Regional Operational Plan CF.4K.2016.06

The Shumagin Islands Immature Salmon Test Fishery Operational Plan, 2016–2018

by

Charles W. Russell

April 2016

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. 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)

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

REGIONAL OPERATIONAL PLAN CF.4K.2016.06

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Charles W. Russell

Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak

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Division of Commercial Fisheries

April 2016

The Regional Operational Plan Series was established in 2012 to archive and provide public access to operational plans for fisheries projects of the Divisions of Commercial Fisheries and Sport Fish, as per joint-divisional Operational Planning Policy. Documents in this series are planning documents that may contain raw data, preliminary data analyses and results, and describe operational aspects of fisheries projects that may not actually be implemented. All documents in this series are subject to a technical review process and receive varying degrees of regional, divisional, and biometric approval, but do not generally receive editorial review. Results from the implementation of the operational plan described in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author if you have any questions regarding the information provided in this plan. Regional Operational Plans are available on the Internet at: http://www.adfg.alaska.gov/sf/publications/

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SIGNATURE/TITLE PAGE

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Approval

Title	Name	Date
Project Leader	Charles W. Russell	4/13/16
Research Coordinator or Section Supervisor	Jeff Wadle	4/11/16

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ABSTRACT

This document provides commercial salmon fishers and buyers on the South Alaska Peninsula with information and guidelines that will be used to conduct the Shumagin Islands immature salmon test fishery during 2016, 2017, and 2018. The presence of immature salmon in South Peninsula waters has warranted restrictions to commercial fishing in some years. In 1990, a test-fishing program was instituted by the Alaska Department of Fish and Game in the Shumagin Islands to determine the presence and abundance of immature salmon in South Peninsula waters prior to commercial salmon fishing periods in July. In 1998, the Alaska Board of Fisheries adopted regulations in the Post-June Management Plan (5 AAC 09.366(i)), mandating that the test fishery be conducted to assist management staff with making commercial fishery management decisions.

The Shumagin Islands test fishery will be operated beginning July 2 with one purse seine vessel making a minimum of six sets per day. The objective of the test fishery is to assess the marine abundance of immature salmon in the vicinity of the Shumagin Islands. Test fishing will be conducted prior to the first July commercial purse seine fishing period in the Shumagin Islands. Additional test fishing may be required if the abundance of immature salmon harvested during the commercial fishery is above the regulatory threshold.

Key words: Shumagin Islands, Alaska Peninsula, immature salmon, test fishery, commercial fishery management, Post June management plan, Area M, *Oncorhynchus*, purse seine, operational plan

PURPOSE

This paper documents the purpose, goals, and methods of a program designed to assess immature Chinook *Oncorhynchus tshawytscha,* sockeye *O. nerka,* coho *O. kisutch*, and chum *O. keta* salmon abundance in the marine waters near the Shumagin Islands. For the purposes of the test fishery, immature salmon are defined as those Chinook, sockeye, coho, and chum salmon that are gilled in the seine web (5 AAC 09.366(i)).

The Alaska Department of Fish and Game (ADF&G) first became aware of immature salmon catches in 1963 (Keyse 2015). The presence of excess numbers of immature salmon in South Alaska Peninsula commercial salmon catches has warranted restrictions to commercial fishing in some years. These restrictions were applied to all gear types in affected areas from late June into July in 1963, 1968, 1969, 1974, 1979, and for purse seine fishing only during the 1989–1992, 1999, 2001, 2003, 2008, 2013, and 2015 seasons (Keyse 2015).

High abundance of immature salmon has been most prevalent in the Shumagin Islands Section where the concern for harvesting immature salmon is limited to purse seine gear (Figure 1). Under current regulations, seine mesh size may not exceed 3½ inches except for the first 25 meshes above the lead line, which may not exceed 7 inches (5 AAC 09.332(a)). Set gillnet gear has larger mesh size (minimum of 5 ¼ inches; 5 AAC 09.331(b)(3)) which allows immature salmon to pass through. Immature salmon usually migrate out of the area by the third week of July, although in 1992, closures were necessary until July 29 and in 2013 from August 20–August 23.

In 1990, the department instituted a test fishing program in the Shumagin Islands to determine the presence and abundance of immature salmon in South Peninsula waters prior to commercial salmon fishing in July (Table 1). In the Shumagin Islands Section, most purse seine fishing effort occurs in the nearshore waters from Popof Head to Red Bluff, so test fishing sites were established in those areas (Figure 2). In 1991, the Alaska Board of Fisheries (BOF) restricted commercial salmon fishing to terminal areas within South Peninsula waters from July 6–July 19, due in part to concerns for immature Chinook, sockeye, and chum salmon that were inadvertently gilled during purse seine gear fishing operations (McCullough and Shaul 1992). In 1998, the BOF amended the Post-June Management Plan (5 AAC 09.366), which regulates the

commercial salmon fishery after June 30 in South Alaska Peninsula waters. The regulation established the test fishery and clarified the definition of immature salmon.

OBJECTIVES

BIOLOGICAL

- Provide a timely index of the immature salmon abundance within the marine waters in the vicinity of the Shumagin Islands;
- reduce the potential for large catches of immature salmon, thus maximizing future escapement and harvest; and
- collect biological data from test fishery-caught salmon.

FISCAL

- Secure revenue through the sale of fish caught during the test fishery to cover the costs of the daily charter.

METHODS

In April of 2016–2018, ADF&G will distribute a pre-season letter and request for quotation (RFQ) seeking individuals interested in working with the department in conducting test fishery operations. Interested parties are asked to submit a bid based on a percentage, not to exceed 70% of the adult salmon harvested, that they would accept as payment for the charter. Selection of the test fish charter will go to the lowest bidder. In the case of multiple "low" bids, charter selection will be awarded to the low bid that was received first. The standard department short-term vessel charter agreement between the State of Alaska and the vessel owner will be used (Appendix A). Skippers will provide necessary crew to operate the boat and gear, fuel and lubricants, and other supplies needed for daily operation of the vessel. Vessel operators must have a current Area M salmon purse seine permit. Protection (hull) and Indemnity insurance including crew exposure in the amount of at least $300,000 is required. All vessels must contain a refrigerated sea water (RSW) system to chill the catch.

Immature salmon are defined as Chinook, sockeye, coho, and chum salmon observed to be gilled in seine webbing (5 AAC 09.366(i)). All salmon harvested are the property of the State of Alaska and will be sold to cover charter costs. During off-loading, the mature salmon will be separated by species, and weighed. The number of mature salmon, by species, will be determined from the average weight of a sample of fish.

SCHEDULE AND DELIVERABLES

Department staff will determine when test fishing occurs based on management requirements. Since 1998, the test fish program has been conducted in early July. However, prior to early July department staff will monitor the seine fishing fleet (via department vessel) for immature salmon harvests.

RESPONSIBILITIES

Department staff will meet with the skipper of the scheduled chartered vessel prior to departure from Sand Point. The vessel will depart at an agreed upon time with at least one department

observer, and will return to Sand Point after the required sets are completed. The purse seine vessel must make a minimum of six sets; two each at Popof Head, Middle Set, and Red Bluff, all near Popof Island (Figure 2). Sets will be perpendicular to the beach and department staff will record the number of immature salmon and bycatch caught by species, by set, set location, start net out, net fully out, start net close, and end net close on the Sand Point Test Fishery Data Form (Appendix B). All gilled salmon will be removed from the net as they are brought aboard. Standard sets are 20 minutes in duration (time the entire net is in the water until vessel begins to close the net). Actual set time may vary depending on fishing conditions and the number of fish being caught. If large numbers of immature salmon (greater than 1,000) are observed being gilled during any set, additional sets may be shorter than 20 minutes in length.

Sets will be made as close to shore as possible. The skipper should use his/her sound judgment when fishing in a specific site based on weather conditions or other hindrances, such as known snags. Attempts should be made to reduce damage to fishing gear and equipment. If a high rate of catch of immature salmon is encountered before all six sets are made, fishing may cease to prevent excessive numbers of immature salmon from being harvested. Determination of the need for additional sets or locations will be made onsite by the department observers in consultation with the Area Management Biologist.

Upon completion of the final set, the skipper will transport the catch to a processor and will return department staff to the Sand Point dock. All fish will be sold and revenue will be deposited into the department Test Fish Account.

REFERENCES CITED

Keyse, M. D., C. W. Russell, and E. K. C. Fox. 2015. South Alaska Peninsula salmon annual management report, 2015. Alaska Department of Fish and Game, Fishery Management Report No. 16-02, Anchorage.

McCullough, J. N. and A. R. Shaul. 1992. The incidence of immature salmon in south peninsula purse seine fisheries, 1963-91. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K92-17, Kodiak.

TABLES AND FIGURES

Table 1.–Shumagin Islands, immature salmon test fish results, 1990–2015.

Year	Duration	Number[a] of sets	Number of Adult Salmon						Number of Immature Salmon				
			Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Chum	Total
1990	July 03–August 13	29	23	1,194	1,708	4,516	3,104	10,545	39	796	0		1,973
		Avg/Set	0.8	41.2	58.9	155.7	107.0	363.6	1.3	27.4	0.0		68.0
1991	July 01–July 19	51	148	3,791	1,422	7,077	4,092	16,530	331	13,167	0		20,908
		Avg/Set	2.9	74.3	27.9	138.8	80.2	324.1	6.5	258.2	0.0		410.0
1992	July 10–July29	44	134	2,413	3,695	10,167	4,388	20,797	892	13,449	5	2,087	16,433
		Avg/Set	3.0	54.8	84.0	231.1	99.7	472.7	20.3	305.7	0.1	47.4	373.5
1993	July 12–July 18	24	259	1,804	4,892	2,944	827	10,726	393	2,188	0	139	2,720
		Avg/Set	10.8	75.2	203.8	122.7	34.5	446.9	16.4	91.2	0.0	5.8	113.3
1994	July 14–July 27	31	99	1,171	4,221	8,530	2,657	16,678	135	3,685	2	11	3,833
		Avg/Set	3.2	37.8	136.2	275.2	85.7	538.0	4.4	118.9	0.1	.4	123.6
1995	July 12–July 17	30	122	4,000	3,671	8,456	2,592	18,841	215	221	0	390	826
		Avg/Set	4.1	133.3	122.4	281.9	86.4	628.0	7.2	7.4	0.0	13.0	27.5
1996	July 12–July 18	35	188	2,093	15,187	7,010	7,391	31,869	211	520	4	234	969
		Avg/Set	5.4	59.8	433.9	200.3	211.2	910.5	6.0	14.9	0.1	6.7	27.7
1997	July 12–July 19	39	373	2,716	3,536	4,925	4,075	15,625	3,361	674	32	182	4249
		Avg/Set	9.6	69.6	90.7	126.3	104.5	400.6	86.2	17.3	0.8	4.7	108.9
1998	July 02–July 03	10	6	711	33	1,200	499	2,449	5	24	0	0	29
		Avg/Set	0.6	71.1	3.3	120.0	49.9	244.9	0.5	2.4	0.0	0.0	2.9
1999	July 01–July 07	26	26	12,284	18	12,340	4,680	29,348	13	2,132	0	42	2,187
		Avg/Set	1.0	472.5	0.7	474.6	180.0	1128.8	0.5	82.0	0.0	1.6	84.1
2000	July 03–July 05	13	9	1,597	101	2,946	1,919	6,572	13	77	0	126	216
		Avg/Set	0.7	122.8	7.8	226.6	147.6	505.5	1.0	5.9	0.0	9.7	16.6

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Table 1.–Page 2 of 3.

Year	Duration	Number[a] of sets	Number of Adult Salmon						Number of Immature Salmon				
			Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Chum	Total
2001	July 02–July 16	50	318	6,258	3,353	9,382	10,772	30,083	1,265	3,241	17	1,382	5,905
		Avg/Set	6.4	125.2	67.1	187.6	215.4	601.7	25.3	64.8	0.3	27.6	118.1
2002	July 02–July 04	15	29	1,020	11	443	1,227	2,730	325	911	1	280	1,517
		Avg/Set	1.9	68.0	0.7	29.5	81.8	182.0	21.7	60.7	0.1	18.7	101.1
2003	July 02–July 20	28	26	819	1,279	4,646	2,275	9,045	1,419	8,640	43	512	10,614
		Avg/Set	0.9	29.3	45.7	165.9	81.3	323.0	50.7	308.6	1.5	18.3	379.1
2004	July 07–July 08	10	81	507	542	1,131	1,827	4,088	42	111	0	279	432
		Avg/Set	8.1	50.7	54.2	113.1	182.7	408.8	4.2	11.1	0.0	27.9	43.2
2005	July 02–July 05	22	68	1,197	2,137	7,117	2,140	12,659	1,110	263	2	211	1,586
		Avg/Set	3.1	54.4	97.1	323.5	97.3	575.4	50.5	12.0	0.1	9.6	72.1
2006	July 02–July 05	15	21	1,211	440	2,254	7,855	11,781	69	356	0	66	491
		Avg/Set	1.4	80.7	29.3	150.3	523.7	785.4	4.6	23.7	0.0	4.4	32.7
2007	July 02–July 05	17	12	11,389	781	7,036	1,300	20,518	2	951	0	9	962
		Avg/Set	0.7	669.9	45.9	413.9	76.5	1206.9	0.1	55.9	0.0	0.5	56.6
2008	July 03–July 08	23	12	9,310	1,901	14,838	11,436	37,497	22	2,167	0	391	2,580
		Avg/Set	0.5	404.8	82.7	645.1	497.2	1630.3	1.0	94.2	0.0	17.0	112.2
2009	July 03–July 05	18	28	1,587	389	21,101	3,825	26,930	76	644	3	260	983
		Avg/Set	1.6	88.2	21.6	1172.3	212.5	1496.1	4.2	35.8	0.2	14.4	54.6
2010	July 02–July 05	18	13	6,418	179	4,180	1,608	12,398	2	416	0	7	425
		Avg/Set	0.7	356.6	9.9	232.2	89.3	688.8	0.1	23.1	0.0	0.4	23.6
2011	July 02–July 05	18	7	1,151	49	11,980	1,315	14,502	4	267	0	3	274
		Avg/Set	0.4	63.9	2.7	665.6	73.1	805.7	0.2	14.8	0.0	0.2	15.2

-continued-.

Table 1.–Page 3 of 3

Year	Duration	Number[a] of sets	Number of Adult Salmon						Number of Immature Salmon				
			Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Chum	Total
2012	July 02–July 05	18	4	2,668	16	947	1,192	4,827	7	108	0	3	118
		Avg/Set	0.2	148.2	0.9	52.6	66.2	268.2	0.4	6.0	0.0	0.2	6.6
2013	July 02–July 05	20	4	2,366	1,002	7,043	1,632	12,047	5	662	0	0	667
		Avg/Set	0.2	118.3	50.1	352.2	81.6	602.4	0.3	33.1	0.0	0.0	33.4
2014	July 02–July 05	23	356	2,959	957	977	3,270	8,519	161	143	0	26	330
		Avg/Set	15.5	128.7	41.6	42.5	142.2	370.4	7.0	6.2	0.0	1.1	14.3
2015	July 02–July 09	21	116	1,502	5,915	27,904	3,808	39,245	1,498	236	57	616	2,407
		Avg/Set	5.5	71.5	281.7	1,328.8	181.3	1,868.8	71.3	11.2	2.7	29.3	114.6
2005–2014		17	53	4,026	785	7,747	3,557	16,167	146	598	1	98	842
Average		Avg/Set	2.7	209.7	40.9	403.5	185.3	842.0	7.6	31.1	0.0	5.1	43.8

[a] Test fishing is standardized to purse seine gear, conducting 20 minute sets at Popof Head, Middle Set, and Red Bluff located on Popof Island, additional sets are made if time allows.

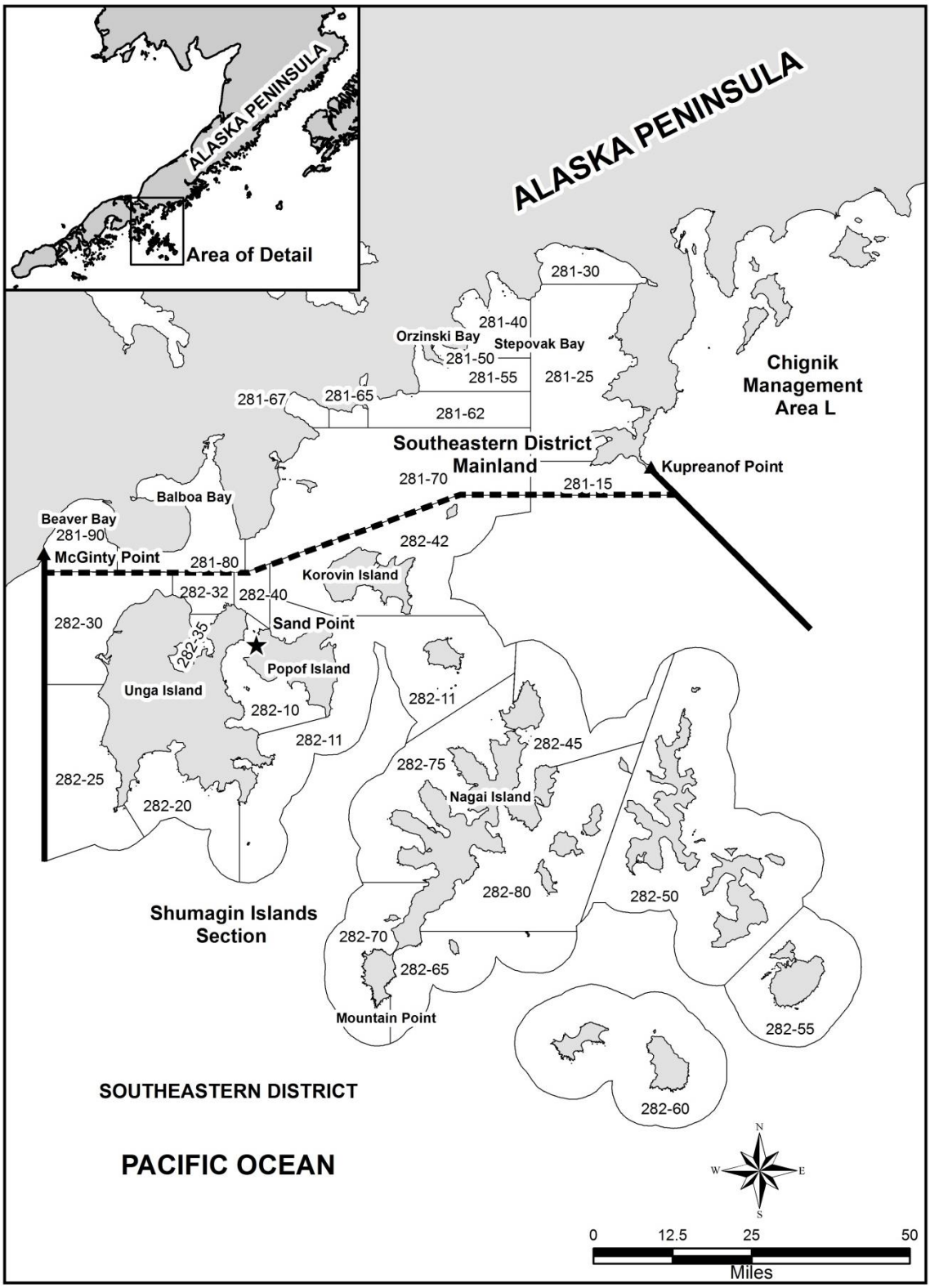

Figure 1.–Map of the Alaska Peninsula Area from Kupreanof Point to McGinty Point (Southeastern District) with the statistical salmon fishing areas shown.

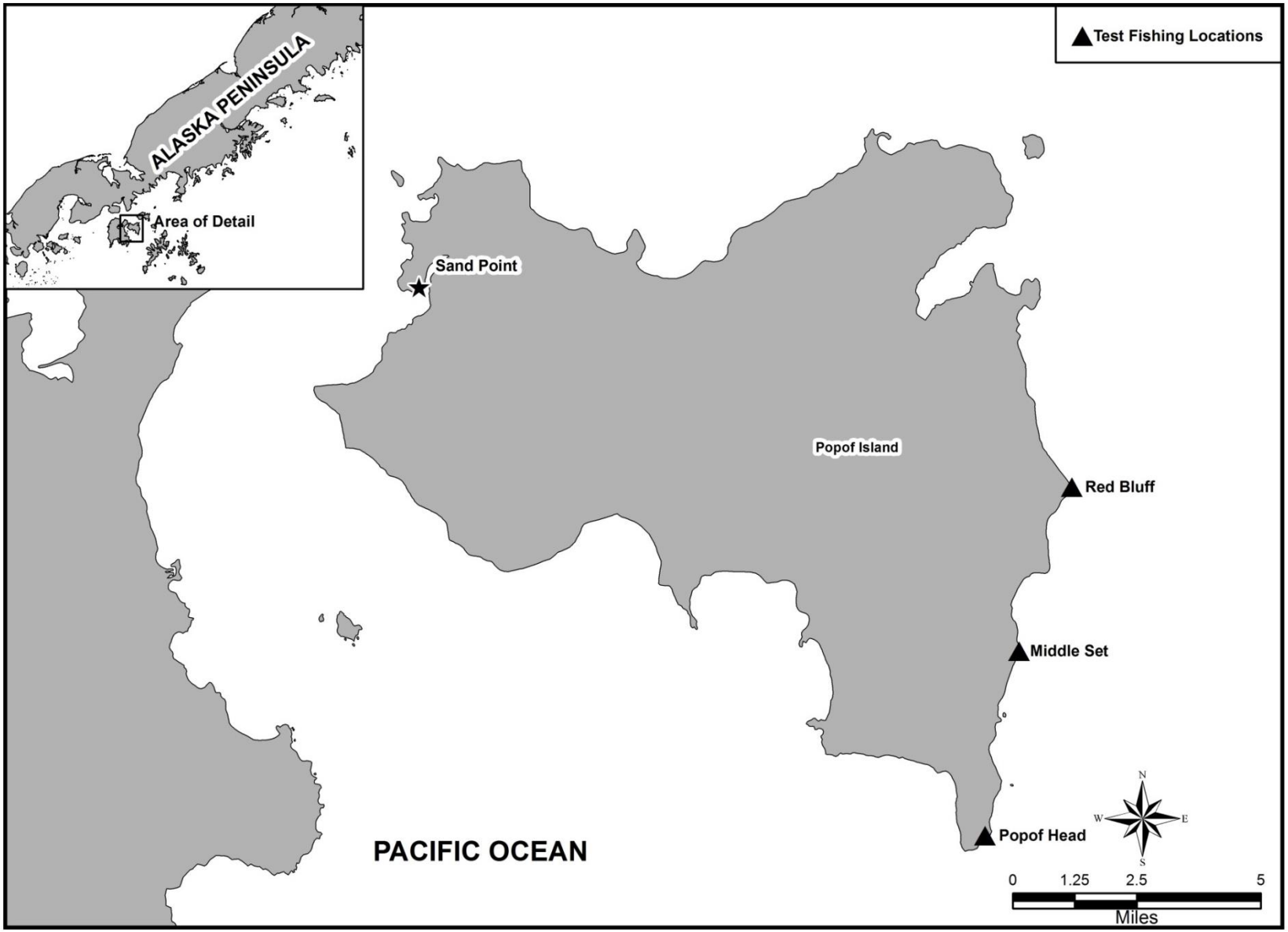

Figure 2.–Map of Popof Island with test fishing sites defined.

APPENDICES

Appendix A.–Short-term vessel charter agreement.

State of Alaska

Department of Fish and Game

SHORT-TERM VESSEL CHARTER AGREEMENT

This agreement shall cover chartering of the vessel described and under the conditions set forth below between the State of Alaska, Department of Fish and Game and:

Name_____ Mailing address _____

Telephone_____ City/State/Zip_____

VESSEL S.S.# or Tax ID_____

Name and/or Number_____ Type & Keel length_____

Equipment & supplies needed provided by the contractor (food, bait, skiff, etc.)_____

_____

Fishing gear provided by contractor_____

Fuel _____will be _____ will not be provided by the State of Alaska.

PURPOSE OF CHARTER_____

_____

Charter will begin at _____ on _____ and end at _____ on _____.

(Location) (Date) (Location) (Date)

(Agreement cannot exceed fourteen (14) working days. No extension or sequential contract allowed.)

Cost of Charter: $_____ (cannot exceed $30,000)

TERMS AND CONDITIONS

1. The state will have general direction of activities of the vessel, but contractor (if aboard) will be responsible for safe operation of vessel.
2. The contractor will hold the State harmless from any liability caused by loss of vessel or damage caused to or by the vessel, and against any loss, damage, and/or liability occasioned by or arising from, any negligent act on the part of the contractor.
3. The State will provide insurance coverage for the state employees only.
4. The length of the charter shown above is estimated and can be terminated at anytime by the State but cannot exceed fourteen (14) days.
5. Vessel may be required to submit to an inspection by the U.S. Coast Guard (State's option).
6. Upon completion of the contract, Department of Fish and Game representatives will initiate payment processing. A warrant will be mailed to the above address after processing.
7. Special conditions _____
_____.

The terms and conditions are understood and agreed to.

/s/_____ /s/_____

Department of Fish and Game Representative Owner or Master of Vessel

INSURACE INFORMATION

1. Value of hull insurance $_____

2. Amount of protection and indemnity insurance $_____

3. Name of Insurance Carrier _____

4. Expiration date of policy _____

5. Number of Contractors _____

6. Name(s) of Department of Fish and Game personnel aboard: _____

Appendix B.–Example of an immature salmon test fishery data form.

Page ___ of ____

Sand Point Test Fishery Data Form

Date_____ Vessel_____
Observer_____
Processor_____

SET NUMBER_____	Lat.	Long.
SET LOCATION_____	Start net out	Net fully out
	Start net closed	End net closed
	Time Out	Time Closed

Immature Salmon Caught

	Caught
Sockeye	
Chinook	
Pink	
Chum	
Coho	
Total	

Bycatch

Species	Caught
Total	

Comments:

Date_____ Vessel_____
Observer_____
Processor_____

SET NUMBER_____	Lat.	Long.
SET LOCATION_____	Start net out	Net fully out
	Start net closed	End net closed
	Time Out	Time Closed

Immature Salmon Caught

	Caught
Sockeye	
Chinook	
Pink	
Chum	
Coho	
Total	

Bycatch

Species	Caught
Total	

Comments: