Cordova	1993	15.4	1.0	1.0	14.4	2.9	36	84	0.1	0.0	186
Cordova	1997	10.7	1.6	0.4	10.3	0.4	98	225	0.3	0.1	164
Cordova	2003	16.9	1.4	1.4	15.5	6.8	219	503	0.6	0.2	131
Tatitlek	1987	10.5	0.0	0.0	10.5	0.0	0	0	0.0	0.0	
Tatitlek	1988	9.5	0.0	0.0	9.5	4.8	0	0	0.0	0.0	
Tatitlek	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Tatitlek	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Tatitlek	1991	5.3	0.0	0.0	5.3	5.3	0	0	0.0	0.0	
Tatitlek	1993	5.0	5.0	5.0	0.0	5.0	3	6	0.2	0.1	100
Tatitlek	1997	25.0	6.3	6.3	18.8	0.0	2	4	0.1	0.1	136
Tatitlek	2003	4.0	0.0	0.0	4.0	0.0	0	0	0.0	0.0	

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Table 6. – Page 2 of 2.

Community	Study year	Percentage of households					Estimated harvests				
		Using	Trying	Harvesting	Receiving	Giving	Community total, numbers	Community total, pounds	Average pounds per household	Per capita pounds	95% confidence interval (+/- %)[1]
Valdez	1991	7.0	1.0	1.0	6.0	1.0	535	1,231	1.0	0.3	188
Valdez	1992	3.0	0.0	0.0	3.0	0.0	0	0	0.0	0.0	
Valdez	1993	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Whittier	1990	6.8	4.5	4.5	2.3	2.3	47	108	1.1	0.4	38

[1] Blank cells indicate no harvest; therefore, a confidence limit cannot be generated.

Sources: ADF&G 2007; Fall 2006.

Table 7. – Harvests and uses of Tanner crabs, Prince William Sound communities.

		Percentage of households					Estimated harvests				
Community	Study Year	Using	Trying	Harvesting	Receiving	Giving	Community harvest, numbers	Community harvest, pounds	Average pounds per household	Per capita pounds	95% Confidence interval (+/- %)[1]
Chenega Bay	1984	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1985	31.3	6.3	0.0	31.3	0.0	0	0	0.0	0.0	
Chenega Bay	1989	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1990	0.0	5.6	0.0	0.0	0.0	0	0	0.0	0.0	
Chenega Bay	1991	55.6	16.7	11.1	50.0	11.1	208	332	15.1	4.1	73
Chenega Bay	1992	17.4	8.7	8.7	17.4	4.3	118	188	7.2	2.1	52
Chenega Bay	1993	8.7	4.3	4.3	8.7	4.3	15	23	0.8	0.2	80
Chenega Bay	1997	20.0	26.7	6.7	20.0	20.0	6	9	0.4	0.2	115
Chenega Bay	2003	18.8	6.3	0.0	18.8	12.5	0	0	0.0	0.0	
Cordova	1985	22.8	4.4	3.9	19.9	2.9	2,195	3,511	4.1	1.6	144
Cordova	1988	26.1	8.6	8.6	17.6	5.7	2,616	4,185	4.8	1.7	78
Cordova	1991	8.9	3.0	3.0	5.9	1.0	320	512	0.7	0.2	142
Cordova	1992	4.9	2.4	2.4	2.4	0.0	359	574	0.7	0.2	190
Cordova	1993	28.8	5.8	4.8	25.0	7.7	2,238	3,580	3.8	1.2	150
Cordova	1997	15.0	5.5	4.7	11.4	4.7	4,458	7,132	8.6	2.8	87
Cordova	2003	6.8	0.7	0.7	6.1	4.1	195	313	0.3	0.1	180
Tatitlek	1987	36.8	10.5	10.5	26.3	10.5	286	457	14.7	3.7	90
Tatitlek	1988	71.4	9.5	9.5	61.9	23.8	500	800	28.6	7.9	71
Tatitlek	1989	13.6	0.0	0.0	13.6	4.5	0	0	0.0	0.0	
Tatitlek	1990	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	
Tatitlek	1991	21.1	0.0	0.0	21.1	10.5	0	0	0.0	0.0	
Tatitlek	1993	40.0	20.0	20.0	35.0	25.0	185	296	10.6	3.1	57
Tatitlek	1997	62.5	31.3	31.3	50.0	18.8	405	648	24.0	8.0	99
Tatitlek	2003	20.0	0.0	0.0	20.0	4.0	0	0	0.0	0.0	

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Table 7. – Page 2 of 2.

Community	Study Year	Percentage of households					Estimated harvests				
		Using	Trying	Harvesting	Receiving	Giving	Community harvest, numbers	Community harvest, pounds	Average pounds per household	Per capita pounds	95% Confidence interval (+/- %)[1]
Valdez	1991	16.0	5.0	4.0	12.0	3.0	8,232	13,172	10.7	3.2	136
Valdez	1992	15.0	3.0	3.0	13.0	2.0	1,320	2,112	1.7	0.6	112
Valdez	1993	14.3	5.7	5.7	8.6	5.7	2,514	4,022	3.2	1.1	154
Whittier	1990	27.9	8.9	8.9	19.0	9.9	318	510	5.0	1.8	41

[1] Blank cells indicate no harvest; therefore, a confidence limit cannot be generated.

Sources: ADF&G 2007; Fall 2006.

Table 8. – Harvests of king and Tanner crabs by gear type.

		King crabs (numbers)		Tanner crabs (numbers)	
Community	Study year	Commercial removal	Other	Commercial removal	Other
Chenega Bay	1984 - 85	0	0	0	0
Chenega Bay	1985 - 86	0	19	0	0
Chenega Bay	1991	0	0	0	208
Chenega Bay	1992	0	0	0	118
Chenega Bay	1993	0	0	0	15
Chenega Bay	1997	0	21	0	6
Chenega Bay	2003	0	0	0	0
Cordova	1985	137	203	621	1,573
Cordova	1988	556	377	2,171	445
Cordova	1991	844	16	243	78
Cordova	1992	0	33	359	0
Cordova	1993	18	18	200	2,038
Cordova	1997	98	0	163	4,295
Cordova	2003	16	203	3	192
Tatitlek	1987	0	0	0	286
Tatitlek	1988	0	0	0	500
Tatitlek	1991	0	0	0	0
Tatitlek	1993	0	3	0	185
Tatitlek	1997	0	2	0	405
Tatitlek	2003	0	0	0	0
Valdez	1991	0	535	0	8,232
Valdez	1992	0	0	0	1,320
Valdez	1993	0	0	0	2,514
Whittier	1990 - 91	0	47	2	316

Source: ADF&G 2007.

Table 9. – Percentage of harvest by commercial removal or noncommercial methods.

		King crabs[1]		Tanner crabs[1]	
Community	Study year	Commercial removal	Non-commercial harvest	Commercial removal	Non-commercial harvest
Chenega Bay	1984 - 85				
Chenega Bay	1985 - 86		100.0%		
Chenega Bay	1991				100.0%
Chenega Bay	1992				100.0%
Chenega Bay	1993				100.0%
Chenega Bay	1997		100.0%		100.0%
Chenega Bay	2003				
Cordova	1985	40.3%	59.7%	28.3%	71.7%
Cordova	1988	59.6%	40.4%	83.0%	17.0%
Cordova	1991	98.1%	1.9%	75.7%	24.3%
Cordova	1992		100.0%	100.0%	
Cordova	1993	50.0%	50.0%	8.9%	91.1%
Cordova	1997	100.0%		3.7%	96.3%
Cordova	2003	7.3%	92.7%	1.5%	98.5%
Tatitlek	1987				100.0%
Tatitlek	1988				100.0%
Tatitlek	1991				
Tatitlek	1993		100.0%		100.0%
Tatitlek	1997		100.0%		100.0%
Tatitlek	2003				
Valdez	1991		100.0%		100.0%
Valdez	1992				100.0%
Valdez	1993				100.0%
Whittier	1990 - 91		100.0%	0.6%	99.4%

[1] Blank cells indicate no harvest.

Source: ADF&G 2007.

Table 10. – Estimated total wild resource harvests, pounds usable weight per person.

Community	Study year	Estimated pounds per person
Chenega Bay	1984	316
Chenega Bay	1985	374
Chenega Bay	1991	345
Chenega Bay	1992	414
Chenega Bay	1993	275
Chenega Bay	1997	577
Chenega Bay	2003	471
Cordova	1985	164
Cordova	1988	234
Cordova	1991	189
Cordova	1992	164
Cordova	1993	128
Cordova	1997	179
Cordova	2003	176
Tatitlek	1987	352
Tatitlek	1988	644
Tatitlek	1991	346
Tatitlek	1993	270
Tatitlek	1997	406
Tatitlek	2003	290
Valdez	1991	88
Valdez	1992	103
Valdez	1993	79
Whittier	1990	80

Sources: ADF&G 2007; Fall 2006.

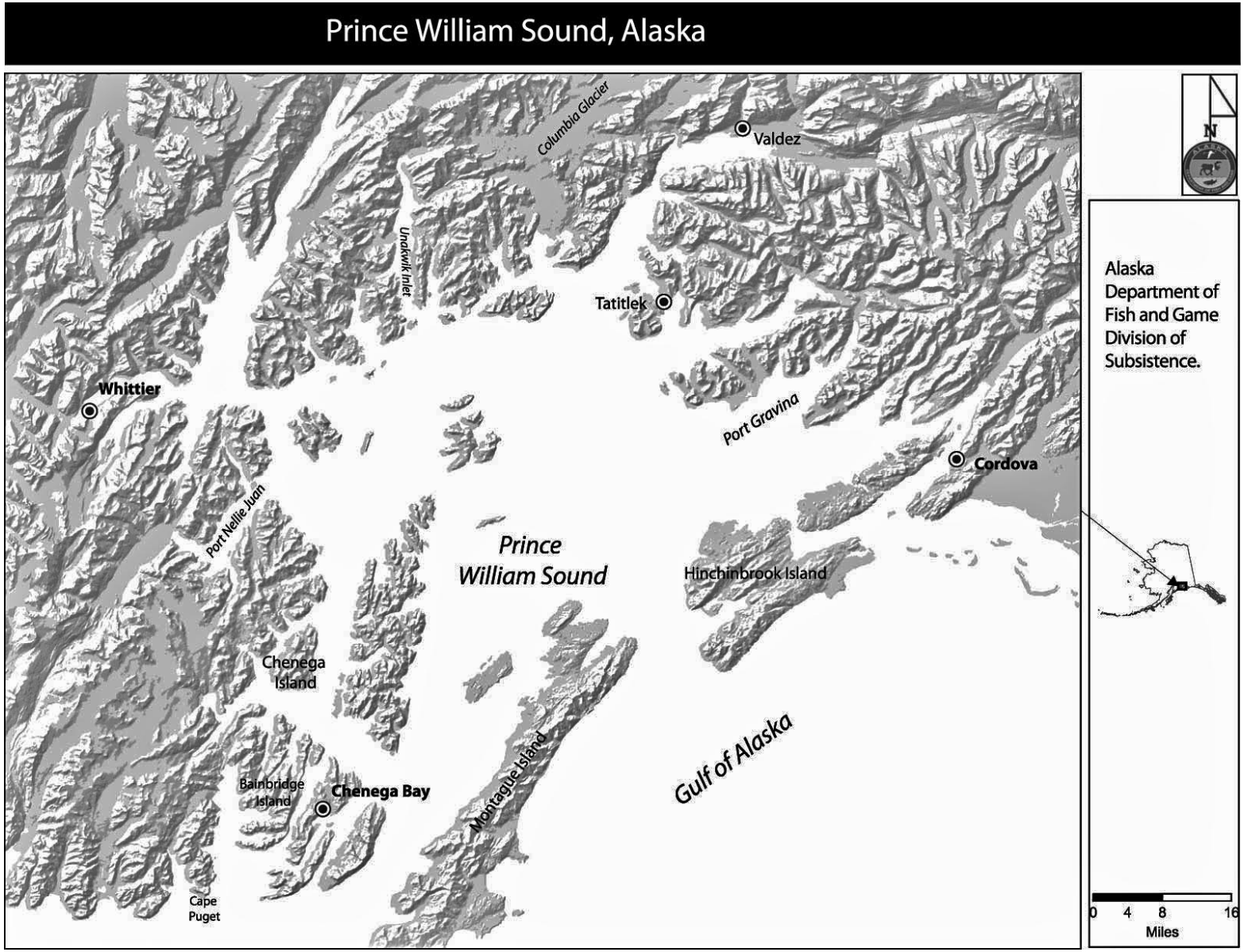

Figure 1. – Map of the Prince William Sound Management Area.

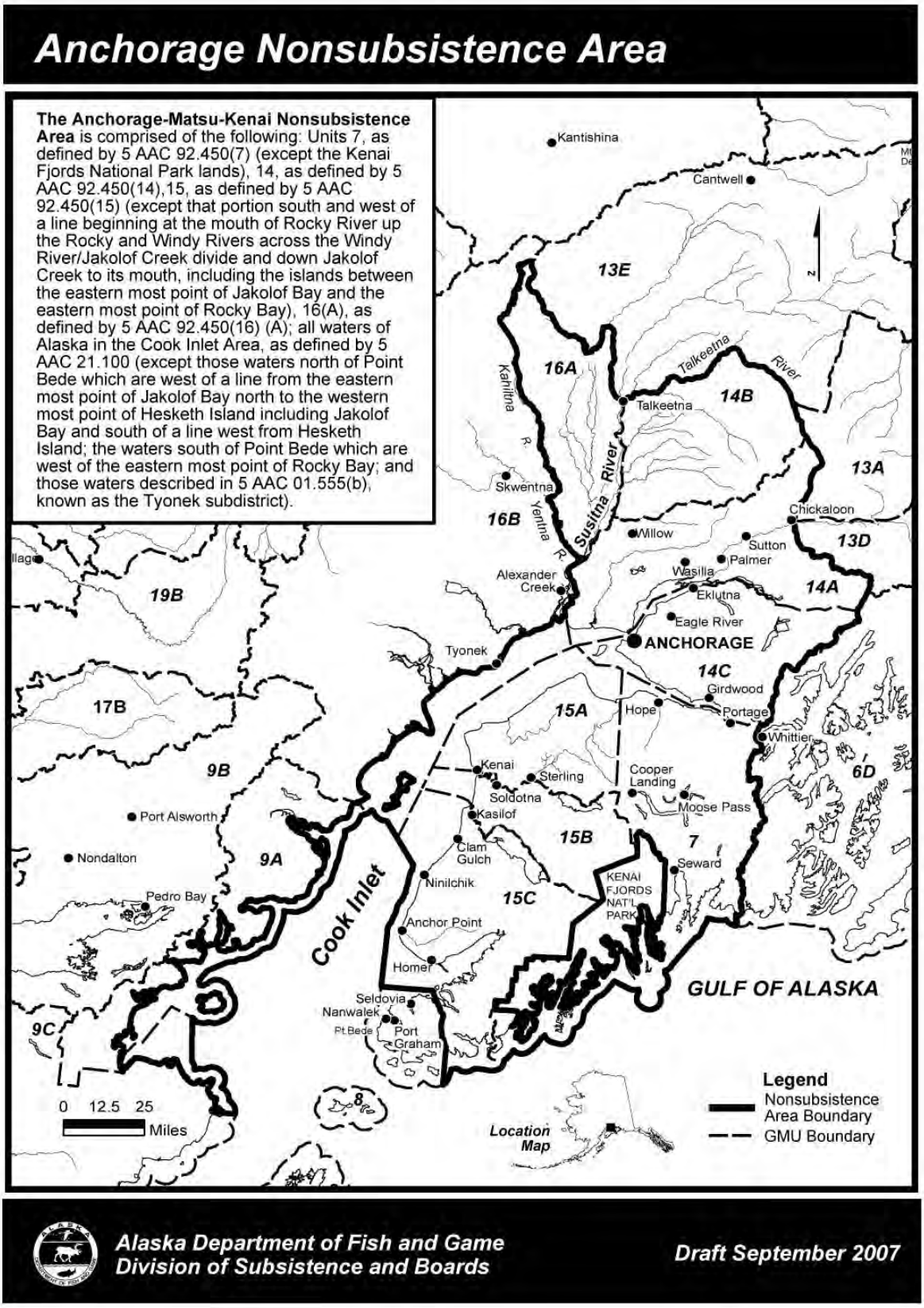

Figure 2. – Map of the Anchorage – MatSu – Kenai nonsubsistence area.

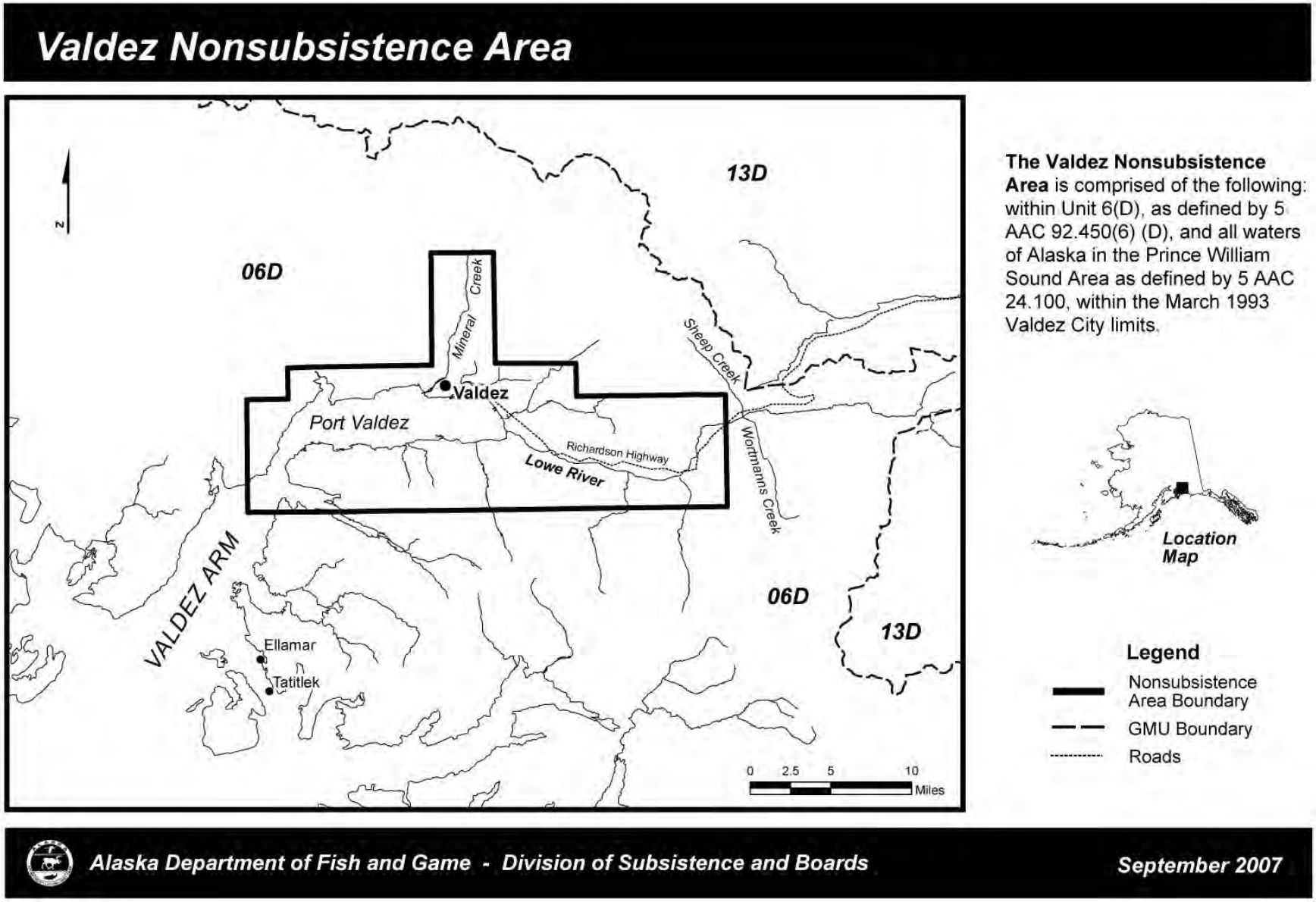

Figure 3. – Map of the Valdez nonsubsistence area.