Regional Operational Plan SF.4A.2020.06

Alaska Statewide Sport Fish Harvest Survey, 2020

by

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November 2020

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

Symbols and Abbreviations

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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 SF.4A.2020.06

ALASKA STATEWIDE SPORT FISH HARVEST SURVEY, 2020

by
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SIGNATURE/TITLE PAGE

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ABSTRACT

Since 1977, the Alaska Department of Fish and Game has conducted an annual mail survey to estimate sport fishing participation (number of anglers, days fished) and harvests (fish kept) statewide by Alaska fisheries, areas, regions, and species. Since 1990, catches (fish harvested plus fish released) have also been estimated. Planning details are provided for the 2020 survey, which will estimate number of anglers fishing in Alaska, days fished, and numbers of fish caught and kept by species, water type and fishing location.

Keywords: Alaska, sport, fish, fisheries, fishing, catch, harvest, angler, angler-days, survey, Pacific salmon, trout, char, Arctic grayling, northern pike, whitefish, burbot, smelt, Pacific halibut, rockfish, lingcod, Pacific cod, crab, shrimp, shark, razor clams, Alaska Statewide Harvest Survey, Statewide Harvest Survey, Alaska Sport Fishing Survey, SWHS

PURPOSE

NEED

Meeting public demand for recreational fishing opportunities in Alaska while at the same time maintaining and protecting fishery resources has become increasingly complex. Decision-makers require information on participation, catch, and harvest in order to maintain, protect, and improve recreational fisheries. Because of Alaska's vastness, obtaining this information through onsite creel surveys would be prohibitively expensive. This project will provide the needed information at far less expense.

BENEFITS

This project will update and maintain a statewide database on where fishing occurs, the extent of participation, and the species and numbers of game fishes caught and harvested. Such information is essential for regulation and management of fisheries, for project evaluation, and for formulation of department policies and priorities that reflect angler needs, concerns, and preferences.

This project not only meets management needs, but also provides information necessary for establishing priorities; for formulating policies; for planning and evaluating rehabilitation, enhancement hatchery, stocking, habitat protection, and access acquisition projects; for stock assessment; for forecasting; for gauging the economic and social significance of sport fishing; and for satisfying requests for information from individuals, special interest groups, government agencies, and the recreational industry.

PROCEDURES

Questionnaires will be developed and mailed to a stratified random sample of households having at least one person with a 2020 Alaska sport fishing license (any type). Reminder letters and questionnaires will be mailed to first-time and second-time non-respondents in the Resident and Nonresident Early strata and to first-time non-respondents in the Nonresident Late stratum. Data from returned questionnaires will be coded, captured, verified, edited, and processed to produce 2020 estimates to update an established database of sport fishing participation, catch, and harvest estimates. A computer-based processing, storage, and retrieval system for all completed surveys and associated data will be maintained and updated.

LOCATION

The project will be conducted out of the Anchorage office but will collect information from 2020 resident and nonresident anglers on sport fishing throughout Alaska.

INTRODUCTION

Meeting public demand for recreational fishing opportunities in Alaska while at the same time maintaining and protecting the fishery resources has become increasingly complex. In the early years of statehood, before rapid population expansion and industrial development, good, uncrowded fishing was accessible; large sport fisheries were few and easily monitored; and sport fishing was considered to be a minor factor affecting management or population dynamics of fish stocks.

Today, following tourism and forest, mineral, petroleum, and associated government development, Alaska has a large recreationally oriented population. Accessible sport fisheries have become crowded, new fisheries have developed, and pressure from this large mobile population has spilled ever farther afield. International treaties, Alaska Native land allotments, national interest land legislation (e.g., Section 17(d)(2) of the Alaska Native Claims Settlement Act, 43 U.S.C. 1601-1629e), the issue of subsistence, state legislated land conveyance quotas, and problems of access have complicated maintenance and expansion of sport fishing opportunities. The State and private corporations have made substantial commitments to aquaculture and hatchery propagation, and recreational fishing is now a significant factor in total fisheries management, and vociferous sport-commercial-subsistence user conflicts have developed in some areas of the state.

Against this backdrop, a statewide database providing estimates on where sport fishing occurs in Alaska, the extent of participation, the preferences of participants (as revealed by their reported sport fishing activities), and the species and numbers of major game fishes being caught and harvested has become essential for maintenance, enhancement, and management of Alaska's sport fisheries.

Because of Alaska's vastness, meeting these data needs by onsite creel surveys would be prohibitively expensive, so an off-site survey-based program was started in 1977 to meet management information needs. The information obtained by this project also provides information necessary for establishing management priorities; for formulating policies; for planning and evaluating rehabilitation, enhancement, hatchery, stocking, habitat protection, and access acquisition projects; for fisheries stock assessment and forecasting; for gauging the economic and social significance of sport fishing; and for satisfying requests for information from government agencies, the recreational industry, the angling public, and special interest groups.

OBJECTIVE

The primary object of this project is to estimate participation, catch, and harvest for major Alaska sport-caught species statewide, by area, and by site such that statewide estimates of participation, harvest, and catch of major sport-caught species are within the levels of precision set below 95% of the time (Table 1):

Table 1.–SWHS Precision objectives for statewide effort, harvest and catch of major species - 2020

Relative Precision (%)[a]												
Effort	Total Harvest							Total Catch				
Days Fished	Chinook salmon	Coho salmon	Sockeye salmon	Halibut	Lingcod	Rockfish	Rainbow Trout	Rainbow Trout	Dolly Varden	Arctic Grayling	Steelhead	Northern Pike
5	5	5	5	5	10	10	15	10	10	15	25	25

[a] Based on 95% confidence intervals.

The estimated harvests of sport fish are primarily interpretable as descriptive of the legal take for each fish species. There is no attempt to estimate "illegal" harvest of fish in Alaska. Specifically, individuals who fail to obtain a sport fishing license or are otherwise unauthorized to catch and harvest fish are not part of the sampling frame, and as such cannot be included in the estimation process. Additionally, reported harvest by surveyed households that is excessively large numerically in comparison to daily or annual harvest limits and hence are deemed "illegal" are either edited or censored from the analyses.

STUDY DESIGN

A stratified random sample survey will be conducted to estimate participation, catch, and harvest in Alaska sport fisheries in 2020. A self-administered mail-back questionnaire will be mailed to households with anglers licensed to sport fish in Alaska during 2020. The survey booklet was revised in 2011 and the new format has been used since. The revised booklet incorporates elements of the two different types of booklets used prior to 2011. Included in the survey booklet are pages that ask specifically about Kenai, Kasilof and Russian rivers freshwater fisheries and Cook Inlet saltwater fisheries. These pages will list specific sites within the Kenai Peninsula/Cook Inlet survey area. There will also be pages that ask about sport fishing activities at all other saltwater and freshwater sites in Alaska. On these pages, respondents are asked to write the name of the location where they fished using a map booklet as a guide. The survey booklet is designed to capture guided/non-guided activity within fisheries across Alaska.

SURVEY

A stratified random sample of sport fishing households will be used to estimate participation, catch, and harvest. Questionnaires will be mailed to 46,996 households from the incomplete 2020 sport fishing household database available in fall 2020. The 2020 sport fishing household database consists of identifying information for households with either:

(1) at least one individual who purchased a sport fishing license in 2020, or

(2) at least one individual holding a permanent identification (PID) card (a free card issued on request to Alaskan residents of at least one year who are ≥60 years old) and who is no older than 82 years old, or

(3) at least one individual holding a disabled veteran (DAV) license (a free license issued on request to Alaskan residents who are certified 50% disabled by the US Veteran Administration) and no older than 82 years old.

The PID holders list consists of all individuals who were issued a PID from 1987 through December 31, 2019. The DAV holders list consists of all individuals who were issued a DAV license from 1998 through December 31, 2019. Both PIDs and DAVs are issued by the Alaska

Department of Fish and Game and are valid for both hunting and fishing. The PID and DAV holders lists are maintained in a single database and were modified to account for mortality, residency and duplication (see Appendix B). PID holders >82 years of age were excluded from sampling due to low participation in sport fishing (<1%, Appendix B). DAV holders did not exhibit the same pattern of decline in sport fishing participation by age but comments from past survey respondents suggest that an age cutoff of 82 was also appropriate. The PID and DAV holders list contained 93,063 records available for sampling in 2020 (not including those noted as inactive by ADF&G Licensing Section, deceased or who refuse to participate per the Division of Sport Fish copy of the PID and DAV database) as of July 31, 2020.

The sport fishing household list is termed "incomplete" at the time of sampling since (1) individuals who purchase sport fishing licenses after the in-season sampling dates or whose license records have not been added by ADF&G Licensing Section prior to the sampling dates are not in the list, 2) PIDs or DAVs issued after January 1, 2020 are not in the list, and (3) some of the names and/or addresses on the sport fishing license list are incomplete or illegible to the degree that they cannot be used for sampling.

The structure used to define sampling strata in this survey involves two dimensions. The first dimension is determined by the residency[1] of the sport fishing households according to the following groupings:

- Alaska residents;
- Other USA residents, (includes other 49 states, Washington, D.C., and all other territories and possessions of the United States);
- Canadian residents; and
- Other foreign residents.

This dimension of stratification was identified and defined so that each household within a stratum will have an equal probability of being surveyed. Previous surveys have indicated that the response rates of these demographic groups differ sufficiently to justify stratification by this dimension. Additionally, the sport fishing household computer file is incomplete at the time of the initial mailing and the degree of incompleteness differs for these residential groupings (the Other Foreign Residents stratum consistently has the greatest number of incomplete or illegible addresses). Accordingly, if a simple random sample (not stratified) were to be used, the resultant combined probabilities of sample selection and response to the survey would differ for the individual households. Use of this stratification dimension (residential groupings) is similar to the stratification structure that has been used since the 1993 survey.

The second dimension of stratification - early/late - was defined according to the date of the first license purchase by any household member in each household. An "early" and "late" date of first license purchase grouping was defined differently for the Alaska resident grouping compared to the non-Alaska resident groupings. Combining the first and second dimensions of stratification results in eight sampling strata as defined in Table 2.

[1] Residency is determined by the mailing address given when the respondent is issued a sport fishing license. The class of the license is not taken into consideration when determining residency for stratification purposes. The intent of this classification scheme is to stratify respondents who are expected to behave in similar fashion, e.g. a person with an Alaska address is more likely to fish like other people with Alaska addresses.

Table 2.–Alaska statewide sport fish harvest survey stratification definitions for sampling and catch, harvest and participation estimation.

Stratum		Description
1	Early Alaska Resident	Alaska households with first license purchase between January 1 and July 4, 2020. Also includes all current DAV holders and PID holders ≤ 82 years of age in the corresponding databases.
2	Late Alaska Resident	Alaska households with first license purchase after July 4, 2020
3	Early Other USA Resident	Other USA households with first license purchase between January 1 and July 17, 2020
4	Late Other USA Resident	Other USA households with first license purchase after July 19, 2020
5	Early Canadian Resident	Canadian households with first license purchase between January 1 and July 17, 2020
6	Late Canadian Resident	Canadian households with first license purchase after July 17, 2020
7	Early Other Foreign Resident	Other Foreign households with first license purchase between January 1 and July 17, 2020
8	Late Other Foreign Resident	Other Foreign households with first license purchase after July 17, 2020

The second dimension of stratification as defined by date of first license purchase by a household member was adopted to address issues related to the incomplete nature of the Sport Fish License file available for sampling. Specifically, at the time (late September/early October) when early sampling is initiated, licenses purchased later in the year are under-represented in the license file. Additionally, Alaskan residents who purchase sport fishing licenses tend to do so earlier in a calendar year than many of the non-Alaskan residents. Accordingly, if the early/late license dimension of stratification was not used to define sampling strata, then the resultant samples drawn from the license file (if only done once per residential grouping) would over-sample households with household members who purchased licenses earlier in the year, and conversely under-sample households with late season license purchases. Over/under-sampling of different households could result in biased estimates, since households with early versus late license purchase probably have different fishing characteristics.

The defining dates for classifying the early versus late date of license purchase stratification (Table 3) were chosen to correspond with historical dates of license purchasing behavior for Alaska residents separately from the non-Alaskan resident demographic groupings. The dates selected represent a balancing of the historical records of license purchasing behavior with logistic constraints related to: (1) the availability of the Sport License File, (2) concerns related to initiating the first mailing to each sampling stratum to occur 'soon as feasible', (3) while still allowing adequate time for households to respond to the initial and follow-up mailings, and (4) finalizing the receipt of responses from all mailings from the previous survey cycle (early June 2020).

Table 3.–Average (2016–2020) percent of early versus late license sales for Alaska/non-Alaska households.

Stratum or Combined Strata		Dates of License Purchase	Average (2016-2020) percent of early versus late license sales for Alaska and non-Alaska households
1	Early Alaska Resident	January 1 – July 4	70%
2	Late Alaska Resident	After July 4	30%
3, 5, & 7	Early NON-Alaskan Residents (i.e., Other USA, Canadian, and Other Foreign Residents)	January 1 – July 17	50%
4, 6, & 8	Late NON-Alaskan Residents (i.e., Other USA, Canadian, and Other Foreign Residents)	After July 17	50%

Sample sizes for each of the 8 stratum (Table 2) were based on historical sampling levels that have achieved the objective criteria for precision (Table 1). The 2020 sample sizes were set using response data for each stratum as observed while conducting the 2019 survey. Sample sizes for the late non-Alaska residential combined stratum are adjusted upwards to compensate for the lack of a 2nd reminder mailing (described below) to this stratum, with the goal of achieving similar levels of response to those obtained in years when a second reminder was mailed to the Late strata - prior to 2006. Sample size allocations were set to be proportional to the relative stratum sizes (number of households per stratum) as estimated from the 2019 survey (Table 4).

Table 4.–Sample size by stratum for the 2020 Alaska statewide sport fish harvest survey.

Stratum		A Relative Size of Stratum (2019)	B Response Rate (2019)	C Number of Households to be Mailed Surveys in 2020 (1st Mailing) [a]	D Expected Number of Responses for 2020 after all reminders	E Expected Relative Size of 2020 Responses[b]
1	Early Alaska Resident	32.85%	36.35%	13,728	4,991	32.85%
2	Late Alaska Resident	14.08%	22.19%	9,640	2,139	14.08%
3	Early Other USA Resident	25.19%	36.48%	10,492	3,827	25.19%
4	Late Other USA Resident	25.19%	32.24%	11,868	3,827	25.19%
5	Early Canadian Resident	0.63%	46.61%	204	96	0.63%
6	Late Canadian Resident	0.63%	37.16%	256	96	0.63%
7	Early Other Foreign Resident	0.72%	32.73%	336	110	0.72%
8	Late Other Foreign Resident	0.72%	23.24%	472	110	0.72%

[a] Number of Households to be Mailed Surveys in 2020 in stratum *i* will be calculated as $C_i = A_i * 47{,}000 / \sum \frac{A_i}{B_i}$.

[b] Expected Relative Size of Responses = Expected Number of Responses for 2019 by Stratum divided by Expected Number of Responses for 2020 Over All Strata times 100%.

The sample size needed to meet the objective of this study was derived from an evaluation of whether the precision objectives set for the study were met for the previous survey year (Table 5). The number of responding households for all strata for 2020 is estimated to be 15,196 based upon the sample size and 2019 response rates.

Table 5.–Survey response and relative precision of key effort and harvest estimates statewide, 2007-2019.

					Relative Precision (%)[a]												
					Effort	Total Harvest							Total Catch				
Year	Sample Size	Number of Responses	Non-deliverable surveys	Overall Response Rate (%)[b]	Days Fished	Chinook salmon	Coho salmon	Sockeye salmon	Halibut	Lingcod	Rockfish	Rainbow Trout	Rainbow Trout	Dolly Varden	Arctic Grayling	Steelhead	Northern Pike
2007	47,000	19,397	2,797	43.9	2	4	4	6	3	8	7	14	7	10	13	19	31
2008	47,000	19,900	2,727	44.9	2	5	4	5	3	7	7	12	8	8	11	21	28
2009	47,000	20,478	2,313	45.8	2	7	3	5	4	8	5	14	7	8	12	24	17
2010	47,000	18,855	2,439	42.3	2	6	4	5	3	7	6	11	7	8	13	21	22
2011[c]	47,000	17,362	2,567	39.1	2	6	4	6	3	10	6	15	9	11	15	39	22
2012	47,000	17,699	2,759	40.0	2	6	4	5	3	7	6	16	11	11	11	25	29
2013	46,630	16,893	2,834	38.6	2	6	4	5	3	7	6	17	8	9	13	24	27
2014	47,000	17,738	2,571	39.9	3	6	4	5	3	8	5	14	7	9	18	26	25
2015	47,000	16,885	2,608	38.0	2	5	4	7	3	8	5	19	9	11	13	28	33
2016	47,000	16,773	2,527	37.7	2	7	4	6	3	8	5	20	9	9	14	29	28
2017	47,000	16,181	2,880	36.7	2	6	4	5	4	9	6	16	15	12	13	29	26
2018	46,694	15,666	2,906	35.6	2	8	4	6	3	9	5	14	9	11	16	25	23
2019	49,000	15,986	3,221	34.9	2	6	4	5	4	8	5	16	8	12	15	27	63

[a] Based on 95% confidence intervals.

[b] Overall Response rate = total number of returned surveys containing reported fishing information (# of Responses) / (Sample Size - Nondeliverable surveys). Nondeliverable surveys include sampled households that could not be reached after three mailings. Households who refuse to participate or are deceased are not included in Response set.

[c] Single booklet survey implemented.

7

Starting in 2012, surveys sent to selected households in the Other USA Resident stratum were mailed using First Class postage (as opposed to Bulk Mail rate). The rationale for this modification in mailing procedures was to shorten the delivery time and, hopefully, improve the response rate for that stratum.

The schedule for mailing is different among the sampling strata. Specifically, the mailing schedule calls for grouping the sampling strata as follows (Table 6):

Table 6.–Definition of mailing groups by sampling strata.

Mailing Group	Corresponding Strata
Resident Early	Early Alaska Resident
Resident Late	Late Alaska Resident
Nonresident Early	Early Other USA, Early Canadian, Early Other Foreign
Nonresident Late	Late Other USA, Late Canadian, Late Other Foreign

The Resident Early mailing group will be sampled from a version of the Sport Fish License file obtained from Alaska Department of Fish and Game, Division of Administrative Services (Licensing) on or about September 14, 2020. Historical records indicate that this version of the file is approximately 90% complete for licenses sold between January 1 and early July. As noted above, the PID and DAV holders are classified as all belonging to the Resident Early mailing group (and the corresponding Early Alaska Resident stratum). The version of the PID and DAV file used for sampling will be based upon all available and eligible records as of December 31, 2019.

The Nonresident Early mailing group is the next group to be surveyed and will be sampled from the Sport Fish License file available from Licensing on or about October 14, 2020. This file is expected to be approximately 90% complete for license sales to non-Alaska resident households between January 1 and July 17, 2020.

The final two mailing groups (Resident Late and Nonresident Late) will be sampled from the Sport Fish License File available on or about December 2, 2020 and Dec 15, 2020 respectively, which is expected to be 90% complete for the corresponding license sale time periods (see Table 3).

The additional milestone dates for the corresponding mailing dates for 2020 can be found in Table 7.

Table 7.–Mailing schedule for the 2020 survey.

Residency	Mailing Number	Labels Drawn by RTS	Labels to Assets/Data[a] Processing	Survey to Post Office	Days for Household to Respond[b]
Resident	1 - early	9/28/2020	9/29/2020	10/19/2020	28
	1 - late	12/15/2020	12/16/2020	1/4/2021	42
Nonresident (Other US)	1 - early	10/28/2020	10/29/2020	11/12/2020	68
	1 - late	1/4/2021	1/5/2021	1/21/2021	40
Nonresident (Canadian and Other Foreign)[c]	1 - early	10/28/2020	10/30/2020	11/6/2020	75
	1 - late	1/4/2021	1/8/2021	1/12/2021	48
Resident	2 - early	11/17/2020	11/17/2020	12/4/2020	57
	2 – late	2/16/2021	2/16/2021	2/26/2021	29
Nonresident (Other US)	2 – early	1/20/2021	1/21/2021	2/2/2021	43
	2 – late	3/1/2021	3/2/2021	3/12/2021	no 3rd mailing
Nonresident (Canadian and Other Foreign)[c]	2 – early	1/20/2021	1/26/2021	1/27/2021	47
	2 – late	3/1/2021	3/3/2021	3/6/2021	no 3rd mailing
Resident	3 – early	2/1/2021	2/2/2020	2/12/2021	
	3 – late	3/25/2021	3/25/2020	4/5/2021	
Nonresident (Other US)	3 – early	3/15/2021	3/16/2021	3/25/2021	
Nonresident (Canadian and Other Foreign)[c]	3 – early	3/15/2021	3/19/2021	3/22/2021	

[a] Labels for Other US residents are processed at our mailing house – Assets, Inc. Mailings to Canadian and other foreign addresses are processed by SF Data Processing. As a general rule, the mailing house can process 1,000 pieces per day. This figure is used when calculating the number of days for processing once labels are received.

[b] Difference between date of previous mailing delivered to Post Office and date labels for current mailing are drawn. We do not mail a 3rd Nonresident (Other US) or Nonresident (Canadian and Other Foreign) LATE mailing survey packet so no days for response are calculated. Also, 3rd mailing response days vary by the final date of data entry cut-off which is usually in late May or early June.

[c] Booklets being sent to the foreign segment (Canadian and Other Foreign) of the Nonresident strata will go to the Post Office earlier than the Other USA addresses to allow for more time in transit.

Reminder letters and questionnaires will be mailed to non-respondents per the schedule in Table 7. The rationale for using multiple waves of questionnaires is described by El-Badry (1956). Additionally, the response rate by mailing provides information to correct for nonresponse bias as outlined in the Data Analysis section. The dates for sending the reminder letters and questionnaires were chosen to allow for adequate opportunity to respond to the previous mailing balanced against mailing contractor constraints.

Households that fail to respond to the first survey will be sent a second survey (first reminder) after the noted "Days for Household to Respond" have passed. Nonresponding households to this second survey for the Resident Early and Resident Late survey groups as well as the Nonresident Early survey group will be sent a third survey (second reminder). The Nonresident Late Survey group will not be sent a third survey (second reminder).

Prior to the 2006 survey, all strata (and the corresponding mailing groups) were all sent three mailings. In order to send out three mailings for the Nonresident mailing groups and still receive all responses by April-May of the following year, the number of days to respond to the previous mailing was shortened to a level that was subsequently deemed inadequate. The various Nonresident Mailing groups' households, by definition, are expected to receive questionnaires after a greater lapse of time than the corresponding Resident Mailing groups. Similarly, receipt of their responses takes longer to transit. In previous years, a substantial number of responses to the 1st and 2nd mailing for the Nonresident mailing groups would be received after sending the same households the corresponding reminder. Accordingly, since 2006 the third mailing (second

reminder) was dropped for the Late Nonresident mailing group, to allow for more time for response between mailings and still produce estimates by early July. As noted above, the initial (first mailing) sample sizes were expanded upwards for this mailing group to compensate for the loss of responses that would have been expected to result from a third mailing. Estimation procedures were adapted to address this change in study design and are outlined in the Data Analysis section.

An additional change to the mailing schedule that was implemented starting with the 2006 survey year was directed at sending out the 1st mailing of the surveys to sampled households in the Canada and Other Foreign strata one to two weeks before the corresponding date for the other strata within the same mailing group when possible. This change was directed at providing additional time for these surveys to be delivered to these households, as mailing transit times are expected to be greater for the Canada and Other Foreign strata (in comparison to USA). This practice will be repeated in 2020.

Estimates will be generated for each of the 8 strata (Table 2) by first calculating mean angler participation, catch, and harvest of each species over all sport fishing households that return completed surveys. The means from each mailing will then be calculated and tested for nonresponse bias. Exponential regression models will be used to correct for nonresponse bias. A nonresponse bias correction factor will be calculated for individual sport fish species and for effort (days fished) and number of trips. The nonresponse bias correction factor will be calculated separately for each mailing group (Table 6). Mean estimates will be expanded by the total number of sport fishing households within each of the 8 strata to obtain estimates of participation, catch, and harvest for each stratum. Variances and confidence intervals will be obtained by the bootstrap method (Efron and Tibshirani 1993). Total estimates will be obtained by summing stratum estimates. Standard errors and 95% confidence intervals for the total estimate will also be calculated. Complete details of the estimation procedures are outlined in the Data Analysis section of this plan.

The survey questionnaire has been formatted as a "split-ballot" survey instrument to address the potential for question order bias and page order bias. There will be two split-ballot tests (one for question order, one for page order) resulting in four distinct versions of the survey questionnaire. The first split-ballot version of the questionnaires will present charter/guided fishing activities listed first in the response grid pages and the second option will present charter/guided activities after non-charter/unguided fishing activity in the response grid. The second split-ballot version of the survey questionnaire present pages specific to the Kenai Peninsula and Cook Inlet first in page order, followed by the more general pages for Saltwater and Freshwater appearing second. The second option in this split-ballot version will present the general saltwater/freshwater pages first followed by Kenai Peninsula and Cook Inlet pages. Selection of households to each version of the questionnaire (4 sub-types) will be made at random such that 25% of the of the total sample for each strata mailing group is allocated to one of the four questionnaire formats.

SAMPLE SELECTION

As noted above, the ADF&G license file available on or about September 14, 2020 will be used for the sample selection for the Resident Early mailing group. Since, the Resident Early mailing group corresponds to 70% of all license sales to Alaska sport fishing households, the sample size for this mailing group was set so that the expected number of responses would comprise 70% of responses across the two Alaska resident strata (early and late). To avoid sending any individual

household more than one survey, households considered[1] for the Resident Early sample will be excluded from selection in the later Resident Late sample even though other members of the household may have purchased their license during the Resident Late sample time frame.

Sample selection for the four questionnaire formats for the Resident Early mailing group will be conducted as follows:

- Randomly select, without replacement, 13,728 households from the Alaskan resident households in the combined incomplete sport fishing household, PID, and DAV file for Resident Early mailing group.
- Then randomly select, without replacement, from these 13,728 (selected) Alaskan resident households a total of 3,432 households for each version of the survey form:
    - Kenai/Cook Inlet pages first, charter grid on top of page
    - Saltwater/Freshwater pages first, charter grid on top of page
    - Kenai/Cook Inlet pages first, noncharter grid on top of page
    - Saltwater/Freshwater pages first, noncharter grid on top of page

Similarly, the ADF&G license file available in mid-October for the Nonresident Early mailing group is expected to represent approximately 50% of license sales to all Nonresident households (early and late combined). The sample sizes for the strata in the Nonresident Early mailing group were set so the expected number of responses to this mailing group will comprise 50% of responses across the early and late non-Alaska resident strata. Like the Resident Early sample, households considered for the Nonresident Early sample will be excluded from selection in the Nonresident Late sample to avoid sending any individual Nonresident household more than one survey. Sample selection for the four questionnaire formats for the Nonresident Early, Resident Late and Nonresident Late mailing groups will be conducted in a similar fashion to the Resident Early sample, according to the specifications described in Table 8. Due to a high number of illegible foreign addresses, inability to reconcile mailing addresses for many countries, and formidable language barriers for some participants in filling out the license form, the sample frame for Other Foreign households will contain a large proportion of records that will be removed prior to sampling. Based on address cleaning of 2020 sport fish license records purchased and added through September 14, 2020, it is projected that between 50-60% of these Other Foreign addresses will be usable for Non-Resident Early sample selection in October 2020 and Non-Resident Late sample selection in early January 2020.[2] Due to the high cost of mailing surveys to foreign countries, the project can only justify sending surveys to those Other Foreign households with a verified address. The inability to include in the sample frame Other Foreign household records with addresses that cannot be reconciled may have a small effect on overall SWHS estimates but it is assumed that Other Foreign households that are sampled are generally representative of those households that are not sampled. In addition, due to concerns about sending more than one survey to an Other Foreign household that is selected, sample selection for Other Foreign households was further constrained to allow only one household selected per city in each non-Canadian foreign

[1] A resident household is considered for early sample selection if at least one member of that household purchases a license during the early sample strata period (Jan1 – July 4) and thus is available for possible early sample selection.

[2] Due to the onset of the COVID-19 pandemic in March of 2020, it is expected that the sample goals for Canadian and Foreign angling households may not be met in 2020 due to travel restrictions implemented and angler reluctance to travel to Alaska amidst the pandemic. If realized, unused Canadian and Foreign household sample will be re-allocated to the Alaska resident sample.

country for the Early mailing group. Due to the small number of non-Canadian foreign licenses in the Nonresident Late mailing group, restricting the Other Foreign sample to one household per city may not be possible.

Table 8.–Sample selection and allocation by booklet type by mailing group for the 2020 survey.

Mailing Group	Number of households to be sampled	License Data File Subset	Expected Percent of License Sales by Residency and Time	Number of households per version of the survey
Resident Early	13,728	Alaskan resident sport fishing households from combined file of licenses issued January1 -July 4, 2020 and current PID, and DAV file (7-31-20 version)	70%	3,432
Resident Late	9,640	Alaskan resident sport fishing households from licenses issued July 5- December 4, 2020	30%	2,410
Nonresident Early		Nonresident sport fishing households with licenses issued January 1-July 17, 2020	50%	
Other USA	10,492	Other USA resident households		2,623
Canadian	204	Canadian resident households		51
Other Foreign	336	Other Foreign resident households		84
Nonresident Late		Nonresident sport fishing households with licenses issued July 18-Dec 14, 2020	50%	
Other USA	11,868	Other USA resident households		2,967
Canadian	256	Canadian resident households		64
Other Foreign	472	Other Foreign resident households		118

OUTREACH AND SURVEY COVER LETTERS

Prior to conducting the first mailing to the Resident Early mail group, a news release will be issued by the Division of Sport Fish announcing the initiation of the annual mail survey, outlining its overall goals, and emphasizing the importance of replying to the survey. A similar announcement may also be posted to the ADF&G social media outlets. The purpose of these announcements is to notify potential participating households of the survey's purpose and importance of their timely response if selected, with the end goal of maintaining or improving overall response rates. Although it is expected that nonresident households would be less likely to be aware of the news release, the impact of the different treatment of resident versus non-Alaska resident households will not bias the results since estimates are derived from independent stratified sample survey procedures. In addition to the news release and social media notice, each mailing of the questionnaires for each survey type will be accompanied by a cover letter that outlines to each potential survey respondent the purposes of the survey and the importance of their participation in responding to the survey (Figures 1-3). The Other Foreign strata will receive a cover letter for each mailing that contains slightly different language related to the return of the completed survey, since return postage is not provided by ADF&G (Figure 4). The reminder cover letters (2nd and 3rd mailings) will necessarily identify that a response to the previous mailing had not yet been received, and reemphasizes the importance of responding to the survey (Figures 2 and 3).

As with the public announcements, the main purpose of the cover letters is to convey the survey purpose and encourage household response to maintain or improve overall response rates and the precision of the estimates.

BIAS

Estimates produced from surveys of this type might be expected to suffer from one or more sources of respondent bias. For example, surveying anglers after the fishing season is over could result in recall bias. Some anglers might also be expected to overstate their success and therefore introduce prestige bias. On occasion it has been suggested that anglers might even underreport harvest in areas facing restrictions and thus introduce strategic bias. While the study does not assess the effects of bias, Mills and Howe (1992) and Clark (2009) examined the accuracy and precision of survey estimates and found they were consistent with onsite creel survey estimates for several fisheries. Such comparisons are done annually at locations that have creel surveys with sufficient coverage to make reasonable comparisons with annual estimates for the same locations. In recent years the number of creel surveys has decreased and those that remain do not all produce estimates comparable to statewide harvest survey estimates due to limited time and location coverage, although overall the comparable estimates have continued to track consistently between the former two types of survey (Clark (2009).

THE STATE of ALASKA

GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

DIVISION OF SPORT FISH
Research & Technical Services

333 Raspberry Road
Anchorage, Alaska 99518-1565
Phone: 907.267.2280
Fax: 907.267.2422

Dear Angler,

Every year we conduct a survey of anglers who went sport fishing in Alaska to measure where sport fishing occurs and how many fish are caught and kept in Alaska. This information is essential to our ongoing efforts to preserve and improve Alaska's sport fisheries. You have been selected to receive the 2020 Alaska Sport Fishing Survey.

Please help us maintain sport fishing opportunities in Alaska by doing your best to remember and record your household's 2020 freshwater and saltwater sport fishing activity in the enclosed survey booklet, and then return the booklet using the enclosed postage-paid envelope. **Even if no one in your household fished in 2020, we ask that you please complete the General Questions on page 3 of the questionnaire and return the survey to us so we can register that information and not send you a reminder packet.**

Your answers to the survey are completely confidential and will only be used to produce summaries in which no individual answers are identified. While the tables and maps may make the survey look a bit complicated, for most people there are only a few sections that must be completed to report a household's sport fishing information.

Please accept the full-color listing of common Alaska fresh and salt water species as a small token of thanks for your time.

If you have any questions or comments about this study, we would be glad to hear from you. You can contact us by email at *dfg.dsf.publications@alaska.gov* or by phone at (907) 267-2280.

The results of the 2020 Alaska Sport Fishing Survey will be available in the fall of 2021. If you are interested in seeing the results of previous years' surveys, visit the Alaska Fishing Survey website at: http://www.adfg.alaska.gov/sf/sportfishingsurvey/

Thank you very much for helping with this important study.

Sincerely,

Dave Rutz
Director

Figure 1.–Draft cover letter to be sent to all domestic and Canadian households receiving the survey.

THE STATE of ALASKA

GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

DIVISION OF SPORT FISH
Research & Technical Services

333 Raspberry Road
Anchorage, Alaska 99518-1565
Phone: 907.267.2280
Fax: 907.267.2422

Dear Angler,

A few weeks ago we sent you a **2020 Alaska Sport Fishing Survey**. We conduct this survey every year to measure where fishing occurs and how many fish are caught and kept by sport anglers in Alaska. This information is essential to our ongoing efforts to maintain and improve Alaska's sport fisheries.

Information about your household's 2020 sport fishing is very valuable to this study because you have been randomly chosen to represent many other sport anglers in Alaska. However, we have yet to receive your completed survey. If you have recently returned your completed booklet, please disregard this letter and accept our thanks.

If you have not completed the survey, please take a few minutes to recall your **household's** 2020 sport fishing activity and record it in the survey booklet, then return the booklet using the enclosed postage-paid envelope. For most people there are only a few sections that must be completed to report a household's sport fishing information.

Even if no one in your household fished in 2020, we ask that you please complete the General Questions on page 3 of the booklet and return it to us, so we can register that information and not send another reminder packet. Your answers to the survey are completely confidential and will only be used to produce summaries in which no individual answers are identified.

Please accept the full-color listing of common Alaska fresh and salt water species as a small token of thanks for your effort.

If you have any questions or comments about this study, we would be glad to hear from you. You can contact us by email at *dfg.dsf.publications@alaska.gov* or by phone at (907) 267-2280.

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Sincerely,

Dave Rutz
Director

Figure 2.–Draft reminder letter to be sent to domestic and Canadian households receiving a 2nd mailing of the survey.

THE STATE of ALASKA

GOVERNOR MIKE DUNLEAVY

Department of Fish and Game

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Research & Technical Services

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Phone: 907.267.2280
Fax: 907.267.2422

Dear Angler,

At this time of year, we realize that your 2020 fishing experiences may be a distant memory. We are, however, requesting your help by asking that you complete the **2020 Alaska Sport Fishing Survey**. Over the past few months we have sent you copies of the survey, but we have not received a reply.

This survey is mailed annually to about 10% of Alaska sport fishing license holders. The information gained helps the Alaska Department of Fish and Game determine where anglers fished and how many fish they caught and kept within Alaska's sport fisheries. The results are used for sport fisheries planning and management purposes, and by anglers planning for the best sport fishing experience.

The study is drawing to a close, and this is the last contact that will be made in this year's survey. Hearing from everyone who was mailed a survey helps assure that the results are as accurate as possible. **Even if no one in your household fished in 2020, we ask that you please complete the General Questions on page 3 of the questionnaire and return the survey to us.** Your answers to the survey are completely confidential and will only be used to produce summaries in which no individual answers are identified.

If you have recently returned your completed survey, please disregard this letter and accept our thanks.

If you have any questions or comments about this study, we would be glad to hear from you. You can contact us by email at *dfg.dsf.publications@alaska.gov* or by phone at (907) 267-2280.

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Thank you very much for helping with this important study.

Sincerely,

Dave Rutz
Director

Figure 3.–Draft reminder letter to be sent to all domestic and Canadian households receiving a 3rd mailing of the survey.

Dear Angler,

Every year we conduct a survey of anglers who went sport fishing in Alaska to measure where sport fishing occurs and how many fish are caught and kept in Alaska. This information is essential to our ongoing efforts to preserve and improve Alaska's sport fisheries. You have been selected to receive the 2020 Alaska Sport Fishing Survey.

Please help us maintain sport fishing opportunities in Alaska by doing your best to remember and record your **household's** 2020 sport fishing activity in Alaska in the enclosed survey booklet. **Even if no one in your household fished in 2020, we ask that you please complete the General Questions on page 3 of the questionnaire and return the survey to us so we can register that information and not send another reminder packet.** Because our postage permit is only valid within the United States, we ask that you return the survey by supplying your own postage on the return envelope provided, or e-mail a photo or scanned image of your completed survey to dfg.dsf.publications@alaska.gov.

Your answers to the survey are completely confidential and will only be used to produce summaries in which no individual answers are identified. For most people there are only a few sections that must be completed to report a household's sport fishing information.

Please accept the full-color listing of common Alaska fresh and salt water species as a small token of thanks for your time.

If you have any questions or comments about this study, we would be glad to hear from you. You can contact us by email at *dfg.dsf.publications@alaska.gov* or by phone at (907) 267-2280.

The results of the 2020 Alaska Sport Fishing Survey will be available in the fall of 2021. If you are interested in seeing the results of previous years' surveys, visit the Alaska Fishing Survey website at: http://www.adfg.alaska.gov/sf/sportfishingsurvey/

Thank you very much for helping with this important study.

Sincerely,

Dave Rutz
Director

Figure 4.–Draft cover letter to be sent to all foreign households receiving the survey.

Dear Angler,

A few weeks ago, we sent you a **2020 Alaska Sport Fishing Survey**. We conduct this survey every year to measure where fishing occurs and how many fish are caught and kept by sport anglers who fished in Alaska. This information is essential to our ongoing efforts to maintain and improve Alaska's sport fisheries.

Information about your household's 2020 sport fishing is very valuable to this study because you have been randomly chosen to represent many other sport anglers in Alaska. However, we have yet to receive your completed survey. If you have recently returned your completed booklet, please disregard this letter and accept our thanks.

If you have not completed the survey, please take a few minutes to recall your **household's** 2020 sport fishing activity in Alaska, record it in the enclosed survey booklet, and return the booklet using the envelope provided. **Even if no one in your household fished in 2020, we ask that you please complete the General Questions on page 3 of the booklet and return it to us, so we can register that information and not send another reminder packet.** Because our postage permit is only valid within the United States, we ask that you return the survey by supplying your own postage on the return envelope provided, or e-mail a photo or scanned image of your completed survey to dfg.dsf.publications@alaska.gov.

Your answers to the survey are completely confidential and will only be used to produce summaries in which no individual answers are identified. For most people there are only a few sections that must be completed to report a household's sport fishing information.

Please accept the full-color listing of common Alaska fresh and salt water species as a small token of thanks for your effort. If you have any questions or comments about this study, we would be glad to hear from you. You can contact us by email at *dfg.dsf.publications@alaska.gov* or by phone at (907) 267-2280.

The results of the 2020 Alaska Sport Fishing Survey will be available in fall of 2021. If you are interested in seeing the results of previous years' surveys, visit the Sport Fishing Survey website: http://www.adfg.alaska.gov/sf/sportfishingsurvey/

Thank you for helping with this important study.

Sincerely,

Dave Rutz
Director

Figure 5.–Draft reminder letter to be sent to all foreign households receiving a 2nd mailing of the survey.

Dear Angler,

At this time of year, we realize that your 2020 fishing experiences may be a distant memory. We are, however, requesting your help by asking that you complete the **2020 Alaska Sport Fishing Survey**. Over the past few months we have sent you copies of the survey, but we have not received a reply.

This survey is mailed annually to about 10% of Alaska sportfishing license holders. The information gained helps the Alaska Department of Fish and Game determine where anglers fished and how many fish they caught and kept within Alaska's sport fisheries. The results are used for sport fisheries planning and management purposes, and by anglers planning for the best sport fishing experience.

The study is drawing to a close, and this is the last contact that will be made in this year's survey. Hearing from everyone who was mailed a survey helps assure that the results are as accurate as possible. **Even if no one in your household fished in 2020, we ask that you please complete the General Questions on page 3 of the booklet and return it to us, so we can register that information for summary purposes.** Your answers to the survey are completely confidential and will only be used to produce summaries in which no individual answers are identified.

Because our postage permit is only valid within the United States, we ask that you return the survey by supplying your own postage on the return envelope provided, or e-mail a photo or scanned image of your completed survey to *dfg.dsf.publications@alaska.gov*.

If you have recently returned your completed survey, please disregard this letter and accept our thanks

If you have any questions or comments about this study, we would be glad to hear from you. You can contact us by email at *dfg.dsf.publications@alaska.gov* or by phone at (907) 267-2280.

The results of the 2020 Alaska Sport Fishing Survey will be available in the fall of 2021. If you are interested in seeing the results of previous years' surveys, visit the Alaska Fishing Survey website at: http://www.adfg.alaska.gov/sf/sportfishingsurvey/

Thank you very much for helping with this important study.

Sincerely,

Dave Rutz
Director

Figure 6.–Draft reminder letter to be sent to all foreign households receiving a 3rd mailing of the survey.

DATA COLLECTION

QUESTIONNAIRES

Sport fishing participation, catch, and harvest data for finfish and selected shellfish harvested under sport licensing will be collected for all areas and fishing locations in the state. Participation and harvest for personal use dipnet-caught fish will be collected for all appropriate fisheries statewide but estimates for these fisheries will not be generated.[3]

Catch and harvest data will be collected on a site and species specific basis; whereas the number of anglers, number of trips, and number of days fished will be collected on a site-specific basis only. The 2020 questionnaire will be very similar to the questionnaire used in 2019, a single-booklet format that has been used since the last major revision of the survey in 2011 (Appendix A1.).

The current questionnaire will have pages where respondents will be provided a list of fishing sites for specific freshwater locations on the Kenai Peninsula and the facing page will provide a list of saltwater locations in Cook Inlet. Both of these pages will have the species listed across the top of the grid.

The questionnaire will also have a Saltwater section where respondents will be provided a grid that will contain saltwater species listed across the top of two facing pages. They will be instructed to use an accompanying Mapsite booklet to locate where their saltwater fishing activities occurred and to use the associated codes in the grid of the booklet.

The Freshwater section of the questionnaire will look similar to the Saltwater section. Respondents will be instructed to again use the Mapsite booklet to locate where they fished, and report number of trips, number of anglers, catch, and harvest of fish by species at these locations.

For species that are not identified in the survey questionnaire, the respondent will be requested to write the species name in the space provided. For locations that are not listed in the accompanying Mapsite booklet, the respondent will be requested to write the location name in the space provided.

No revisions were made to the survey questionnaire for 2020 and it will be identical to the survey booklets used in 2019, with year references updated. A final 2020 questionnaire packet is included in Appendices A1-A3 and consists of a cover letter, a survey booklet with instructions and pages on which to record participation, catch, and harvest by area, a Mapsite booklet with area maps and lists of specific fishing locations, and a full-color sheet describing common Alaska sport fish species.

Each mailing of the questionnaire will have a different cover letter and the questionnaire will be printed with a different color ink. The first mailing will use brown ink. The second and third mailings will use green and blue ink, respectively. The cover letters for each mailing will bear the signature of the Director of the Division of Sport Fish. The text and ink color for the Mapsite booklet will be the same for all three mailings.

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[3] The purpose of asking questions related to personal use dipnet fishing is to provide respondents a forum for reporting this information "correctly". Households that qualify for personal use fishing sometimes report their activities while personal use fishing as recreational fishing regardless of instructions to not report such activities in the survey. By providing a place to report personal use effort and harvest in the survey, their responses related to these personal use activities can then be clearly separated from the recreational fishing statistics of concern for this survey.

The 2020 questionnaire will have the following main sections:

- Kenai Peninsula Freshwater/Cook Inlet saltwater, chartered;
- Kenai Peninsula Freshwater/Cook Inlet saltwater, non-chartered;
- Saltwater Sport Fishing, chartered;
- Saltwater Sport Fishing, non-chartered;
- Freshwater Sport Fishing, guided;
- Freshwater Sport Fishing, non-guided;
- Personal Use Dipnetting;
- Shellfish;

The questionnaire will also include a definitions section for the terms 'Chartered/Guided' 'Household', 'Personal use' (fisheries), and 'Subsistence Fisheries'. Both the Freshwater and Saltwater Sport Fishing pages will also include "Boat" and "Shore" categories as well as provide additional information for exact specifications of large vs. small King Salmon based on where fish were caught.

ANGLER HOUSEHOLD IDENTIFICATION

The identification of sport fishing households involves combining and processing the incomplete 2020 sport license file, PID and DAV holder lists. The process described below is to identify individuals who are likely to be members of the same household as determined by the similarity of such attributes as last names, mailing address, consecutive license numbers, etc. The identification process is assumed to be imperfect but is implemented in the interest of reducing the likelihood of sending multiple surveys to the same household and to obviate the need for more complicated and expensive estimation procedures.

Prior to household identification, the 2020 sport license file is split into four groups based on residency: Alaska, other United States, Canada and other foreign countries. Due to the nature of addresses and postal codes in each group, license holders will be evaluated by slightly different combinations of criteria.

The initial step involves reviewing the identifying information for foreign licenses from the incomplete sport license file. These licenses will be reviewed by eye for completeness, accuracy, and consistency. Where possible, foreign, non-Canadian addresses will be verified through use of Google Earth, or use of country-specific address and person-finding internet applications, including foreign post office websites. All other sport fishing license, DAV, and PID holders with a U.S. address or Canadian address will be computer processed for address validity by the commercial software package Accumail frameworks by SmartSoft. Prior to this processing, many domestic addresses are corrected via a series of automated SAS programs that identify duplicate records, incomplete records, and for Alaskan addresses, a comparison to the most current available list of Alaska Permanent Fund Dividend applicants.

Households will be determined by evaluating combinations of values such as last names, addresses, sequential license numbers and postal codes. In past years, potential duplicate household members were identified according to these factors and evaluated by eye prior to being removed from the sample files. Starting in 2014, this evaluation was done largely by computer programs. As names and addresses are frequently misspelled, these computer evaluations involve fuzzy character comparisons, leaving just a small fraction of unresolved cases, and foreign license records for human evaluation.

Alaska and other United States household duplicates will be determined by name, zip code, carrier route and delivery point, as well as various permutations of zip code, address, names and license number ranges. Many Alaska addresses consist of post office boxes, rural routes or small communities with just one address. In these cases, adjacent license numbers will be taken into consideration as well. Canadian household duplicates will be identified by combinations of state, seven-digit postal codes, address, names and license number range, except for Yukon Territory reciprocal license holders, where different households frequently have adjacent license numbers. Unlike the first three groups, foreign licenses will be screened by country, state, city, postal codes, names, address, and license number range for potential duplicates, but need to be evaluated by eye to compensate for ubiquitous spelling errors.

Any Alaska, other United States, Canada or foreign records that have been flagged as potential household members will be flagged as such in the sample selection precursor files. If, during review, any doubt remains whether a record is part of an existing household or not, it will be a considered a duplicate to prevent mailing more than one survey to a household.

MAIL LABEL GENERATION AND EDITING

Development of the 2020 sample frame will begin in May 2020 when the available 2020 sport fishing license records are first downloaded from the master ADF&G issued license file which is maintained by the Division of Administration, Licensing Section (DAS-Licensing). The Division of Sport Fish, Research and Technical Services (SF/RTS) enjoys direct networked 'view-access' of this master license file. After the initial May download of sport fishing license records, RTS staff will use a series of data editing steps to maximize the number of license records with complete (mailable) addresses for the purposes of household sample unit identification and selection. Periodic downloads of additional sport fishing license records are conducted throughout the May-December timeframe and processed for incorporation into the 2020 sample frame.

The DAS-Licensing master license file also contains PID and DAV card issuance data. SF/RTS captures and cleans any PID/DAV license records that have been added since the prior calendar year survey sample frame development. This is done only once per year around August 1, and newly issued PID/DAV records are appended to a SF/RTS PID/DAV database containing all known active and inactive PID/DAV card holders to date. PIDs/DAVs are only incorporated into the Early Resident sample selection as noted above.

After the SF/RTS license sample frames are compiled for the current survey year (including processing to maximize address completeness), household identification and then sample selection occur. After household identification and sample selection, but just prior to label creation for any first or follow-up mailing, a batch command-line computer program will be used to submit the selected sample addresses to the National Change of Address (NCOA) utility, which applies any needed real-time updates required by the U.S. Postal Service for bulk mailing rates

Label generation will occur using an in-house program (Mailing Manager) that arranges the addresses of sampled households in a *.pdf file using two-wide label format where:

- The return label will be printed directly below the angler address label,
- The city, state, and zip code fields will be separated by a single space,
- Mailing labels will be printed on forms with the carrier sheet exposed vertically at the right and left margins and vertically between labels,

- The labels will be printed starting with the first label in the left column of the first sheet through the last label in the left column on the last sheet, before proceeding to the first label in the right column of the first sheet through the last label in the right column on the last sheet.

All address labels, including those used for forwarding questionnaires, will include the license holder's name, mailing address, and license number. For domestic mail that conforms to postal addressing standards the address label will contain the U.S. Postal service bar code (including delivery point). The foreign labels do not have postal barcodes but will have the country spelled out in full in capital letters.

Each questionnaire will also have a label affixed to its front. The label will contain a thirteen-character code consisting (from left to right) of:

- The sample group (R=Resident, N=Nonresident[4]),
- The survey type (1, 2, 3 or 4 = Early, 5, 6, 7, 8 = Late); [Kenai Freshwater/Cook Inlet Saltwater (KC), Saltwater/Freshwater (SF), Charter grid on top of page (Charter/Non), Noncharter grid on top of page (Non/Charter)]
    - 1 = Early, KC/SF, Charter/Non
    - 2 = Early, SF/KC, Charter/Non
    - 3 = Early, KC/SF, Non/Charter
    - 4 = Early, SF/KC, Non/Charter
    - 5 = Late, KC/SF, Charter/Non
    - 6 = Late, SF/KC, Charter/Non
    - 7 = Late, KC/SF, Non/Charter
    - 8 = Late, SF/KC, Non/Charter
- The year (20),
- The mailing number (1, 2, or 3),
- A dash,
- The angler id nnnnnn for traditional licenses, P, Z, or TZ followed by the number for PIDs, D followed by the nnnnn for DAVs),
- e.g., R2201-20642698 – (Sample Group = Resident; Survey Type = Early, SF/KC, Charter/Non; year = 2020; mailing = 1; angler id = 20642698)

The corresponding bar code (code 93 symbology) will be printed directly above the thirteen-character code. As part of our bulk mail arrangement with the Post Office, surveys will be forwarded (full address service requested). If the addressee has moved and left a forwarding address, the Post Office will forward the questionnaire and provide RTS with the current address. Data control personnel will update the mail label database with any address revisions.

[4] No further distinction is made on the label regarding the breakdown of Nonresidents into Other USA, Canada, and Other Foreign. This information is associated with the sport fishing license number in the sample database.

QUESTIONNAIRE MAILOUT

Procedures will be updated annually as needed and posted to the Confluence collection: Statewide Harvest Survey.

A mailing agent will be contracted to conduct the printing and mailing of surveys with domestic addresses (USA residents). Address labels will be supplied to the mailing agent who will affix the address labels to the questionnaires, insert them with business reply mail envelopes into outside mailing envelopes, and then deliver them to the bulk mailing center at the General Mail Facility at Anchorage International Airport where they will be mailed. Survey booklets being mailed to USA residents of all states other than Alaska will be sent at the Presorted First Class rate to ensure a quicker delivery of the booklets allowing for more response time[5]. Booklets being mailed to Alaska resident addresses will be sent at the Standard bulk business mail rate.

Survey mailings to Canada and other foreign countries will be conducted by project staff. Canadian postage stamps for first class (air mail) return postage will be affixed to the return envelope before it is mailed to Canadian households. No form of postage prepayment will be included with the "Other Foreign" surveys, as the results of prior tests demonstrated that postage prepayment (International Reply Coupons) did not significantly ($\alpha = 0.05$) increase response rates.

Surveys destined for foreign addresses and those being forwarded to U.S. residents will be metered and mailed first class (air mail) through the ADF&G mail room. Mail room personnel will require a budget code for mailing charges. Records of these mailing charges will be maintained for subsequent reconciliation with billings by the Division of Administration.

Mailing of the Survey

Three mailings will be conducted as noted above from approximately mid-October 2020 to April 2020 for the Resident Early, Resident Late, and Nonresident Early mailing groups. Two mailings will be conducted as noted above from January 2021 to March 2021 for the Nonresident Late mailing group. Each mailing will require the generation of mail labels. Individuals who have responded, who are unwilling to participate, who are deceased, or to whom surveys are undeliverable, will be dropped from the subsequent mailings.

Envelopes used for all survey mailings will be 9-1/2" x 12-1/2" buff colored, end opening, self-sealing, and printed with black ink. Envelopes will have return address, return postage guarantee, and bulk mail permit No. 531 printed on them. Permit imprint format will be per specifications in U.S. Postal Service. An ADF&G logo will be included on the envelope in the upper left corner and resident and non-resident versions of the mailout envelopes will be distinguishable by inverted coloration of the logo on the resident mailout envelope (Appendix A).

Business Reply Mail envelopes used for returns from domestic addresses will be 9" x 12" buff colored, end opening, gummed, and printed with black ink. They will be printed from camera-ready art provided by Alaska Department of Fish and Game, Division of Sport Fish. Envelopes will have return address, business reply mail address, bar codes, and permit No. 92 postage information printed on them. Facing identification marks and bar codes will be positioned per specifications in U.S. Postal Service.

[5] Use of Presorted First Class mailing for the Other USA resident strata has been used since 2010 to ensure quicker delivery of the survey booklets to households outside of Alaska.

Business Reply Envelopes may only be used to transmit mail within the U.S., its territories, and its possessions. Only courtesy reply envelopes will be used for returns from foreign countries. They will be 9" x 12" white colored, end opening, gummed, and printed with black ink. Courtesy reply envelopes will be white in color so they will be easily distinguished from the buff colored U.S. citizen business reply mail envelope upon receipt. They will be printed from camera-ready art provided by ADF&G Division of Sport Fish. Envelopes will have return address, courtesy reply mailing address, and bar codes printed on them. Facing identification marks and bar codes will be positioned per specifications in U.S. Postal Service.

QUESTIONNAIRE RECEIPT

Questionnaires will be delivered to the ADF&G mailroom at 333 Raspberry Road. A statement of the business reply mail account number 92 charges and ending balances will be prepared by postal service staff for the survey and will be included with each mail delivery. Project staff will maintain cumulative records on business reply mail fees for each survey. Pertinent Postal Service regulations and postal account procedures will be referenced, as needed.

Returned questionnaires will be sorted into two categories: "deliverables" and "undeliverables". "Deliverables" will be defined as questionnaires returned by households. "Undeliverables" will be defined as questionnaires the Post Office was unable to deliver.

After sorting and opening of returned questionnaires are completed, the bar-coded angler identification information on the questionnaire labels will be directly scanned into a database. The mail label database will also be updated with correct addresses for those questionnaires forwarded by the Post Office personnel.

Questionnaires that have been returned with the license number either removed or rendered illegible or data pages that are returned without the cover page will be assigned a unique thirteen digit identifying number where:

- The first character is *X* (to denote fabricated ID numbers),
- The second character is *A*,
- The third and fourth characters are *20* for the year,
- The fifth character is the mailing number (*1, 2, or 3*) based or questionnaire color (1=brown, 2=green, 3=blue),
- A dash,
- Thus far = *XA201-*
- The seventh through ninth are '*X*' and the year again – *20-* for 2020
- The tenth through thirteenth characters are unique identifier numbers,
- Thus, the first unidentified response for a first mailing would be: *XA201-X200001*

A list of assigned numbers will be maintained to preclude the assignment of the same number more than once.

Blank questionnaires returned from the 1st and 2nd mailings and undeliverable survey packets will be saved in the event of a questionnaire shortage during the 2nd or 3rd mailing.

DATA HANDLING AND CODING

The returned surveys will be coded by project staff before data entry according to detailed survey data processing and coding procedures stored in Confluence at: Survey Processing Procedures. The coding will involve:

- Review and coding of all entries per the specified procedures[6],
- Mapping of new sites (i.e., those fishing sites anglers have written in for which there is not a designated site code) to the proper geographic survey areas, and
- Maintenance of a breakdown table by area of the other species category.

If there are participation, catch, and harvest data, but no information on the general questions page, the household record will still be transcribed and entered into the database. If a questionnaire is returned completely blank, the survey will be designated as No Data and the record will be entered into database as such.

Unless there are supportive written comments that are specific (e.g., "None", which should be coded as zero), all "blanks" will be left blank and not coded.

General question 1A asks for the number of household members that purchased a sport fishing license, including those who did not fish. A sport fishing license is required of all persons 16 years of age or older while sport fishing, including digging razor clams.

General question 1B asks for number of household members that purchased a sport fishing license (2A) and who also sport fished. Occasionally respondents will erroneously include household members under age 16 or age 60 and over that fished. A computer edit program will check to see that line 1B is less than or equal to Line 1A.

General question 2A asks for number of household members under age 16 who sport fished. A sport fishing license is not required of persons under 16 years of age.

General question 2B asks for number of household members that are Alaskan residents 60 years of age or older who hold a Permanent Identification card (PID holder) or Disabled Veteran permit (DAV) for Alaska sport fishing. A resident who is 60 years of age or more and has been a resident for one year or more is not required to purchase a sport fishing license as long as he or she remains a resident and obtains a special permanent identification card (PID or DAV) (free of charge) from the Alaska Department of Fish and Game Licensing Section. If no response is given, the space will be left blank.

General question 2C asks for the number of Permanent Identification or Disabled Veteran card holders (recorded in 2B) who sport fished. If no response is given, the space will be left blank.

General question 3 asks for the total number of people in the household that sport fished in Alaska during 2019.

For the above general questions, some respondents may write in zero AND complete data pages indicating that sport fishing did occur. A computer edit program will check to see if there are completed data pages.

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[6] Located in SWHS Documentation—Survey Coding Prodecures.

Space is provided for comments on sport fishing in Alaska. These comments are captured at the data verification stage and available for review or textual analysis as needed by project staff but have not been regularly coded since 2014 due to staff time limitations.

If a questionnaire is returned without any response to the general questions (i.e., blank) and no supportive written comment, yet there are pages of fishing data, parameters 1A and 1B will be identified for possible correction (as described below: Computer Based Editing).

Instructions request that both the number of fish caught and the number of fish kept be reported in the labeled columns. If the reported catch is less than the reported harvest, the numbers will be reversed.

If a write-in species of fish is reported, the data coder will check to see if it can be transferred to one of the labeled species columns. A list of species synonyms is on file. A list of write-in species that cannot be transferred will be maintained by the entry software. If the species is not a sport fished species or shellfish species (e.g., seals), the data will not be captured.

A new location code will be created and assigned to each freshwater write-in fishing site not included in the current SWHS site code list. The new site code, fishery name and type, latitude and longitude, and valid species list will be recorded in the electronic site code list (Sites File). The location code will be written adjacent to the write-in fishing site in the questionnaire. New saltwater sites will not be assigned new code numbers, rather they will be coded to the saltwater body in which they are located. This will be done to prevent further creation of overlapping saltwater location code numbers.

The geographic coordinates of previously unreported fishing locations will be obtained using the GNIS layer in an ArcGIS®, or if not found, in Orth (1971). The electronic site code list will be updated with the new latitude and longitude coordinates. Each new site is added as a point to an ArcGIS®-based GIS currently under development. The ADF&G Anadromous Waters Catalogue, Alaska Lakes Database, and ADF&G Area Management Biologists are also consulted regularly to update information on reported sport fishing locations (species presence, stocking information, etc.).

After the household's reported sport fishing data has been coded on the returned survey form in red ink, the form will be digitally scanned to produce image files of all pages of the completed questionnaire. These image files will be used for data entry/verification, quality control checks and to review entries during data cleaning and analysis. Once scanning and data entry is completed, the original completed forms will be returned to boxes for short-term storage. These questionnaires will be recycled after all surveys have been accounted for in the electronic file and estimation is complete.

DATA REDUCTION

The following are the general procedures that will be followed for the surveys.

A database including the following information recorded by site will be maintained:

- Location code value,
- Site name,
- Hierarchy site code,
- Report code value,

- Type of fishing,
- Valid species for site,
- Latitude-longitude of site, and
- Commonly misidentified species list.

New freshwater sites will be added each year as needed.

A second database containing legal bag limits by area and site will also be maintained and updated annually to reflect seasonal changes to the various sport fish bag limits.

DATA ENTRY

Data entry of the general information, participation, catch and harvest data will be completed by RTS data processing personnel. Data entry instructions will be reviewed and updated (as needed) annually and posted to the following Confluence collection: SWHS Processing Procedures

For general purposes, the questionnaires may be viewed as three record types:

- General information,
- Harvest and participation information, and
- Catch information.

There will also be several fields common to all records. The general information data will be kept in a separate file from the catch, harvest, and participation data.

SURVEY FORM IMAGE SCANS

Each completed and returned survey questionnaire is scanned in color and output as an image file. These images can then be accessed via selection of the survey ID number. This approach allows images of questionable records to be retrieved electronically, rather than by sorting through boxes to find the paper original. Starting in 2014, small, page-specific barcodes and page anchors (5mm squares) were added to each page of each survey booklet to facilitate more effective scanning and identification of each page among the four different booklet variants at the time of scanning. The interface also allows project staff, primarily research analysts, to add comments about post data-entry interpretation of the record. Once estimation is complete, the image files are archived and transferred to portable media for long-term storage. Paper surveys are recycled after all data editing and preliminary analysis is complete.

COMPUTER-BASED EDITING

While some response errors will be detected by the data coders (e.g., information recorded on the incorrect area page), most problems will be dealt with via computer-based editing programs. The edit programs will check the data records for incorrect fishing site codes; inconsistent and potentially incorrect relationships between the number of members in the household, the number of anglers, number of trips, and number of days fished; data that indicate that a fish was harvested at a site where that species is not present ; and data that indicate a higher than legal harvest.

The General Question responses will be processed to compute a maximum number of household anglers who fished (D_TOTFISH). Pertinent variables and adjustment procedures are described in detail below (Figure 7). There are a variety of D_TOTFISH adjustments for situations where

components are missing, D_TOTFISH exceed 10, or where the components exceed the number of PIDs or license holders in the household. If there are further discrepancies, D_HHFISH (response to General Question 3) is used to adjust D_TOTFISH. If none of this information was completed for the survey response, the largest number of anglers reported fishing at any site for this response is used for D_TOTFISH.

After all imputations are completed and D_TOTFISH has been calculated, any value for number of anglers on a reported harvest record that exceeds D_TOTFISH will be set to equal D_TOTFISH. No adjustments are made to other effort variables, catch, or harvest data during this step.

The first check for the participation, catch, and harvest data is to ensure for each species that when harvest is ≥ catch, that catch is set equal to harvest. An effort checking program will then be used to examine the participation variables of number of anglers (NA), number of trips (NT), and days fished (DF) and to impute missing values. One goal is to only change those fields with missing information and to not modify reported data, unless the values conflict. At the culmination of this process there should be no 0 values (or blanks) for NA, NT, and DF in any record with reported catch or harvest. To accomplish this, three passes are made through the data. The general process is to impute missing values for NA first, followed by DF, then NT. The first pass fills in NA from D_TOTFISH, or the combination of D_TOTFISH and DF. After pass 1, all NA will have values greater than zero. The second pass fill in all missing DF from NA, or, if NT is greater than zero, NA * DF. Since DF cannot be less than NA, any DF < NA will be replaced with NA, or NA * NT depending on the availability of NT. Finally

1. NA = 0:

   If D_TOTFISH and DF > 0 then NA = minimum of D_TOTFISH and DF.

   If D_TOTFISH > 0 and DF == then NA = D_TOTFISH.

   If D_TOTFISH = 0 then NA = 1.

   (NA > D_TOTFISH then NA = D_TOTFISH.

2. DF = 0:

   If NT = 0 then DF = NA and NT = 1.

   If NT > 0 then DF = NA * NT.

   DF < NA:

   If NT = 0 then DF = NA.

   If NT > 0 then DF = NA * NT.

At this stage in the editing process both NA and DF have values > 0. If NT is still zero, it will be replaced in a third pass with DF / NA. NT will not be used for any other purposes after this step.

3. NT = 0:

   NT = round(DF/NA).

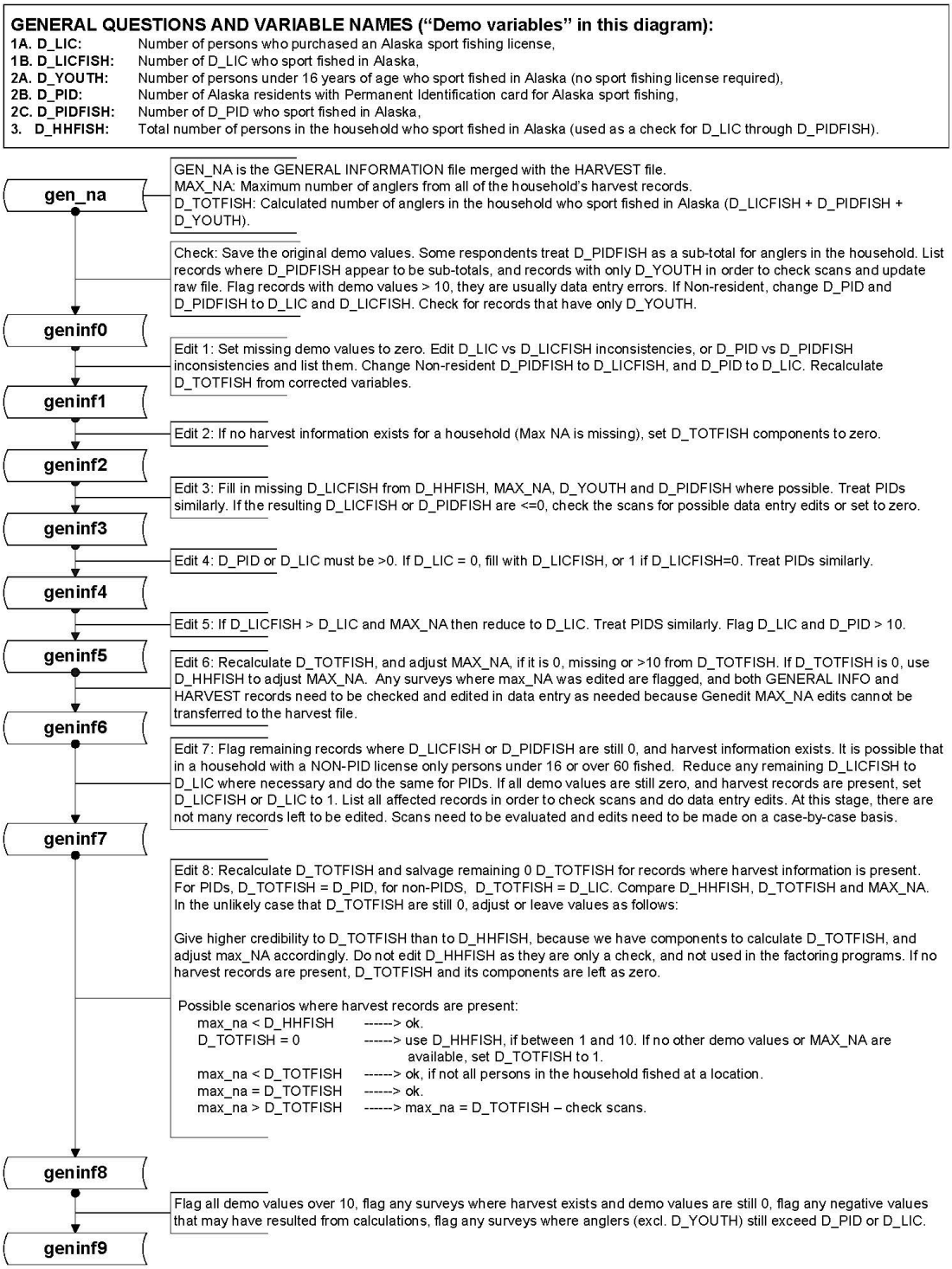

Figure 7.–Flow chart depicting adjustments to General Question responses.

The next data check will identify those records that contain species reported as caught or harvested that are not known to occur at a location. The general approach is to change the reported species to a species that is known to occur at the specific location based on guidance that was historically provided by area staff. If no specification for changing a species exists for the site, it is considered a potentially invalid species for the location. Records containing potentially invalid species will be listed and manually reviewed. Area staff will be consulted to determine if these species should be kept as is, shifted to another valid species, shifted to the non-specific "other" category, or zeroed out. Occasionally area staff will determine that the species was actually caught in another location and the reported information will be coded to the new location.

The objectives for this survey are directed at the estimation of legal sport harvest, under the assumptions that (1) most respondents voluntarily stay within legal harvest limits, (2) respondents that purposely fail to stay within legal limits would not be expected to voluntarily report their illegal activities, and/or (3) individuals who fail to obtain a sport fishing license or are otherwise unauthorized to catch and harvest fish are not part of the sampling frame, and as such cannot be included in the estimation process. Therefore, reported harvest is checked against daily and seasonal limits. Information on number of anglers, days fished, and angler residency is taken into account when editing records, so they do not exceed the maximum legal harvests.

There is some circumstantial evidence that the reports of apparently illegal harvest of small Chinook salmon were misreports of large Chinook salmon in Southeast Alaska waters[7]. Yet lacking strong evidence to the contrary, the assumption was that these were illegal harvest of small Chinook salmon and thus harvests were reduced to legal limits for the size category and location fished.

EDITING REVIEW PROCEDURES

Records of species harvest or catch flagged as incorrect (misidentified species or species known not to occur at a given site) will be reviewed after computer editing has flagged probable errors. Summaries of all the data will be reviewed after editing has taken place.

An electronic listing of records flagged as exceeding legal bag limits will be reviewed to compare the area and/or site-specific sport fish harvest regulations for the year. Each rejected record will be checked. If some records have been rejected for harvests that fall within the site's bag limits, the records will be noted for further review and the edit program will be revised and rerun.

An electronic listing of records flagged as invalid species at a site will be reviewed and edited. The goal of this process will be to correct as many incorrect records as reasonably possible. If flagged species do occur at a site, the edit specifications will be revised, and the edit program rerun.

Some invalid species records will be easy to correct. These include cases where the anglers harvested only razor clams but harvested them from a boat site (the edit program will be revised as needed to move these records to the equivalent shoreline site). The edit program will change

[7] During on-site surveys of select locations within Southeast Alaska (see Hubartt and Jaenicke 2004) the observed harvest of small Chinook salmon in fisheries where the taking of small Chinook salmon was illegal was negligible if not non-existent. It is supposed that some respondents to the mail survey mistakenly report their legal harvest of large Chinook salmon in the incorrect small Chinook salmon column, since separate columns were used for the reporting of small versus large Chinook salmon (see Appendices A1 and A2).

anadromous coho salmon harvested from landlocked lakes stocked with landlocked salmon to landlocked salmon.

The remaining flagged records will be checked against notes taken from contacts with area biologists in previous years whose comments have been translated to a misidentification field in the Sites File. A quick search will also be done of any other obvious sources of information (usually division reports (Schwan 1984) and the Anadromous Waters Catalogs (Giefer, J. and B. Blossom 20120 *a-f)*]; stocking records; Emergency Orders, and the Sportfish Alaska Lake Database "ALDAT'). Stocking records become available as stocking is conducted throughout the current year, detailing the water stocked, species, and numbers. Based on this review, edit programs will be updated and rerun as needed.

As part of the data editing and error checking process, meta-data will be retained in the individual database record that indicates the original record data source (self-reported) and if any additional record source was used to verify or correct the information reported. Current record source categories include: S= self-reported, C= data from Comments box on survey instrument, F= location data from a guide logbook record, H= some or all harvest, catch, and location data from guide logbook record, and A= angler count from guide logbook record). The default record source category for all individual harvest records reported is S= self-reported, unless changed by project staff during the data editing and review process.

Division of Sport Fish area biologists will be contacted concerning records that cannot be confirmed as either correct or incorrect by the above approach. If the area biologist agrees that the record is incorrect, he or she will then be asked for their opinion about what should be done with the record. In some cases, the respondent probably recorded the harvest in the wrong site. In other cases, the respondent probably misidentified the harvest. Some harvest or catch values are too unusual to be changed and will be flagged in the database as unusable. If there are two or more possibilities for what the correct response should be, and none of the possibilities seem more likely, then the record will also be deleted. The edit programs will be updated to reflect the area biologist's recommendations.

Effort, participation, harvest and catch values will be summarized and charted to highlight potential data problems and verify edits. Data are summarized and charted at the survey area and water type level and added to historical data from 1996 on to produce line graphs. Additionally, 2020 data and historical data from 1996 on will be summarized at the location code level and effort, participation, harvest, and catch values that are outside three standard deviations of the historical mean will be identified for further data checking. Scatter plots are generated of number of anglers, effort, and catch per angler day fished to identify potential outliers. Area biologists will be consulted to determine if any abnormalities identified in this approach should be corrected. Any resulting edits are flagged with the biologists' comments.

The editing programs produce electronic listings that identify all changes made, record by record. Editing programs include comments/annotations that explain the nature of the code, identify changes made from previous years, and identify areas that need to be addressed. After completion of all editing, an electronic file summarizing all species edits will be maintained to document the revisions.

DATA ANALYSIS

Each sampled household will be asked for information on the number of licensees residing in his or her household; the number of anglers in the household that do not hold licenses (i.e. juveniles, PID, or DAV card holders), the number of fish caught and the number of fish kept (harvested) by species and location for the household; and the number of anglers, trips, and days fished (participation) for the household for calendar year 2020.

Catch and harvest for each species and participation for each site for each stratum is estimated by the following procedure (with subscripts denoting parameter of estimation deleted for simplicity). 'Stratum' refers to the residential strata: Alaska, PID, other United States, Canada, and Foreign. 'Mailing group' refers to the stratification of early residents, late residents, early non-residents, and late non-residents by license purchase date (Table 2). For data analysis, the Alaska stratum is split into PID (including DAV card holders), and Alaska (other Alaskan residents), yielding five residential strata. The PID stratum is analyzed separately because it is sampled from a permanent, rather than an annual sport license.

$$\hat{Y}_{hk} = \hat{N}_h \hat{R}_s \frac{\sum_{i=1}^{q_s} \sum_{j=1}^{n_{hi}} y_{hijk}}{\sum_{i=1}^{q_s} n_{hi}} \tag{1}$$

where:

$\hat{Y}_{hk} =$ estimated total catch, harvest or participation for stratum h within site k;

$y_{hijk} =$ catch, harvest or participation at site k by household j responding to mailing i within stratum h;

$q_s =$ number of mailings sent to households within each stratum (denoted by s), set to 3 for the early and late resident mailing groups as well as the early non-resident mailing group, and set to 2 for the late non-resident mailing group;

$n_{hi} =$ number of households responding to the mailing i within stratum h;

$\hat{N}_h =$ estimated number of households with at least one fishing license holder in 2020 for stratum h, calculated as:

$$= \left(M_h + P_h\right)\hat{V}_h; \tag{2}$$

$M_h =$ number of license holders comprising stratum h in 2020;

$P_h =$ equals the total number unique Alaska residents holding a valid PID or DAV card (note that this term is only valid for the early Alaska stratum, accordingly the value is set to zero (0) for the other seven strata);

$\hat{V}_h =$ is the estimated ratio of the number of households to license-holders and PID or DAV holders for each of the five residential stratum, calculated from the respondents to the survey as:

$$= \frac{\sum_{i=1}^{q_s} n_{hi}^{\dagger}}{\sum_{i=1}^{q_s} \sum_{j=1}^{n_{hi}^{\dagger}} \left(m_{hij} + p_{hij}\right)} \tag{3}$$

$n_{hi}^{\dagger} =$ the number of respondents to mailing i within stratum h who answered the questions regarding the number of sport fishing license and PID or DAV holders;

$m_{hij} =$ the reported number of sport fishing license holders in household j for mailing i within stratum h;

p_{hij} = the reported number of individual PID or DAV holders for household j for mailing i within stratum h; and

$\hat{R}_s$ = Nonresponse adjustment for each mailing group s (Table 6)

The $\hat{R}_s$ were obtained by simulation based upon exponential regression models for those households which did respond (analogously to the procedures outlined by Drane et al. 1993). The exponential regression model that is used has been shown over the years of the survey to fit the observed responses over the three mailings, and it essentially corresponds with the demonstrated relationship that nonrespondents tend to fish less frequently than respondents (Brown and Wilkins 1978; Leinonen 1988; Tarrant et al. 1993; Fisher 1993).

The value of $\hat{R}_s$ for the late nonresident mailing group involves use of response information from the early nonresident mailing group as a "proxy" to compensate for not sending a third reminder to this mailing group.

The two exponential regression models are:

$$ln(n_{si}) = \alpha_s' + \beta_s' i + \varepsilon_{si}', \quad \text{for } i = 1, 2, 3; \text{ and} \tag{4}$$

$$ln(r_{si}) = \alpha_s'' + \beta_s'' i + \varepsilon_{si}'', \quad \text{for } i = 1, 2, 3; \tag{5}$$

where:

n_{si} = number of households responding to mailing i for mailing group s;

r_{si} = mean participation or harvest for a species, over all sites by respondents to mailing i for mailing group s;

and ε_{si}' and ε_{si}'' are normal variates with mean 0 and variance $\sigma_s'^2$ and $\sigma_s''^2$, respectively.

Parameters α_s', α_s'', β_s', and β_s'' were estimated using the method of least squares (Draper and Smith 1981). The form of the regression models used was chosen during previous Alaska statewide mail surveys conducted in a similar manner. The chosen form was demonstrated to fit the patterns of response for the respondents to the three mailings. The set $\{n_4, n_5, ..., n_I\}$ was estimated from regression 4, and the set $\{r_4, r_5, ..., r_I\}$ was estimated from regression 5, where I was the simulated mailing at which the following criterion was met (this criterion was not always met, in these cases an infinite series equality was used as described below, see equations (13) and (14)):

$$\sum_{i=1}^{q_s} n_{si} + \sum_{i=(q_s+1)}^{I} \tilde{n}_{si} = n_s \tag{6}$$

where:

$\tilde{n}_{si}$ = Simulated number of households responding to the simulated mailing i, for i = 3 or 4, 5, ..., I, for mailing group s, calculated as:

$$= e^{(\alpha_s' + \beta_s' i)}; \text{ and} \tag{7}$$

n_s = the number of households sampled for mailing group s.

All regression models are evaluated for lack of fit using plots of observed and predicted values for each parameter. If any serious lack of fit is evident which can be the case for some of the statistics

for non-major species then the statistics associated with the days-fished participation parameter are used as a proxy for calculating the nonresponse ratio for these species.

The term $\hat{R}_s$ is calculated as follows:

$$\hat{R}_s = \frac{\theta_s \overline{Y}_s + (1-\theta_s)\widetilde{Y}_s}{\overline{Y}_s}; \tag{8}$$

where:

θ_s = ratio of the number of observed respondents to the total of observed respondents and "simulated" respondents for mailing group *s*, calculated as follows:

$$= \frac{\sum_{i=1}^{q_s} n_{si}}{\sum_{i=1}^{q_s} n_{si} + \sum_{i=(q_s+1)}^{I} \widetilde{n}_{si}} \tag{9}$$

$\overline{Y}_s$ = the reported average participation or harvest of a particular species over all locations throughout the state for all responding households within each mailing grouping *s*, calculated as:

$$= \frac{\sum_{i=1}^{q_s} \sum_{j=1}^{n_{si}} y_{sij}}{\sum_{i=1}^{q_s} n_{si}}; \tag{10}$$

y_{sij} = reported participation or harvest of a particular species over all locations throughout the state for responding household *j* for mailing *i* within mailing grouping *s*;

$\widetilde{Y}_s$ = the simulated average harvest of a particular species over all locations throughout the state for all households simulated to respond to simulated mailings within each mailing group *s*, calculated as:

$$= \frac{\sum_{i=(q_s+1)}^{I} \widetilde{n}_{si}\widetilde{r}_{si}}{\sum_{i=(q_s+1)}^{I} \widetilde{n}_{si}}; \tag{11}$$

$\widetilde{r}_{si}$ = the simulated harvest of a particular species over all locations throughout the state for all households simulated to respond to the simulated mailing *i* within mailing group *s*, calculated using the parameters obtained from regression 5, as:

$$= e^{\left(\alpha_s'' + \beta_s'' i\right)} \tag{12}$$

Note that for the values for $\widetilde{n}_{si}$ and $\widetilde{r}_{si}$ calculated by equations 7 and 12 for the Nonresident Late mailing group will be calculated using the regression model developed for the Nonresident Early mailing group.

If the criterion defined in equation 6 is not met, then the term *I* is set to infinity, then the following infinite series equality (Gradshteyn and Ryzhick 1980, page 7, equation 0.231.1) is used to calculate the numerator of equation 11:

$$\sum_{i=(q_s+1)}^{I} \widetilde{n}_{si}\widetilde{r}_{si} = \frac{e^{\left(\alpha_s' + \alpha_s''\right)}}{1 - e^{\left(\beta_s' + \beta_s''\right)}} - e^{\left(\alpha_s' + \alpha_s''\right)} - \left(\sum_{i=1}^{q_s} e^{\left(\alpha_s' + \beta_s' i + \alpha_s'' + \beta_s'' i\right)} \right) \tag{13}$$

Similarly, the denominator in equation 11 is calculated by:

$$\sum_{i=(q_s+1)}^{I} \tilde{n}_{si} = \frac{e^{\alpha_s^{'}}}{1-e^{\beta_s^{'}}} - e^{\alpha_s^{'}} - \left(\sum_{i=1}^{q_s} e^{\left(\alpha_s^{'}+\beta_s^{'} i\right)} \right) \tag{14}$$

Note, the regression parameters used above for the Nonresident Late mailing group are the regression parameter estimates from the Nonresident Early mailing group.

The estimating equations outlined above are similar to those used in years prior to 2006, with the exception of the modifications of calculations related to only sending one reminder (2nd mailing) to the strata in the Nonresident Late mailing group. The procedures outlined above were implemented 2006 through 2019 and were evaluated to provide reasonable approximations to those that would have been obtained if all mailing groups had received three mailings. Accordingly, these same procedures will again be used in 2020.

Standard errors for participation, catch, and harvest estimates will be calculated using a bootstrap resampling procedure (Efron and Tibshirani 1993) with 1,000 replications.

SUMMARY REPORTS

Several sets of tables and charts will be generated from the survey database: summary statistics for household information, summaries of response rates by mailing, and summary statistics for catch, harvest and participation data by area and fishing site.

After application of expansion factors and non-response bias adjustments at the location code, residential strata and early/late license purchase level, the resulting estimates are summarized by site, SWHS survey area, region, and year and will be loaded into the preliminary version of the historic database for production of reports. These reports are posted on Docushare for review including: participation, effort, harvest and catch at the location code level, and summaries of participation, effort, harvest and catch estimates and standard errors at the survey area level over the past ten years. ADF&G, Division of Sport Fish/RTS Area Management Biologists and their assistant staff will be asked to identify any problems with the data based upon their local knowledge of the fisheries. Changes or corrections recommended by area biologists will be logged and tracked in an MS Excel spreadsheet, and incorporated into the database(s) as appropriate.

ADDITION TO HISTORIC DATA

Following final edits to the raw data, the survey estimates and summary reports are re-generated. Estimates, summarized by site, SWHS survey area, region, and year will be loaded into the final version of the historic database for the production of various tables and figures used in the Statewide Harvest Survey reports, and the SWHS query applications on the ADF&G website. The actual database will be composed of several working subsets of the data. Starting in 2014, data are grouped into survey areas (Q_SURAREA) that are independent of survey area boundary changed that occurred between 1998 and 2006. New data batches will be added to the historic SWHS database management system annually.

Many tables will be generated from the estimate database for use in the final published report and online reporting systems. Several miscellaneous tables not included in the published report will also be generated to summarize key survey metrics and performance measures useful for assessing

whether to make changes to the survey methodology or sampling procedures for the subsequent survey year.

SCHEDULES AND REPORTS

The schedule for each of the tasks associated with the survey is identified below. Contract preparation will begin in June 2020. The number of questionnaires and envelopes required for this project along with a detailed schedule of mailing dates and quantities will be estimated by project staff, then a written request for quotation for questionnaire and envelope printing and mailing costs will be obtained from the printer/mailing agent. By mid-July 2020, the necessary Delivery Orders for paper ordering and subsequent survey questionnaire printing and mailing will be prepared and delivered to the printing/mailing contractor by ADF&G Administrative staff in Anchorage under a Master Agreement document.

Questionnaire printing and mailing will be completed according to the contractual agreement. ASSETS (a certified nonprofit provider of a program to increase employment opportunities for individuals with physical or mental disabilities that constitute substantial handicaps to employment) is able to supply SOA-contracted products and services without competitive sealed bid, and has performed printing and mailing services for this project from 1984-2019. ASSETS will again be contracted to complete the questionnaire printing and domestic mailing for this project in 2020. RTS personnel will conduct the mailing of questionnaires to the sample of Alaska sport license holders who reside in foreign countries.

Throughout the course of questionnaire printing, mailing, data receipt, and coding, a weekly summary of progress will be completed by the Principal Investigator. This progress report will include mailing account balances, a synopsis of the mailings completed since the last report, a summary of the number of deliverable and undeliverable surveys returned, and any problems (with suggested solutions) that have arisen since the last report.

Questionnaire booklet design and preparation began in March 2020. Printing is considered a nonprofessional service by the State Department of Administration and depending on the dollar amount of the work may be obtained via a delivery order or purchase requisition.

The following milestones for questionnaire development must be met to keep the survey on schedule:

- The final layout concepts for the questionnaire and associated documents (map booklet, cover letters, envelopes, etc.) will be determined by no later than mid-July 2020 by project staff.
- Survey booklet layout will be completed by mid-July 2020 and provided to the printer, and a first proof will be completed by early August 2020.
- The final proofs will be reviewed by project staff, corrected and changed as needed, and (barring problems) permission will be given to commence printing by no later than mid-August 2020.

The mailing of questionnaires will occur from October 2020 through April 2021 as outlined in the mailing schedule (Table 7).

Data receipt and coding will occur from late November 2020 through late May or early June 2021. Data capture, database development, and software modifications will occur from November 2020 through mid-April 2021. Data editing will occur through early June 2021.

The final license and PID/DAV files for the 2020 calendar year will be completed by May 15, 2021 or sooner to facilitate development of survey estimates. Analysis of data will begin in June 2021.

Preliminary estimates will be posted on the Divisional Docushare site in July 2021 so area management staff can review and comment on those estimates prior to running the final estimates. Final estimates of 2020 harvest and participation will be produced by late September 2021. All results from this project will be presented in a Fishery Data Series report and made available in the SWHS online reporting system to staff and the public. Numerous summary tables and charts will be presented in the summary report which will follow a format similar to previous years (Jennings et al. 2015) with some modifications to report layout that were established in 2014 (See 2014 Report Changes Log).

BUDGET

BUDGET SUMMARY

Code	Line Item	Cost
100	Personal Services	$595.1
200	Travel	$0.0
300	Contractual	$338.3
400	Commodities	$6.0
500	Equipment	$0.0
700	Grants	$0
Total		$919.4

Budget Manager: Bill Romberg, Principal Investigator

Project Personnel: (Name, job class, months budgeted)

Bill Romberg	Fisheries Biologist IV	12
Mike Martz	Research Analyst III	12
Ian Rafferty	Research Analyst III	12
Malla Kukkonen	Project Assistant	6
Jiaqi Huang	Biometrician III	0
Elizabeth Hughes	Office Assistant II	5
Michaela Young	Office Assistant II	4
Sherri Luafulu	Office Assistant II	3
Mia Molina	Office Assistant I	0

RESPONSIBILITIES

The following provides more detail on the specific assignments of each person working on the project, their title, job classification, and total months for all tasks.

Name/Title	Months (funded)	Responsibilities
Bill Romberg, Fisheries Biologist IV, Principal Investigator	12.0	Manages the budget and supervises RTS project staff responsible for sport license file processing, mail label generation, survey logging procedures, data entry, computer editing, database development, estimate generation, and production of summary tables and reports. Coordinates long term changes to survey methodology and procedures. Coordinates with divisional staff on requests for changes to survey instrument and methodology. Reviews proposed changes or additions to existing data handling, coding, computer procedures, and prepares annual operational plan. Reviews annual estimates and coordinates preparation of annual project report and posting of final estimates for staff retrieval. Supervises contracting for printing and mailing. Contacts Post Office personnel to ensure compliance with their regulations and maintains postal account balances. Oversees adequacy of supplies necessary for survey administration.
Jiaqi Huang, Biometrician III	0.0	Review of, consultation on, and approval of design and analytical procedures.
Ian Rafferty, Research Analyst III	12.0	Conducts license and PID database cleaning and draws stratified, random samples of households for survey label production. Responsible for mailing label production for survey. Coordinates the survey log-in and processing status report system. Maintains and updates the statewide bag limit database using updated regulations information and Emergency Order listings. Assists with coding and checking of data following established procedures. Responds to ad hoc requests for license file data. Certifies that the Sport Hunting and Fishing License File administered in the Division of Administration is accurate, then uses established computer programs to draw stratified, random samples of households for survey label production. Provides analyses for operational plan and in-season survey metrics.
Mike Martz, Research Analyst III	12.0	Assist with processing sport license file for duplicate foreign households. Assists with coding of data. Runs computer editing programs, reviews and edits data files. Generates point estimates and produces tables for annual reports. Maintains standard error software and generates all standard error estimates. Develops programs and runs retrievals for miscellaneous requests for survey information. Reviews and edits historic data files. Reformats and appends data to the historic data sets for use in the web applications. Updates location codes in associated ArcGIS files.
Malla Kukkonen, Project Assistant	6.0	Provide planning and coordination assistance to the Statewide Harvest Survey Program (SWHS) including coordination and documentation of internal and external review workshops, assisting with development of project planning documents, overseeing specific components of the re-design effort, (e.g., summarizing outcomes from the development and testing of alternative biological data collection methods), and assisting with revision of the fisheries research plan(s) to transition to a revised methodology over time.
Nailya Galimzyanova, Analyst Programmer V	0.0	Develops, maintains, and improves the data storage, processing, and delivery systems which support the annual survey lifecycle.
Area managers and staff biologists	0.0	Review preliminary results and provide documentation to SWHS Research Analysts on areas of concern. Provide input to SWHS staff on recommendation for changes to the survey and map/site booklets.
Kyra Sherwood, Publications Specialist II	0.0	Assists with revision and preparation of digital survey instrument files for sending to contract printer.
Michaela Young, Office Assistant II	4.0	Logs in returned surveys, foreign survey mailing preparation, processes forwarding address corrections, scanning and data entry following established procedures.,
Elizabeth Hughes, Office Assistant II	4.0	Logs in returned surveys, foreign survey mailing preparation, processes forwarding address corrections, scanning and data entry following established procedures.,
Sherri Luafulu, Office Assistant II	4.0	Logs in returned surveys, foreign survey mailing preparation, processes forwarding address corrections, scanning and data entry following established procedures.,
Mia Molina, Office Assistant I	0.0	Logs in returned surveys, sorting/preparation of returns for coding, scanning, and data entry, assists with foreign survey mailing, processes forwarding address corrections

The principal private contractor associated with this project will be: ASSETS Inc., 2330 Nichols Street, Anchorage, Alaska, telephone 907-279-6617. ASSETS will store materials, print survey questionnaires, envelopes, and associated materials, prepare the domestic surveys for bulk mailing, and deliver the domestic surveys to the Post Office.

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APPENDIX A:
SURVEY FORMS

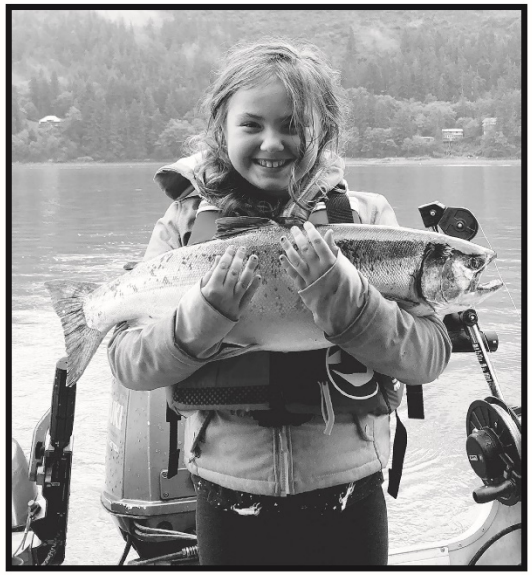
Appendix A1.–Draft survey form for the 2020 Sport Fishing Survey.

ALASKA DEPARTMENT OF FISH AND GAME

2020 Alaska Sport Fishing Survey

Please help us maintain sport fishing opportunities in Alaska by recording your household's 2020 freshwater and saltwater sport fishing activity on the following pages. Please refer to the instructions for completing the survey on page 2 and return the survey in the enclosed envelope.

Thank you!

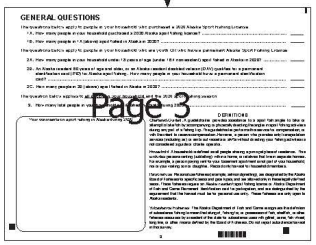


Alaska Department of Fish and Game
Division of Sport Fish (RTS)
333 Raspberry Road
Anchorage AK 99518
(907) 267-2280
dfg.dsf.publications@alaska.gov

BOOK 1

HOW TO COMPLETE YOUR SURVEY

Step 1 **Complete Page 3, even if no one in your household fished.**



In 2020, did you or members of your household...

Step 2 ... fish freshwater on the **KENAI/KASILOF/RUSSIAN RIVER or** saltwater in **COOK INLET/KACHEMAK BAY**?

Step 3 ... fish **SALTWATER** any place other than Cook Inlet or Kachemak Bay?

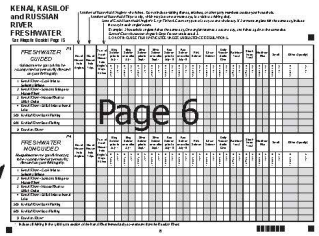
Step 4 ... fish **FRESHWATER** any place other than Kenai/ Kasilof/Russian River?

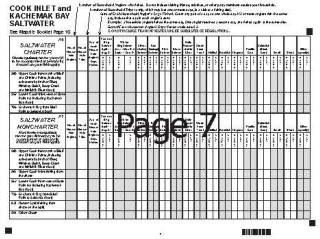
Step 5 ...gather **SHELLFISH** or go dipnetting in a **PERSONAL USE** fishery area?

Step 6

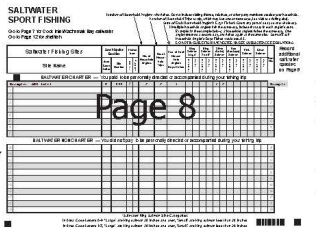
Please return the survey in the envelope provided. Thank you for your time and effort.

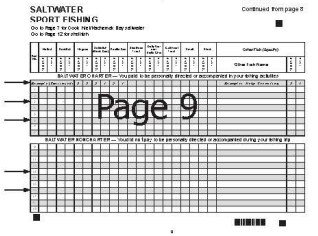
Yes



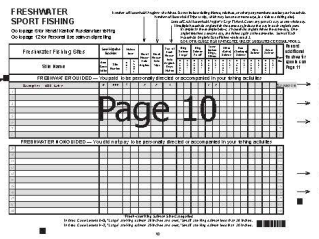


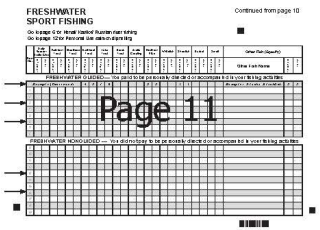
Yes



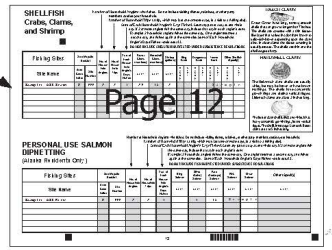


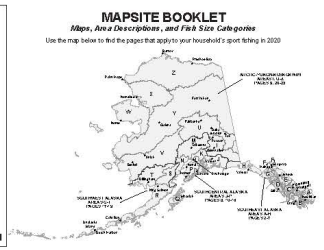
Yes





Yes





Questions? See detailed instructions on pages 4–5.

GENERAL QUESTIONS

The questions below apply to people in your household who purchased a 2020 Alaska Sport Fishing License:

1A. How many people in your household purchased a 2020 Alaska sport fishing license? ..... _____

1B. How many people in 1A (above) sport fished in Alaska in 2020? ..... _____

The questions below apply to people in your household who are youth OR who have a permanent Alaska Sport Fishing License:

2A. How many people in your household under 18 years of age (under 16 if nonresident) sport fished in Alaska in 2020? ..... _____

2B. An Alaska resident 60 years of age and older, or an Alaska resident disabled veteran (DAV) qualifies for a permanent identification card (PID) for Alaska sport fishing. How many people in your household **have** a permanent identification card? ..... _____

2C. How many people in 2B (above) sport fished in Alaska in 2020? ..... _____

The question below applies to <u>all people in your household</u> and the 2020 sport fishing season:

3. How many total people in your household sport fished in Alaska during 2020? ..... _____

Your comments on sport fishing in Alaska during 2020

DEFINITIONS

Chartered/Guided: A guide/charter provides assistance to a sport fish angler to take or attempt to take fish by accompanying or physically directing the angler in sport fishing activities during any part of a fishing trip. The guide/charter performs this service for compensation, or with the intent to receive compensation. However, a person who provides only transportation services (including air) or rents out vessels or skiffs without directing your fishing activities is not considered a guide or charter operator.

Household: A household is defined as all people sharing a principal place of residence. This **excludes** persons renting (subletting) within a home, or relatives that live in separate homes. For example, a person paying rent for your basement apartment is not part of your household, nor is your visiting son or daughter. Record only harvest for household members.

Personal use: Personal use fisheries (example; salmon dipnetting), are designated by the Alaska Board of Fisheries for specific areas and gear types, and are allowed only in these legally defined areas. These fisheries require an **Alaska resident** sport fishing license or Alaska Department of Fish and Game Permanent Identification card for participation, and are distinguished by the requirement that the harvest must be for personal use only. These fisheries are only open to Alaska residents.

Subsistence Fisheries: The Alaska Department of Fish and Game recognizes the definition of subsistence fishing to mean the taking of, fishing for, or possession of fish, shellfish, or other fisheries resources by a resident of the state for subsistence uses with gillnet, seine, fish wheel, long line, or other means defined by the Board of Fisheries. Do not report subsistence harvest in this survey.

INSTRUCTIONS

Period covered: January 1 through December 31, 2020.

What if your household did not sport fish in 2020?

- Answer the questions on page 3.
- Return the survey in the postage-paid envelope, so we avoid mailing you additional 2020 surveys.

What if your household did sport fish in 2020?

- Answer the questions on page 3.
- Complete the pages in this booklet that cover the types of sport fishing done by you or your household members. Even if you did not catch any fish, please record the locations that you fished, and the number of anglers and household trips to each location on the appropriate page(s). Use the Mapsite booklet to identify fishing sites visited.
- Return the survey in the postage-paid envelope. We mail up to two reminders to those who do not respond; you can help reduce costs by replying promptly.

Who to include: Report your household's sport fishing only. A "household" is defined as all people sharing a principal place of residence. If you are the one who keeps the fish from a proxy, report that fishing activity as part of your household.

Who to exclude: Do not report fishing by visitors to your home, even if they are family members. Do not report fishing by people renting (subletting) within a home. Do not report fish caught while proxy fishing for someone outside your household.

What to include: Report sport fishing activity for your entire household, including ice fishing activity. Record **Saltwater** and **Freshwater** fishing on the appropriate pages. Shellfish and Personal Use fishing are different from sport fishing and should be reported on page 12.

What to exclude: Do not report commercially caught or subsistence caught fish. A sport fishing guide should not report client information.

SPORT ANGLERS LIVING OUTSIDE THE UNITED STATES AND CANADA: The postage permit that we have provided is valid only within the United States. Canadian envelopes have return postage affixed. For anglers living outside the U.S and Canada, we ask that you return the survey by supplying your own postage or e-mail a scanned copy of your completed survey to the address listed below.

Still have questions? If you have questions about this survey, please call (907) 267-2280 or contact us via e-mail at: dfg.dsf.publications@alaska.gov.

The State of Alaska is an equal opportunity employer and service provider and complies with federal civil rights laws and Alaska Human Rights Law. Individuals with disabilities who require this publication in an alternative format are welcome to contact the Statewide Harvest Survey Program Manager for assistance at 907-267-2280 (individuals with hearing impairments via Alaska Relay at 711 or (800) 770-8973); by e-mail at dfg.dsf.publications@alaska.gov; or by mail to: Statewide Harvest Survey Program, Alaska Department of Fish and Game, 333 Raspberry Road, Anchorage, AK 99518-1599; or the Department's Americans with Disabilities Act Coordinator at 907-465-6077 or V/TTY (800) 478-3648.

EXAMPLE OF HOW TO RECORD YOUR HOUSEHOLD'S 2019 SPORT FISHING

(1 ▶) **Sections:** Use the chart on page 2 to identify the pages to complete based on your household's 2019 sport fishing activities. Do not combine saltwater and freshwater fishing on one line or page.

(2 ▶) **Site Name:** Write the name of each site where you fished. Names of some commonly fished sites are provided in the *Mapsite* booklet included in this packet. If you cannot locate a fishing site in the *Mapsite* booklet, please write the area code letter and the name of the location. **Kenai/ Kasilof/ Russian rivers** and **Cook Inlet/Kachemak Bay** have pages specifically designed for recording fishing at these sites: you will find them on pages 6-7.

(3 ▶) **Area Code Letter:** The *Mapsite* booklet divides Alaska into areas labeled A through Z, each identified by a major area or drainage. Use the *Mapsite* booklet to determine the area code letter for each of your fishing locations and write it in the column marked *Area Code Letter*.

(4 ▶) **Site Number:** The *Mapsite* booklet lists the names and site numbers of many commonly fished sites in Alaska. Determine the site number for each location fished, and write it in the *Site Number* column. If you do not find your site in the *Mapsite* booklet, please record the *Area Code Letter* and the fishing site name (or a brief description) in the *Site Name* column.

(5 ▶) **Fishery Type:** For **Saltwater** or **Freshwater** pages, mark whether you fished from a boat or from the shore/bank. If you fished from both a boat and on the shore/bank at the same location, check both boxes.

(6 ▶) **Number of Household Anglers:** Record how many anglers in your household fished at this site.

(7 ▶) **Number of Household Trips:** Record the number of trips made to this site (a trip, which may last one or more days, is a visit to a fishing location).

(8 ▶) **Sum of each Household Angler's Days Fished:** Add up the TOTAL number of days each household member fished at this site. Count any part of a day as a whole day. If two or more anglers fished the same day, include that day in each angler's sum. Then total all anglers' days for that site.

(9 ▶) **Caught** and **Kept:** A fish caught is one landed; a fish kept is one harvested. While it can be difficult to remember exactly all fish caught, please make your best estimation.

EXAMPLE: A husband and wife made 3 fishing trips to ABC Lake in their canoe. The man then fished alone on 1 additional trip to the site. In this example, the **number of household anglers** would be 2. The **number of trips** would be 4 (together they took 3, followed by 1 trip by the man alone). The **sum of each angler's days fished** would be 7; the sum of the trip they made together (3 days times 2 anglers) and the 1 day that the man fished alone. They **caught** a total of 4 silver salmon, and **kept** 3.
The household survey recipient should record these trips with the following information:

Number of Household Anglers = 2 (the husband and wife)
Number of Household Trips = 4 (3 by the couple together, and 1 by the man alone)
Sum of Each Household Angler's Days Fished = 7 total
(4 by the husband and 3 by the wife).

FRESHWATER SPORT FISHING

(1 ▶) Freshwater Fishing Sites	See Mapsite Booklet (3 ▼)	(4 ▼)	Fished from (5 ▼)		(6 ▼) No. of Household Anglers	(7 ▼) No. of Household Trips	(8 ▼) Sum of Each Household Angler's Days Fished	King Salmon Large*		King Salmon Small*		Land-locked Kings, Silvers		(9 ▼) Silver (Coho) Salmon		Red (Sockeye) Salmon		Pink Salmon		Chum Salmon	
(2 ▶) Site Name	Area Code Letter	Site Number	BOAT	SHORE				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
FRESHWATER NONGUIDED — You **did not pay** to be personally directed or accompanied in your fishing activities																					
Example: ABC Lake	X	999	√		2	4	7	EXAMPLE						4	3						

KENAI, KASILOF and RUSSIAN RIVER FRESHWATER

See Mapsite Booklet Page 15

Number of Household Anglers who fished. Do not include visiting friends, relatives, or other party members outside your household.
Number of Household Trips (a trip, which may last one or more days, is a visit to a fishing site).
Sum of Each Household Angler's Days Fished. Count any part of a day as one whole day. If 2 or more anglers fish the same day, include that day in each angler's sum.
Example: 2 household anglers fished the same day, One angler returned a second day, and fished again at the same site.
Sum of Each Household Angler's Days Fished would equal 3.
DO NOT INCLUDE FISH HARVESTED UNDER SUBSISTENCE REGULATIONS.

P5 *FRESHWATER GUIDED* ***Guided*** **means you paid to be accompanied or personally directed on your fishing trip**	No. of Household Anglers	No. of Household Trips	**Sum** of Each Household Angler's Days Fished	King Salmon prior to July 1		King Salmon on or after July 1		Silver Salmon prior to Sept. 1		Silver Salmon on or after Sept. 1		Red Salmon prior to July 15		Red Salmon on or after July 15		Pink Salmon		Chum Salmon		Dolly Varden/ Arctic Char		Rainbow Trout		Steel-head Trout		Northern Pike		Smelt		Other (Specify)	
				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
1 **Kenai River** - Cook Inlet to Soldotna Bridge																															
2 **Kenai River** - Soldotna Bridge to Moose River																															
3 **Kenai River** - Moose River to Skilak Outlet																															
4 **Kenai River** - Skilak Inlet to Kenai Lake																															
500 **Kasilof River** Bank Fishing																															
600 **Kasilof River** Boat Fishing																															
9 **Russian River***																															

P4 *FRESHWATER NONGUIDED* ***Nonguided*** **means you did not pay to be accompanied or personally directed on your fishing trip**	No. of Household Anglers	No. of Household Trips	**Sum** of Each Household Angler's Days Fished	King Salmon prior to July 1		King Salmon on or after July 1		Silver Salmon prior to Sept. 1		Silver Salmon on or after Sept. 1		Red Salmon prior to July 15		Red Salmon on or after July 15		Pink Salmon		Chum Salmon		Dolly Varden/ Arctic Char		Rainbow Trout		Steel-head Trout		Northern Pike		Smelt		Other (Specify)	
				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
1 **Kenai River** - Cook Inlet to Soldotna Bridge																															
2 **Kenai River** - Soldotna Bridge to Moose River																															
3 **Kenai River** - Moose River to Skilak Outlet																															
4 **Kenai River** - Skilak Inlet to Kenai Lake																															
500 **Kasilof River** Bank Fishing																															
600 **Kasilof River** Boat Fishing																															
9 **Russian River***																															

* Include all fishing in the 1,800-yard section of the Kenai River immediately downstream from the Russian River.

COOK INLET and KACHEMAK BAY SALTWATER

See Mapsite Booklet Page 16

Number of Household Anglers who fished. Do not include visiting friends, relatives, or other party members outside your household.
Number of Household Trips (a trip, which may last one or more days, is a visit to a fishing site).
Sum of Each Household Angler's Days Fished. Count any part of a day as one whole day. If 2 or more anglers fish the same day, include that day in each angler's sum.
Example: 2 household anglers fished the same day, One angler returned a second day, and fished again at the same site. *Sum of Each Household Angler's Days Fished* would equal 3.
DO NOT INCLUDE FISH HARVESTED UNDER SUBSISTENCE REGULATIONS.

P6 SALTWATER CHARTER — *Charter (guided)* means you paid to be accompanied or personally directed on your fishing trip	No. of Household Anglers	No. of Household Trips	Sum of Each Household Angler's Days Fished	Summer King Salmon April 1 - Aug. 31		Winter King Salmon Jan 1 - Mar 31 Sep 1 - Dec 31		Silver (Coho) Salmon		Red (Sockeye) Salmon		Pink Salmon		Chum Salmon		Dolly Varden/ Arctic Char		Steel-head Trout		Halibut		Rockfish		Lingcod		Pacific Cod		Sablefish (Black Cod)		Smelt		Shark		Other (specify)	
				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
980 **Upper Cook Inlet** north of Bluff and Chinitna Points, including saltwaters by Anchor River, Whiskey Gulch, Deep Creek and Ninilchik River (boat)																																			
952 **Lower Cook Inlet** west of Gore Point not including Kachemak Bay (boat)																																			
796 **Kachemak Bay** from Bluff Point to Seldovia (boat)																																			

P1 SALTWATER NONCHARTER — *Noncharter (nonguided)* means you did not pay to be accompanied or personally directed on your fishing trip	No. of Household Anglers	No. of Household Trips	Sum of Each Household Angler's Days Fished	Summer King Salmon April 1 - Aug. 31		Winter King Salmon Jan 1 - Mar 31 Sep 1 - Dec 31		Silver (Coho) Salmon		Red (Sockeye) Salmon		Pink Salmon		Chum Salmon		Dolly Varden/ Arctic Char		Steel-head Trout		Halibut		Rockfish		Lingcod		Pacific Cod		Sablefish (Black Cod)		Smelt		Shark		Other (specify)	
				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
980 **Upper Cook Inlet** north of Bluff and Chinitna Points, including saltwaters by Anchor River, Whiskey Gulch, Deep Creek and Ninilchik River (boat)																																			
981 **Upper Cook Inlet** fishing from the shore																																			
952 **Lower Cook Inlet** west of Gore Point not including Kachemak Bay (boat)																																			
796 **Kachemak Bay** from Bluff Point to Seldovia (boat)																																			
823 **Homer Spit** (fishing from shore on the Spit)																																			
991 **Other Shore**																																			

SALTWATER SPORT FISHING

Go to Page 7 for Cook Inlet/Kachemak Bay saltwater
Go to Page 12 for shellfish

Number of Household Anglers who fished. Do not include visiting friends, relatives, or other party members outside your household.
Number of Household Trips (a trip, which may last one or more days, is a visit to a fishing site).
Sum of Each Household Angler's Days Fished. Count any part of a day as one whole day.
If multiple household anglers fish the same day, include that day in each angler's sum.
Example: In the example below, 2 household anglers fished the same day, One angler returned a second day, and fished again at the same site. Sum of Each Household Angler's Days Fished would equal 3.
DO NOT INCLUDE FISH HARVESTED UNDER SUBSISTENCE REGULATIONS

Saltwater Fishing Sites	See Mapsite Booklet		Fished from		No. of Household Anglers	No. of Household Trips	**Sum** of Each Household Angler's Days Fished	King Salmon **Large***		King Salmon **Small***		Silver (Coho) Salmon		Red (Sockeye) Salmon		Pink Salmon		Chum Salmon		Row No.
Site Name	Area Code Letter	Site Number	BOAT	SHORE				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	
SALTWATER CHARTER — You paid to be personally directed or accompanied during your fishing trip																				
Example: ABC Inlet	*X*	*999*	*√*		*2*	*2*	*3*					*4*	*2*							*Example*
1																				1
2																				2
3																				3
4																				4
5																				5
6																				6
7																				7
8																				8
SALTWATER NONCHARTER — You did not pay to be personally directed or accompanied during your fishing trip																				
9																				9
10																				10
11																				11
12																				12
13																				13
14																				14
15																				15
16																				16
17																				17
18																				18
19																				19

Record additional saltwater species on Page 9

*Saltwater King Salmon Size Categories:
In Area Code Letters A-H, "Large" are king salmon 28 inches and over, and "Small" are king salmon less than 28 inches
In Area Code Letters I-Z, "Large" are king salmon 20 inches and over, and "Small" are king salmon less than 20 inches

SALTWATER SPORT FISHING

Continued from page 8

Go to Page 7 for Cook Inlet/Kachemak Bay saltwater
Go to Page 12 for shellfish

Row No.	Halibut		Rockfish		Lingcod		Sablefish (Black Cod)		Pacific Cod		Steelhead Trout		Dolly Varden/ Arctic Char		Cutthroat Trout		Smelt		Shark		Other Fish (Specify)		
	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	Other Fish Name	CAUGHT	KEPT
SALTWATER CHARTER — You paid to be personally directed or accompanied in your fishing activities																							
Example (Continued)					2	2	2	1	2	1											*Example: Kelp Greenling*	2	1
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
SALTWATER NONCHARTER — You did not pay to be personally directed or accompanied during your fishing trip																							
9																							
10																							
11																							
12																							
13																							
14																							
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16																							
17																							
18																							
19																							

FRESHWATER SPORT FISHING

Go to page 6 for Kenai/ Kasilof/ Russian river fishing
Go to page 12 for Personal Use salmon dipnetting

Number of Household Anglers who fished. Do not include visiting friends, relatives, or other party members outside your household.
Number of Household Trips (a trip, which may last one or more days, is a visit to a fishing site).
Sum of Each Household Angler's Days Fished. Count any part of a day as one whole day.
If multiple household anglers fish the same day, include that day in each angler's sum.
Example: In the example below, 2 household anglers fished the same day, One angler returned a second day, and fished again at the same site. Sum of Each Household Angler's Days Fished would equal 3.
DO NOT INCLUDE FISH HARVESTED UNDER SUBSISTENCE REGULATIONS.

Record additional freshwater species on Page 11

Freshwater Fishing Sites	See Mapsite Booklet		Fished from		No. of Household Anglers	No. of Household Trips	Sum of Each Household Angler's Days Fished	King Salmon Large*		King Salmon Small*		Land-locked Kings, Silvers		Silver (Coho) Salmon		Red (Sockeye) Salmon		Pink Salmon		Chum Salmon		Row No.
Site Name	Area Code Letter	Site Number	BOAT	SHORE				CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	
FRESHWATER GUIDED — You paid to be personally directed or accompanied in your fishing activities																						
Example: ABC Lake	X	999	√		2	2	3					4	2									Example
1																						1
2																						2
3																						3
4																						4
5																						5
6																						6
7																						7
8																						8
FRESHWATER NONGUIDED — You did not pay to be personally directed or accompanied in your fishing activities																						
9																						9
10																						10
11																						11
12																						12
13																						13
14																						14
15																						15
16																						16
17																						17
18																						18
19																						19

*Freshwater King Salmon Size Categories:
In Area Code Letters A-G, "Large" are king salmon 28 inches and over, "Small" are king salmon less than 28 inches.
In Area Code Letters H-Z, "Large" are king salmon 20 inches and over, "Small" are king salmon less than 20 inches.

FRESHWATER SPORT FISHING

Continued from page 10

Go to page 6 for Kenai/ Kasilof/ Russian river fishing
Go to page 12 for Personal Use salmon dipnetting

Row No.	Dolly Varden/ Arctic Char		Rainbow Trout		Steelhead Trout		Cutthroat Trout		Lake Trout		Brook Trout		Arctic Grayling		Northern Pike		Whitefish		Sheefish		Burbot		Smelt		Other Fish (Specify)		
	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	Other Fish Name	CAUGHT	KEPT
FRESHWATER GUIDED — You paid to be personally directed or accompanied in your fishing activities																											
Example (Continued)							4	2	1	0					2	2			3	3					*Example: Alaska Blackfish*	2	2
1																											
2																											
3																											
4																											
5																											
6																											
7																											
8																											
FRESHWATER NONGUIDED — You did not pay to be personally directed or accompanied in your fishing activities																											
9																											
10																											
11																											
12																											
13																											
14																											
15																											
16																											
17																											
18																											
19																											

SHELLFISH Crabs, Clams, and Shrimp

Number of Household Anglers who fished. Do not include visiting friends, relatives, or other party members outside your household.
Number of Household Trips (a trip, which may last one or more days, is a visit to a fishing site).
Sum of Each Household Angler's Days Fished. Count any part of a day as one whole day. If 2 or more anglers fish the same day, include that day in each angler's sum.
Example: 2 household anglers fished the same day, One angler returned a second day, and fished again at the same site. Sum of Each Household Angler's Days Fished would equal 3.

DO NOT INCLUDE SHELLFISH HARVESTED UNDER SUBSISTENCE REGULATIONS

Fishing Sites	See Mapsite Booklet		No. of Household Anglers	No. of Household Trips	**Sum** of Each Household Angler's Days Fished	Razor Clams (numbers)	Hardshell Clams (numbers)	Shrimp (gallons)	King Crab		Dungeness Crab		Tanner Crab		Other Shellfish (Specify)	
Site Name	Area Code Letter	Site Number				KEPT	KEPT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT	CAUGHT	KEPT
Example: ABC Beach	X	999	2	2	3	20	15	2					Example			
								GALLONS								

RAZOR CLAMS

Razor Clams have long, narrow, smooth shells that can grow to longer than 7 inches. The shells are covered with a thin tissue-like layer that varies in color from brown to yellowish-brown depending upon the clam size. In older clams the tissue covering is usually eroded. The shells are thin and the shell edges sharp.

HARDSHELL CLAMS

The **littleneck clam** shells are usually white, but may be brown or have brown markings. The shells have concentric growth rings and distinct vertical ridges. Littleneck clams are about 2 inches long.

The **butter clam** shell is thick and white. It has heavy concentric growth rings, but no vertical ridges. The shell's inner edge is smooth. Butter clams are 3 to 5 inches long.

PERSONAL USE SALMON DIPNETTING
(Alaska Residents Only)

Number of Household Anglers who fished. Do not include visiting friends, relatives, or other party members outside your household.
Number of Household Trips (a trip, which may last one or more days, is a visit to a fishing site).
Sum of Each Household Angler's Days Fished. Count any part of a day as one whole day. If 2 or more anglers fish the same day, include that day in each angler's sum.
Example: 2 household anglers fished the same day, One angler returned a second day, and fished again at the same site. Sum of Each Household Angler's Days Fished would equal 3.

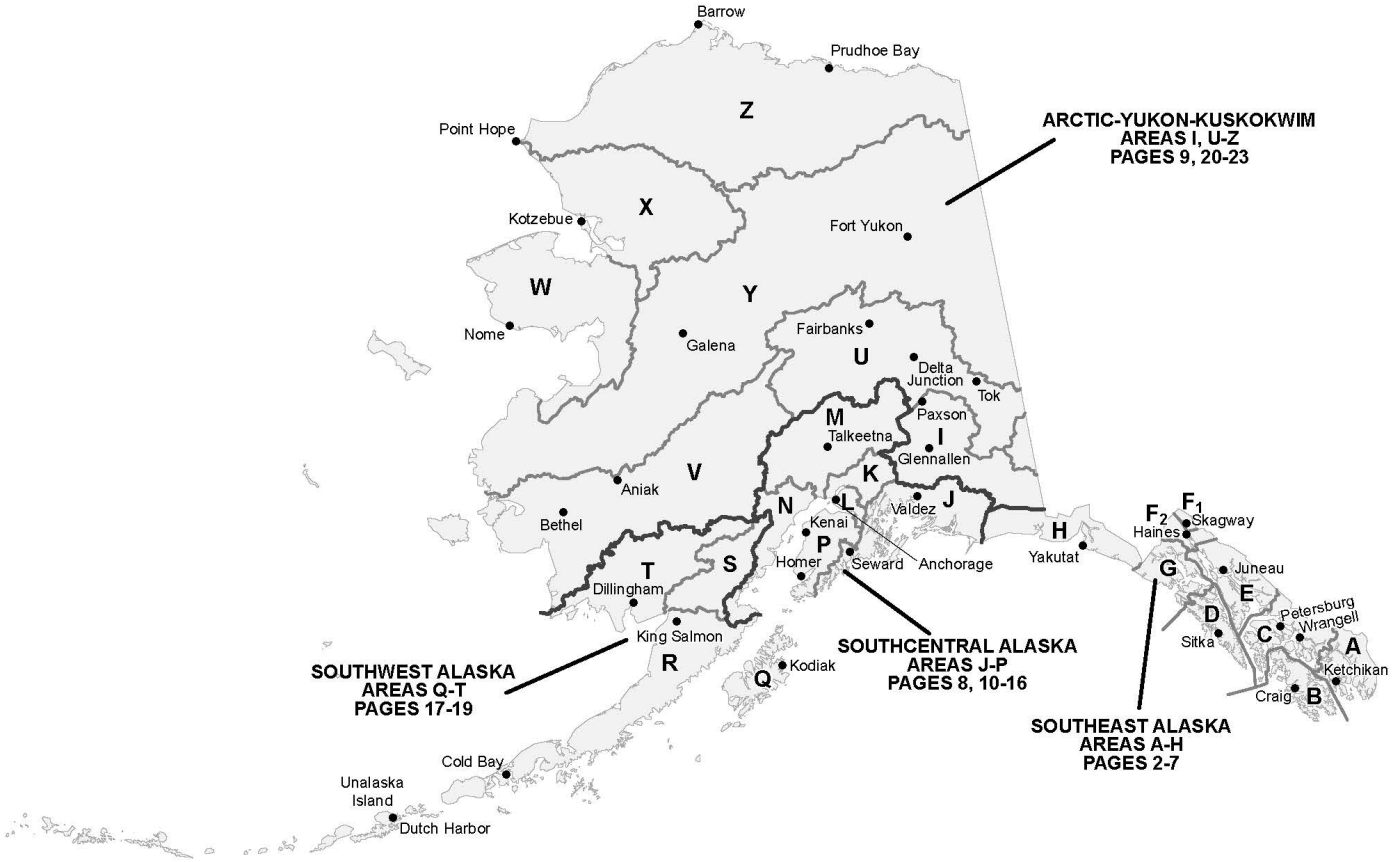
DO NOT INCLUDE FISH HARVESTED UNDER SUBSISTENCE REGULATIONS

Fishing Sites	See Mapsite Booklet		No. of Household Anglers	No. of Household Trips	**Sum** of Each Household Angler's Days Fished	King Salmon	Silver (Coho) Salmon	Red (Sockeye) Salmon	Pink Salmon	Chum Salmon	Other (Specify)
Site Name	Area Code Letter	Site Number				KEPT	KEPT	KEPT	KEPT	KEPT	KEPT
Example: ABC River	X	999	2	2	3		1	15	Example		

MAPSITE BOOKLET

Maps, Area Descriptions, and Fish Size Categories

Use the map below to find the pages that apply to your household's sport fishing in 2020



TO SAVE POSTAGE, PLEASE DO NOT RETURN THIS BOOKLET WITH YOUR QUESTIONNAIRE

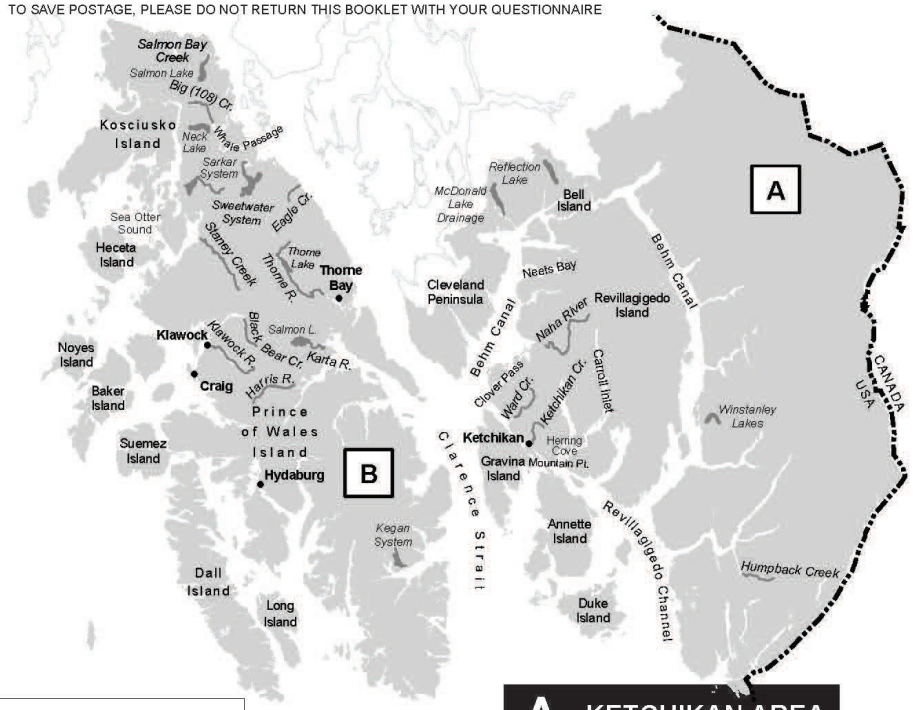
B PRINCE OF WALES ISLAND AREA

Saltwater

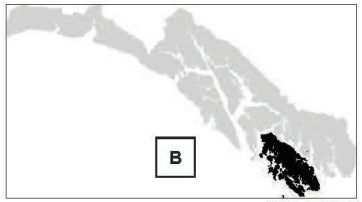
No.	Site Name
760	Craig Area
1055	Neck Lake Outlet fishery
786	Noyes Island
1008	Prince of Wales Island, east side
1010	Prince of Wales Island, west side
724	Sea Otter Sound
766	Dall Island
858	Whale Passage
9991	Other saltwater (specify)

Freshwater

No.	Site Name
216	Big Creek (108 Creek)
115	Black Bear Creek
120	Eagle Creek
124	Harris River
3	Karta River
219	Kegan System (stream, lake)
5	Klawock River
191	Salmon Bay Creek
243	Salmon Lake
220	Sarkar System (stream, lake)
158	Staney Creek
218	Sweetwater System (stream, lake)
217	Thorne System (stream, lake)
9994	Other streams (specify)
9993	Other lakes (specify)



Fish Size Categories
AREAS A and B KING SALMON
"Large" are 28 inches and over;
"Small" are less than 28 inches.



SOUTHEAST ALASKA

A KETCHIKAN AREA

Saltwater

No.	Site Name
1	Behm Canal, East and West
6	Bell Island
730	Carroll Inlet
2	Clarence Strait
726	Clover Pass
737	Herring Cove Shoreline
1008	Ketchikan Terminal Harvest Area[a]
728	Mountain Point
1012	Neets Bay Terminal Harvest Area[a]
3	Revillagigedo Channel
9991	Other saltwater (specify)

Freshwater

No.	Site Name
134	Humpback Creek
214	Ketchikan Creek
200	McDonald Lake drainage
9	Naha River
165	Reflection Lake
10	Ward Creek
187	Winstanley lakes
9994	Other streams (specify)
9993	Other lakes (specify)

[a] *Includes the Ketchikan Sport Terminal Harvest Area and Neets Bay Terminal Harvest Area. These terminal harvest areas allow anglers to target Alaska hatchery king salmon with liberalized bag, possession and annual limits.*

TO SAVE POSTAGE, PLEASE DO NOT RETURN THIS BOOKLET WITH YOUR QUESTIONNAIRE

C KAKE, PETERSBURG, WRANGELL, STIKINE AREA

Saltwater

PETERSBURG AREA SITES

No.	Site Name
728	Frederick Sound
907	Petersburg road system shoreline sites
906	Petersburg area - other sites (specify)
1	Terminal Harvest Area near Petersburg [a]
758	Thomas Bay
720	Wrangell Narrows

OTHER AREA C SALTWATER SITES

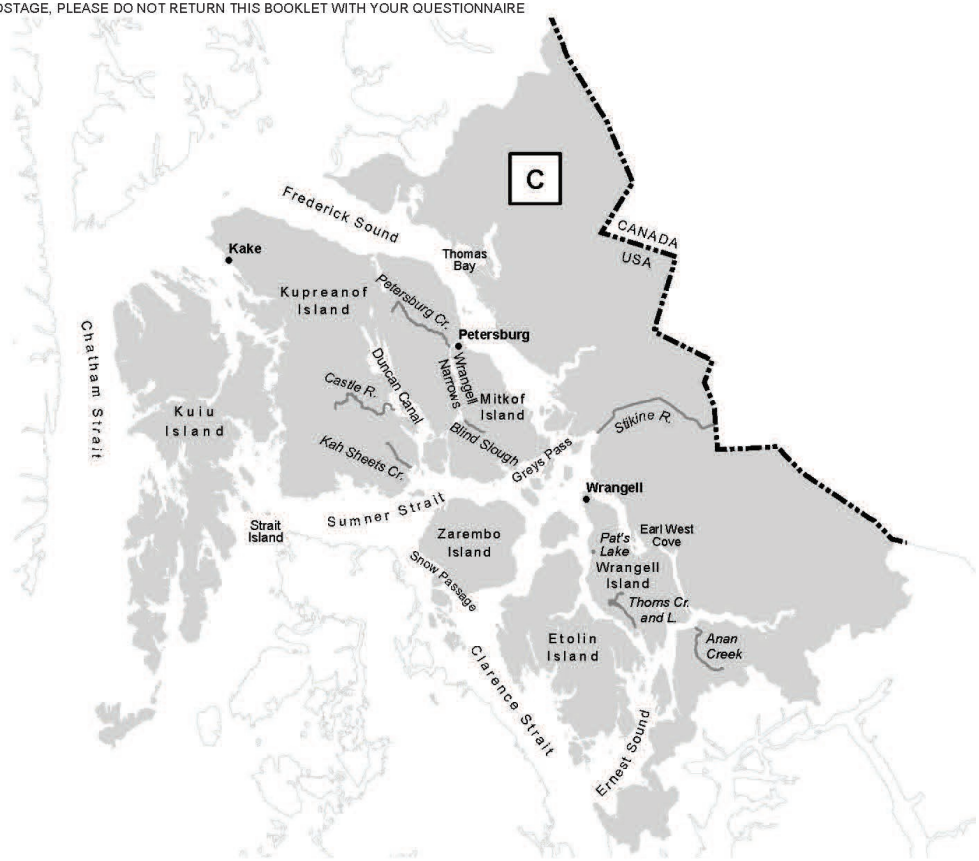
3	Greys Pass/Banana Point
776	Kake Area
798	Snow Passage
794	Sumner Strait from Strait Island to Greys Pass [b]
908	Wrangell area
909	Wrangell road system
766	Zarembo Island
9991	Other saltwater (specify)

Freshwater

No.	Site Name
9	Anan Creek
5	Blind Slough (in Wrangell Narrows)
8	Castle River
147	Kah Sheets Creek
196	Kupreanof Island streams (specify)
194	Mitkof Island streams (specify)
202	Pat's Lake (Trout Lake)
10	Petersburg Creek
175	Stikine River
216	Thoms Creek and Lake
9994	Other streams (specify)
9993	Other lakes (specify)

[a] *Wrangell Narrows south of 56° 46′N. latitude (Martinsen's Dock) and north of the latitude of the nothern tip of Woewodski Island. A terminal harvest area is where associated boundaries and liberalized harvest limits or methods and means are established by emergency order.*

[b] *Waters adjacent to South Mitkof Island shore (Woodpecker Cove, Station Island), Zarembo Island (Baht Harbor, Craig Pt.) and South Kupreanof Island (Kah Sheets Bay, Level islands, and Eye Opener).*



Fish Size Categories
AREA C KING SALMON
"Large" are 28 inches and over;
"Small" are less than 28 inches.

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D SITKA AREA

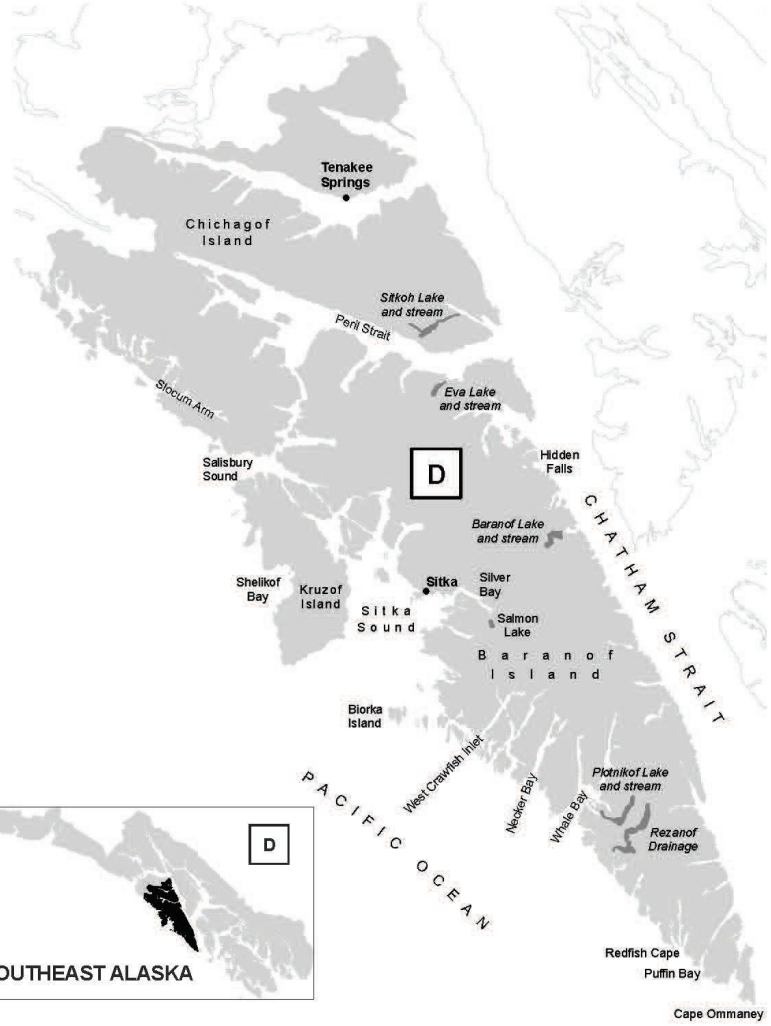
Saltwater

No.	Site Name
1048	Baranof Island, east side
1072	Baranof Island, southwest side (West Crawfish Inlet to Cape Ommaney)
738	Biorka Island
1050	Chichagof Island, west side
1060	Chichagof Island, remainder
850	Hidden Falls
1044	Kruzof Island, outer coast
734	Peril Strait
766	Salisbury Sound
13	Silver Bay
1053	Sitka road system
724	Sitka Sound (specify)
1046	Tenakee area
9991	Other saltwater (specify)

Freshwater

No.	Site Name
186	Baranof Lake (Warm Springs Lake) and stream
8	Eva Lake and stream
231	Plotnikof Lake and stream
232	Rezanof drainage (lakes, streams)
148	Salmon Lake
14	Sitkoh Lake and stream
9994	Other streams (specify)
9993	Other lakes (specify)

Fish Size Categories
AREA D KING SALMON
"Large" are 28 inches and over;
"Small" are less than 28 inches.



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E JUNEAU AREA

Saltwater

No.	Site Name
758	Angoon Area
950	Frederick Sound
1000	Juneau area saltwater sites [a]
956	Juneau, Terminal Harvest Area (THA) [b]
3	Juneau road system shoreline sites
939	Macaulay Hatchery
754	Stephens Passage, lower, south of Doty Cove
9991	Other saltwater (specify)

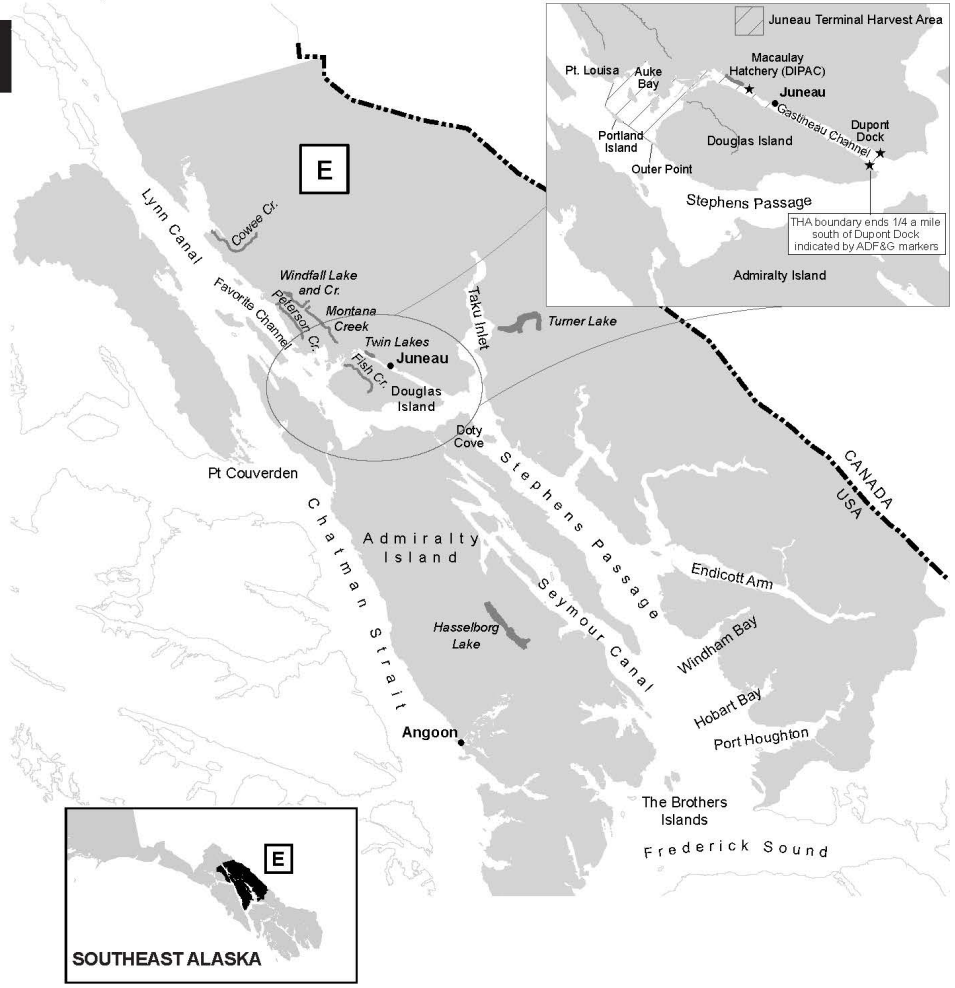
Freshwater

No.	Site Name
213	Cowee Creek (near Echo Cove)
143	Fish Creek (Douglas Island)
9	Hasselborg Lake
6	Juneau road system freshwater sites
168	Montana Creek, including mouth
175	Peterson Creek and Salt Chuck
211	Twin Lakes
11	Turner Lake
223	Windfall Creek
198	Windfall Lake
9994	Other streams (specify)
9993	Other lakes (specify)

[a] *Lower Lynn Canal south to Pt. Couverden, Favorite Channel, and upper Stephens Passage south to Doty Cove, excluding the Juneau Terminal Harvest Area.*

[b] *Marine waters east of a line from Pt. Louisa to the eastern shore of Portland Island, to the north tip of Outer Point on Douglas Island and the waters west of Dupont (see map at right). A terminal harvest area is where associated boundaries and liberalized harvest limits or methods and means are established by emergency order.*

Fish Size Categories
AREA E KING SALMON
"Large" are 28 inches and over;
"Small" are less than 28 inches.



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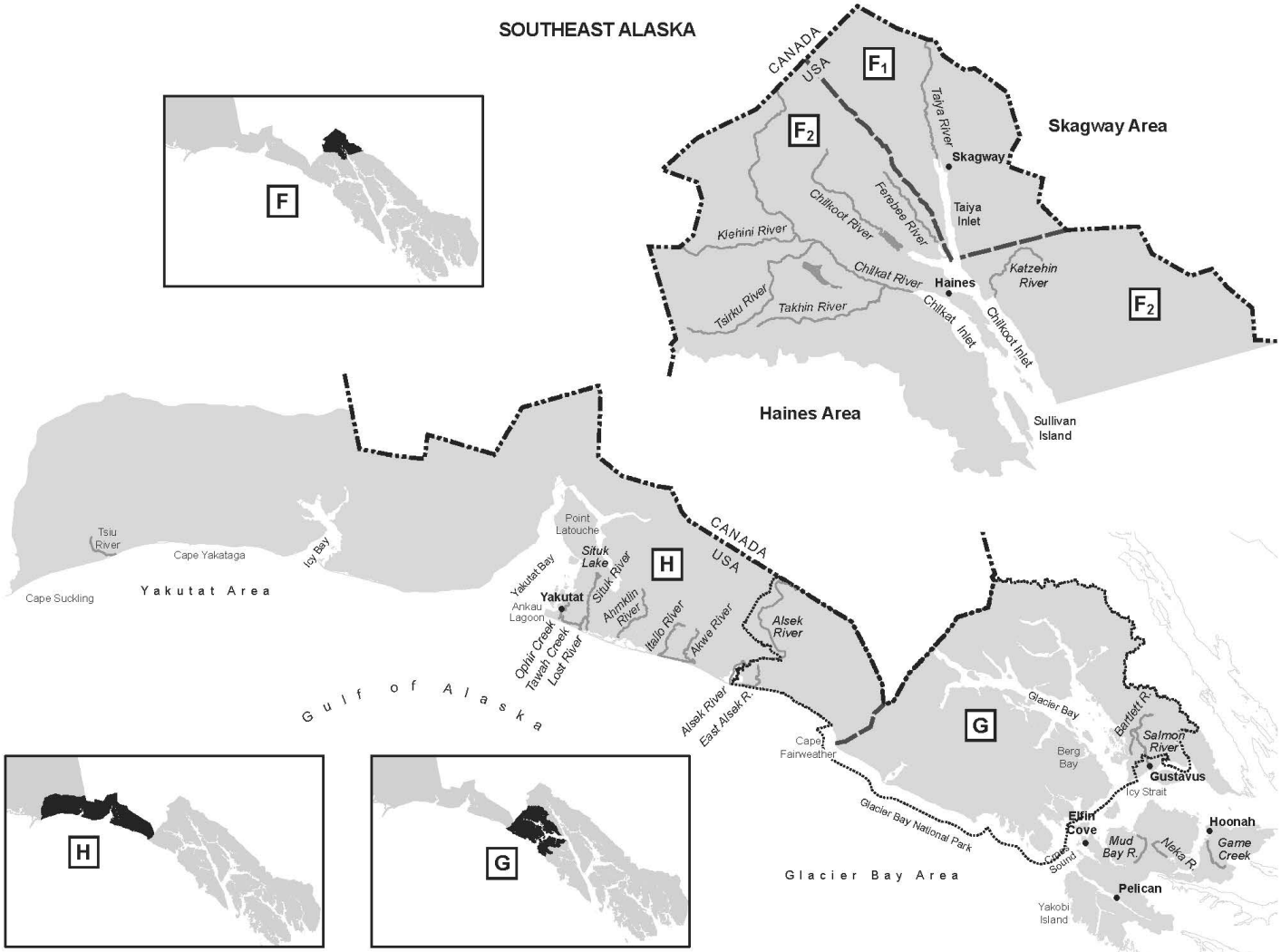

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F1 SKAGWAY AREA

Saltwater Skagway Area

No.	Site Name
736	Taiya Inlet
9991	Other Skagway saltwater (specify)

Freshwater Skagway Area

121	Pullen Creek and Pond
9994	Other Skagway Area streams (specify)
9993	Other Skagway Area lakes (specify)

F2 HAINES AREA

Saltwater Haines Area

No.	Site Name
730	Chilkat Inlet
732	Chilkoot Inlet
9991	Other Haines saltwater (specify)

Freshwater Haines Area

130	Chilkat Lake
107	Chilkat River
5	Chilkoot Lake
3	Chilkoot River
9994	Other Haines Area streams (specify)
9993	Other Haines Area lakes (specify)

Fish Size Categories
AREA F KING SALMON
"Large" are 28 inches and over;
"Small" are less than 28 inches.

G GLACIER BAY AREA

Saltwater

No.	Site Name
768	Berg Bay
804	Chichagof Island, north side
970	Cross Sound (NOT within Glacier Bay National Park)
972	Glacier Bay National Park (NOT within Glacier Bay proper) [a]
736	Glacier Bay proper (INSIDE Glacier Bay National Park) [a]
740	Gustavus area
802	Homeshore area
908	Hoonah area
968	Icy Strait (NOT within Glacier Bay National Park)
800	Yakobi Island, outer coast
9991	Other saltwater (specify)

Freshwater

No.	Site Name
105	Bartlett River
128	Game Creek
127	Mud Bay River
129	Neka River
110	Salmon River
9994	Other streams (specify)
9993	Other lakes (specify)

[a] *Glacier Bay proper is described as all marine contiguous water inside or north of a line from Pt. Carolus and Pt. Gustavus.*

Fish Size Categories
AREA G KING SALMON
"Large" are 28 inches and over;
"Small" are less than 28 inches.

H YAKUTAT AREA

Saltwater

No.	Site Name
750	Ankau Lagoon
724	Yakutat Bay
9991	Other saltwater (specify)

Freshwater

No.	Site Name
147	Ahrnklin River
107	Akwe River
135	East Alsek River
117	Italio River
120	Lost River
148	Situk River, above weir [a]
149	Situk River, below weir [a]
132	Tawah Creek
134	Tsiu River
9994	Other streams (specify)
9993	Other lakes (specify)

[a] *The Situk weir is located near the river mouth approximately 1.5 miles above the Situk Landing.*

Fish Size Categories
AREA H KING SALMON
Saltwater
"Large" are 28 inches and over;
"Small" are less than 28 inches.
Freshwater
"Large" are 20 inches and over;
"Small" are less than 20 inches.

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SPORT FISH SURVEY AREAS I - P

SOUTHCENTRAL ALASKA INDEX

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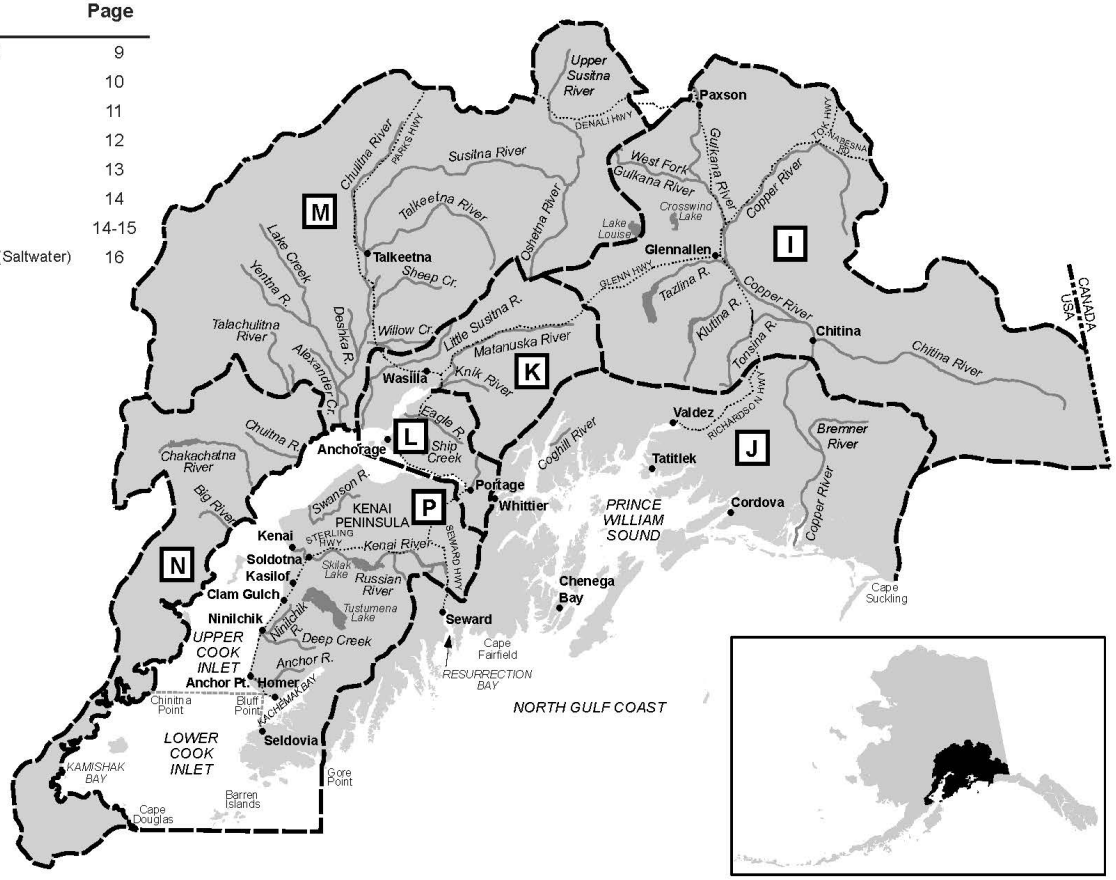

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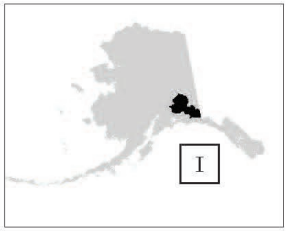
I UPPER COPPER RIVER DRAINAGE SPORTFISHING

Freshwater

No.	Site Name
8	Crosswind Lake
650	Gulkana River (above Paxson Lake)
501	Gulkana River (Paxson Lake outlet to Counting Tower)
502	Gulkana River (Counting Tower to West Fork mouth)
600	Gulkana River (West Fork mouth to Richardson Hwy)
16	Gulkana River (Richardson Hwy to Copper River)
371	Middle Fork Gulkana River
372	West Fork Gulkana River
416	Klutina River
212	Mendeltna Creek
13	Paxson Lake
4	Silver Lake
14	Summit Lake (near Paxson)
398	Tolsona Lake
287	Tonsina River
9994	Other streams (specify)
9993	Other lakes (specify)



I_1 UPPER COPPER RIVER DRAINAGE PERSONAL USE DIPNET FISHERY

Personal Use DIPNET FISHERY

No.	Site Name
9010	Copper River (near Chitina) **Do not include fishwheel or subsistence dipnetting**

Fish Size Categories
AREA I KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.

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J PRINCE WILLIAM SOUND/ NORTH GULF COAST

SALTWATER SPORTFISHING FROM BOAT

Boat Trip ENDED in Seward - Fish were caught in:

No.	Site Name
1101	Resurrection Bay
1105	North Gulf Coast west of Aialik Cape
1106	North Gulf Coast east of Aialik Cape
1103	Western Prince William Sound
1104	Other site (specify)

Boat Trip ENDED in Whittier, Chenega, or other site in Western Prince William Sound - Fish were caught in:

No.	Site Name
1200	Passage Canal and Blackstone Bay
1201	Western Prince William Sound (**outside** Passage Canal and Blackstone Bay)
1202	Eastern Prince William Sound
1203	Other site (specify)

Boat Trip ENDED in Valdez - Fish were caught in:

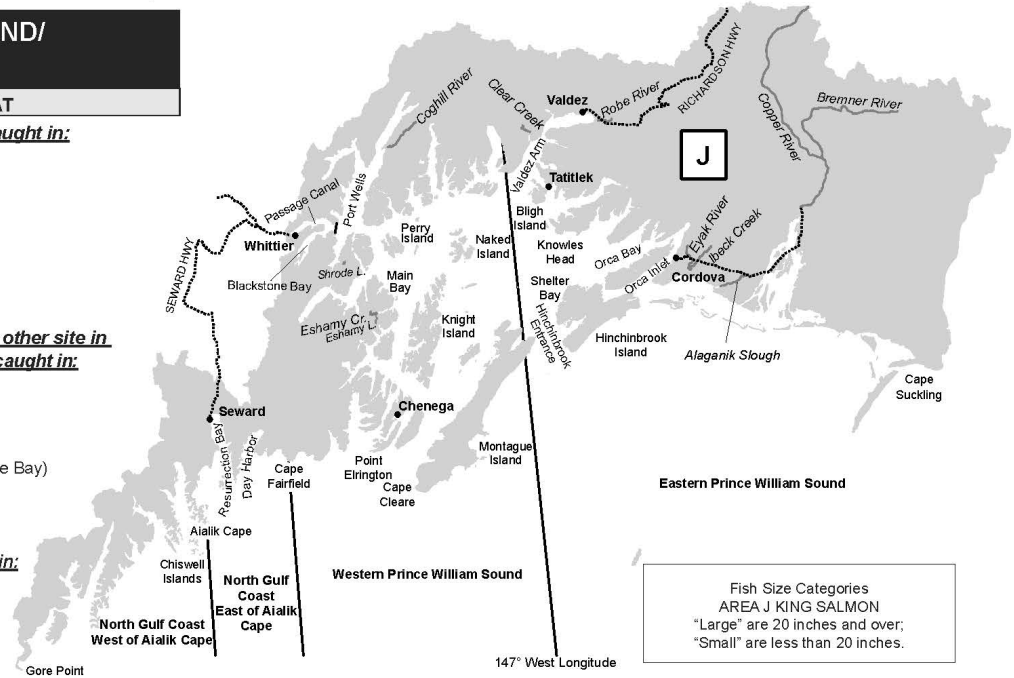
No.	Site Name
1301	Western Prince William Sound
1302	Eastern Prince William Sound
1305	Valdez Arm, Port Valdez
1303	Other site (specify)

Boat Trip ENDED in Cordova or other site in Eastern Prince William Sound - Fish were caught in:

No.	Site Name
1401	Western Prince William Sound
1402	Eastern Prince William Sound
1403	Other site (specify)

Boat Trip ENDED in location other than those listed above - Fish were caught in:

No.	Site Name
9991	Other site (specify)



Fish Size Categories
AREA J KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.

SALTWATER FISHING FROM SHORELINE

No.	Site Name
1008	Resurrection Bay (Seward)
759	Passage Canal (Whittier)
998	Cove Creek mouth (Whittier)
747	Valdez Arm/Port Valdez
831	Allison Point (Valdez)
815	Fleming Spit/Hippy Cove (Cordova)
9992	Other shoreline site (specify)

FRESHWATER FISHING

No.	Site Name
114	Alaganik Slough
308	Clear Creek
7	Coghill River
307	Eshamy Lake, Creek, and Lagoon
5	Eyak River
171	Ibeck Creek
222	Robe River
12	Shrode Lake
9994	Other streams (specify)
9993	Other lakes (specify)

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K KNIK ARM AREA

Saltwater

No.	Site Name
9991	Saltwater (specify)

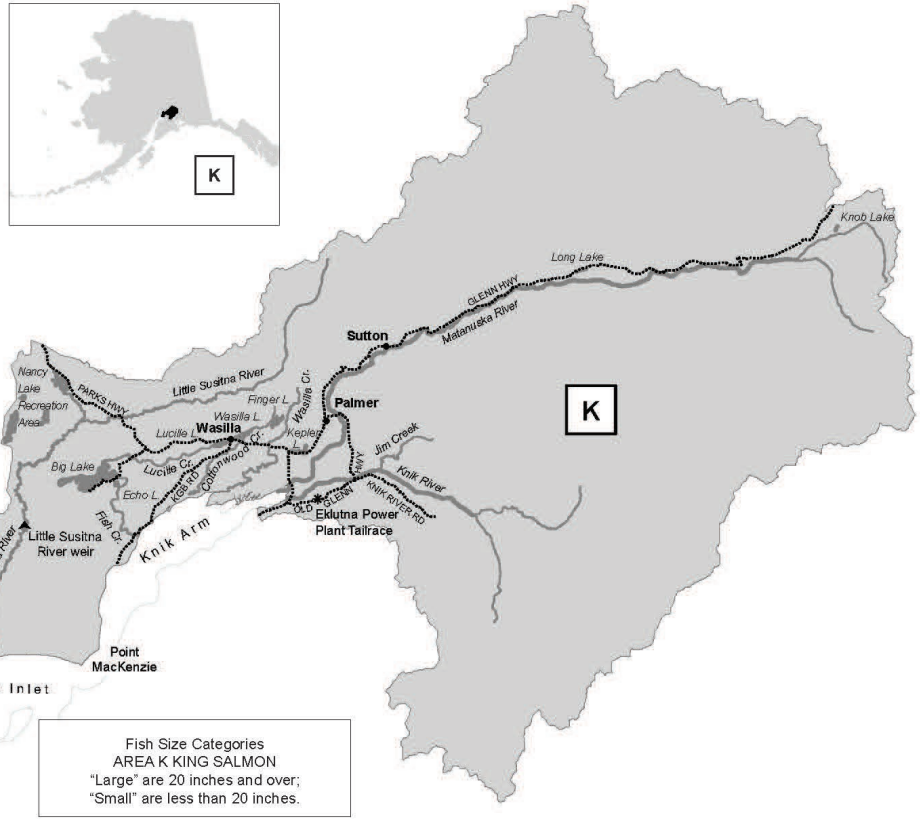
Freshwater

Knik Arm Area

No.	Site Name
12	Big Lake
7	Cottonwood Creek
14	Eklutna Power Plant Tailrace
9	Finger Lake
234	Fish Creek, Big Lake drainage
10	Kepler Lakes Complex (specify) includes Bradley, Canoe, Echo, Irene, Kepler, Klaire, Long, Matanuska, Silver, and Victor lakes
5	Knik River and tributaries including Jim Creek
486	Little Susitna River, below the weir (the weir is located at river mile 32.5, about 4 miles upstream of the Little Susitna River Public Use Facility)
487	Little Susitna River, above the weir
11	Lucille Lake
6	Wasilla Creek (Rabbit Slough)
8	Wasilla Lake
9994	Other streams (specify)
9993	Other lakes (specify) If Long Lake, specify location: • Kepler Lakes complex (K 294) • Mile 85 Glenn Hwy (K 221) • In the Willow area (K 316) • In the Big Lake area (K 300)

Nancy Lake Recreation Area Sites

No.	Site Name
443	Lynx Lake
13	Nancy Lake
456	Red Shirt Lake
241	South Rolly Lake
244	Other sites within Recreation Area (specify)



Fish Size Categories
AREA K KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.

K1 FISH CREEK PERSONAL USE DIPNET FISHERY

Personal Use DIPNET FISHERY

No.	Site Name
9000	Fish Creek (Big Lake Drainage) - Personal Use

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L ANCHORAGE AREA

Saltwater

No.	Site Name
731	Twentymile River (mouth)
9991	Other boat sites (specify)
9992	Other shoreline sites (specify)

Freshwater

Streams

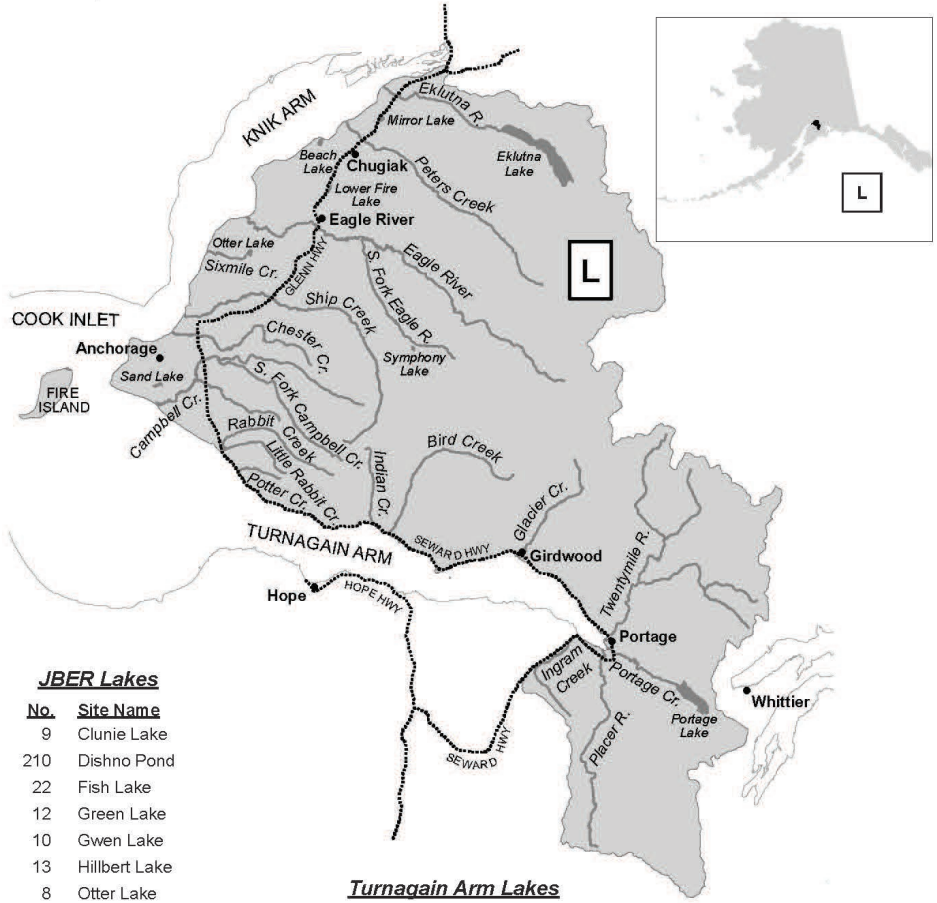
No.	Site Name
15	Bird Creek
16	Campbell Creek
18	Eagle River
148	Glacier Creek
218	Ingram Creek
219	Placer River
14	Ship Creek
17	Twentymile River
9994	Other streams (specity)

Anchorage Bowl Lakes

No.	Site Name
20	C Street Lake (Taku-Campbell Lake)
4	Campbell Point (Little Campbell) Lake
23	Cheney Lake
138	Delong Lake
3	Jewel Lake
215	Lake Otis
5	Sand Lake
24	University (APU) Lake
300	Other Anchorage bowl lakes (specify)

Eagle River/Chugiak Lakes

No.	Site Name
21	Beach Lake
139	Eklutna Lake
6	Lower Fire Lake
7	Mirror Lake
228	Symphony Lake
302	Other Eagle River/Chugiak lakes (specify)



JBER Lakes

No.	Site Name
9	Clunie Lake
210	Dishno Pond
22	Fish Lake
12	Green Lake
10	Gwen Lake
13	Hillbert Lake
8	Otter Lake
11	Sixmile Lake
188	Spring Lake
19	Triangle Lake
208	Walden Lake
303	Other JBER lakes (specify)

Turnagain Arm Lakes

No.	Site Name
229	Airstrip Willow Pond
223	Alder Pond
226	Rabbit Lake
227	Tangle Pond

Fish Size Categories
AREA L KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.

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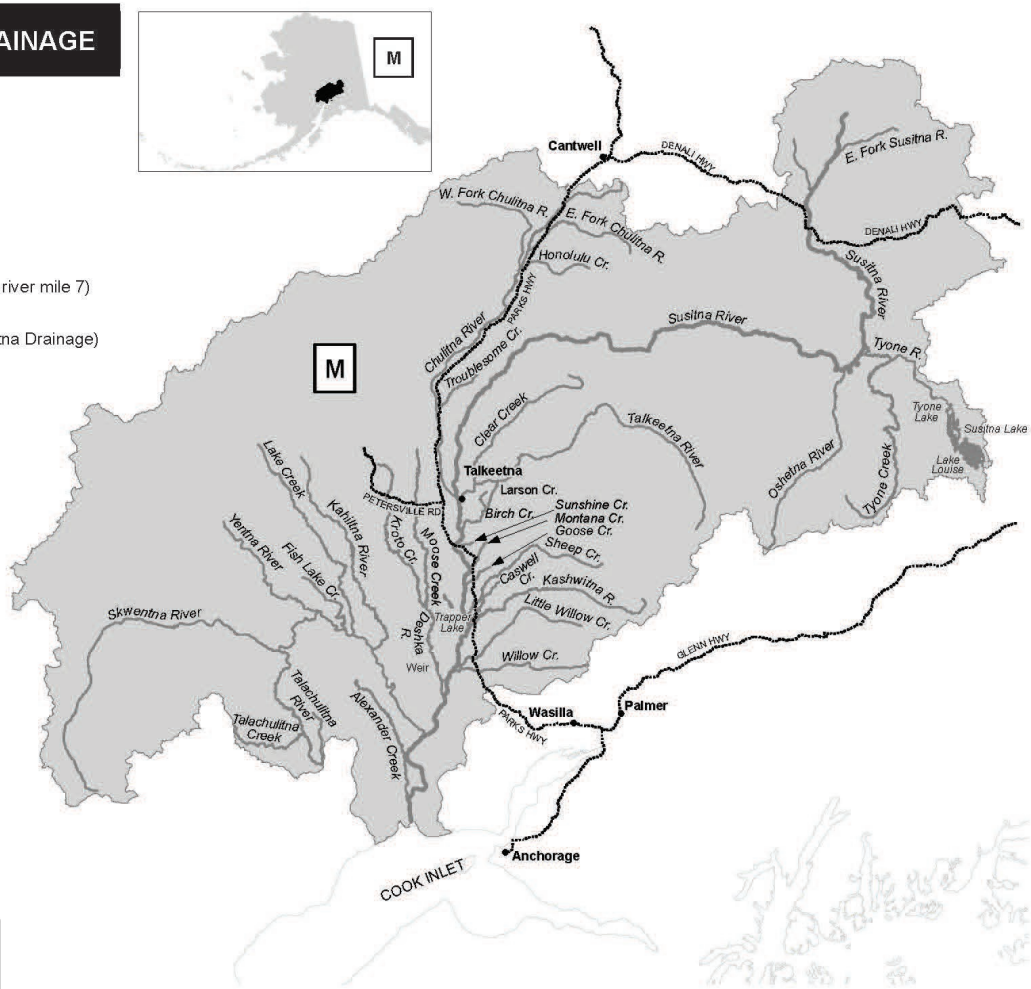
M SUSITNA RIVER DRAINAGE

Freshwater

No.	Site Name
1117	Alexander Creek
1118	Alexander Lake
117	Birch Creek
5	Caswell Creek
8	Clear (Chunilna) Creek
1347	Deshka River above weir (weir is at river mile 7)
1348	Deshka River below weir
1171	Fish Lake Creek & Fish Lakes (Yentna Drainage)
138	Goose Creek
143	Kashwitna River
1004	Lake Creek
3010	Lake Louise
10	Little Willow Creek
6	Montana Creek
9	Sheep Creek
1239	Skwentna River
7	Sunshine Creek
3011	Susitna Lake
1251	Susitna River
1007	Talachulitna River
170	Talkeetna River
1262	Trapper Lake
181	Troublesome Creek
3295	Tyone Creek
4	Willow Creek
1277	Yentna River
9993	Other lakes (specify)
9994	Other streams (specify)

Fish Size Categories
AREA M KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.



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N WEST COOK INLET FRESHWATER

In Area N all fishing sites are freshwater. Record all Cook Inlet saltwater to Area P

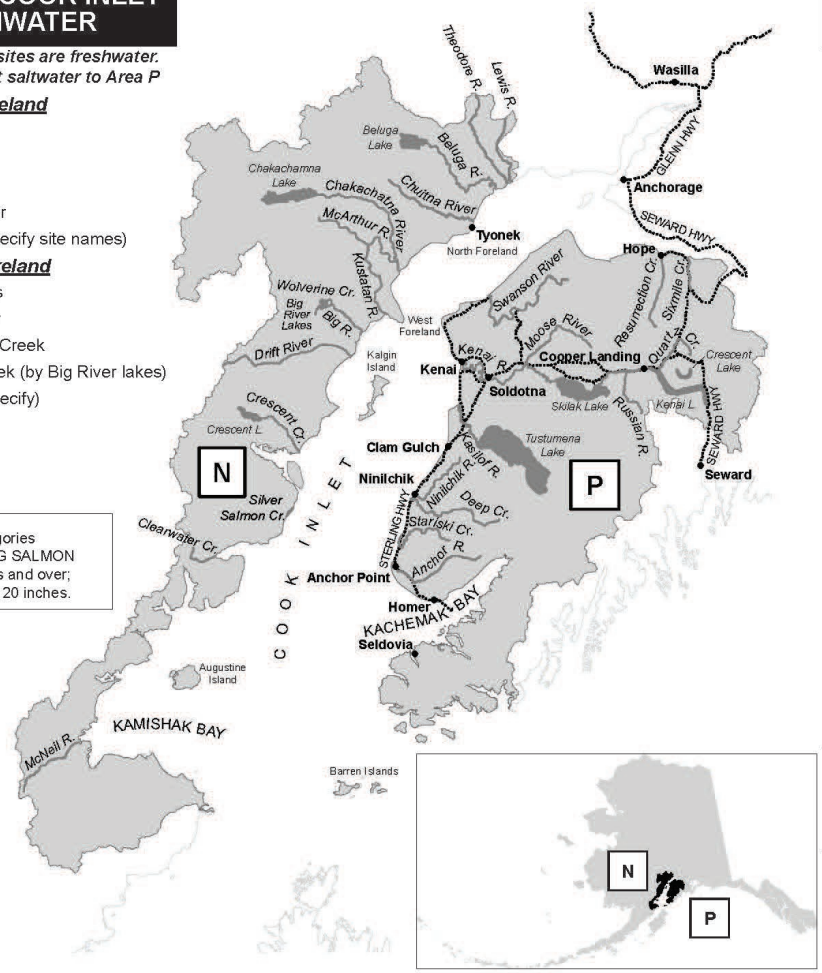
North of North Foreland

No.	Site Name
8	Chuitna River
10	Lewis River
9	Theodore River
332	Other sites (specify site names)

South of North Foreland

125	Big River lakes
186	Kustatan River
237	Silver Salmon Creek
340	Wolverine Creek (by Big River lakes)
333	Other sites (specify)

Fish Size Categories
AREAS N and P KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.



P KENAI PENINSULA FRESHWATER

No.	Site Name
5	Anchor River
137	Centennial Lake
147	Crescent Lake
7	Deep Creek
12	Hidden Lake
300	Island Lake
178	Johnson Lake
183	Kenai Lake
192	Longmare (Longmere) Lake
6	Ninilchik River
218	Quartz Creek
261	Resurrection Creek (near Hope)
226	Sixmile Creek drainage, including Granite, East Fork, and Canyon creeks
228	Skilak Lake
368	Spirit (Elephant) Lake
283	Sports Lake
8	Stariski Creek
235	Summit Lake
15	Swan Lake Canoe Route
334	Swanson River
14	Swanson River Canoe Route lakes
244	Tustumena Lake
9994	Other streams (specify)
9993	Other lakes (specify)

P KENAI PENINSULA PERSONAL USE DIPNET FISHERIES

No.	Site Name
9001	China Poot (dipnet)
9002	Kenai River (dipnet)
9003	Kasilof River (dipnet)
9007	Kasilof River (gillnet)

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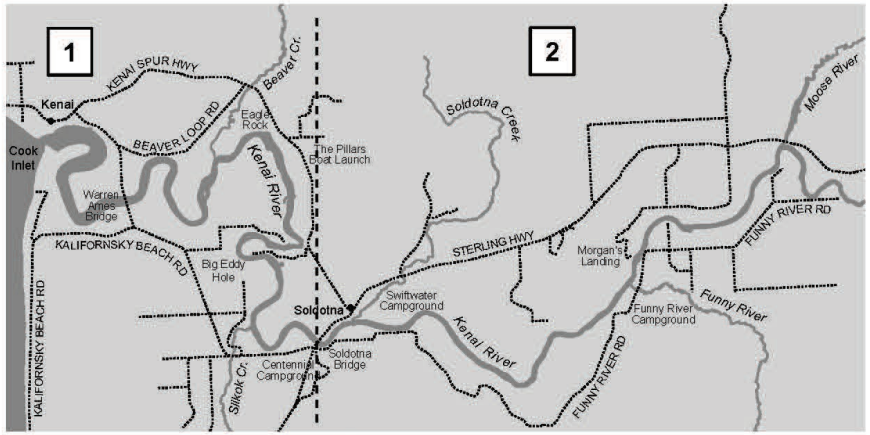
P KENAI, KASILOF and RUSSIAN RIVERS FRESHWATER

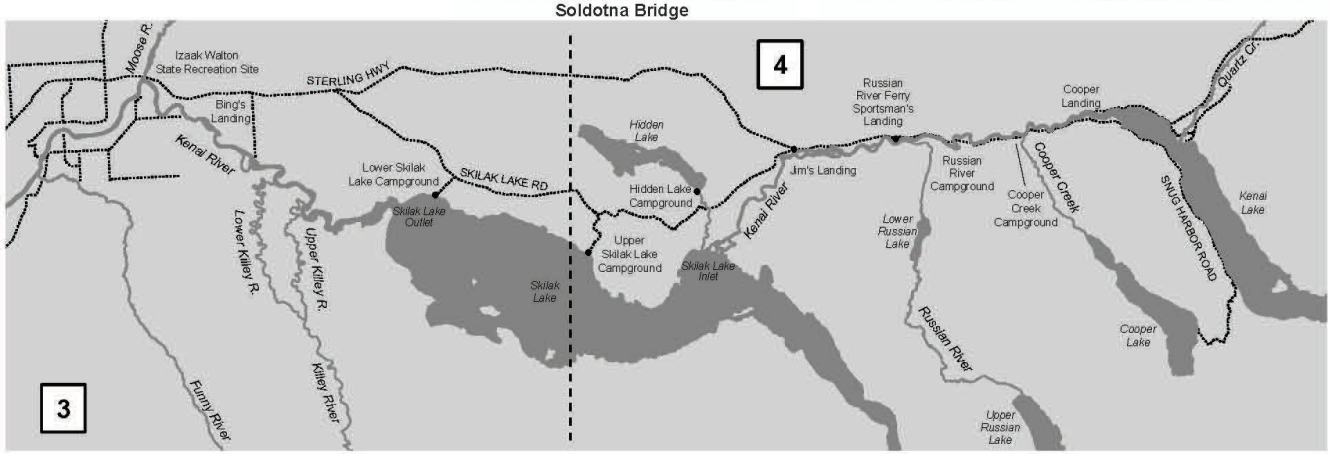
No.	Site Name
1	Kenai River - Cook Inlet to Soldotna Bridge
2	Kenai River - Soldotna Bridge to Moose River
3	Kenai River - Moose River to Skilak outlet
4	Kenai River - Skilak inlet to Kenai Lake
500	Kasilof River - Bank fishing
600	Kasilof River - Boat fishing
9	Russian River (include all fishing in the 1,800 yard section of the Kenai River immediately downstream from the Russian River)

For all other Kenai Peninsula freshwater, go to page 14



Area Code Letter P
Site No. 1 Kenai River - Cook Inlet to Soldotna Bridge

Area Code Letter P
Site No. 2 Kenai River - Soldotna Bridge to Moose River



Area Code Letter P
Site No. 3 Kenai River - Moose River to Skilak Outlet

Area Code Letter P
Site No. 4 Kenai River - Skilak Inlet to Kenai Lake

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P COOK INLET and KACHEMAK BAY SALTWATER

No.	Site Name
980	**Upper Cook Inlet** north of Bluff and Chinitna Points, including saltwaters by Anchor River, Whiskey Gulch, Deep Creek and Ninilchik River (boat)
981	**Upper Cook Inlet** fishing from shore (specify)
952	**Lower Cook Inlet** west of Gore Point not including Kachemak Bay (boat)
796	**Kachemak Bay** from Bluff Point to Seldovia (boat)
823	**Homer Spit** (fishing from shore on the Spit)
991	Other Lower Cook Inlet and Kachemak Bay fishing from the shore (specify)

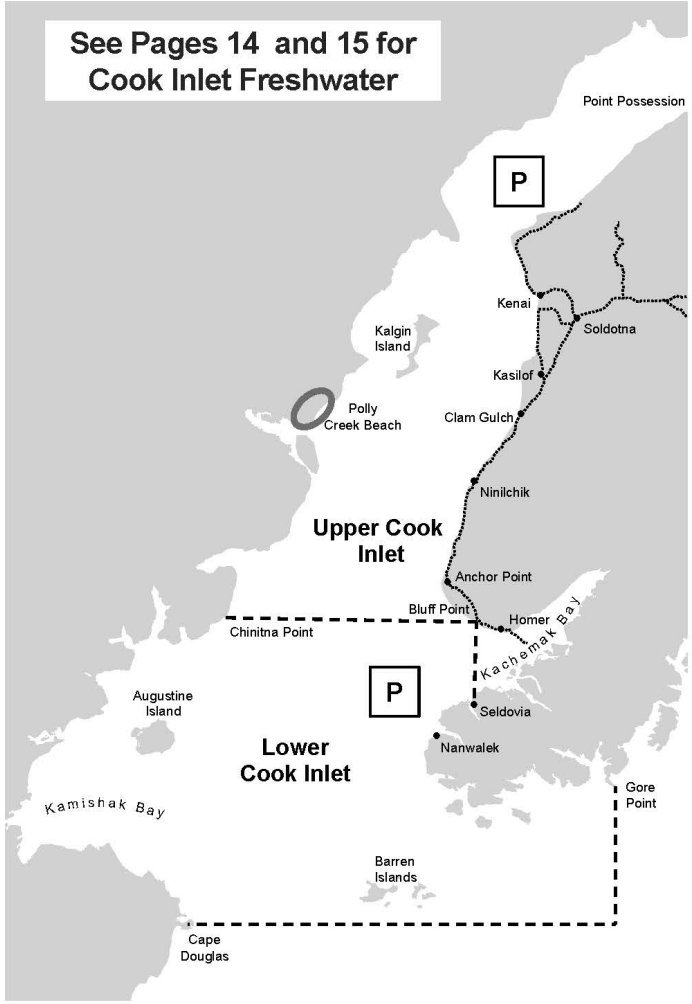
P COOK INLET SHELLFISH

East side Cook Inlet shellfish fisheries

No.	Site Name
797	Kachemak Bay (from Bluff Point to Seldovia)
1000	CLAMS: Between Anchor Point and Kasilof River (including Whiskey Gulch, Deep Creek, Ninilchik, Clam Gulch and Cohoe beaches)
953	Lower Cook Inlet sites west of Gore Point (not including Kachemak Bay)
4	Other East Cook Inlet Shellfish sites (specify)

West side Cook Inlet shellfish fisheries

No.	Site Name
16	Polly Creek beach/Crescent River bar
700	Shellfish, north of Chinitna Point
710	Shellfish, south of Chinitna Point
1004	Other West Cook Inlet shellfish sites (specify)



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Q KODIAK AREA

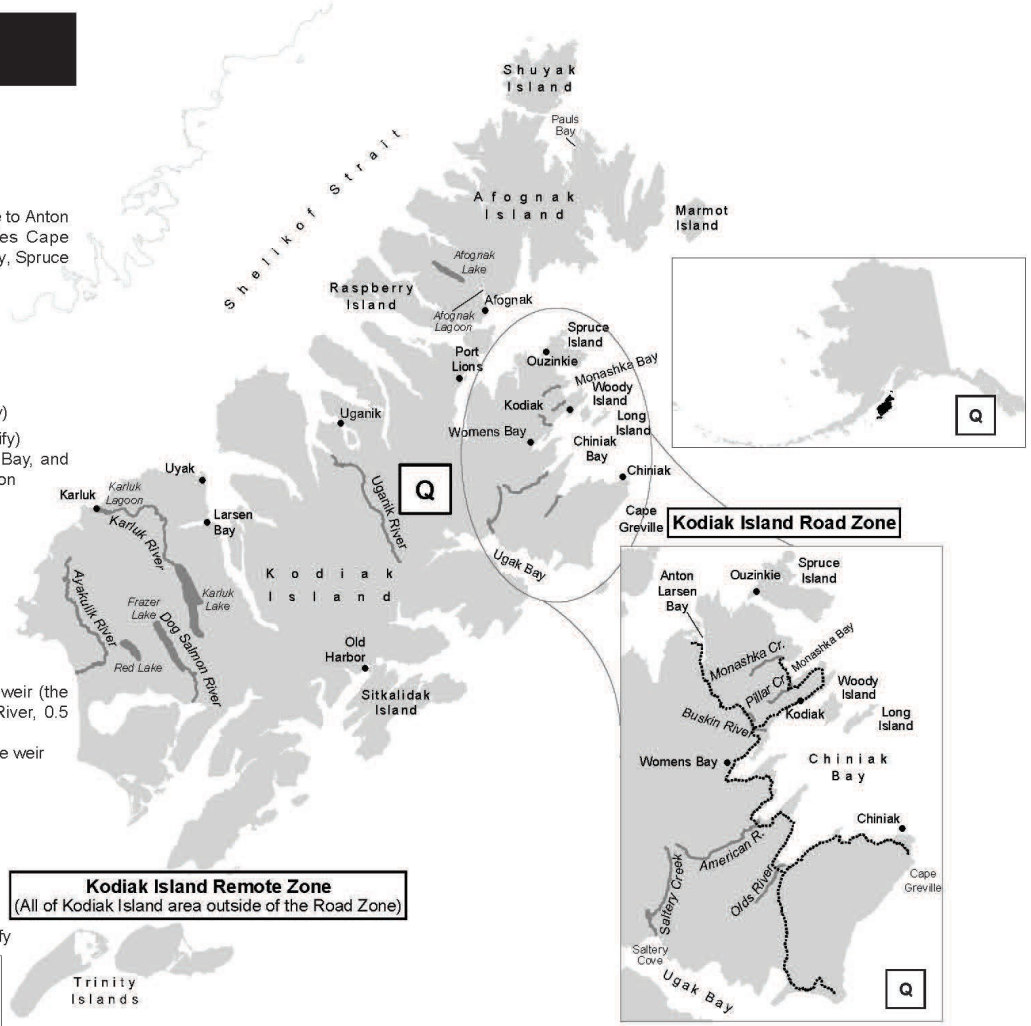
Saltwater

No.	Site Name
814	Afognak Island
887	Afognak Lagoon (Litnik)
736	Chiniak Bay area from Cape Greville to Anton Larsen Bay (specify). Includes Cape Chiniak, Mill Bay, Monashka Bay, Spruce Island and all of Chiniak Bay
812	Pauls Bay
800	Shuyak Area
776	Ugak Bay
770	Uyak Bay
932	Other remote saltwater sites (specify)
934	Other roadside saltwater sites (specify) Includes Narrow Cape, Pasagshak Bay, and Saltery Cove areas, and Barry Lagoon

Freshwater

No.	Site Name
110	Afognak Lake
114	American River
174	Ayakulik (Red) River
3	Buskin River
277	Karluk Lake and River ABOVE the weir (the weir is located on the Karluk River, 0.5 miles upstream of the Lagoon)
278	Karluk Lagoon and River BELOW the weir
163	Olds River (or Creek)
275	Pasagshak drainage
276	Saltery Cove drainage
108	Roadside lakes (specify)
109	Other lakes (Remote Zone) specify
105	Roadside streams (specify)
106	Other streams (Remote Zone) specify

Fish Size Categories
AREA Q KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.



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SOUTHWEST ALASKA AREAS R-T

SOUTHWEST ALASKA INDEX

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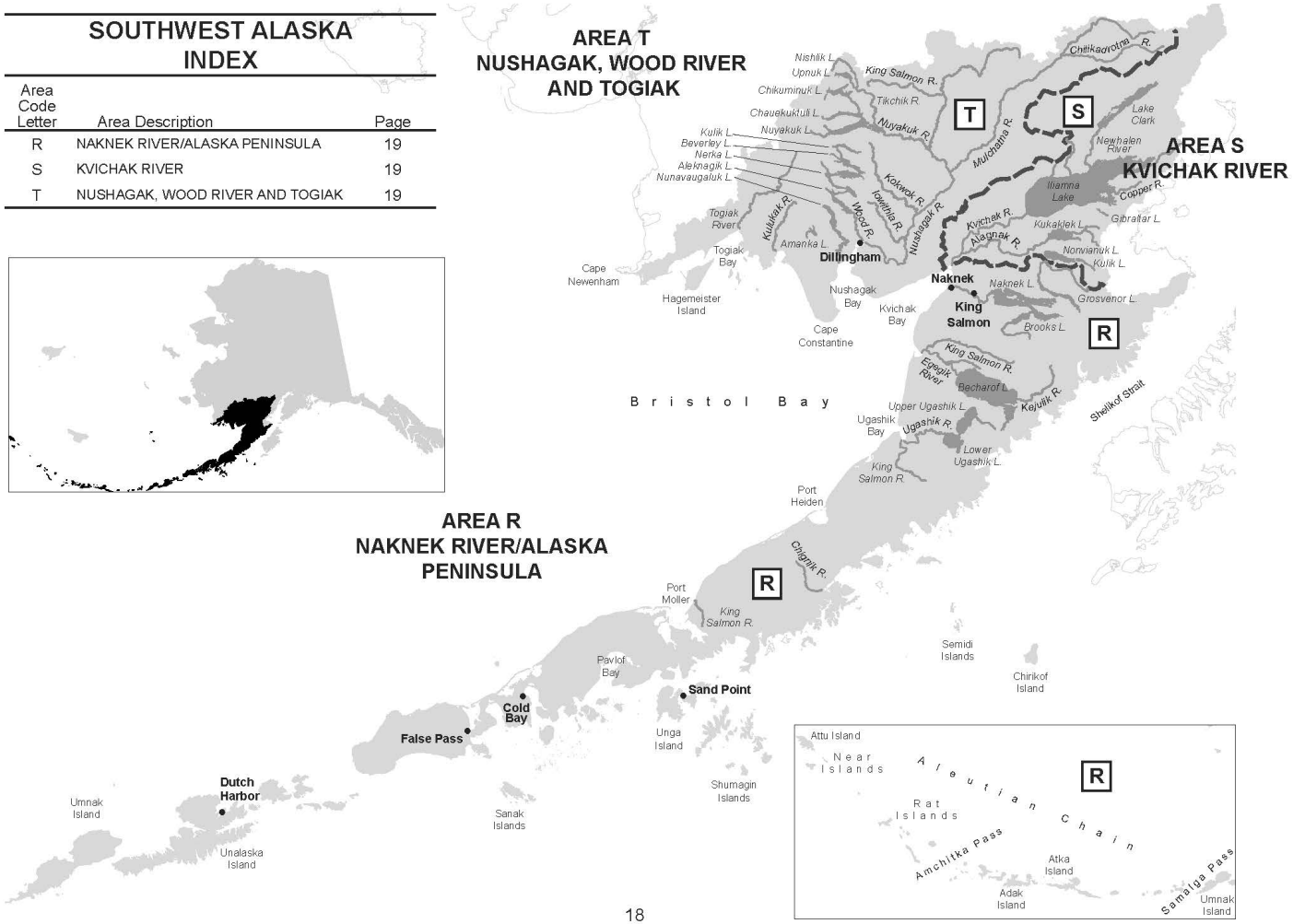
T	NUSHAGAK, WOOD RIVER AND TOGIAK	19



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R NAKNEK RIVER/ALASKA PENINSULA AREA

Saltwater

No.	Site Name
1	Cold Bay area
756	Unalaska Bay area
900	Boat-Cape Menshikof north to Naknek Bay includes Ugashik, Egegik, and Naknek Bays (specify)
950	Boat-Other Alaska Peninsula; saltwater boat fishing west of Cape Menshikof and Cape Douglas, excluding Cold Bay or Unalaska Bay (specify)
9991	Other saltwater (specify)

Freshwater

No.	Site Name
182	American Creek
12	Becharof System (including Becharof Lake, Kejukik and Egegik rivers, and Shosky Creek)
13	Brooks Lake
10	Brooks River
130	Chignik River
5	Cold Bay area (including Russel Creek)
8	Naknek Lake - Bay of Islands
9	Naknek Lake - other
279	Naknek River (downstream of Rapids Camp)
275	Naknek River (Rapids Camp to Naknek Lake)
11	Ugashik System, including Ugashik River, and Upper/Lower Ugashik Lakes
281	Unalaska Bay streams
9994	Other streams (specify) If King Salmon River, specify location: • near the community of King Salmon (R 143) • near Egegik Bay (R 144) • near Ugashik Bay (R 194) • near Port Moller (R 195)
9993	Other lakes (specify site names)

S KVICHAK RIVER DRAINAGE

Saltwater

No.	Site Name
9991	Specify site names

Freshwater

No.	Site Name
8	Alagnak (Branch) River
141	Battle River
5	Copper River (tributary of Iliamna Lake)
146	Funnel Creek
6	Gilbraltar Lake
170	Gilbraltar River
125	Iliamna Lake
120	Iliamna River
183	Kukaklek River (Big Ku)
123	Kulik River
3	Kvichak River
9	Lake Clark
134	Moraine Creek
7	Newhalen River
4	Lower Talarik Creek
139	Upper Talarik Creek
9994	Other streams (specify)
9993	Other lakes (specify)

Fish Size Categories
AREA R-T KING SALMON
"Large" are 20 inches and over;
"Small" are under 20 inches

T NUSHAGAK, WOOD RIVER, AND TOGIAK AREA

Saltwater

No.	Site Name
9991	Specify site names

Freshwater

No.	Site Name
111	Agulowak River
128	Agulukpak River
112	Aleknagik Lake
8	Chilikadrotna River
126	Kokwok River
209	Iowithla River
116	Kulukak River
7	Mulchatna River
207	Nushagak River from Black Point upstream to sonar site (by Portage Creek)
208	Nushagak River, sonar site (by Portage Creek) upstream to outlet of Mulchatna River
190	Nushagak River, upstream from outlet of Mulchatna River
3	Nushagak system, other (specify)
206	Nuyakuk River
5	Tikchik-Nuyakuk lakes area, including Nuyakuk, Tikchik, Chikuminuk, Nishlik, and Upnuk lakes, and Lake Chauekuktuli (specify)
6	Togiak River and Lake drainage (specify)
4	Wood River Lakes system, including lakes Nerka, Beverley, and Kulik (specify)
9994	Other streams (specity)
9993	Other lakes (specity)

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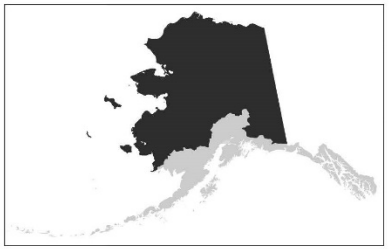
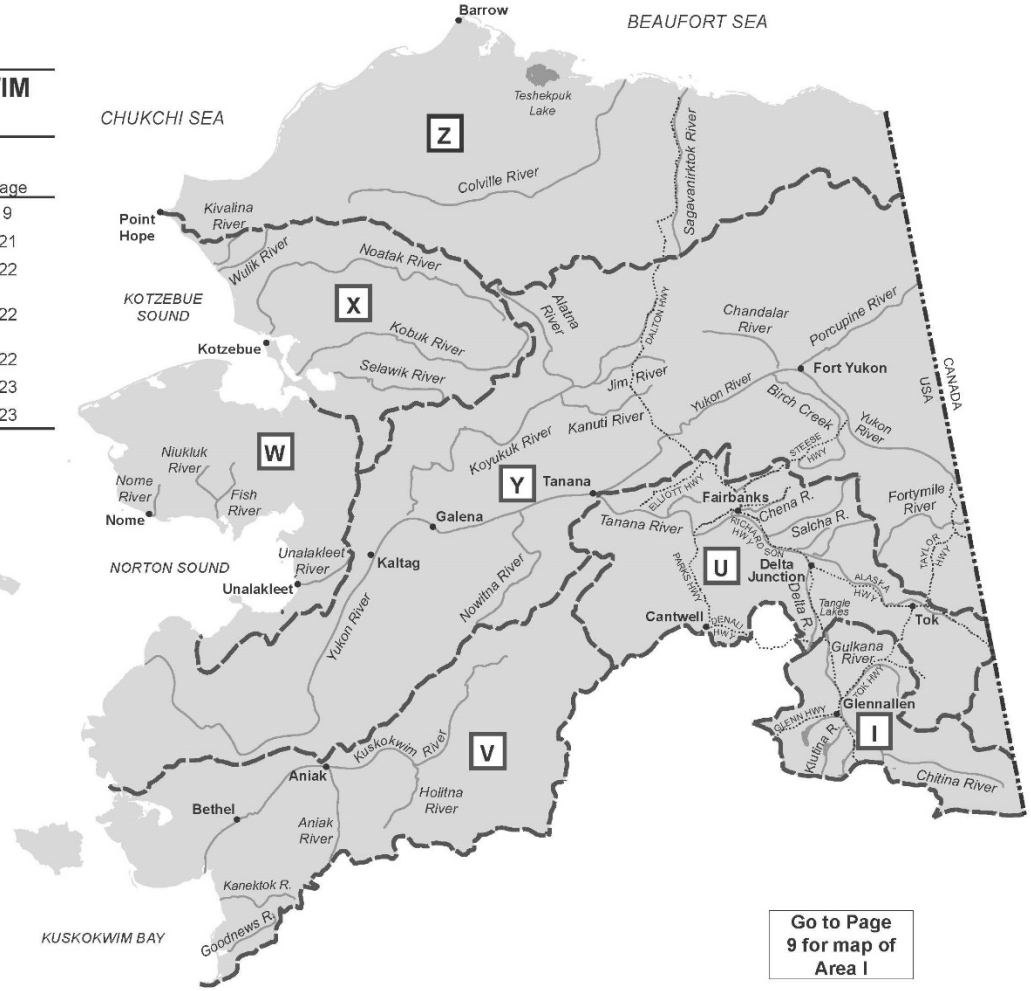
ARCTIC-YUKON-KUSKOKWIM AREAS I AND U-Z

ARCTIC-YUKON-KUSKOKWIM INDEX

Area Code Letter	Area Description	Page
I	UPPER COPPER RIVER DRAINAGE	9
U	TANANA RIVER DRAINAGE	21
V	KUSKOKWIM RIVER/ KUSKOKWIM BAY DRAINAGES	22
W	SEWARD PENINSULA/ NORTON SOUND	22
X	NORTHWEST ALAKSA	22
Y	YUKON RIVER DRAINAGE	23
Z	NORTH SLOPE-BROOKS RANGE	23





Go to Page 9 for map of Area I

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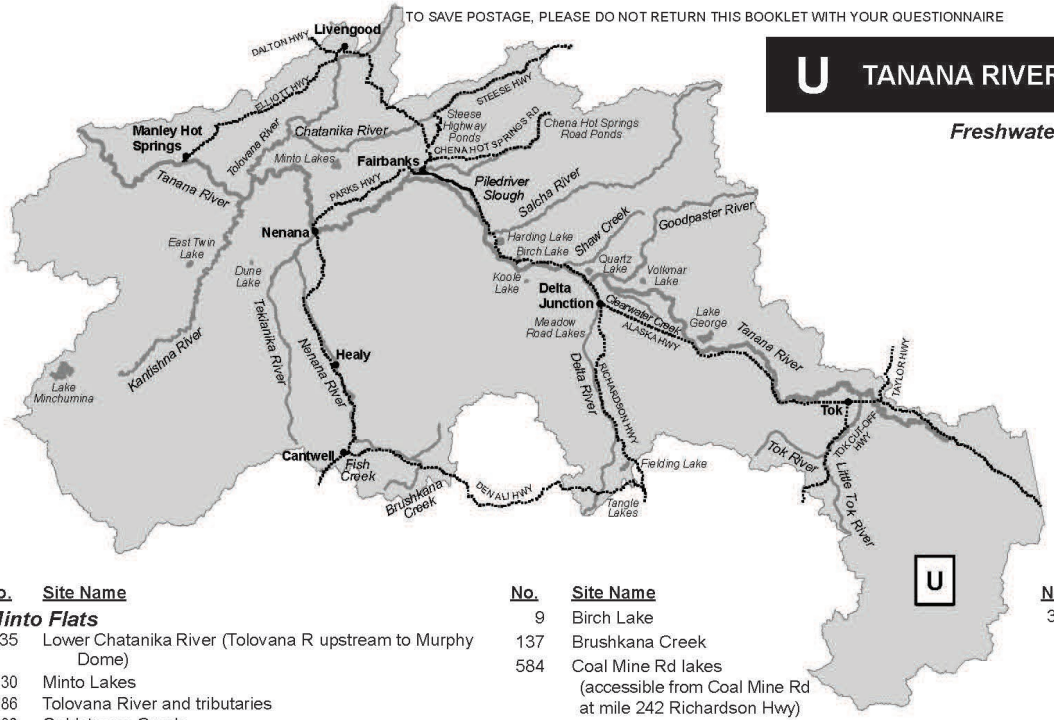
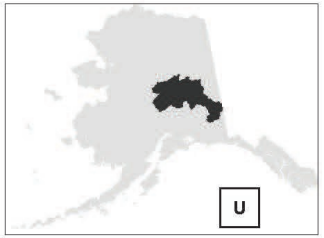
U TANANA RIVER DRAINAGE

Freshwater





Fish Size Categories
AREA U KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.

No.	Site Name
Minto Flats	
635	Lower Chatanika River (Tolovana R upstream to Murphy Dome)
230	Minto Lakes
286	Tolovana River and tributaries
183	Goldstream Creek
Chatanika River	
614	Upper Chatanika R & tributaries (upstream of Elliot Hwy)
636	Middle Chatanika R (Murphy Dome upstream to Elliot Hwy)
Chena River	
347	Chena Hot Springs Road ponds (along Chena Hot Springs Road from mile 30 to mile 50)
18	Chena Lake Recreation Area
1050	Chena River (Lower Chena R & tributaries) from mouth upstream to Moose Creek Dam at river mile 45. Includes all parts of Badger (Chena) Slough
1051	Chena River (Upper Chena River & tributaries upstream of Moose Creek Dam at river mile 45)

No.	Site Name
9	Birch Lake
137	Brushkana Creek
584	Coal Mine Rd lakes (accessible from Coal Mine Rd at mile 242 Richardson Hwy)
6	Delta Clearwater River
17	Delta River (below Tangle Lakes)
408	Dune Lake
163	East Twin Lake
13	Fielding Lake
1025	Fish Creek (Denali Highway)
11	George Lake
8	Goodpaster River
189	Harding Lake
201	Koole Lake
583	Meadow Road Lakes (along Meadow & Ridge roads in southern part of Ft Greely Military Reservation, including Weasel Lake)
513	Nenana R drainage (not including Brushkana Creek)

No.	Site Name
319	Piledriver Slough (including Moose Cr)
10	Quartz Lake
7	Richardson Clearwater Creek
5	Salcha River
16	Shaw Creek
346	Steese Ponds (along the Steese Highway from mile 30 to mile 40)
15	Tangle Lakes and River (including Long Tangle, Lower Tangle, Landlocked Tangle, Round Tangle, and Upper Tangle lakes)
514	Tanana River downstream from Nenana (mainstem only)
515	Tanana River between Delta Junction and Nenana (mainstem only)
516	Tanana River upstream from Delta Junction (mainstem only)
12	Volkmar Lake
9993	Other lakes (specify)
9994	Other streams (specify)

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V KUSKOKWIM RIVER–KUSKOKWIM BAY DRAINAGES

Saltwater

No.	Site Name
9992	Specify site names

Freshwater

Kuskokwim River upstream of Aniak R

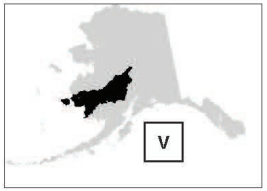
No.	Site Name
301	Kuskokwim River drainages above Aniak River (specify)
6	Holitna River
134	George River
302	Lakes (specify)

Kuskokwim River downstream of Aniak R

No.	Site Name
310	Kuskokwim River drainages below Aniak River (specify)
5	Aniak River
43	Kisaralik River
19	Kwethluk River
312	Lakes (specify)

Kuskokwim Bay Streams and Lakes

No.	Site Name
88	Arolik River
3	Kanektok River
4	Goodnews River
321	Other streams (specify)
322	Lakes (specify)



W SEWARD PENINSULA/ NORTON SOUND AREA

Saltwater

No.	Site Name
9991	Specify site names

Freshwater

No.	Site Name
20	Cripple River
11	Eldorado River
112	Fish River and tributaries (including Pargon, Rathlatulik, and Boston Creek; excluding Niukluk River)
113	Niukluk River and tributaries
30	Flambeau River
14	Fox River
18	Kuzitrin River
4	Nome River
94	North River
6	Pilgrim River
41	Shaktoolik River
22	Sinuk River
12	Snake River
15	Solomon River
3	Unalakleet River
9994	Other streams (specify)
9993	Lakes (specify)

X NORTHWEST ALASKA AREA

Saltwater

No.	Site Name
9991	Specify site names

Freshwater

No.	Site Name
78	Desperation Lake
13	Feniak Lake
16	Kelly River
17	Kivalina River
4	Kobuk River
86	Kugururok River
32	Matcharak Lake
3	Noatak River
24	Selawik River
27	Squirrel River
28	Walker Lake
5	Wulik River
9994	Other streams (specify)
9993	Other lakes (specify)

Fish Size Categories
AREA V-X KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.

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Y YUKON RIVER DRAINAGE

Yukon R Drainage, Downstream from Koyukuk River

No.	Site Name
147	Andreafsky River
148	Anvik River
182	Innoko River
247	Other sites Yukon River downstream from Koyukuk River (specify)

Yukon R Drainages, Koyukuk River to Ft Yukon

ACCESSED from Dalton Hwy (Haul Road)

No.	Site Name
15	Jim River
400	Kanuti River (accessed from Dalton Highway)
410	Koyukuk River Middle Fork (accessed from Dalton Hwy)
420	Koyukuk River South Fork (accessed from Dalton Hwy)
899	Other streams accessed from Dalton Hwy (specify)
898	Other lakes accessed from Dalton Hwy (specify)

Yukon River Drainages, Koyukuk River to Fort Yukon

NOT ***ACCESSED from Dalton Hwy (Haul Road)***

500	Kanuti River (not accessed from Dalton Hwy)
510	Koyukuk River Middle Fork (not accessed from Dalton Hwy)
520	Koyukuk River South Fork (not accessed from Dalton Hwy)
16	Koyukuk R mainstem (downstream from confluence with South Fork, not accessed from Dalton Hwy)
204	Nowitna River
94	Dall River
202	Beaver and Nome creeks (Steese Highway)
255	Birch Creek (Steese Highway)
24	Porcupine River Drainage
248	Other sites, Koyukuk R to Fort Yukon (specify)

Yukon River Drainages, Fort Yukon to Canadian Border

No.	Site Name
249	Other Sites (specify)

Z NORTH SLOPE/ BROOKS RANGE AREA

Saltwater

No.	Site Name
9991	Specify site names

Freshwater

Lakes Near the Dalton Highway (Haul Road)

No.	Site Name
60	Galbraith Lake
43	Toolik Lake
99	Other lakes (specify)

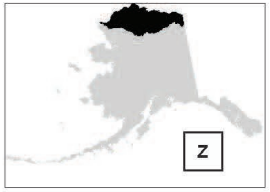
Streams Near the Dalton Highway (Haul Road)

No.	Site Name
22	Ivishak River
76	Sagavanirktok River
100	Other streams (specify)

Remainder of North Slope/Brooks Range Area

No.	Site Name
53	Canning River
15	Colville River
9	Meade River
14	Kongakut River
9994	Other streams (specify)
9993	Other lakes (specify)

Fish Size Categories
AREAS Y - Z KING SALMON
"Large" are 20 inches and over;
"Small" are less than 20 inches.



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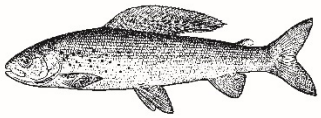
THANK YOU!
YOUR PARTICIPATION SUPPORTS SUSTAINABLE SPORT FISHERIES THROUGHOUT THE STATE OF ALASKA

Feel free to call us if we can assist you at (907) 267-2280 or, email us at: dfg.dsf.publications@alaska.gov

Please visit our website, which provides current and historical information gathered from this vital survey.
Our web address is: http://www.adfg.alaska.gov/sf/sportfishingsurvey



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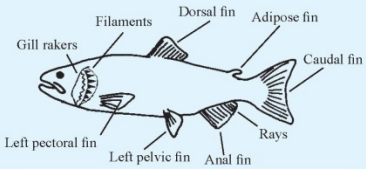
SALMON, TROUT, AND OTHER SPECIES COMMONLY FOUND IN ALASKA



ALASKA'S WILD SALMON ARE FOUND IN BOTH FRESH AND SALTWATERS

King (Chinook) Salmon
Oncorhynchus tshawytscha
Small black spots on back and both lobes of tail. Gum line on lower jaw black. Less than 25 gill rakers, 15-17 anal fin rays. The largest of all Pacific salmon, 30-55 inches.

Silver (Coho) Salmon
Oncorhynchus kisutch
Small black spots usually occur only on upper lobe of tail and on back. Gum line on lower jaw not black. Scales large; less than 25 gill rakers, 13-15 anal fin rays. Size 24-28 inches.

Sockeye (Red) Salmon
Oncorhynchus nerka
No distinct black spots on back or tail; over 30-40 long, fine, serrated and closely spaced gill rakers over 12 anal fin rays. Relatively large eye. Size 18-24 inches.

Pink (Humpback) Salmon
Oncorhynchus gorbuscha
Large oval black spots on back and on both lobes of tail; scales very small; usually over 12 anal fin rays; males develop a pronounced hump during spawning. Size 15-24 inches.

Chum (Dog) Salmon
Oncorhynchus keta
No distinct black spots on back or tail; 18-28 smooth, short, stout, and widely spaced gill rakers; usually over 12 anal fin rays. Size 24-32 inches.

Steelhead
Oncorhynchus mykiss
Sea-run rainbow trout with bluish gray back and bright silvery sides. Small black spots on back, sides and tail. Pink/red coloration develops after returning to fresh water to spawn. Size several inches to over 40 inches.

Rainbow Trout
Oncorhynchus mykiss
Freshwater residents. Green to bluish black with silvery to yellowish-green sides. Broad pinkish band along side and black spots on back, sides, and tail. Upper jaw usually does not extend past eye.

Dolly Varden/Arctic Char
Salvelinus malma, S. alpinus
Round, red, pink or yellow spots on sides, tail slightly forked; 8-12 anal fin rays; no dark green wavy marks on back or dorsal fin. Arctic char occur from Bristol Bay to polar regions.

Lake Trout
Salvelinus namaycush
Body dark green to grayish with oval irregular white to yellowish spots on sides and back, tail deeply forked; 8-12 anal fin rays; no dark green wavy marks on back or dorsal fin.

Cutthroat Trout
Oncorhynchus clarki
Spots on body dark brown or black; 8-12 anal fin rays, no red band on sides; red to orange slash on underside of lower jaw; upper jaw extends well behind eye in adults.

Arctic Grayling
Thymallus articus
Dorsal fin much longer than in whitefish (especially in males) and fan-like. Rows of reddish to orange and/or purple to green spots on dorsal fin; sides of fish are black spotted; scales larger than in trouts.

Burbot
Lota lota
Two dorsal fins and one anal fin present; no adipose fin as in trouts, salmon, grayling and whitefish; pelvic fins very far forward and just under head; body long and tapering; barbel on chin.

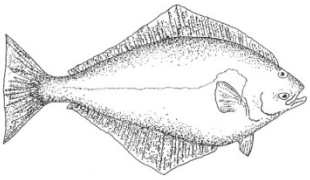
Several common species that occur in AK are the **round** and **humpback** whitefish, **least cisco**, and **sheefish**. A sheefish is shown.

Whitefish
Whitefish are distinguished from the trout and salmon by the small, weak, or absent teeth and the presence of large scales; distinguished from Arctic grayling by the much smaller dorsal fin.

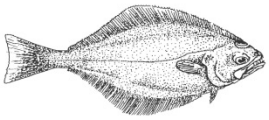
Northern Pike
Esox lucius
Dorsal and anal fins positioned rearward; no adipose fin as in trouts, salmon, grayling and whitefish; long flattened jaws with large mouth and many sharp teeth, sides are yellowish gray.

SALTWATER SPECIES COMMONLY FOUND IN ALASKA

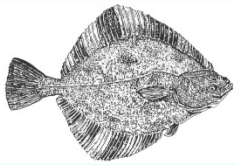
FLATFISH



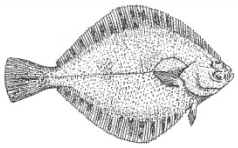
Pacific Halibut
Hippoglossus stenolepis
More elongated than most flatfishes, with width being about one-third the length. Adults have both eyes on their dark or upper side. Color on the dark side tends to assume the coloration of the ocean bottom. The underside is lighter, often white.



Arrowtooth Flounder
Atheresthes stomias
Large mouth and numerous sharp teeth. Little arching of lateral line. Upper eye reaches top of head. Length to 34 inches.



Starry Flounder
Platichthys stellatus
Black and yellow to orange bands on fins. Length to 36 inches.



Rock Sole
Lepidopsetta bilneata
Lateral line arched over pectoral fin. Jaw does not extend below middle of eye. Length to 24 inches.

ROCKFISH

More than 30 species occur in Alaska's coastal waters, and about a dozen are commonly taken in Alaska sport fisheries, including **yelloweye, black, dusky, quillback, copper, tiger, china, canary, redstripe, silvergray, rougheye** and **shortraker** rockfish. These fish are characterized by having bony plates or spines on the head and body, a large mouth, and pelvic fins attached forward near the pectoral fins. The spines are venomous, and although not extremely toxic, can cause pain and infection. Some species are brightly colored, and many are difficult to distinguish from one another.

Black Rockfish
Sebastes melanops
Often misnamed "black bass". Dark gray to black with dusky white belly. Jaw extends to rear of eye. Up to 25 inches.

Yelloweye Rockfish
Sebastes ruberrimus
Also called red snapper. Orange red and orange yellow, with bright yellow eye. Size up to 36 inches.This is a non-pelagic rockfish; bottom dwelling and found on or near the ocean floor.

Dusky Rockfish
Sebastes ciliatus
There are both dark colored species (uniformly black, no white belly), and light dusky rockfish (brownish body color, whitish belly).

Copper Rockfish
Sebastes caurinus
Olive brown to copper with pink or yellow blotches, white on sides and belly. Up to 22 inches. Non-pelagic.

OTHER SALTWATER SPECIES

Lingcod
Ophiodon elongatus
Brown to reddish-brown with spots or blotches. Sharp teeth. Elongated body, large head and mouth, no barbel. Single dorsal fin, notched past the middle of its length. Can grow to 5 ft.

Kelp Greenling
Hexagrammos decagrammus
In the same family as lingcod, but lacking rigid spines on the dorsal fin. Male kelp greenling have irregular blue spots; females are various shades of golden yellow on their heads and fins. Only grow to about 21 inches.

Pacific Cod, Tomcod, and Pollock

All have three distinct dorsal fins, and two anal fins. No rigid spines on their fins. Small teeth. Pacific cod and tomcod have a prominent barbel beneath their chin; on pollock it is very small or absent. Pacific cod grow to 40 inches.

Sablefish, also known as "Black Cod"
Anoplopoma fimbria
Sablefish, commonly known as black cod, have a streamlined, elongated body, black to dark gray above fading to gray or white in the belly, with two dorsal fins and small teeth. Larger fish found in deep water, can grow to 40 inches.

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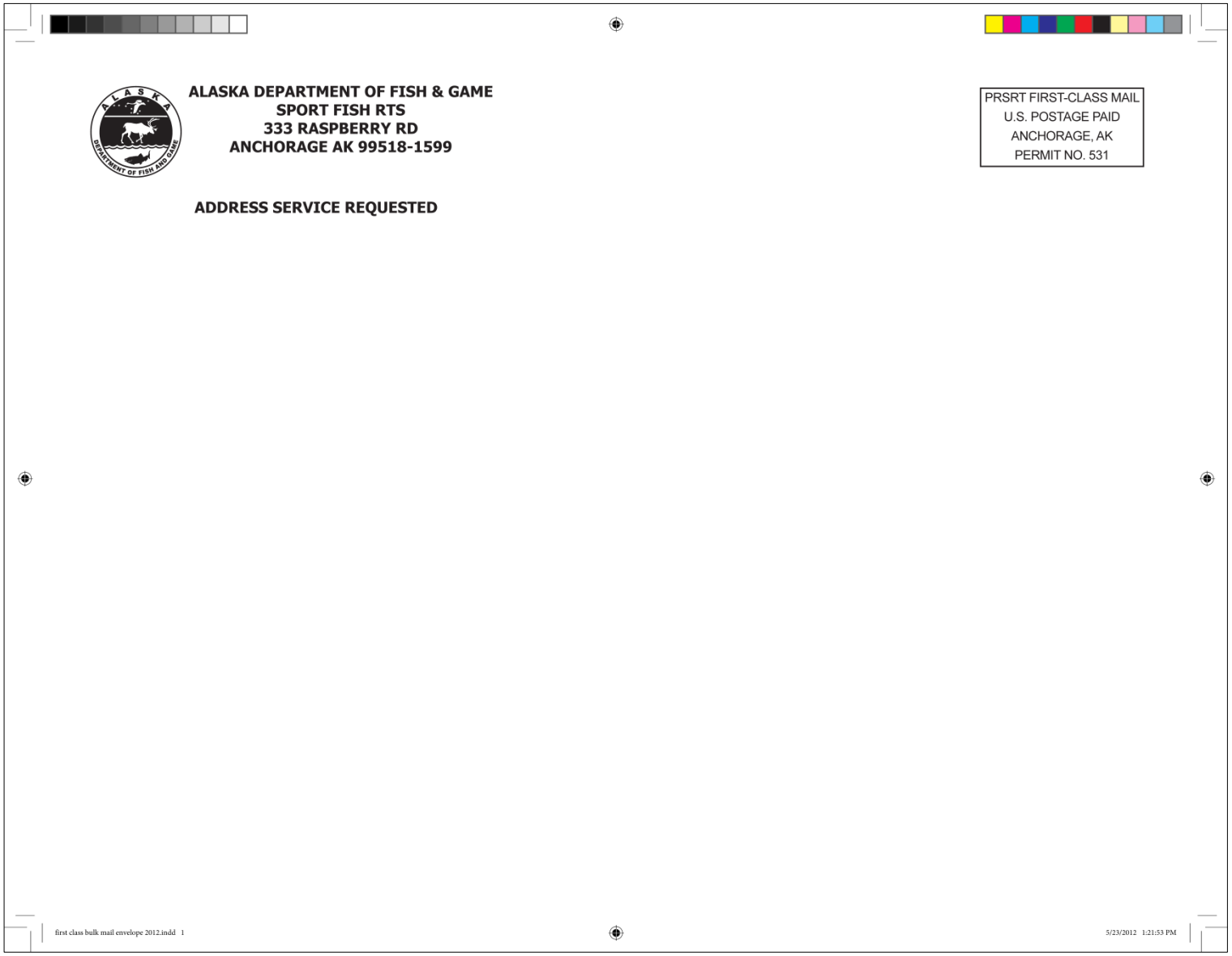
Appendix A4.–Draft Envelope for nonresident first-class presorted mailout of survey.



Appendix A5.–Draft envelope for resident standard presorted mailout of survey.

ALASKA DEPARTMENT OF FISH & GAME
SPORT FISH RTS
333 RASPBERRY RD
ANCHORAGE AK 99518-1599

ADDRESS SERVICE REQUESTED

PRSRT STANDARD MAIL
U.S. POSTAGE PAID
ANCHORAGE, AK
PERMIT NO. 531

Appendix A6.–Draft business reply mail envelope for domestic survey returns.

IMPORTANT: DO NOT ENLARGE, REDUCE OR MOVE the FIM and POSTNET barcodes. They are only valid as printed!
Special care must be taken to ensure FIM and POSTNET barcode are actual size AND placed properly on the mail piece to meet both USPS regulations and automation compatibility standards.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 92 ANCHORAGE AK

POSTAGE WILL BE PAID BY ADDRESSEE

ALASKA DEPARTMENT OF FISH & GAME
SPORT FISH RTS
333 RASPBERRY RD
ANCHORAGE AK 99518-9977

Artwork for: Envelope, 9 x 12 (9" x 12")
Layout: sample BRM Env with IMB.lyt
May 25, 2012

Produced by DAZzle Designer, Version 9.0.05
(c) 1993-2009, Endicia, www.Endicia.com
U.S. Postal Service, Serial #

Appendix A7.–Envelope for return of foreign and Canadian strata surveys.

ALASKA DEPARTMENT OF
FISH AND GAME
SPORT FISH RTS
333 RASPBERRY RD
ANCHORAGE AK 99518-1599

AIRMAIL

ALASKA DEPARTMENT OF FISH AND GAME
SPORT FISH SURVEY
333 RASPBERRY RD
ANCHORAGE AK 99518-1599
USA

APPENDIX B:
PID SAMPLING ANALYSIS

In lieu of an annual fishing license, Alaskan residents ≥60 years old may obtain a permanent identification (PID), a free card issued by the Alaska Department of Fish and Game. The PID holders list consists of all individuals who were issued a PID from 1987 through December 31, 2019. The list is annually modified to account for mortality, residency and duplication (See PID File Management).

Participation in sport fishing is not considered in the maintenance of the PID list by ADF&G Licensing Section, but based upon comments provided in returned surveys, project staff are concerned that older PIDs participate in sport fishing at a much lower rate and that above a certain age, they are very unlikely to participate in sport fishing. In July, 2014, a regression analysis was used to examine the relationship between age and participation in sport fishing. The analysis used PID survey responses for the years (2009 – 2013). The 2014 PID holders file contained 79,949 records aged 60 and over at the time of the analysis. Two modifications were made to the data:

1. While 60 is the qualifying age for a PID, some individuals continue to obtain a regular annual fishing license until age 65. For this reason the analysis only included the PID holders age ≥65.
2. The higher ages were determined to be potential outliers and too influential on the regression estimates. Data associated with the oldest 5% was removed from the regression analysis.

The regression analysis estimated that <1% of PID respondents >82 years old participated in sport fishing for the years 2009-2013 (Figure B-1). Because PID holders >82 years old make a negligible contribution to the overall survey estimates and are not cost effective to sample they were eliminated from the 2014 sampling frame and the expansion of all estimates. An updated regression analysis incorporating 2014 data on PID participation rate by age showed a similar slope (Figure B-2) and thus PID holders >82 years of age will continue to be removed from the SWHS resident sample frame in 2020 and subsequent years.

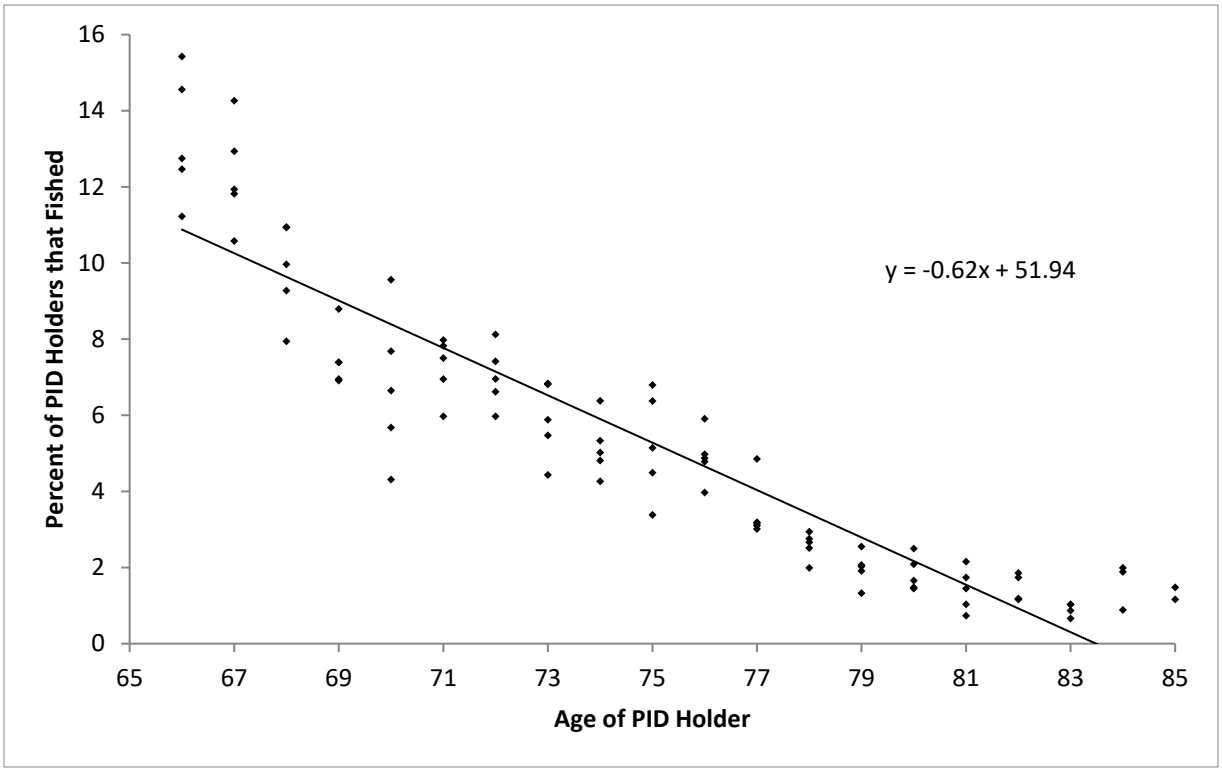


Figure B-1. 2014 Analysis of PID sport fishing participation by age.

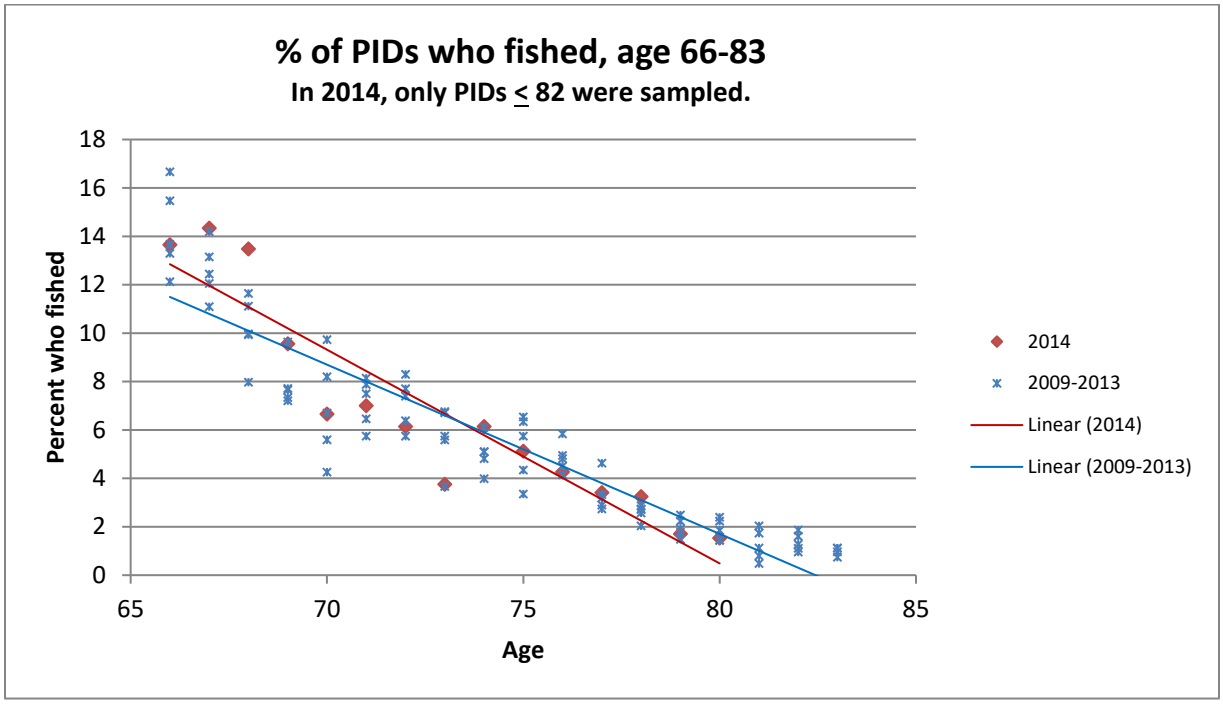


Figure B-2. 2015 update of PID analysis showing 2014 and 2015 PID participation rate by age.