

**Haines Marine Boat Sport Fishery Creel Survey and  
Skagway Marine Boat Sport Fishery Harvest  
Sampling, 2013**

by

**Richard Chapell**

and

**Brian Elliott**

---

---

September 2013

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	$H_A$
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	$e$
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient (simple)	r
		corporate suffixes:		covariance	cov
<b>Weights and measures (English)</b>		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft <sup>3</sup> /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	$E$
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	$\geq$
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia	e.g.	less than or equal to	$\leq$
pound	lb	(for example)		logarithm (natural)	ln
quart	qt	Federal Information Code	FIC	logarithm (base 10)	log
yard	yd	id est (that is)	i.e.	logarithm (specify base)	log <sub>2</sub> , etc.
		latitude or longitude	lat. or long.	minute (angular)	'
<b>Time and temperature</b>		monetary symbols (U.S.)	\$, ¢	not significant	NS
day	d	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	$H_0$
degrees Celsius	$^\circ\text{C}$	registered trademark	®	percent	%
degrees Fahrenheit	$^\circ\text{F}$	trademark	™	probability	P
degrees kelvin	K	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
hour	h	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
minute	min	U.S.C.	United States Code	second (angular)	"
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
<b>Physics and chemistry</b>				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
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				

***REGIONAL OPERATIONAL PLAN SF.1J.2013.13***

**HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY  
AND  
SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING,  
2013**

by

Richard Chapell and Brian Elliott

Alaska Department of Fish and Game, Division of Sport Fish, Haines

Alaska Department of Fish and Game  
Division of Sport Fish

September 2013

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

*Richard S. Chapell and Brian W. Elliott,  
Alaska Department of Fish and Game, Division of Sport Fish,  
P.O. Box 330, Haines, AK 99827*

*This document should be cited as:*

*Chapell, R. S., and B. W. Elliott. 2013. Haines marine boat sport fishery creel survey and Skagway marine boat sport fishery harvest sampling, 2013. Alaska Department of Fish and Game, Division of Sport Fish, Regional Operational Plan No. SF.1J.2013.13, Anchorage.*

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

**If you believe you have been discriminated against in any program, activity, or facility please write:**

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526

U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042, Arlington, VA 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW MS 5230, Washington DC 20240

**The department's ADA Coordinator can be reached via phone at the following numbers:**

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648,

(Juneau TDD) 907-465-3646, or (FAX) 907-465-6078

**For information on alternative formats and questions on this publication, please contact:**

ADF&G, Division of Sport Fish, Research and Technical Services, 333 Raspberry Rd, Anchorage AK 99518 (907) 267-2375

**SIGNATURE/TITLE PAGE**

Project Title: Haines marine boat sport fishery creel survey and Skagway marine boat sport fishery harvest sampling, 2013

Project leader(s): Richard Chapell, Fishery Biologist III; Brian Elliott, Fishery Biologist II

Division, Region and Area: Sport Fish, Region 1, Haines/Skagway management area

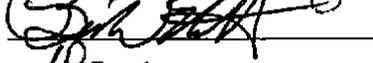
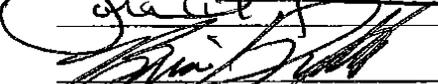
Project Nomenclature: Project F-10-28 and 29; Study S Job 1-1

Period Covered: June 1, 2013 through February 28, 2014

Field Dates: May 6–June 23, 2013 (Haines), and May 28–August 31, 2013 (Skagway)

Plan Type: Category III

**Approval**

Title	Name	Signature	Date
Project leader	Richard Chapell		4/4/2013
Project leader	Brian Elliott		4.5.2013
Biometrician	Sarah Power		4-1-2013
Research Coordinator	John DerHovansian		4/9/13
Regional Supervisor	Brian Frenette		4.11.13

# TABLE OF CONTENTS

	<b>Page</b>
LIST OF TABLES.....	iii
LIST OF FIGURES .....	iii
LIST OF APPENDICES .....	iii
PURPOSE.....	1
BACKGROUND.....	1
Haines Marine Boat Sport Fishery Creel Survey .....	1
Skagway Marine Boat Sport Fishery Harvest Sampling.....	4
OBJECTIVES.....	113
Haines Marine Boat Sport Fishery Creel Survey .....	113
Skagway Marine Boat Sport Fishery Harvest Sampling.....	113
METHODS.....	114
Haines Marine Boat Sport Fishery Creel Survey .....	114
Skagway Marine Boat Sport Fishery Harvest Sampling.....	22
DATA COLLECTION.....	22
Haines Marine Boat Sport Fishery Creel Survey .....	22
Skagway Marine Boat Sport Fishery Harvest Sampling.....	26
DATA REDUCTION.....	26
DATA ANALYSIS .....	27
Haines Marine Boat Sport Fishery Creel Survey .....	27
Skagway Marine Boat Sport Fishery Harvest Sampling.....	31
SCHEDULE AND DELIVERABLES .....	31
Haines Marine Boat Sport Fishery Creel Survey .....	31
Skagway Marine Boat Sport Fishery Harvest Sampling.....	31
RESPONSIBILITIES .....	32
REFERENCES CITED .....	32
APPENDIX A: 2013 HAINES MARINE CREEL TECHNICIAN MANUAL .....	35
APPENDIX B: SALMON SPECIES IDENTIFICATION AND CHINOOK SALMON MATURITY EVALUATION .....	65
APPENDIX C: 2013 SKAGWAY MARINE HARVEST SAMPLING TECHNICIAN MANUAL .....	69

## LIST OF TABLES

<b>Table</b>	<b>Page</b>
1. Estimated angler effort, and large Chinook salmon catch and harvest in the Haines marine boat sport fishery for comparable sample periods, 1984–2012.....	3
2. Estimated sport harvest of wild mature Chinook salmon in the Haines marine boat fishery and abundance of large Chinook salmon in the Chilkat River, 1991–2012.....	5
3. Estimated age composition and mean length-at-age of harvested Chinook salmon in the Haines marine sport fishery by harbor location, May 7–June 24, 2012. ....	6
4. Contribution estimate of coded wire tagged Chinook salmon to the Haines marine sport fishery, May 7–June 24, 2012, along with statistics used for computing estimates. ....	7
5. Statewide Harvest Survey estimates of annual marine sport effort and harvest of Chinook salmon in Taiya Inlet, 1999–2011.....	8
6. Annual summary of Chinook salmon marine sport effort surveyed and fish sampled at Skagway Boat Harbor, 2001–2012.....	8
7. Number of hatchery-raised Chinook salmon smolt coded wire tagged, total number released into Taiya Inlet, and marked fraction, 1996–2012.....	9
8. Contribution estimate of coded wire tagged Chinook salmon to the Skagway marine boat sport fishery, May 31–September 5, 2011, along with statistics used for computing estimates. ....	10
9. Summary of liberalized king salmon bag and possession limits in Taiya Inlet and Pullen Creek, 1998–2012.....	11
10. Number of Chinook salmon sampled and in the Skagway marine boat sport fishery, by age class and biweek, 2012. ....	12
11. Chinook salmon maturity sampling results from Skagway marine boat sport fishery, 2000–2012. ....	12
12. Haines marine creel survey Letnikof Dock sampling schedule, 2013.....	18
13. Haines marine creel low-use port sampling schedule, 2013.....	20
14. Estimated proportion of large Chinook salmon harvest estimates by Haines marine creel survey biweekly stratum, 1998–2007 and 2009–2012, and planned 2013 genetic sampling schedule.....	23
15. Number of large Chinook salmon sampled in the Skagway marine boat sport fishery, 2003–2011, and 2013 genetic sampling schedule.....	24

## LIST OF FIGURES

<b>Figure</b>	<b>Page</b>
1. Map of the Haines area showing the location of marine boat access sites and northern Chilkat Inlet area closure line. ....	2
2. Average proportion of effort and catch of large Chinook salmon over time of anglers returning to the Letnikof Dock, 1993–2007, 2009–2012.....	15
3. Distribution of angler effort sampled at the Letnikof Dock by weekend and weekday evenings, 2001–2007, 2009–2012.....	16

## LIST OF APPENDICES

<b>Appendix</b>	<b>Page</b>
A. 2013 Haines marine creel survey technician manual .....	35
B. Salmon species identification and Chinook salmon maturity evaluation .....	65
C. 2013 Skagway marine harvest sampling technician manual. ....	69

## **PURPOSE**

The purpose of this study is to estimate Chinook salmon harvest from the Haines marine boat sport fishery and to estimate Chinook salmon stock composition from the Skagway marine boat sport fishery harvest.

Chilkat River Chinook salmon are a Pacific Salmon Commission (PSC) indicator stock that contributes to management of the Southeast Alaska sport fishery allocation in accordance with the Pacific Salmon Treaty (PST). Estimating Chilkat River Chinook salmon harvest in the Haines marine boat sport fishery is important for run reconstruction and for identifying important exploitation areas. Data obtained from this project include angler effort, Chinook salmon catch and harvest, age sex and length composition of the harvest, and contributions of coded wire tagged stocks, both wild and hatchery origin.

Stocks of Chinook salmon harvested by Skagway sport anglers are composed of hatchery-origin fish that were released as smolts in Pullen Creek and other wild and hatchery-origin stocks rearing in Taiya Inlet. Sampling harvested Chinook salmon in Taiya Inlet provides age and maturity data, as well as stock composition data through recovery of coded wire tags (CWT) implanted in several wild and hatchery-origin stocks. Stock composition, age, and maturity data are used to manage the Taiya Inlet marine boat sport fishery. In June and July of most years, Chinook salmon bag and annual limits are liberalized in Taiya Inlet to allow harvest of hatchery-origin fish in excess of broodstock needs. After July, bag limits typically revert to Southeast Alaska regional regulations to avoid overharvest of rearing Chinook salmon stocks from throughout Southeast Alaska.

## **BACKGROUND**

### **HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY**

The spring marine boat sport fishery near Haines primarily targets Chinook salmon returning to the Chilkat River, along with rearing and hatchery-origin Chinook salmon in Lynn Canal (Figure 1). Directed management for Chilkat River Chinook salmon was developed when the number of spawning salmon, observed in index streams, declined sharply in 1985 and 1986. This decline corresponded with relatively large estimated sport harvests (Table 1). These concerns prompted restrictions on the sport fishery beginning in 1987. In 1989, the Haines King Salmon Derby was suspended because of conservation concerns. Restrictions increased during the ensuing few years until the fishery was closed in 1991 and 1992. The fishery was reopened in 1993 and the Haines King Salmon Derby was reinstated in 1995.

The Lynn Canal and Chilkat River King Salmon Fishery Management Plan (5 AAC 33.384) specifies a Chinook salmon inriver abundance goal range of 1,850–3,600 large (age-1.3 and older) fish. If the preseason forecast is for inriver abundance below the goal range, commercial and sport fishing restrictions go into effect in Chilkat Inlet. In 2008, the preseason inriver abundance forecast was below the lower end of the goal range, so Chilkat Inlet was closed to retention of Chinook salmon in May and June, and the Haines Sportsman's Association cancelled the Haines King Salmon Derby. The 2008 Haines creel survey documented that overall Chinook salmon effort and harvest were the lowest in the creel survey's history (Table 1). Because of the restricted fishery in 2008, Haines creel survey estimates from that year are excluded from averages and comparisons in this operational plan.

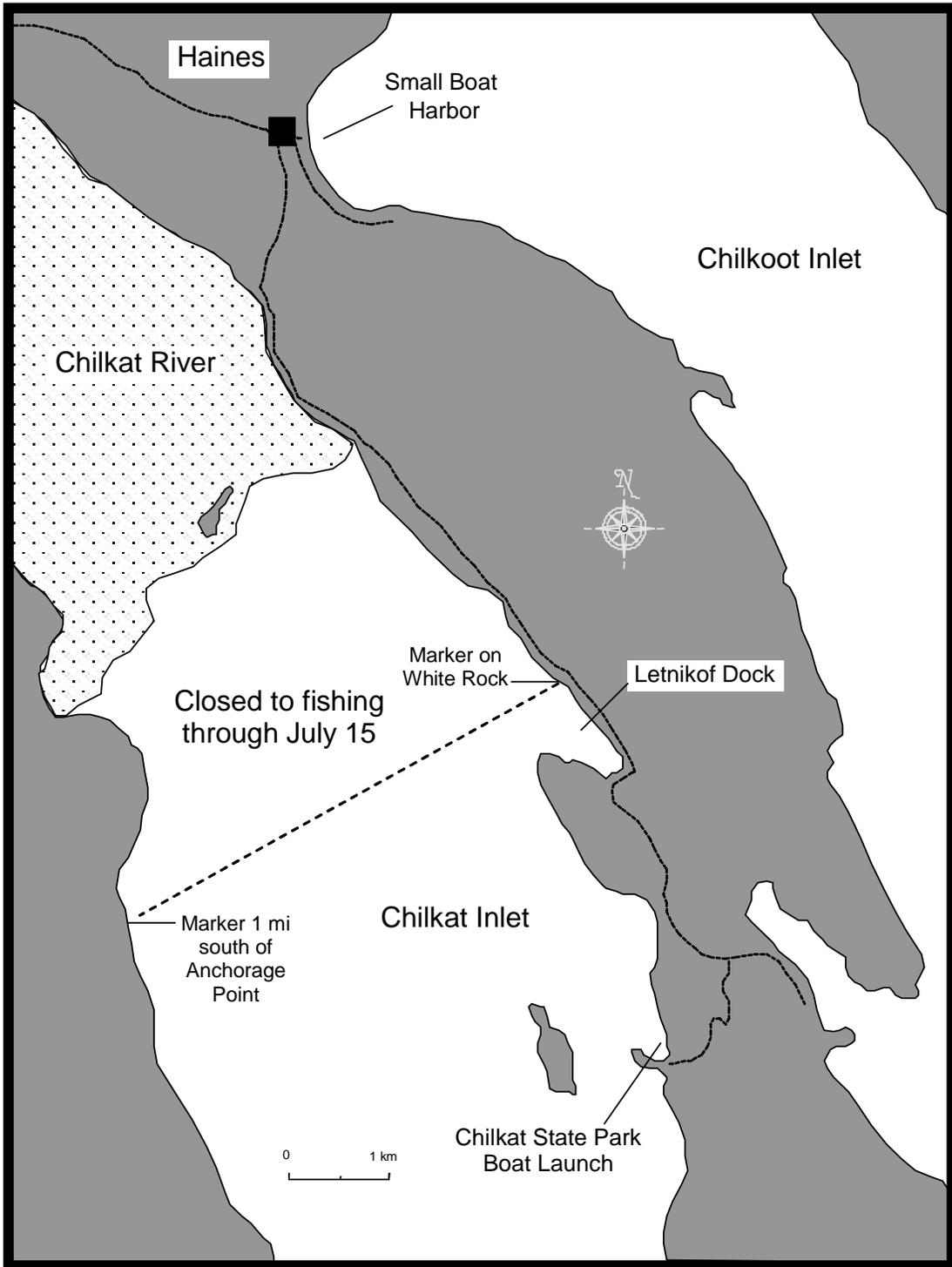


Figure 1.—Map of the Haines area showing the location of marine boat access sites and northern Chilkat Inlet area closure line.

Table 1.—Estimated angler effort, and large ( $\geq 28$  in TL) Chinook salmon catch and harvest in the Haines marine boat sport fishery for comparable sample periods, 1984–2012.

Year	Survey dates	Effort				Large ( $\geq 28$ " ) Chinook salmon			
		Angler-hours	SE	Salmon-hours	SE	Catch	SE	Harvest	SE
1984 <sup>a</sup>	5/06–6/30	10,253	b	9,855	b	1,072	b	1,072	b
1985 <sup>c</sup>	4/15–7/15	21,598	b	20,582	b	1,705	b	1,696	b
1986 <sup>d</sup>	4/14–7/13	33,857	b	32,533	b	1,659	b	1,638	b
1987 <sup>e</sup>	4/20–7/12	26,621	2,557	22,848	2,191	1,094	189	1,094	189
1988 <sup>f</sup>	4/11–7/10	36,222	3,553	32,723	3,476	505	103	481	101
1989 <sup>g</sup>	4/24–6/25	10,526	999	9,363	922	237	42	235	42
1990 <sup>h</sup>	4/23–6/21	h	h	11,972	1,169	248	60	241	57
1991				Sport fishery closed					
1992				Sport fishery closed					
1993 <sup>i</sup>	4/26–7/18	11,919	1,559	9,069	1,479	349	63	314	55
1994 <sup>j</sup>	5/09–7/03	9,726	723	7,682	597	269	41	220	32
1995 <sup>k</sup>	5/08–7/02	9,457	501	8,606	483	255	42	228	41
1996 <sup>l</sup>	5/06–6/30	10,082	880	9,596	866	367	43	354	41
1997 <sup>m</sup>	5/12–6/29	9,439	861	8,758	697	381	46	381	46
1998 <sup>n</sup>	5/11–6/28	8,200	811	7,546	747	222	60	215	56
1999 <sup>o</sup>	5/10–6/27	6,206	736	6,097	734	184	24	184	24
2000 <sup>p</sup>	5/08–6/25	4,428	607	4,043	532	103	34	49	12
2001 <sup>q</sup>	5/07–6/24	5,299	815	5,107	804	199	32	185	26
2002 <sup>r</sup>	5/06–6/30	7,770	636	7,566	634	343	40	337	40
2003 <sup>s</sup>	5/07–6/29	10,651	648	10,055	578	405	40	404	40
2004 <sup>t</sup>	5/10–6/27	12,761	744	12,518	744	413	46	403	44
2005 <sup>u</sup>	5/09–6/26	12,641	1,239	12,287	1,216	260	31	252	31
2006 <sup>v</sup>	5/08–6/24	8,172	610	7,869	558	176	15	165	13
2007 <sup>w</sup>	5/07–6/25	7,411	725	7,223	690	285	43	285	43
2008 <sup>xy</sup>	5/05–6/22	1,211	177	1,132	167	27	11	27	11
2009 <sup>z</sup>	5/04–6/21	7,405	534	7,267	520	145	12	143	12
2010 <sup>aa</sup>	5/10–6/27	7,983	523	7,901	510	222	25	219	25
2011 <sup>ab</sup>	5/9–6/26	8,734	478	8,592	471	217	16	217	16
2012 <sup>ac</sup>	5/7–6/24	7,423	498	7,403	496	229	33	217	33

-continued-

Table 1.–Page 2 of 2.

---

<p><sup>a</sup> From Neimark (1985).</p> <p><sup>b</sup> Estimates of variance were not provided until 1987.</p> <p><sup>c</sup> From Mecum and Suchanek (1986 ).</p> <p><sup>d</sup> From Mecum and Suchanek (1987).</p> <p><sup>e</sup> From Bingham et al. (1988).</p> <p><sup>f</sup> From Suchanek and Bingham (1989).</p> <p><sup>g</sup> From Suchanek and Bingham (1990).</p> <p><sup>h</sup> From Suchanek and Bingham (1991), no estimate of the total angler effort and harvest was provided.</p> <p><sup>i</sup> From Ericksen (1994).</p> <p><sup>j</sup> From Ericksen (1995).</p> <p><sup>k</sup> From Ericksen (1996).</p> <p><sup>l</sup> From Ericksen (1997).</p> <p><sup>m</sup> From Ericksen (1998).</p> <p><sup>n</sup> From Ericksen (1999).</p> <p><sup>o</sup> From Ericksen (2000).</p>	<p><sup>p</sup> From Ericksen (2001).</p> <p><sup>q</sup> From Ericksen (2002).</p> <p><sup>r</sup> From Ericksen (2003).</p> <p><sup>s</sup> From Ericksen (2004).</p> <p><sup>t</sup> From Ericksen (2005).</p> <p><sup>u</sup> From Ericksen and Chapell (2006).</p> <p><sup>v</sup> From Chapell (2009).</p> <p><sup>w</sup> From Chapell (2010).</p> <p><sup>x</sup> From Chapell (2012).</p> <p><sup>y</sup> Chilkat Inlet was closed to Chinook salmon retention and the Haines King Salmon Derby was cancelled.</p> <p><sup>z</sup> From Chapell (2013).</p> <p><sup>aa</sup> From Chapell (<i>in prep a</i>)</p> <p><sup>ab</sup> From Chapell (<i>in prep b</i>)</p> <p><sup>ac</sup> From Chapell (<i>in prep c</i>)</p>
--	---

---

The 2013 preseason forecast for Chilkat River Chinook salmon inriver abundance is within the bounds of the goal range, so harvest restrictions in Chilkat Inlet will not be required. We anticipate that, similar to previous years, the Haines King Salmon Derby will take place over 2 weekends (5 days) in 2013. A creel survey will be used to obtain inseason and postseason estimates of angler effort, Chinook salmon catch and harvest rates (CPUE and HPUE), number of and age composition of harvested Chinook salmon, and the number of wild mature Chinook salmon harvested (Tables 1–3). The creel survey will sample the Haines marine boat sport Chinook salmon harvest for CWTs to estimate the harvest of Chilkat River and other CWT-tagged stocks in the Haines area (Table 4).

Creel survey estimates will be used for management and research. The Board of Fisheries (BOF) allocated 20% of the combined commercial troll and sport U.S./Canada PST allocation of Chinook salmon to the Southeast Alaska sport fishery. To track the harvest of PST fish, it is desirable to conduct harvest studies in all areas of the region where a substantial portion of the Chinook salmon harvest occurs. This increases precision in harvest estimates, which aids management of the sport fishery allocation. Sampling the sport harvest of Chinook salmon near Haines for CWTs will document hatchery contributions for PST catch reporting. Chinook salmon produced by Southeast Alaska hatcheries, except for a base period catch of 850 fish, do not count against the PST allocation.

### **SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING**

The marine boat sport fishery based in the Skagway Small Boat Harbor targets Chinook salmon in Taiya Inlet from late May through early September (Tables 5 and 6). Since 1998, hatchery-raised Chinook salmon smolts have been released in Taiya Inlet to enhance marine sport fishing opportunity (Table 7). Samples from the Skagway marine boat sport harvest have been used to

Table 2.—Estimated sport harvest of wild mature Chinook salmon in the Haines marine boat fishery and abundance of large Chinook salmon in the Chilkat River, 1991–2012.

Year	Sport harvest		Chilkat River abundance	
	Wild mature Chinook	Standard error	Large ( $\geq$ age-1.3) Chinook	Standard error
1991		Sport fishery closed	5,897 <sup>a</sup>	1,005
1992		Sport fishery closed	5,284 <sup>b</sup>	949
1993	252 <sup>c</sup>	46	4,472 <sup>d</sup>	851
1994 <sup>e</sup>	190	29	6,795	1,057
1995 <sup>f</sup>	193	35	3,790	805
1996 <sup>g</sup>	257	29	4,920	751
1997 <sup>h</sup>	311	41	8,100	1,193
1998 <sup>i</sup>	153	51	3,675	565
1999 <sup>j</sup>	82	11	2,271	408
2000 <sup>k</sup>	27	8	2,035	334
2001 <sup>l</sup>	126	20	4,517	722
2002 <sup>m</sup>	272	37	4,051	429
2003 <sup>n</sup>	285	27	5,657	690
2004 <sup>o</sup>	269	29	3,422	456
2005 <sup>p</sup>	165	26	3,366	555
2006 <sup>q</sup>	86	9	3,027	437
2007 <sup>r</sup>	177	33	1,442	278
2008 <sup>s,t</sup>	5	2	2,905	544
2009 <sup>u</sup>	80	10	4,429	747
2010 <sup>v</sup>	121	19	1,815	226
2011 <sup>w</sup>	174	13	2,688	318
2012 <sup>x</sup>	153	30	1,744	266

<sup>a</sup> From Johnson et al. (1992).

<sup>b</sup> From Johnson et al. (1993).

<sup>c</sup> From Ericksen (1994).

<sup>d</sup> From Johnson (1994).

<sup>e</sup> From Ericksen (1995).

<sup>f</sup> From Ericksen (1996).

<sup>g</sup> From Ericksen (1997).

<sup>h</sup> From Ericksen (1998).

<sup>i</sup> From Ericksen (1999).

<sup>j</sup> From Ericksen (2000).

<sup>k</sup> From Ericksen (2001).

<sup>l</sup> From Ericksen (2002).

<sup>m</sup> From Ericksen (2003).

<sup>n</sup> From Ericksen (2004).

<sup>o</sup> From Ericksen (2005).

<sup>p</sup> From Ericksen and Chapell (2006).

<sup>q</sup> From Chapell (2009).

<sup>r</sup> From Chapell (2010).

<sup>s</sup> From Chapell (2012).

<sup>t</sup> Chilkat Inlet was closed to Chinook salmon retention in 2008.

<sup>u</sup> From Chapell (2013).

<sup>v</sup> From Chapell (*in prep a*).

<sup>w</sup> From Chapell (*in prep b*).

<sup>x</sup> From Chapell (*in prep c*).

Table 3.—Estimated age composition and mean length-at-age (MEF in mm) of harvested Chinook salmon in the Haines marine sport fishery by harbor location, May 7–June 24, 2012.

		Brood year and age					Total aged	Total sampled <sup>a</sup>
		2008 0.3	2008 1.2	2007 1.3	2006 1.4	2005 1.5		
<b>CHILKAT INLET HARBORS</b>								
Males	Sample size	1	3	29	8	1	42	45
	Mean length	830	670	732	920	1050		
	SD(length)	NA	52	50	44	NA		
Females	Sample size		2	30	16		48	52
	Mean length		695	761	885			
	SD(length)		71	63	32			
Combined <sup>b</sup>	Sample size	1	5	59	24	1	90	97
	Harvest-weighted %	1.4	6.6	61.9	29.4	0.6		
	SE(%)	1.5	2.6	5.6%	5.2%	0.7		
	Mean length	830	680	747	896	1050		
	SD(length)	NA	53	59	40	NA		
<b>SMALL BOAT HARBOR</b>								
Males	Sample size		2	9	1		12	13
	Mean length		648	696	810			
	SD(length)		18	43	NA			
Females	Sample size			6	2		8	8
	Mean length			745	795			
	SD(length)			60	0			
Combined <sup>b</sup>	Sample size		2	15	3		20	21
	Harvest-weighted %		15.3	72.5	12.2			
	SE(%)		9.0	10.2	7.0			
	Mean length		648	715	800			
	SD(length)		18	54	9			

<sup>a</sup> Includes fish that were not assigned a valid age.

<sup>b</sup> Includes fish that were not assigned a sex.

estimate the contribution of CWT-tagged stocks to the Skagway-based Chinook salmon harvest, as estimated by Alaska Department of Fish and Game's (ADF&G) Statewide Harvest Survey (SWHS, Table 8). Because final SWHS estimates are not available until 12 months after sample collection is completed, calendar year 2011 data is shown in Table 8. Stock composition, maturity, and age composition data (Tables 9–11) are used by area management staff to decide when Chinook salmon bag, size, and annual limits can be liberalized in Taiya Inlet to increase exploitation of hatchery stocks without overharvesting wild stocks. In some years, large numbers of immature wild Chilkat River Chinook salmon have been harvested in the Taiya Inlet sport

Table 4.—Contribution estimate ( $r$ ) of coded wire tagged Chinook salmon to the Haines marine sport fishery, May 7–June 24, 2012, along with statistics used for computing estimates.

Agency	Release site	Tag code	Brood year	Marked fraction $\hat{\theta}$	Harvest		Sampled $n$	Adipose clip $a$	Heads collected $a'$	Tags detected $t$	Tags decoded $t'$	Tags $m$	Contribution	
					N	SE							$r$	SE
HAINES MARINE CREEL SURVEY HARVEST														
ADFG <sup>a</sup>	Chilkat River	41557	2006	0.060								2	61	43
ADFG	Chilkat River	41510	2006	0.078								1	24	23
ADFG	Chilkat River	41687	2007	0.078	217	33	118	8	8	8	8	3	71	41
DIPAC <sup>b</sup>	Fish Creek 111-50	41974	2007	0.011								1	168	168
NSRAA <sup>c</sup>	Lutak Inlet 115-33	41996	2008	0.219								1	8	8
Total												333	180	

Note: Contribution estimates for wild Chilkat River fish are preliminary as marked fractions will not be estimated until returns from all brood years are complete.

<sup>a</sup> ADFG = Alaska Department of Fish and Game

<sup>b</sup> DIPAC = Douglas Island Pink and Chum

<sup>c</sup> NSRAA = Northern Southeast Regional Aquaculture Association

Table 5.—Statewide Harvest Survey (SWHS) estimates of annual marine sport effort and harvest of Chinook salmon in Taiya Inlet, 1999–2011.

Year	Days fished	Chinook <28 in TL					Chinook ≥28 in TL				
		Catch	SE	Harvest	SE	Released	Catch	SE	Harvest	SE	Released
1999	6,156	1,505	336	219	79	1,286	705	227	396	99	309
2000	8,463	1,203	246	434	92	769	725	159	634	152	91
2001	4,833	2,145	708	381	86	1,764	865	298	417	83	448
2002	4,747	2,413	853	410	85	2,003	867	250	473	96	394
2003	5,236	1,585	352	331	110	1,254	1,055	275	434	182	621
2004	5,976	1,227	332	331	113	896	796	189	653	164	143
2005	4,456	1,615	438	290	86	1,325	647	173	468	134	179
2006	4,156	1,792	532	331	105	1,461	674	274	434	149	240
2007	3,826	1,163	298	335	116	828	502	126	439	119	63
2008	2,717	939	315	0	0	939	776	190	372	91	404
2009	4,398	729	213	0	0	729	782	233	450	188	332
2010	4,441	899	403	0	0	899	647	324	494	206	153
2011	4,565	1,768	774	0	0	1,768	615	284	492	273	123
Average	4,921	1,460	446	236	67	1,225	743	231	474	149	281

Table 6.—Annual summary of Chinook salmon marine sport effort surveyed and fish sampled at Skagway Boat Harbor, 2001–2012.

Year	Rod*hrs Surveyed	Catch		Harvest		Rod*hrs per large harvested	Examined		Ad-clips	
		Small	Large	Small	Large		Small	Large	Small	Large
2001							169	63	12	6
2002							84	94	12	17
2003							109	142	16	45
2004	1,243	362	128	28	104	12	23	104	0	33
2005	2,084	326	153	53	134	16	32	110	9	31
2006	1,368	155	56	52	48	29	52	41	4	9
2007	1,261	114	44	43	38	33	39	34	5	5
2008	1,644	152	82	0	52	32	0	48	0	4
2009	2,123	460	95	0	87	24	0	81	0	8
2010	1,468	277	78	0	73	20	0	55	0	11
2011	1,685	246	42	6	42	42	0	42	0	6
2012	2,017	312	81	0	70	29	0	69	0	3
Average	1,655	267	84	20	72	26	42	74	5	15

Table 7.—Number of hatchery-raised Chinook salmon smolt coded wire tagged, total number released into Taiya Inlet, and marked fraction (theta), 1996–2012.

Tag code	Brood year	Release year	Facility	Total tagged	Total released	Marked fraction $\hat{\theta}$
	1996	1998	Burro Creek	7,423	15,956	0.47
	1996	1998	Jerry Myers	8,355	8,631	0.97
	1997	1999	Burro Creek	0	16,424	0.00
	1997	1999	Jerry Myers	1,856	1,856	1.00
	1998	2000	DIPAC	27,637	91,618	0.30
	1999	2001	DIPAC	29,746	32,123	0.93
	2000	2002	DIPAC	27,835	95,386	0.29
040394	2001	2003	DIPAC	30,781	58,793	0.52
040934	2002	2004	DIPAC	31,288	128,688	0.24
041117	2003	2005	DIPAC	28,179	219,620	0.13
041227	2004	2006	DIPAC	28,440	68,002	0.42
041457	2005	2007	DIPAC	34,107	168,135	0.20
041562	2006	2008	DIPAC	30,416	51,945	0.59
041973	2007	2009	DIPAC	31,004	276,262	0.11
042282	2008	2010	DIPAC	32,497	258,000	0.13
042668	2009	2011	DIPAC	25,494	128,619	0.20
042466	2010	2012	DIPAC	20,834	74,936	0.28
042467	2010	2012	DIPAC	20,589	119,667	0.17

Table 8.—Contribution estimate ( $r$ ) of coded wire tagged Chinook salmon to the Skagway marine boat sport fishery, May 31–September 5, 2011, along with statistics used for computing estimates.

Agency	Release site	Tag code	Brood year	Marked fraction $\hat{\theta}$	SWHS annual harvest estimate		Sampled $n$	Ad-clips $a$	Heads collected $a'$	Tags detected $t$	Tags decoded $t'$	Tags $m$	Contribution		
					N	SE							$r$	SE	
DIPAC	Pullen Creek	41457	2005	0.20	492	273							1	58	57
DIPAC	Pullen Creek	41562	2006	0.59	492	273	42	6	6	6	6		4	79	55
DIPAC	Pullen Creek	41973	2007	0.11	492	273							1	104	104
Total							42	6	6	6	6	6	6	241	131

Table 9.—Summary of liberalized king salmon bag and possession limits in Taiya Inlet and Pullen Creek, 1998–2012.

Year	EO number	Effective dates	Area	King salmon bag and possession limit <sup>a</sup>
1998	1-11-98	6/19 to 8/31	Pullen Cr	2 ≥ 28 in. and 2 < 28 in.
			Skagway R	4 ≥ 28 in. and 4 < 28 in.
1998	1-12-98	6/19 to 8/31	Taiya Inlet	2 ≥ 28 in. and 2 < 28 in.
1999	1-09-99	6/11 to 8/31	Pullen Cr	2 ≥ 28 in. and 2 < 28 in.
			Skagway R	4 ≥ 28 in. and 4 < 28 in.
1999	1-10-99	6/11 to 8/31	Taiya Inlet	2 ≥ 28 in. and 2 < 28 in.
2000	1-11-00	6/10 to 8/31	Taiya Inlet	1 ≥ 28 in. and 2 < 28 in.
2001	1-11-01	6/13 to 8/31	Taiya Inlet	1 ≥ 28 in. and 1 < 28 in.
2001	1-26-01	8/21 to 9/15	Pullen Cr	6 ≥ 28 in. and 6 < 28 in.
2002	1-11-02	6/13 to 8/31	Taiya Inlet	2 ≥ 28 in. and 1 < 28 in. NGR 1 ≥ 28 in. and 1 < 28 in. NR and GR
2003	1-12-03	6/10 to 7/31	Taiya Inlet	2 any size
2003	1-33-03	8/05 to 9/14	Pullen Cr <sup>b</sup>	10 any size
2004	1-KS-F-08-04	6/07 to 7/31	Taiya Inlet	2 any size
2005	1-KS-F-08-05	6/06 to 7/31	Taiya Inlet <sup>c</sup>	3 any size
2006	1-KS-F-07-06	6/05 to 7/31	Taiya Inlet	3 any size
2007	1-KS-F-07-07	6/04 to 7/31	Taiya Inlet <sup>d</sup>	3 any size
2007	1-KS-F-17-07	8/25 to 9/14	Pullen Cr	10 any size
2008	1-KS-F-22-08	7/16 to 7/31	Taiya Inlet	2 ≥ 28 in.
2008	1-KS-F-22-08	7/16 to 7/31	Between SGY docks	no retention
2008	1-KS-F-27-08	8/02 to 9/14	Pullen Cr	4 any size
2008	1-KS-F-28-08	8/21 to 9/15	Between SGY docks	2 ≥ 28 in.
2009	1-KS-F-10-09	6/6 to 7/31	Taiya Inlet	3 ≥ 28 in.
2009	1-KS-F-16-09	7/1 to 8/30	Between SGY docks	no retention
2009	1-KS-F-22-09	8/4 to 9/14	Pullen Cr	4 any size
2010	1-KS-F-11-10	6/5 to 7/31	Taiya Inlet	3 ≥ 28 in.
2010	1-KS-F-18-10	7/22 to 8/29	Between SGY docks	no retention
2011	1-KS-F-19-11	7/1 to 8/26	Between SGY docks	no retention
2011	1-KS-F-25-11	8/9 to 9/14	Pullen Cr	4 any size
2012	1-KS-F-18-12	7/1 to 8/26	Between SGY docks	no retention

<sup>a</sup> NGR = non-guided residents, NR = nonresidents, GR = guided residents.

<sup>b</sup> Area enlarged from above broodstock weir to all of Pullen Creek as of 8/14 by EO 1-35-03.

<sup>c</sup> Time for the fishing closure in salt water at the mouth of Pullen Creek was extended to 8/31 by subsequent EO 1-KS-F-22-05.

<sup>d</sup> The area of the fishing closure in salt water at the mouth of Pullen Creek was enlarged slightly by subsequent EO 1-KS-F-15-07.

Table 10.—Number of Chinook salmon sampled and in the Skagway marine boat sport fishery, by age class and biweek, 2012.

Biweek	Brood year and age class			Total aged	Total sampled
	2007 1.2	2006 1.3	Not aged		
12			1	0	1
13	4	5	1	9	10
14	2	8	5	10	15
15	1	6	3	7	10
16	2	2	2	4	6
17	9	2	3	11	14
18	3	2	1	5	6
Total	21	25	16	46	62

Note: Scales without fresh water age determination were considered not aged.

Table 11.—Chinook salmon maturity sampling results from Skagway marine boat sport fishery, 2000–2012.

Biweek	Number sampled	Immature	Immature proportion	SE(proportion)
11	2	1	0.50	0.50
12	64	30	0.47	0.06
13	122	53	0.43	0.05
14	225	106	0.47	0.03
15	248	107	0.43	0.03
16	247	158	0.64	0.03
17	200	157	0.79	0.03
18	113	102	0.90	0.03
Total	1,219	713	0.58	0.01

fishery (Chapell 2009, 2010, 2012, 2013, *in prep* a–c). Historic Skagway sampling data shows an increase in the immaturity rate in August, indicating an influx of rearing “feeders” into Taiya Inlet (Table 11). The high immaturity rate has been the basis for ending liberal Chinook salmon harvest regulations on July 31 each year.

Effort data have also been collected during Skagway harvest sampling, but the data have not been used for harvest estimates or for management decisions. The weekly average number of rod-hours required to harvest a large Chinook salmon has been posted inseason on the Haines and Skagway sport weekly fishing report at:

[http://www.adfg.alaska.gov/sf/FishingReports/index.cfm?ADFG=R1.ReportDetail&area\\_key=3](http://www.adfg.alaska.gov/sf/FishingReports/index.cfm?ADFG=R1.ReportDetail&area_key=3).

## **OBJECTIVES**

### **HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY**

The main research objective for 2013 is:

- 1) to estimate the harvest of wild, mature Chinook salmon in the Haines marine boat sport fishery from May 6 to June 23, 2013, such that the estimate is within 0.25 of the true value 80% of time.

Secondary objectives for 2013 are:

- 2) to estimate the total harvest of all Chinook salmon in the Haines marine boat sport fishery from May 6 to June 23, 2013, such that the estimate is within 0.25 of the true value 80% of the time.
- 3) to estimate the age composition of Chinook salmon harvested in the Haines marine boat sport fishery from May 6 to June 23, 2013, such that estimates are within 0.15 of the true values 80% of time.
- 4) to estimate the Alaska hatchery Chinook salmon contributions (for PST reporting) to the Haines marine boat sport fishery, such that estimates are within 0.15 of the true values 80% of time.

Tasks for the 2013 season are:

- 5) to sample the Haines marine boat sport fishery consistently from May 6 to June 23, 2013 and provide estimates of annual effort as well as inseason weekly estimates of large Chinook salmon harvest per unit effort (HPUE) to the public.
- 6) to collect 25 Chinook salmon genetic samples from the Haines marine boat sport fishery harvest for the ADF&G Gene Conservation Laboratory at a rate that is proportional to harvest throughout the season.

### **SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING**

The main research objective for 2013 is:

- 1) to estimate the Alaska hatchery Chinook salmon contributions (for PST reporting) to the Skagway marine boat sport fishery, such that estimates are within 0.25 of the true values 80% of time.

Secondary objectives for 2013 are:

- 2) to estimate the contribution of other CWT-tagged Chinook salmon stocks to the Skagway marine boat sport fishery such that estimates are within 0.25 of the true values 80% of time.
- 3) to estimate the biweekly age and maturity composition of Chinook salmon harvested in the Skagway marine sport fishery from May 28 through August 31, such that estimates are within 0.15 of the true values 80% of time.

Tasks for the 2013 season are:

- 4) to sample the Skagway marine boat sport fishery consistently from May 28 to August 31, 2013 and provide inseason weekly estimates of large Chinook salmon HPUE to the public.

5) to collect 20 Chinook salmon genetic samples from the Skagway marine boat sport fishery for the ADF&G Gene Conservation Laboratory at a rate that is proportional to harvest throughout the season.

## **METHODS**

### **HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY**

The harvest of mature, wild Chinook salmon in the spring marine boat fishery near Haines will be monitored from May 6 to June 23, 2013. Essentially all (99%) of the wild mature Chinook salmon harvested in the marine sport boat fishery are expected to be harvested within this time period.

A stratified, multi-stage, direct expansion creel survey will be used to estimate the harvest of Chinook salmon in the Haines marine boat sport fishery. Strata are defined by combinations of 7-day (high use) or 14-day (low use) periods (except during the Haines King Salmon Derby and the final sampling weeks as described below), and access location (2 sites: 1 low use and 1 high use). Strata are also defined by time of day (morning/evening, or TOD), and type of day (weekend/weekday, or WeWd) during the peak of the season at the high-use site (Letnikof Dock) during the evening, as explained below.

In previous years of the Haines creel survey, the boat launch at Chilkat State Park was a third survey site, categorized as low use, but effort estimates at that site declined to 1% or less of the Haines survey total in years after 2007. Poor infrastructure at Chilkat State Park (rough, steep, and winding access road, boat ramp unusable at tide stage <2 ft, the permanent removal of the boarding float in 2010, and the construction of a boarding float at Letnikof boat ramp contributed to the decline in marine boat angler use. The Chilkat State Park site will be omitted from the Haines survey in 2013.

The two access locations to be sampled in 2013 are Letnikof Dock and Haines Small Boat Harbor (Figure 1). In 2013, we expect average distribution of marine sport effort among these sites. Most (54–86% in 2001–2012, excluding 2008) of the effort originates from Letnikof Dock, so it will be considered a high-use site. The Small Boat Harbor will be sampled as a low-use site. We have met or exceeded the targeted precision of  $\pm 25\%$  for mature Chinook harvest (at the 80% CI) during all past surveys except in 1998, 2000, and 2008 (Table 2). In 1998 and 2000, an unusually high percentage of estimated harvest occurred at the Small Boat Harbor, and the lower sampling rate at that low-use harbor resulted in high variance in the estimated effort and harvest. In 2008, retention of Chinook salmon was prohibited in Chilkat Inlet, making sample sizes extremely small.

Summaries of large Chinook salmon effort and catch at Letnikof Dock in 1993–2007 and 2009–2012 show distributions with midpoints around June 1 (Figure 2). Roughly 5% of the harvest is expected to occur by May 16, and roughly 95% is expected to occur by June 17. Angler effort sampled at Letnikof Dock has been highest between mid May and mid June when HPUE peaks. Similarly, angler effort can be much higher on weekends than on weekdays between mid May and mid June (Figure 3). Effort is also expected to be much higher during the Haines King Salmon Derby (May 25–27, and June 1–2).

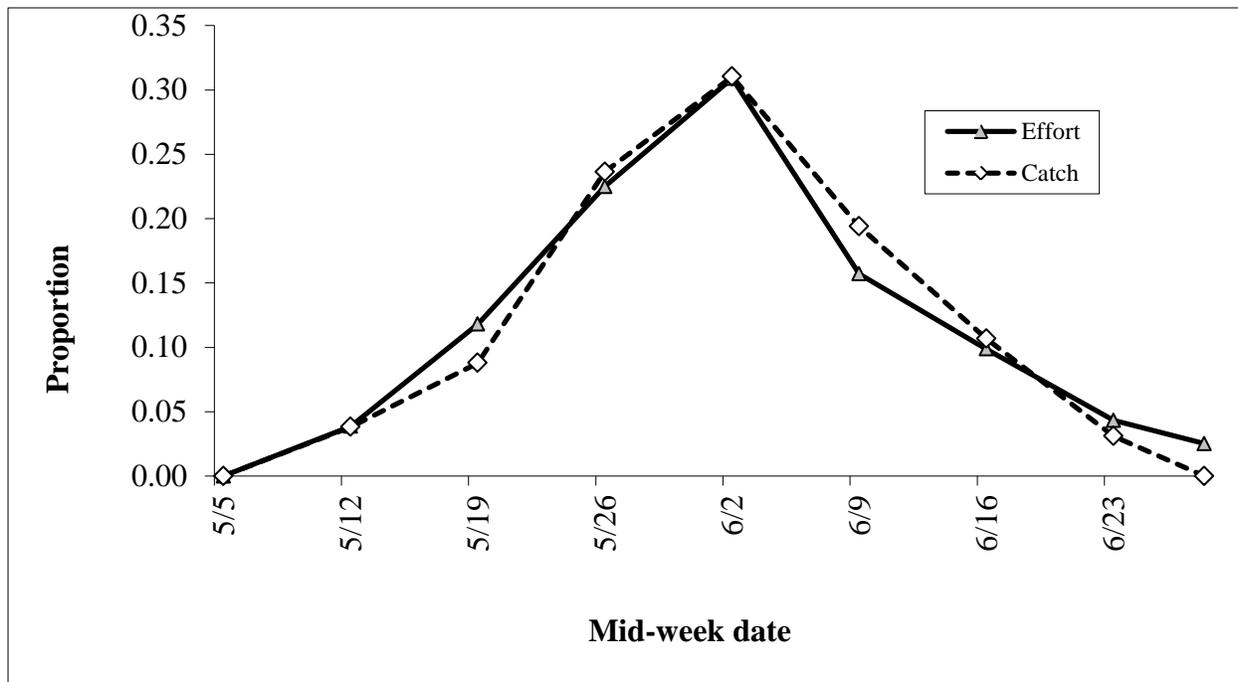


Figure 2.–Average proportion of effort and catch of large Chinook salmon over time of anglers returning to the Letnikof Dock, 1993–2007, 2009–2012.

Earlier surveys indicated that anglers tended to exit the sport fishery in increasing numbers from about 0700 to 1700 hours; thereafter a steady decline occurs until about twilight. Very few boat

parties exit the fisheries prior to 0800 hours or after (we assume) civil twilight. Thus, each fishing day is defined as starting at 0800 hours and ending at civil twilight.

Because we expect most mature Chinook salmon to be landed at Letnikof Dock, the survey would not benefit greatly from weekend/weekday stratification at the low-use harbor. Two technicians can adequately sample the Haines fishery if additional staff provides coverage at the Letnikof derby weigh-in station to sample derby entries outside of scheduled creel survey sampling periods. The sampling design for 2013 is as follows:

Letnikof Dock: 2-stage (days, boating parties) direct expansion

a) Will be sampled from May 6 to June 23, encompassing over 99% of the harvest in an average year. Temporal strata are weeks, except during the derby (May 25–27, June 1–2). During the 2 weeks including the derby days, the nonderby days (May 20–24, May 28–31) will be combined to form one 9-day (weekday) stratum. This will compensate for additional personnel needs during the derby.

b) Has TOD (morning/evening) stratification where mornings last from 0800 hours to 2 hours before midday (shift length = 5:06 to 5:56 [hr:min]) and evenings last from 2 hours before midday to civil twilight (shift length = 9:06 to 9:55). The longer evening periods increase the precision of the estimates because anglers tend to return to the dock in increasing numbers during the afternoon and evening. During the derby, most anglers return to the dock during derby

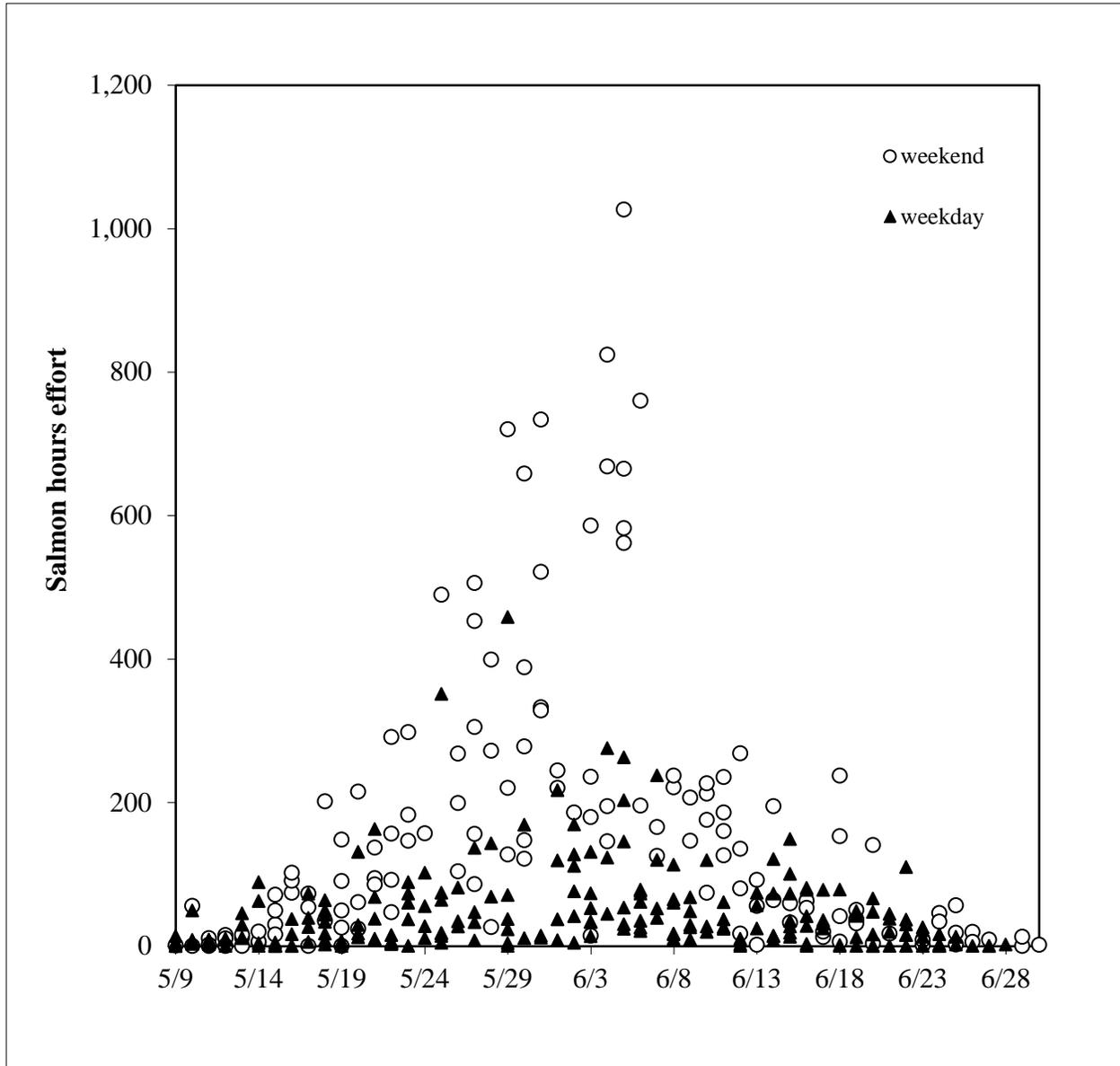


Figure 3.—Distribution of angler effort sampled at the Letnikof Dock by weekend and weekday evenings, 2001–2007, 2009–2012.

hours (0800 to 1800 hours), so TOD will start/end at midday to provide more even coverage during the derby hours (shift length = 7:33).

c) During the peak weeks of the season (May 6 through June 9), evening strata have WeWd stratification, requiring 1 additional sample per week.

Small Boat Harbor: 2-stage (days, boating parties) direct expansion

a) Will be sampled from May 6 to June 23. Temporal strata are biweeks (14-day periods) except for 1 weekly period at the end of the survey (June 17–June 24), and May 20 through June 2 when the biweek is divided into derby (5 days) and nonderby (9 days) strata.

b) Most biweek/harbor combinations will be stratified by TOD, in which morning and evening strata will be equal in length (shift length=7:12 to 7:56 [hr:min]). Time-of-day stratification will be suspended during the five derby days.

c) Has no WeWd stratification.

Primary sampling units are days and secondary sampling units are boat parties. Cochran (1977) describes this standard 2-stage direct expansion sampling design. It is anticipated (from past experiences) that almost all boats in a sampling period will be sampled. There are 17 unique strata at Letnikof Dock: 5 weeks x 2 TOD + 3 additional evening/WeWd strata + 1 “nonderby” stratum x 2 TOD + 1 derby stratum x 2 TOD (Table 12). There are 9 unique strata at Small Boat Harbor: 3 biweeks x 2 TOD + 1 wk x 2 TOD + 1 derby stratum (Table 13). Weekend strata at Letnikof Dock are defined as Saturdays and Sundays. The derby stratum is defined as the 5-day period of May 25–27, and June 1–2. Formulas for a 2-stage direct expansion survey in Bernard et al. (1998) will be used to estimate harvests of mature (wild and hatchery) Chinook salmon. We assume that maturity status will be accurately obtained for all harvested fish. Contributions of mature hatchery fish (recent Lynn Canal releases are noted in Table 7) are estimated using methods described in Bernard and Clark (1996). The difference between the estimated harvests of mature fish and mature hatchery fish is the harvest of wild, mature Chinook salmon bound for the Chilkat River (no other rivers in Lynn Canal contain natural runs of Chinook salmon). Estimates of effort and harvest of all Chinook salmon are simply accomplished by repeating computational procedures without regard to adipose fin status.

Random selections were used to determine primary units to sample in each stratum. At Letnikof Dock, 2 of 7 morning periods will be sampled each week. When WeWd strata are in use, 2 (of 5 possible) weekday evening periods and 2 (of 2 possible) weekend evening periods will be sampled. The derby entry station is at Letnikof Dock, so it receives the most landings on derby days. On derby days, 4 of 5 morning and 4 of 5 evening periods will be sampled. For 1 week after the end of WeWd stratification, 3 of 7 evening periods will be sampled. In the last week, only 2 of 7 evening periods will be sampled so that sampling effort can be shifted to the Small Boat Harbor. Three of 9 possible periods in both the morning and afternoon strata will be sampled during the May 20–24 and May 28–31 nonderby weekday stratum to maintain the sampling density during this 9-day period.

At the low-use Small Boat Harbor, 3 of 14 mornings and 3 of 14 evenings will be sampled in biweek 1. During the May 20–24 and May 28–31 nonderby weekdays, 2 of 9 mornings and 2 of 9 evenings will be sampled. During the 5 derby days, 2 of 10 possible periods (without TOD stratification) will be sampled at the low-use Small Boat Harbor to estimate effort and harvest of fish not turned in to the derby. As sport fishing effort in Chilkoot Inlet typically increases in June, during biweek 3, 4 of 14 mornings and 4 of 14 evenings will be sampled. During the last survey week, the Small Boat Harbor will be sampled at a rate similar to the high-use harbor: 3 of 7 morning periods and 3 of 7 evening periods will be sampled.

It is logistically feasible for 2 creel surveyors to sample only 2 periods per day; as a result, 3 sampling periods were changed in the randomized schedule for the low-use sites (Table 13). Final sampling schedules are found in Table 12 (Letnikof Dock) and Table 13 (low-use harbors).

Table 12.–Haines marine creel survey Letnikof Dock sampling schedule, 2013.

Stratum ID	Date	Schedule		Derby or Wk end?	Letnikof morning	Letnikof evening
1a	6-May					
1a	7-May	start	8:00			
1a	8-May	mid-day	13:06			X
1a	9-May	end	22:12		X	
1a	10-May	shift length	5:06 – 9:06			X
1aWE	11-May			WE		X
1aWE	12-May			WE	X	X
1b	13-May				X	
1b	14-May	start	8:00			
1b	15-May	mid-day	13:17			
1b	16-May	end	22:34			X
1b	17-May	shift length	5:17 – 9:17			X
1bWE	18-May			WE		X
1bWE	19-May			WE	X	X
2	20-May	start	8:00			X
2	21-May	mid-day	13:29		X	
2	22-May	end	22:58			
2	23-May	shift length	5:29 - 9:29			
2	24-May					X
D	25-May			DERBY	DE	X
D	26-May	Derby mid-day	15:33	DERBY	X	X
D	27-May	Derby shift length	7:33	DERBY	X	X
2	28-May					
2	29-May					
2	30-May				X	X
2	31-May				X	
D	1-Jun			DERBY	X	DE
D	2-Jun			DERBY	X	X

-continued-

Table 12.–Page 2 of 2.

Stratum ID	Date	Schedule	Derby or Wk end?	Letnikof morning	Letnikof evening
3a	3-Jun				
3a	4-Jun	Start	8:00		
3a	5-Jun	mid-day	13:46	X	X
3a	6-Jun	end	23:33		X
3a	7-Jun	shift length	5:46 - 9:46		
3aWE	8-Jun		WE		X
3aWE	9-Jun		WE	X	X
3b	10-Jun				X
3b	11-Jun	start	8:00		
3b	12-Jun	mid-day	13:53		X
3b	13-Jun	end	23:46		
3b	14-Jun	shift length	5:46– 9:46		X
3b	15-Jun			X	
3b	16-Jun			X	
4	17-Jun				
4	18-Jun				
4	19-Jun	start	8:00		
4	20-Jun	mid-day	13:56		X
4	21-Jun	end	23:52	X	X
4	22-Jun	shift length	5:56– 9:56	X	
4	23-Jun				

*Note:* Periods start and end 2 hours before midday except during the derby when periods start and end at midday. Midday is ½ the time between 0800 hours and civil twilight. Technicians employ a calendar detailing all sample times.

*Note:* Sampling units belonging to the same stratum are outlined.

*Note:* DE = DSF staff will be at the derby weigh-in station to sample all Chinook salmon entered for age, sex, length, maturity, harvest statistical area, adipose fin status, and to collect heads from adipose-clipped fish. No effort data will be collected outside of random sampling periods

Table 13.–Haines marine creel low-use port sampling schedule, 2013.

Stratum ID	Date	Schedule		Small Boat Harbor morning	Small Boat Harbor evening
1	6-May				
1	7-May				X
1	8-May				
1	9-May				
1	10-May			X	
1	11-May	start	8:00		X
1	12-May	mid-day	15:12		
1	13-May	end	22:24		
1	14-May	shift length	7:12		X
1	15-May				
1	16-May			X	A
1	17-May			X	
1	18-May				
1	19-May				
2	20-May				
2	21-May				X
2	22-May			X	
2	23-May				
2	24-May				X
D	25-May		DERBY	X	
D	26-May		DERBY		
D	27-May		DERBY		
2	28-May	start	8:00		
2	29-May	mid-day	15:29		
2	30-May	end	22:58		
2	31-May	shift length	7:29	X	
D	1-Jun		DERBY	X	
D	2-Jun		DERBY		

-continued-

Table 13.–Page 2 of 2.

Stratum ID	Date	Schedule		Small Boat Harbor morning	Small Boat Harbor evening
3	3-Jun			X	
3	4-Jun				
3	5-Jun				
3	6-Jun			X	
3	7-Jun			X	
3	8-Jun	start	8:00	A	X
3	9-Jun	mid-day	15:49	A	
3	10-Jun	end	23:39		X
3	11-Jun	shift length	7:49		
3	12-Jun			A	X
3	13-Jun				X
3	14-Jun			X	
3	15-Jun				
3	16-Jun				
4	17-Jun				
4	18-Jun	start	8:00	X	X
4	19-Jun	mid-day	15:56	X	
4	20-Jun	end	23:52		X
4	21-Jun	shift length	7:56		
4	22-Jun			X	
4	23-Jun				X

*Note:* Mid-day is 1/2 the time between 0800 hours and civil twilight. Sample periods end/start at mid-day at low-use harbors. Technicians employ a calendar detailing all sample times

*Note:* Sampling units belonging to the same stratum are outlined.

*Note:* “A” denotes sampling units which were originally selected but will not be sampled due to scheduling conflicts (i.e., too few staff).

As noted above, relative precision (RP) for the estimate of harvest of wild, mature fish (Objective 1) has met or exceeded the target value ( $\pm 25\%$ , for an 80% CI) in 16 of the last 19 years, excluding 2008 (Table 2). Similarly, the RP of estimates for harvest of all Chinook (Objective 2) have met or exceeded target values for harvest ( $\pm 25\%$ , for an 80% CI) in 17 of the last 19 years, excluding 2008 (Table 1).

Scales will be collected from all Chinook salmon sampled in the sport harvest to estimate age composition. In addition, Division of Sport Fish (DSF) staff will be at the derby weigh-in station to sample all Chinook salmon entered for age, sex, length, maturity, harvest statistical area, adipose fin status, and to collect heads from adipose-finclipped fish. No effort data will be collected outside of random sampling periods. The overall age composition of the harvest

will be estimated by weighting age composition estimates for each time, harbor (or time-harbor) stratum by the stratum sizes (harvest). Standard sample size calculations (Thompson 1987) estimate that 41 fish must be collected in order to obtain estimates that are within 0.15 of the true value 80% of the time, assuming a scale regeneration rate of 20%.

At the request of the ADF&G Gene Conservation Laboratory in Anchorage, we will collect 25 axillary process samples from large ( $\geq 28$  in TL) Chinook salmon harvested in the Haines marine sport fishery. The sample allocation schedule will match the average proportion of large Chinook salmon harvested by biweek or derby stratum, as estimated by the Haines marine creel survey 1998–2012 (Table 14).

## **SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING**

Skagway creel sampling staff is limited to 1 part-time DSF technician budgeted for sampling 16 hours per week. The sampling schedule of 4 hours per day will be maintained from May 28 to August 31 to ensure proportional sampling.

Sampling days in Skagway will be scheduled Monday–Thursday to maximize the number of Chinook salmon encountered. Most fishing effort in Taiya Inlet is by sport charter operations, which focus primarily on cruise ship passengers for clients. Because peak cruise ship dockings occur Monday through Thursday, sampling 4 hours per day during this time period should ensure encountering the highest amount of sport harvest possible. Occasionally high winds in Taiya Inlet preclude fishing effort; sampling scheduled for inclement weather days will be shifted to Friday or Saturday as conditions permit. During the week of the Pat Moore Memorial Game Fish Derby, at least one sample day will be on a derby day. In recent years, this derby has been scheduled for 4 days (Thursday–Sunday) in mid July.

At the request of the ADF&G Gene Conservation Laboratory in Anchorage, we will collect axillary process samples from 20 large ( $\geq 28$  in TL) Chinook salmon in the Skagway marine boat sport fishery. The sample allocation schedule will match the weekly proportion of the total large Chinook salmon sampled in Skagway from 2003–2012 (Table 15).

## **DATA COLLECTION**

### **HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY**

During each sample period, all sport fishing boats returning to the harbor will be counted and their type classified as charter (guided) or private (unguided). As many of these boat-parties as possible will be interviewed. Not interviewing some parties when busy is acceptable, **as long as accurate counts of the total number of returning sport fishing parties are maintained.** Additionally, in the event that some parties are not interviewed, samplers will ensure that interviewed parties are never selected because they have or do not have fish, do or do not want to be interviewed, etc. Data collected during each interview will include number of rods fished, hours fished, trip type (charter or private), number of days in trip, location fished, target species (salmon, Pacific halibut), and number of fish kept and/or released by species.

**The entire Chinook salmon catch of each interviewed party will be inspected.** Chinook salmon will be classified as either "large",  $\geq 28$  in TL, or "small",  $< 28$  in TL. In general, small Chinook salmon may not be retained, but small Chinook salmon are often caught and released in moderate numbers. Chinook salmon will be classified as mature or immature using criteria

Table 14.—Estimated proportion of large ( $\geq 28$  in TL) Chinook salmon harvest estimates by Haines marine creel survey biweekly (BW) stratum, 1998–2007 and 2009–2012, and planned 2013 genetic sampling schedule.

Survey year	Haines creel survey biweekly stratum					Total samples
	Biweek 1	Biweek 2 nonderby	Derby	Biweek 3	Biweek 4	
1998 <sup>a</sup>	0.04	0.03	0.21	0.58	0.13	
1999 <sup>b</sup>	0.05	0.14	0.27	0.48	0.07	
2000 <sup>c</sup>	0.12	0.00	0.43	0.35	0.10	
2001 <sup>d</sup>	0.01	0.16	0.30	0.45	0.08	
2002 <sup>e</sup>	0.01	0.09	0.53	0.32	0.05	
2003 <sup>f</sup>	0.04	0.24	0.38	0.32	0.03	
2004 <sup>g</sup>	0.08	0.33	0.40	0.18	0.00	
2005 <sup>h</sup>	0.07	0.16	0.46	0.23	0.07	
2006 <sup>i</sup>	0.05	0.08	0.43	0.35	0.08	
2007 <sup>j</sup>	0.06	0.23	0.28	0.43	0.00	
2008 <sup>k</sup>	0.00	0.07	0.18	0.36	0.39	
2009 <sup>l</sup>	0.01	0.00	0.31	0.56	0.12	
2010 <sup>m</sup>	0.05	0.14	0.28	0.45	0.07	
2011 <sup>n</sup>	0.00	0.17	0.42	0.34	0.07	
2012 <sup>o</sup>	0.11	0.03	0.33	0.38	0.17	
Avg. proportion (excludes 2008)	0.05	0.13	0.36	0.39	0.07	
Stratum 2013 start date	6-May	20-May	28-May	3-Jun	17-Jun	
Stratum 2013 end date	19-May	1-Jun	2-Jun	16-Jun	23-Jun	
Samples scheduled for 2013	1	3	9	10	2	25

Note: Average excludes 2008 data because Chilkat Inlet was closed to king salmon retention during the creel survey.

<sup>a</sup> From Ericksen (1999).

<sup>b</sup> From Ericksen (2000).

<sup>c</sup> From Ericksen (2001).

<sup>d</sup> From Ericksen (2002).

<sup>e</sup> From Ericksen (2003).

<sup>f</sup> From Ericksen (2004).

<sup>g</sup> From Ericksen (2005).

<sup>i</sup> From Chapell (2009).

<sup>j</sup> From Chapell (2010).

<sup>k</sup> From Chapell (2012).

<sup>l</sup> From Chapell (2013).

<sup>m</sup> From Chapell (*in prep a*).

<sup>n</sup> From Chapell (*in prep b*).

<sup>o</sup> From Chapell (*in prep c*).

Table 15.—Number of large ( $\geq 615$  mm MEF) Chinook salmon sampled in the Skagway marine boat sport fishery, 2003–2011, and 2013 genetic sampling schedule.

Stat week	22	23	24	25	26	27	28	29	30	31	32	33	34	35	Total
2013 week start	26-May	2-Jun	9-Jun	16-Jun	23-Jun	30-Jun	7-Jul	14-Jul	21-Jul	28-Jul	4-Aug	11-Aug	18-Aug	25-Aug	
2013 week end	1-Jun	8-Jun	15-Jun	22-Jun	29-Jun	6-Jul	13-Jul	20-Jul	27-Jul	3-Aug	10-Aug	17-Aug	24-Aug	31-Aug	
Large sampled through 2012	2	13	35	26	69	78	93	125	75	103	92	131	40	80	962
Large proportion	0.00	0.01	0.04	0.03	0.07	0.08	0.10	0.13	0.08	0.11	0.10	0.14	0.04	0.08	
2013 sample schedule	0	0	1	1	2	2	2	3	2	2	2	3	1	2	20

*Note:* 615 mm MEF length is a surrogate for 28 in TL using the conversion formulas: in TL = 0.039 x mm TL, and mm TL = (1.120 x mm MEF) + 21.328.

listed in Appendix B. At the beginning of the season, the project biologist will ensure that all technicians are expert at determining maturity status. Chinook salmon will be classified as adipose finclipped or not adipose finclipped. Chinook salmon inspected for maturity and adipose fin status will be classified as "sampled"; Chinook salmon not inspected will be classified as "not sampled", but this should happen rarely. Tallies of the number of fish of each species caught and released, and for Chinook salmon, each size-maturity-adipose fin status combination, will be recorded along with the party data on the **Port Sampling Interview Version 1.0** mark-sense form. The effort and Chinook salmon sampling results from each sample period will be summarized daily and submitted by each Monday at 0830 hours.

Sex, maturity, and length data will be collected from each sampled Chinook salmon according to standard procedures (ADF&G *unpublished*<sup>1</sup>), and recorded on **Alternate Age-Weight Length version 1.1 (AWL)** mark-sense forms. Sex will be determined from observing external secondary characteristics unless there is an opportunity to observe the gonads. Maturity will be categorized using criteria in Appendix B. Length will be measured to the nearest 5 mm MEF. Age-weight-length (AWL) data recording procedures are outlined in detail in the 2013 Haines Marine Creel Technician Manual (Appendix A).

A scale sample from each Chinook salmon will be collected and attached to gum cards labeled with the AWL form number, and the gum card will be taped to the AWL form. Five scales will be removed from the *left* side of each sampled fish (right side if left-side scales are regenerated), along a line 2 to 4 scale rows above the lateral line between the posterior insertion of the dorsal fin and anterior insertion of the anal fin (ADF&G *unpublished*). The preferred scale will be collected first, followed by the second scale 1 inch to the left, the third 1 inch to the right, the fourth ½ inch to the left, and the fifth scale ½ inch to the right in relation to the preferred scale. The fourth and fifth scales are also collected 2 rows above where the first three were selected. Obviously regenerated scales will be discarded and new scales will be collected. All the scales from 1 Chinook salmon will be cleaned and carefully placed on the gum card in 1 column (i.e., scales from fish #1 on the AWL form will be placed over 1, 11, 21, 31, and below 31 on the gum card). All scales will be moistened and mounted upright (posterior side down) with the rough (outer side of the fish) side out. After mounting, the scales will be secured to the card with pressure to ensure adhesion. Space will be left at the top middle portion of the card, so that a label can later be affixed. Scale cards will be kept as dry as possible, to prevent gum from running and obscuring the scale ridges. Gum cards will be thoroughly labeled, including the last names of each sampler. A triacetate impression of the scales (30 seconds at 3,500 lb/in<sup>2</sup>, at a temperature of 97°C) will be used for age determination. Scales will be read for age using procedures in Olsen (1992 1992).

Heads from adipose-finclipped fish will be collected and identified with a uniquely numbered cinch strap around the jaw. The cinch strap number will be recorded on the AWL form. Detailed information about each adipose-finclipped fish will be recorded on a Coded Wire Tag Recovery

---

<sup>1</sup> ADF&G. *Unpublished*. Length, sex, and scale sampling procedure for sampling using the ADF&G adult salmon age-length mark-sense form, version 2.1. Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas, Alaska.

Sampling Form supplied by the ADF&G Division of Commercial Fish (DCF) Mark, Age, and Tag Laboratory (Tag Lab).

An axillary process sample will be taken from the first  $x$  large fish encountered during each Haines creel stratum according to the schedule in Table 14, which was derived from the historical time distribution of fish encountered in this program. The axillary process sample vial number will be recorded on the AWL form, as detailed in the 2013 Haines Marine Creel Technician Manual (Appendix A).

## **SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING**

During each Skagway Small Boat Harbor sample day, the Chinook salmon catch from as many sport fishing parties as possible will be sampled. When multiple parties are landing at the same time, it will be acceptable to not sample the catch of some parties. For parties that are sampled, the entire party's catch must be sampled. Catch will not be selected for sampling based on fish size or adipose fin status.

Interview data collected from each sampled party will include the number of rods fished, hours fished, trip type (charter or noncharter), primary area of Chinook salmon harvest, target species (salmon, Pacific halibut, other), and the number of fish kept and released by species. Chinook salmon catch and harvest will be classified as large,  $\geq 28$  in TL, or small,  $< 28$  inches total length. Small Chinook salmon are frequently caught and released. The retention of small Chinook salmon is allowed for limited times in some years in Taiya Inlet by Emergency Order. Effort, catch, and harvest data will be recorded onsite in a waterproof paper notebook and entered daily into an Excel<sup>®2</sup> spreadsheet, as shown in the 2013 Skagway Marine Creel Technician Manual (Appendix C).

Harvested Chinook salmon will be sampled for sex, maturity, length, and scales as described under Haines creel sampling, and data will be recorded on **Alternate Age-Weight Length (AWL) version 1.1** mark-sense forms. The AWL form number will be recorded on the gum card and the gum card will be taped to the AWL form. If a Chinook salmon has a clipped adipose fin, the head will be taken, a cinch strap will be attached around the jaw, and the cinch strap number will be recorded on the AWL form. An axillary process sample will be taken from the first  $x$  large fish encountered during each stat week according to the schedule in Table 15, which was derived from the historical time distribution of fish encountered in this program. The axillary process sample vial number will be recorded on the AWL form. All data recording procedures are detailed in the 2013 Skagway Marine Creel Technician Manual (Appendix C).

## **DATA REDUCTION**

Both Haines and Skagway creel technicians will check and summarize their data before turning it in to the Haines office each Monday morning by 0830 hours. Data checks to be done in the field or shortly after sampling include ensuring that all information on the mark-sense forms is complete and accurate (e.g., species codes, maturity status, angler type, catch-release status of fish caught, counts and types of uninterviewed boat parties, etc.). The mark-sense interview and AWL

---

<sup>2</sup> This and subsequent product names are included for a complete description of the process and do not constitute product endorsement.

sampling data forms will be error-checked again in the Haines office, then sent to marine harvest study staff in Douglas for op-scanning and data file creation. After op-scanning is complete and the original forms are returned to Haines, final editing will be done to eliminate transcription errors and to assure that data, especially the angler counts and species tallies, are complete and accurate. Analysis of the Haines creel survey interview data will be done using SAS<sup>®</sup> PC. The Skagway creel survey interview data will be entered and collated in Excel AWL data files, and will be analyzed in Excel. After analysis, SAS data files, Skagway interview data, and AWL data from both project sites will be archived on the Haines area office network hard drive at S:\Sport Fish\Data archive\Haines marine creel survey\2013 or at S:\Sport Fish\Data archive\Skagway marine creel survey\2013.

The Tag Lab in Juneau is the clearinghouse for all information on CWTs. Heads from adipose-finclipped Chinook salmon encountered in Haines and Skagway will be sent to the Tag Lab, where any tags present will be recovered and decoded. The tag codes and sampling data from each head will be entered into the Tag Lab database. In conjunction with DCF personnel, sport sampling effort and estimated harvest will be entered into a Tag Lab database so hatchery contribution estimates can be generated directly.

Division of Sport Fish personnel in Douglas will read Chinook salmon scales collected in Haines and Skagway and record the ages on the corresponding Alternate AWL mark sense version 1.1 forms. The scale reader will forward the forms to marine harvest study staff in Douglas for op-scanning. Marine harvest study staff will send electronic files and the original AWL forms to Haines DSF staff for error-checking, editing, and data analysis. The scale gum cards and acetates will be logged and stored in the Region 1 age-sex-length data archives, located in the Douglas office.

A final, edited electronic copy of the Haines creel survey interview and AWL data, along with a data map, will be sent to Research and Technical Services (RTS) in Anchorage for archiving when the 2013 escapement and production report is submitted for publication. The data map will include a description of all electronic files contained in the data archive, all data fields, and details of where hard copies of any associated data are to be archived, if not in RTS.

Before October 15, axillary process samples collected in Haines and Skagway will be shipped to the ADF&G Gene Conservation Laboratory in Anchorage. Once scale samples from the Haines and Skagway projects have been aged, AWL data from genetically sampled fish will be forwarded to the Gene Conservation Laboratory in the format that they request.

## **DATA ANALYSIS**

### **HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY**

Equations for estimation of harvest, catch, and effort in the creel survey are those for a 2-stage direct expansion (access point, completed trip interview) survey, as detailed in Bernard et al. (1998). Post stratification of the sampling data will be used to estimate effort and harvest by chartered and unchartered anglers (estimates for chartered and unchartered anglers will, however, not be summed to estimate statistics for all anglers). In the rare event (it has not happened since the survey started in 1984) where angler status is not determined, status of the anglers not interviewed (boat parties) will be estimated (prorated) using the information from other interviews.

The harvest (large and small Chinook salmon calculated separately) in each stratum ( $\hat{H}_h$ ) will be estimated as (Bernard et al. 1998: equation 2.1):

$$\hat{H}_h = D_h \hat{\bar{H}}_h \quad [1]$$

$$\hat{\bar{H}}_h = \frac{\sum_{i=1}^{d_h} \hat{H}_{hi}}{d_h} \quad [2]$$

$$\hat{H}_{hi} = M_{hi} \frac{\sum_{j=1}^{m_{hi}} h_{hij}}{m_{hi}} \quad [3]$$

where  $h_{hij}$  = harvest on boat  $j$ , sampling day (period)  $i$ , stratum  $h$ ;  $m_{hi}$  = number of boat parties interviewed on day  $i$ ;  $M_{hi}$  = number of boat-parties completing trips on day  $i$ ;  $d_h$  = number of days (morning/evening periods) sampled in stratum  $h$ ; and  $D_h$  = number of days in stratum  $h$ .

The variance of the harvest by stratum will be estimated as (Bernard et al. 1998: equation 2.5):

$$\text{var}[\hat{H}_h] = (1 - f_{1h}) D_h^2 \frac{\sum_{i=1}^{d_h} (\hat{H}_{hi} - \hat{\bar{H}}_h)^2}{d_h (d_h - 1)} + D_h \sum_{i=1}^{d_h} M_{hi}^2 (1 - f_{2hi}) \frac{\sum_{j=1}^{m_{hi}} (h_{hij} - \bar{h}_{hi})^2}{d_h m_{hi} (m_{hi} - 1)} \quad [4]$$

where  $f_{1h}$  = sampling fraction for periods and  $f_{2hi}$  = sampling fraction for boat parties. Catch and effort is estimated similarly, substituting  $C$  and  $E$  for  $H$  in equations 1–4. Total harvests for the season are the sums across strata  $\sum H_h$  and  $\sum V[H_h]$ .

The stock contribution ( $r_{ij}$ ) of a CWT-tagged release group  $j$  to a fishery stratum  $h$  is estimated as:

$$\hat{r}_{ij} = \hat{H}_h \left[ \frac{m_{hj}}{\lambda_h n_h} \right] \theta_j^{-1} \quad [5]$$

where  $H_h$  = total harvest in fishery stratum  $h$ ,  $n_h$  = number of fish inspected for adipose clips,  $m_{hj}$  = number of CWTs from release group  $j$  found in the stratum,  $\lambda_h = (a'_h t'_h)/(a_h t_h)$  is the decoding rate for CWTs from recovered salmon, and  $\theta_j$  = fraction of the cohort tagged with code(s) of interest. See Bernard and Clark (1996) for further details.

Because  $H_h$  is estimated with error in sport fisheries, unbiased estimates of the variance of  $\hat{r}_{ij}$  will be obtained using the appropriate large-sample equations in Table 2 of Bernard and Clark

(1996), including the covariance between estimated harvests of cohorts within strata. The total harvest for one or more cohorts is obtained by summing the  $\hat{r}_{ij}$ 's across all sampled strata.

Sport CWT recovery data will be obtained from Tag Lab reports and summarized by biweek and location (e.g., Chilkoot Inlet versus Chilkat Inlet harbors). Within a location, CWTs of interest may be recovered in only a few sampling strata (e.g., low/high-use harbors, morning/evening periods, or derby strata) that define the temporal strata (e.g., biweek). Assuming that the harvests of fish with CWTs of interest are independent of sampling strata within location and temporal strata, harvests and sampling information will be totaled over the spatial-temporal strata to estimate contributions. This allows comparisons between published biweekly harvest ( $H$ ) and the CWT data and minimizes biases that can result if estimates are derived from data obtained in minor strata where sampling rates are unusual. Estimates will also be totaled across locations and time.

The difference between the estimated harvests of mature fish  $H$  and mature hatchery fish  $r$  is the harvest of wild, mature Chinook salmon bound for the Chilkat River. The variance of this difference will be estimated as the sum of the variances of  $H$  and  $r$ .

Application of the formula to estimating harvests of mature Chinook salmon assumes that maturity status is accurately obtained for all harvested fish sampled during interviews. Previous experience suggests that maturity status can be determined on nearly all harvested fish sampled. If an occasional boat party ( $\leq 1$  in 20, or  $\leq 5\%$ ) has fish with undetermined maturity status, interview information for that boat party will be ignored (in estimating harvest of mature salmon) and the expansions (by sample period) will be made from harvests by the remaining boat parties and the total number of boat parties counted. However, the incidence of a significant proportion of boat parties having fish with undetermined maturity status could create a source of bias in survey estimates. Thus, if the overall proportion of boat parties having fish with undetermined maturity status exceeds 5%, harvests of mature Chinook salmon ( $\hat{C}$ ) in each temporal strata will be estimated as the product of the estimate for all Chinook salmon harvested without respect for maturity status ( $H$  or  $r$  in the equations above) and the overall proportion of the harvest with a determinate maturity status that are mature fish:

$$\hat{C} = \hat{H}\hat{p} \quad [6]$$

$$\text{var}[\hat{C}] = \hat{H}^2 \text{V}[\hat{p}] + \hat{p}^2 \hat{\text{V}}[\hat{H}] - \hat{\text{V}}[\hat{H}]\text{V}[\hat{p}] \quad [7]$$

where  $\hat{p}$  is the estimated proportion of fish with determined maturity status that are mature, and  $H$  (or  $r$ ) is harvest.

To estimate harvests inseason, point estimates will be made on a *daily basis for each stratum sampled* by totaling the harvest of mature Chinook salmon sampled (minus fish with adipose clips) and expanding up for boat parties not sampled (including any boat parties with fish of unknown maturity status). Forms to summarize the raw data are included with the 2013 Haines Marine Creel Technician Manual (Appendix A). *At the end of each biweek* the calculated daily harvests in a

stratum will be totaled and expanded up by the total number of days in the stratum using the electronic spreadsheet supplied by the project leader. This information will be used to keep area managers informed about the progress of the fishery. A few mature fish without adipose fins that are of hatchery origin (Table 7 and other releases in Southeast Alaska) may be included in the inseason total; however, few such recoveries are expected in 2013. Final estimates for the season will incorporate the data from decoded CWTs.

Age composition of the sample fish ( $\hat{p}_{a,h}$ ) will be estimated by harbor and by biweekly period:

$$\hat{p}_{a,h} = \frac{n_a}{n} \quad [8]$$

$$\text{var}[\hat{p}_{a,h}] = \frac{\hat{p}_{a,h}(1 - \hat{p}_{a,h})}{n - 1} \quad [9]$$

where  $\hat{p}_{a,h}$  is the proportion with estimated age  $a$  in stratum  $h$ ,  $n$  is the number successfully aged, and  $n_a$  is the subset of  $n$  having estimated age  $a$ . A chi-square test will also be used to determine if differences can be detected ( $\alpha = 0.10$ ) by harbor and by biweekly period. Because sampling is not proportional across strata, the estimate for the whole fishery is:

$$\hat{p}_a = \frac{\sum_h \hat{H}_h \hat{p}_{a,h}}{\sum_h \hat{H}_h} \quad [10]$$

where  $h$  denotes a (time, harbor, or time-harbor) stratum and the estimated harvests supply appropriate ‘weights’ for the different stratum sizes. Variance is estimated:

$$\text{var}[\hat{p}_a] \approx \sum_h \frac{\left( \hat{p}_{a,h} \left( \sum_i \hat{H}_i \right) - \left( \sum_i \hat{p}_{a,i} \hat{H}_i \right) \right)^2}{\left( \sum_i \hat{H}_i \right)^4} \text{var}[\hat{H}_h] + \sum_h \frac{\hat{H}_h^2}{\left( \sum_i \hat{H}_i \right)^2} \text{var}[\hat{p}_{a,h}] \quad [11]$$

where  $\hat{p}_{a,h}$  is the proportion with estimated age  $a$  in stratum  $h$ , and variance is an approximation resulting from a second order Taylor’s series expansion around the expected values of the parameter estimates and estimated values for the expected values (Mood et al. 1974, p. 181).

## **SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING**

The contribution of CWT-tagged Chinook salmon stocks to the Skagway marine boat sport fishery will be calculated as in equation 5 above for a single annual stratum, using SWHS estimates for *H*. The biweekly age composition of the Chinook salmon harvest will be calculated using equations 8 and 9. Chi-square test will be used to determine if differences can be detected ( $\alpha = 0.10$ ) by biweekly period. Maturity rates of large Chinook salmon will be calculated biweekly using equations 8–11 with chi-square tests to determine if differences can be detected ( $\alpha = 0.10$ ).

## **SCHEDULE AND DELIVERABLES**

### **HAINES MARINE BOAT SPORT FISHERY CREEL SURVEY**

Field activities will be initiated in 2013 on May 6 and conclude on June 23 in accordance with the sampling schedule (Tables 12 and 13). Weekly summaries of HPUE and (biweekly) harvest estimates will be produced to generate inseason sport fishing reports for distribution by recorded telephone reports, web reports, and newspaper articles.

Data editing and analysis activities will be done on a weekly basis. Mark-sense marine interview forms will be processed at the end of the sampling season and forwarded to DSF staff in Douglas for op-scanning by September 15, 2013.

Final error correction and reduction of the 2013 on-site marine survey data will be completed by October 15, 2013. Final estimates of harvest and hatchery contributions for the survey will be produced by December 15, 2013. Marine sport fishery sampling data from the Haines site will be reported to the Tag Lab by February 15, 2014.

AWL forms will be edited weekly and forwarded to DSF staff in Douglas by September 30. Division of Sport Fish staff in Douglas will read scales from Chinook salmon by December 31, 2013. Age composition and length-at-age estimates for Chinook salmon will be produced by January 15, 2014.

Report writing will be initiated and this activity will terminate with the submission of a draft ADF&G Fisheries Data Series Report on June 15, 2014.

### **SKAGWAY MARINE BOAT SPORT FISHERY HARVEST SAMPLING**

Field activities will be initiated in 2013 as early as May 28 and will conclude by August 31. Effort, catch and harvest data will be emailed weekly to Haines DSF staff, who will generate inseason sport fishing reports for distribution by recorded telephone reports, web reports, and newspaper articles.

Age-weight-length forms will be edited weekly, and shipped to Haines DSF staff by September 16. Age-weight-length forms will be error-checked and forwarded to DSF staff in Douglas for scale aging by September 30. Division of Sport Fish staff in Douglas will read scales from Chinook salmon by December 31, 2013. Age composition and length-at-age estimates for Chinook salmon will be produced by January 15, 2014.

Marine sport fishery sampling data from the Skagway site will be reported to the Tag Lab by February 15, 2014. Final estimates of CWT-tagged stock contributions to the 2013 Skagway marine boat sport fishery will be produced when final SWHS estimates are published, probably by September 30, 2014.

Taiya Inlet fishery management actions in 2013 and supporting data will be submitted by April 1, 2014 to DSF regional management staff for inclusion in an ADF&G DSF Fishery Management Report.

## **RESPONSIBILITIES**

Richard Chapell, Fishery Biologist III, Lead Biologist

Duties: Designs overall study plan, and writes operational plan with assistance by project biologist. Supervises overall project and coordinates final data analyses in conjunction with biometrician. Authors report.

Sarah Power, Biometrician II

Duties: Assists with operational planning, data analysis, and report writing as required. Reviews report.

Brian Elliott, Fishery Biologist II, Project Biologist

Duties: Drafts operational plan, generates sampling and personnel schedule. Supervises field personnel, makes inseason projections, checks, edits, and analyzes field data. Assists with data analyses and report writing in conjunction with lead biologist.

Lyndsey Hura and Vacant, Fish & Wildlife Technicians

Duties: Conduct Haines creel survey as schedule dictates, review mark-sense forms for accuracy, and provide data summaries on a weekly basis.

Aaron Thomas, Fish & Wildlife Technician

Duties: Conduct Skagway catch sampling 4 days per week, 4 hours per day, review mark-sense forms for accuracy, provide summaries of effort, catch, harvest, and sampling data on a weekly basis.

## **REFERENCES CITED**

- Bernard, D. R., A. E. Bingham, and M. Alexandersdottir. 1998. The mechanics of onsite creel surveys in Alaska. Alaska Department of Fish and Game, Special Publication No. 98-1, Anchorage.
- Bernard, D. R., and J. E. Clark. 1996. Estimating salmon harvest with coded-wire tags. Canadian Journal of Fisheries and Aquatic Sciences 53:2323–2332.
- Bingham, A. E., P. M. Suchanek, S. Sonnichsen, and R. D. Mecum. 1988. Harvest estimates for selected sport fisheries in southeast Alaska in 1987. Alaska Department of Fish and Game, Fishery Data Series No. 72, Juneau.
- Chapell, R. S. 2009. Escapement, terminal harvest, and juvenile tagging of Chilkat River Chinook salmon, 2006. Production and juvenile tagging of Chilkat River Chinook salmon in 2005. Alaska Department of Fish and Game, Fishery Data Series Report No. 09-78, Anchorage.  
<http://www.adfg.alaska.gov/FedAidPDFs/FDS09-78.pdf>
- Chapell, R. S. 2010. Production, escapement, and juvenile tagging of Chilkat River Chinook salmon in 2007. Alaska Department of Fish and Game, Fishery Data Series Report No. 10-86, Anchorage.  
<http://www.adfg.alaska.gov/FedAidPDFs/fds10-86.pdf>
- Chapell, R. S. 2012. Production, escapement, and juvenile tagging of Chilkat River Chinook salmon in 2008. Alaska Department of Fish and Game, Fishery Data Series Report No. 12-68, Anchorage.  
<http://www.adfg.alaska.gov/FedAidPDFs/fds12-68.pdf>
- Chapell, R. S. 2013. Production, escapement, and juvenile tagging of Chilkat River Chinook salmon in 2009. Alaska Department of Fish and Game, Fishery Data Series Report No. 13-02, Anchorage.

## REFERENCES CITED (continued)

- Chapell, R. S. *In prep a.* Production, escapement, and juvenile tagging of Chilkat River Chinook salmon in 2010. Alaska Department of Fish and Game, Fishery Data Series Report, Anchorage.
- Chapell, R. S. *In prep b.* Production, escapement, and juvenile tagging of Chilkat River Chinook salmon in 2011. Alaska Department of Fish and Game, Fishery Data Series Report, Anchorage.
- Chapell, R. S. *In prep c.* Production, escapement, and juvenile tagging of Chilkat River Chinook salmon in 2012. Alaska Department of Fish and Game, Fishery Data Series Report, Anchorage.
- Cochran, W. G. 1977. Sampling techniques, 3rd ed. John Wiley and Sons, Inc. New York. 428 p.
- Ericksen, R. P. 1994. Effort, catch, and harvest of Chinook salmon in the spring marine boat sport fishery near Haines, Alaska, 1993. Alaska Department of Fish and Game, Fishery Data Series Report No. 94-30, Anchorage.
- Ericksen, R. P. 1995. Sport fishing effort, catch, and harvest and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 1994. Alaska Department of Fish and Game, Fishery Data Series Report No. 95-42, Anchorage.
- Ericksen, R. P. 1996. Sport fishing effort, catch, and harvest, fishery contributions, and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 1995. Alaska Department of Fish and Game, Fishery Data Series Report No. 96-48, Anchorage.
- Ericksen, R. P. 1997. Sport fishing effort, catch, and harvest, fishery contributions, and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 1996. Alaska Department of Fish and Game, Fishery Data Series Report No. 97-27, Anchorage.
- Ericksen, R. P. 1998. Sport fishing effort, catch, and harvest and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 1997. Alaska Department of Fish and Game, Fishery Data Series Report No. 98-31, Anchorage.
- Ericksen, R. P. 1999. Sport fishing effort, catch, and harvest, fishery contributions, and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 1998. Alaska Department of Fish and Game, Fishery Data Series Report No. 99-19, Anchorage.
- Ericksen, R. P. 2000. Sport fishing effort, catch, and harvest, and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 1999. Alaska Department of Fish and Game, Fishery Data Series Report No. 00-28, Anchorage.
- Ericksen, R. P. 2001. Sport fishing effort, catch, and harvest, and inriver abundance of Chilkat River Chinook salmon near Haines, Alaska, in 2000. Alaska Department of Fish and Game, Fishery Data Series Report No. 01-12, Anchorage.
- Ericksen, R. P. 2002. Escapement, terminal harvest, and fall fry tagging of Chilkat River Chinook salmon in 2001. Alaska Department of Fish and Game, Fishery Data Series Report No. 02-23, Anchorage.
- Ericksen, R. P. 2003. Escapement, terminal harvest, and fall fry tagging of Chilkat River Chinook salmon in 2002. Alaska Department of Fish and Game, Fishery Data Series Report No. 03-26, Anchorage.
- Ericksen, R. P. 2004. Escapement, terminal harvest, and fall fry tagging of Chilkat River Chinook salmon in 2003. Alaska Department of Fish and Game, Fishery Data Series Report No. 04-20, Anchorage.
- Ericksen, R. P. 2005. Escapement, terminal harvest, and juvenile tagging of Chilkat River Chinook salmon in 2004. Alaska Department of Fish and Game, Fishery Data Series Report No. 05-68, Anchorage.
- Ericksen, R. P. and R. S. Chapell. 2006. Production, spawning distribution, and juvenile tagging of Chilkat River Chinook salmon in 2005. Alaska Department of Fish and Game, Fishery Data Series Report No. 06-76, Anchorage.

## REFERENCES CITED (continued)

- Johnson, R. E., R. P. Marshall, and S. T. Elliott. 1992. Chilkat River Chinook salmon studies, 1991. Fishery Data Series Report No. 92-49, Anchorage.
- Johnson, R. E., R. P. Marshall, and S. T. Elliott. 1993. Chilkat River Chinook salmon studies, 1992. Fishery Data Series Report No. 93-50, Anchorage.
- Johnson, R. E. 1994. Chilkat River Chinook salmon studies, 1993. Fishery Data Series Report No. 94-46, Anchorage.
- Mecum, R. D., and P. M. Suchanek. 1986. Southeast Alaska sport harvest estimates. Alaska Department of Fish and Game, Federal Aid in Fish Restoration, Annual Performance Report 1985-1986, Project F-10-1, 27 (S-1-1), Juneau.
- Mecum, R. D., and P. M. Suchanek. 1987. Harvest estimates for selected sport fisheries in southeast Alaska in 1986. Alaska Department of Fish and Game, Fishery Data Series No. 21, Juneau.
- Mood, A.M., F.A. Graybill, D.C. Boes. 1974. Introduction to theory of statistics. Third edition. McGraw Hill, New York.
- Neimark, L. M. 1985. Harvest estimates for selected fisheries throughout southeast Alaska. Alaska Department of Fish and Game, Federal Aid in Fish Restoration, Annual Performance Report 1984-1985, Project F-9-17, 26 (AFS-41-12B), Juneau.
- Olsen, M. A. 1992. Abundance, age, sex, and size of Chinook salmon catches and escapements in Southeast Alaska in 1987. Alaska Department of Fish and Game Technical Fishery Report No. 92-07, Juneau.
- Suchanek, P. M., and A. E. Bingham. 1989. Harvest estimates for selected sport fisheries in southeast Alaska in 1988. Alaska Department of Fish and Game, Fishery Data Series No. 114, Juneau.
- Suchanek, P. M., and A. E. Bingham. 1990. Harvest estimates for selected marine boat sport fisheries in southeast Alaska in 1989. Alaska Department of Fish and Game, Fishery Data Series No. 90-51, Anchorage.
- Suchanek, P. M., and A. E. Bingham. 1991. Harvest estimates for selected marine boat sport fisheries in southeast Alaska during 1990. Alaska Department of Fish and Game, Fishery Data Series No. 91-48, Anchorage.
- Thompson, S.K. 1987. Sample size for estimating multinomial proportions. *American Statistician*. 41:42-46.

**APPENDIX A: 2013 HAINES MARINE CREEL  
TECHNICIAN MANUAL**

## INTRODUCTION

The Alaska Department of Fish and Game adopted an escapement goal range of 1,750-3,500 large Chinook salmon for the Chilkat River. The escapement goal range forms the basis for the Lynn Canal and Chilkat River King Salmon Management Plan (5 AAC 33.384) that was adopted into regulation by the Alaska Board of Fisheries in 2003. This management plan directs how commercial, sport, and subsistence fisheries will be operated in Chilkat Inlet depending on the annual Chilkat River king salmon run. The 2013 Chilkat River king salmon run is forecast to be below average, however slightly higher than the lower bound of the escapement goal range. The creel survey information that you collect will be used, in part, to assess whether this preseason forecast is accurate. If data from this survey confirms that the run strength is different than the forecast, we may increase or decrease bag limits as directed in the plan. In addition, we will use this survey to estimate the angler effort and harvest, and to document the contribution of various coded wire tagged (CWTd) stocks to the Haines area sport fishery. Data from this study will be essential when we update the escapement goal range for Chilkat River king salmon.

As in past years we will estimate the sport harvest of "wild" and "mature" king salmon. You will also sample king salmon for missing adipose fins and for maturity. Photos at the end of this manual will help you identify with salmon by species and evaluate king salmon maturity.

Each member of the creel survey staff will receive a copy of the sampling schedule before the beginning of the sampling season. Check this schedule so that any problems or personal conflicts can be addressed prior to the beginning of the sampling season. The Haines Sportsmen's Association is planning to hold the Haines King Salmon Derby during Memorial Day weekend and the following weekend (May 25–27 and June 1–2). We expect a lot of sport fishing effort during this time and we plan to sample frequently. Sampling methods may be modified during the derby. You will be provided with additional instructions explaining any changes to procedures prior to the derby. You may also be asked to sample the king salmon taken in the subsistence gillnet fishery, and you will be provided with specific forms and procedures for that.

If you do have any questions about the schedule, manual, or the sampling program, be sure to ask the project biologist. If you have any suggestions for improving this manual or the sampling program, please let the project biologist know. Information on the study design and the purpose of the Haines king salmon harvest study is in the operational plan. You are not required to comprehend the statistical analysis in that plan, but you should understand the survey design and rationale. During slow times on the docks, periodically review this manual, the operational plan, and sport fishing regulations.

## DUTIES

Your duties are as follows:

1. Interview sport boat anglers at specific locations according to the sampling schedule and record catch and fishing effort information from these interviews.
2. Collect biological information such as king salmon lengths, scale samples and maturity data, and heads from adipose-clipped king salmon.
3. Provide information to anglers on local sport fishing regulations.
4. **CAREFULLY EDIT ALL DATA FORMS.**
5. Complete time sheets on a biweekly basis.
6. Assist in the office or in the field on miscellaneous projects as needed.
7. Summarize data on a weekly basis and submit summary no later than 8:30 Monday morning.

## EQUIPMENT NEEDED

Make sure you have the following equipment:

---

Clipboard	Data forms:
Measuring tapes	-Port Sampling Interview (mark-sense)
Tweezers	-Alternate Age Weight Length (mark sense)
Pencils	-Coded Wire Tag (CWT) sampling
Gum cards and wax paper	Data worksheets:
Scotch tape	-Raw king salmon sampling data
Calculator	-Daily creel data summary
Knife	Map with fishing area and statistical area codes (Figure 1)
Fish head bags	Sport fishing 2013 regulation summary booklets
Head cinch straps	"Uses of Creel Survey" information handouts
Garbage bags	
Paper towels	
File box	

---

You will be provided with an ADF&G cap. Please wear it while you are working so that people can readily identify you as an ADF&G employee. You may use a state vehicle while doing creel surveys. Remember to always fasten your seat belt and follow traffic regulations and standard operating procedures.

## 2013 HAINES AREA KING SALMON REGULATIONS

The area in Chilkat Inlet north of a line extending from a department marker one mile south of Anchorage Point to a department marker on a big white rock north of the Letnikof Cove boat ramp is closed to king salmon fishing from April 15 through July 15 (Figure A2). This area is closed to protect mature king salmon milling off the mouth of the river.

Resident and nonresident anglers may retain 1 king salmon 28 inches or more in length per day. There is no annual limit for resident anglers. Nonresident anglers must record all king salmon harvested on the back of their fishing license or on a King Salmon Catch Record for nonresident anglers under age 16. Nonresidents must comply with an annual limit of 3 king salmon through June 30. The annual limit drops to 2 king salmon during July 1-15, and drops again to 1 king salmon fish from July 16 through the end of 2013. All king salmon harvested earlier in the year apply to the annual limit for the whole year. King Salmon Catch Record cards are available at license vendors or through Fish and Game representatives and offices.

Anglers fishing for king salmon throughout the state are required to purchase and possess a sport fishing license and a king salmon stamp. These can be purchased at a sporting goods store for the fees below:

Table A1.–Sport fishing license and king salmon stamp fees, 2013.

	Alaska & Yukon	Other non-Alaska residents					
	residents	1-day	3-day	7-day	14-day	1-year	Military
Sport fish license	\$24.00	\$20.00	\$35.00	\$55.00	\$80.00	\$145.00	\$24.00
King salmon stamp	\$10.00	\$10.00	\$20.00	\$30.00	\$50.00	\$100.00	\$20.00

Alaska sport fish license fees include an “Alaska Sport Fishing Enterprise Fund” surcharge that is used to fund capital projects that directly benefit license purchasers. In the Haines and Skagway area, these funds are used to pay for hatchery-raised king salmon smolts that are released in Lynn Canal.

Since 2005, Yukon Territory residents have been able to purchase an Alaska non-resident sport fishing license, and a king salmon tag, for resident fees. Yukon residents are still required to comply with non-resident restrictions, such as annual king salmon limits.

## SPORT FISHING VIOLATIONS

It is not your responsibility to actively search for sport fishing regulation violations. If you do notice violations, your best course of action is to **document what has occurred and immediately notify the Alaska Wildlife Troopers in Haines (766-2533) or Juneau (465-4005)**. Details about what happened, when it happened, who was involved, and other identifying information such as boat numbers or license plate numbers are essential for making a case. Contact Sport Fish biologists at the Haines ADF&G office (766-2625) so they can coordinate enforcement action.

The most frequent problem in the past has been anglers bringing in undersized kings less than 28 inches total length. Refer to the diagram in the **Port Sampling Interview Form** section for the correct way to measure total length, from the tip of the snout to the tip of tail.

## TIME SHEETS

You must fill out a time sheet on the 16<sup>th</sup> and the 1<sup>st</sup> of each month using a computer at the Haines office. Ask our administrative support staff or project biologists for help. The 2-week pay periods cover the 1<sup>st</sup> through the 15<sup>th</sup> and the 16<sup>th</sup> through the last day of each month. If your time sheet is not turned in on time, you won't get paid on time.

For each day you work, record your start and end times. If you start your shift after 12:00 noon, you will be entitled to receive "swing" shift differential. For holidays, just record the hours you worked. If you take annual or sick leave, record the number of hours and the code on your time sheet. If you work past midnight record an end time 23:59 that day and a start time 00:01 the following day.

## EVALUATION

Because creel survey staff works without immediate supervision, project biologists evaluate your performance largely based on how you collect and record creel survey data. **Data must be thoroughly edited before you turn it in.** We need each week's data and catch rate summary by **8:30 am Monday morning**. If you anticipate an unavoidable delay, submit your data via voice mail at 766-2625 on Sunday night. Feel free to call or stop by during office hours ask project biologists any questions you have.

## END OF SEASON

Please turn in your sampling gear at the end of the season. You also need to fill out a "Seasonal Acknowledgment of Responsibility" form which gives the date you need to tell us whether you are returning for another season (forms available at the office). It is important that you leave a forwarding address and phone number so that you can be notified of any changes in your job scheduling or duties.

## DATA RECORDING ON MARK-SENSE FORMS

Use a number 2 lead pencil to record all data on mark-sense data forms. Fill the bubbles completely, but do not use so much lead that portions of the mark rub off. While you are on the docks, just write in the numbers and then fill in the bubbles during slack periods so you can do a thorough job. Handle the mark-sense forms carefully; wrinkled or torn forms may not feed through the scanner. To avoid mutilating wet forms, pad the teeth of your clipboard with duct tape. If the forms are wrinkled from being wet then dried rapidly, they can be flattened by the scanner operators. Be careful about erasing while the mark-sense forms are wet. Rather than tearing the form by erasing, it is better to mark "delete interview" and use a new line. **Please erase all stray pencil marks completely. If the form has multiple eraser marks, transcribe data onto a fresh form.**

Record creel survey interview data on **Port Sampling Interview Ver. 1.1** mark-sense forms (Figure B3). Record biological sampling data from king salmon, and occasional halibut lengths, on **Alternate Age Weight Length Ver. 1.1** mark-sense forms (Figure B4). Record data from adipose finclipped king salmon on **Coded Wire Tag Sampling Forms** (Figure B5). Specific instructions for use of these forms, as well as examples of completed forms, are below.

## ANGLER INTERVIEWS

Only interview boat parties that have completed their trips. If a party comes in to gas up or grab a sandwich, don't interview the party. If the party is coming in for lunch or to take at least a half hour break, then do interview the party as a completed trip. Charter boats at the dock to drop off one party and take out another should be interviewed as a completed trip. If a party has been on a multi-day trip, record information from all days of the trip with the following exception: if the party could have been interviewed in another port (e.g., Juneau, Hoonah, Gustavus) on a prior day, don't include the data from those days when it could have been previously sampled. Sample parties for boat-based marine fishing only.

The following procedure for angler interviews is a guide; each interview will be unique.

- Contact all parties of potential sport anglers coming in to the dock or launch ramp. Commercial fishing boats can be used for sport fishing.
- Identify yourself and that you are working for ADF&G.
- Ask the party if they have been sport fishing and if so, would they mind answering some questions about their trip. If they refuse, then verify that they were sport fishing and record an interview number with no other information.
- Ask if the fishing trip was a charter or a private trip. Charter boats have a Sport Fishing Guide Vessel (green and yellow) decal on each side of their boat.
- Ask about fishing effort: where they fished, what they targeted, how many rods they fished, and how long they fished, not including time spent traveling and setting up rods.
  - The general fishing areas codes are shown in the Figure B1 map. If the party fished multiple areas, break out the effort and catch by area on separate lines.
  - Target species can be: salmon using trolling gear, bottom fish, halibut, rock fish, lingcod, or other fish using spin-cast/fly-fishing gear. If the party had multiple targets, break out the effort and catch by target on separate lines. Do not document effort on species not listed (i.e., crab or shrimp).
- Detailed interview data recording instructions are in the **PORT SAMPLING INTERVIEW FORM** section.
- Ask the party how many fish of each species they caught and kept, and how many they caught and released. Do not record strikes or fish that got off the line by themselves as "released".
- If the party brought back king salmon, then sample each king salmon in the party's catch for:
  - Missing adipose fin. If the adipose fin is missing, take the head and attach a cinch strap.
  - Maturity.
  - Length, sex, and scale samples.
- Detailed king salmon sampling and data recording instructions are in the **AGE WEIGHT LENGTH FORM** section.
- If time permits, ask non-resident anglers if they recorded their king salmon harvested on the back of their license.
- If time permits, measure the total length of halibut, lingcod, and rockfish. Key out rockfish species.
- If many boats converge on the dock at once and you don't have time for a full interview of each party, you must at least ask **EVERY** party if they have been sport fishing. If they

have, then record an interview number without any interview information. The sampling design requires that every party who has fished and returned has at least been counted.

- After the interview is over, thank the fishing party for their time and the information they have provided.
- Be careful not to volunteer too much information about good or bad fishing spots. **All information collected is confidential and not to be discussed with other anglers.** Charter boat operators do not like their clients being told by an "authority" that they went to a lousy fishing spot. You can share general information on fishing hot spots or techniques. However, data from a particular party or boat are considered confidential and cannot be shared.

If anglers have questions about the creel survey, you can give them a **USES OF CREEL SURVEY INFORMATION** sheet, found later in this manual. This information may help them understand that the information they provide is important to fishery management. You can also tell them to call the Sport Fish office at 766-2625.

## PORT SAMPLING INTERVIEW FORM

Record data for each boat party interviewed. Up to 4 interviews can be recorded on the front of the form, and 5 more on the back. Write number or letter codes in the blank provided and then fill in the bubbles.

Header fields:

Port – Haines.

Name – Write your name and the harbor name.

Page – Page numbering starts at 1 for each sampling period. If more than nine interview lines are used in a sampling period then go on to page 2.

Year, Month, Day – Record only the 2 digits of the year (i.e. “13” for 2013). Leading zeros are required for Month and Day. Leading zeros are optional in the Interview Number, Area, Rods Fishing, Hours Fished, and Tens/Ones fields.

Survey Area – F2 = Haines. This field only needs to be filled out for the first form each week.

Site – 081 = Haines. This field only needs to be filled out for the first form each week.

Sub-Location – Leave blank.

Harbor – Record code as follows:

01 = Letnikof Dock

03 = Small Boat Harbor

Variable (1<sup>st</sup> line) – Code the weather conditions when you arrive as follows:

0 = Terrible - heavy rain or wind or both

1 = Average - cloudy, light rain, or clear but somewhat breezy

2 = Outstanding - little wind, sunshine.

Variable (2<sup>nd</sup> and 3<sup>rd</sup> lines) – Leave blank.

Period Start/End – Record actual start and end times of your sampling period in military time. Please adhere to the scheduled start and end times exactly.

Counted – Record (on first page of sampling period only) the number of boats that came into the dock that were sport fishing during your shift.

Interviewed – Record (on first page of sampling period only) the number of sport fishing boats that you interviewed. This will be the same as counted unless you were too busy to interview all parties, or someone refused to be interviewed.

Interview Lines:

Delete interview – Fill in this column if there has been a mistake and the interview line needs to be deleted. Also mark this column in if there were zero interviews during a sampling period. If this column is not marked and there are no interviews, the scanner will not read the header information.

Interview number – Begin at 1 each sampling period and assign an interview number to each boat party interviewed. One interview can use more than one line if the party targeted more than one species (i.e., halibut and salmon), changed areas during the trip, or changed the number of anglers part way through the trip. Record the interview number on every line used. If no angler effort or catch information is obtained for whatever reason (lack of time, just counted the boat party and didn't interview, uncooperative, etc.) just record the interview number.

Continue – Leave blank unless there are more than eight species and kept/released combinations, in which case you would mark "Y" (this has never occurred in past years). On the following line, only fill in the species boxes, not the effort information. Do **not** mark this column if the interview takes more than one line due to the party targeting multiple species, fishing multiple areas, or changing number of anglers.

Multi-day Trip/Number of Days – If the fishing trip lasted more than 1-day, then mark “Y” and the numbers of days. Otherwise, leave blank.

Class (User Group)

C = Charter (guided) trip

P = Private trip

Species Targeted

SA = Salmon

BF = Bottomfish (includes halibut, rockfish, and lingcod)

OT 5 = Spincasting or Flyfishing

VAR – 5 if Species Targeted = OT. Otherwise, leave blank.

Statistical Area – Use the last column to record **number of anglers** in the boat.

Interview Area – Record the area fished using codes on Figure 1 map.

Num Rods/Anglers – Record **number of rods** fished, **not** the number of people in the boat.

Hours Fished and the next column to the right for ¼ hours – Time fished, rounded to ¼ hr. Do not include travel time or setup time. If less than 1 hr fished, write "0" Hours Fished and mark the appropriate fraction of an hour in the following column. Do not include hours spent pursuing crab or shrimp.

Charter CFEC Number – For **charter** fishing trips only, record the **5-digit Saltwater Logbook number**. Also write the name and AK number of the charter boat in the right page margin. This helps us track and verify the accuracy of the logbook program.

VAR 1–3 – Leave blank.

VAR 4–5 – Record the time of each interview to the nearest hour in military time (i.e. 2 pm = 14).

Tens/Ones – For each species, record the number of fish kept or released. For numbers larger than five, mark two bubbles in the same column (“5” + “2” = 7).

Species – Record the species code using Table A2 below:

Table A2.–King salmon codes indicate size, maturity, and ad-clip status. See Appendix B for criteria and photos for evaluating maturity.

---

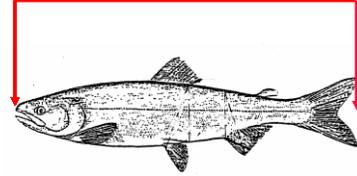
Large king salmon (total length  $\geq$  28 in.)

---

KS 3	Mature	adipose fin not clipped
KS 4	Immature	adipose fin not clipped
KS 5	Unknown maturity	adipose fin not clipped
KS 6	Mature	adipose fin clipped
KS 7	Immature	adipose fin clipped
KS 8	Unknown maturity	adipose fin clipped
KS 9	Entered in derby	adipose fin not clipped
KS 10	Entered in derby	adipose fin clipped

---

Total length measurement to determine large (KS) or small (SK) species code. Total length also determines if a king can be legally harvested.




---

Small king salmon (total length  $<$  28 in.)

---

SK 3	Mature	adipose fin not clipped
SK 4	Immature	adipose fin not clipped
SK 5	Unknown maturity	adipose fin not clipped
SK 6	Mature	adipose fin clipped
SK 7	Immature	adipose fin clipped
SK 8	Unknown maturity	adipose fin clipped

---

Table A3.–Rockfish codes. Use rockfish identification book provided.

Pelagic rockfish		
Code	Species	
RF 8	Dusky Rockfish	
RF 9	Black Rockfish	
OT 10	Other pelagic rockfish	Yellowtail, Widow, Blue etc.
Nonpelagic rockfish, includes demersal and slope species		
Code	Species	Demersal or slope
RF 1	Quillback Rockfish	demersal
RF 2	Copper Rockfish	demersal
RF 3	Yelloweye Rockfish	demersal
RF 4	China Rockfish	demersal
RF 5	Tiger Rockfish	demersal
RF 6	Canary Rockfish	demersal
RF 7	Rosethorne	demersal
OT 9	Unknown demersal	
RF 10	Silvergrey Rockfish	slope
RF 11	Rougheye Rockfish	slope
RF 12	Shortraker	slope
RF 13	Bocaccio	slope
RF 14	Pacific ocean perch	slope
RF 15	Redbanded	slope
OT 11	Other slope	Redstripe, Harlequin, Aurora etc.

Table A4.–Other fish and codes for port sampling interview form.

Code	Species	Letters to write in box
OS 1	Silver (coho) salmon	SS
OS 2	Pink (humpy) salmon	PS
OS 3	Chum (dog) salmon	CS
OS 4	Red (sockeye) salmon	RS
HA 1	Halibut brought back whole	HA
HA 2	Halibut-cleaned at sea	HA
OT 5	Dolly Varden	DV
OT 6	Cutthroat Trout	CT
OT 7	Lingcod	LC
OT 8	Steelhead	SH
OT 1	Dungeness Crab	DC
OT 2	King Crab	KC
OT 3	Shrimp	SP
OT 4	Tanner Crab	TC

Disposition

Kept/Released

K – Fish was kept.

R – Fish was released. “Released” means the angler landed the fish and intentionally released it. If a king salmon was released, ask the angler to classify it as legal (KS) or sub-legal (SK), and leave the maturity/adipose clip code blank.

Sampled/Not sampled

S – You examined the king salmon to see if the adipose fin was clipped.

N – You did not examine the king for adipose-clip status.

Fill in as many blocks as necessary to tally the number of each species kept and released on a trip. For salmon identification, look for clues on the tail of the fish (Figure B2). If there are more than 8 species caught in one area (this would be very unusual), fill in "Y" in the continue column and continue the data from that area on the next line.

Example port sampling interview form

Example below matches Figure A3.

The sampling took place on May 16, 2007 at the Letnikof Dock from 0800 to 1430 hours with average weather conditions. Three boats came in and were interviewed during the period:

- ❑ Boat 1 (pleasure boat) 4 anglers fished for salmon with 3 rods for 4.0 hours in Area 1 and kept 3 kings (2 mature and 1 immature king, all were sampled for adipose clips and maturity) and released 1 small king and 1 large king (Interview time = 10:00).
- ❑ Boat 2 (pleasure boat) 4 anglers fished for salmon with 4 rods for 0.5 hours in Area 1 and caught 1 king but while the creel tech was interviewing boat 1, the anglers had filleted the king salmon and discarded the carcass, so adipose clip and maturity were not known (not sampled) however the sampler saw the fillets verifying that they did catch a king salmon (Interview time = 10:00).
- ❑ Boat 3 (charter boat) 4 anglers fished for salmon with 4 rods for 1.0 hours and caught 2 Dolly Varden in Area 2 and then fished for halibut in Area 3 with 4 rods for 2.5 hours and kept 2 halibut (Interview time = 11:00).

### AGE WEIGHT LENGTH FORM

Sample king salmon for sex, maturity, mid-eye to fork length (MEF), and scales. Take total lengths from halibut, rockfish and lingcod as time allows. Use a separate **Age Weight Length** (AWL) form for each species. Sample only king salmon encountered during creel survey interviews, not adipose-clipped kings voluntarily brought to you. The object of creel sampling is to get a random sample from the fishery.

Record a maximum 9 fish per AWL form. Do not use the back side of the AWL form. To match scale cards and AWL forms, do not use the 10<sup>th</sup> column on the scale card.

Place 5 scales from the preferred area on the left side of each king salmon in 1 column of the scale card. One scale card will match one AWL form. Mount scales onto gum cards as shown on the example AWL form (Figure A4) and tape it to the front of the AWL form. Mount all the scales oriented the same way (i.e. cuticles all facing down). Label the gum cards as shown in the Figure A4. Refer to Figure 1 for the Stat. Code on the scale card. Use wax paper sheets as the backing for the gum card to keep damp cards from sticking together. Line by line instructions for completing the AWL forms follow:

Header fields:

Name – Sampler’s name and harbor sampled.

Fishery – Usually “Haines marine sport”. Add “Derby entry” or “Non-derby entry” on derby days (May 25, 26, 27; June 1, 2). “Subsistence” if kings were harvested by subsistence gillnet.

Page – Leave blank.

Year, Month, Day – Record only the last digit of the year (i.e. “13” for 2013). Use leading zeros on month and day. Note that these fields are additive. For example, 6 is recorded by filling “0” in the “Tens” row and both “5” and “1” in the “Ones” row (5 + 1 = 6).

Survey Area, Site, Sublocation, and Period -- Leave blank.

Species – 410 = king salmon.

Next header field – 1 = Letnikof Dock

3 = Small Boat Harbor

Last 3 header fields – Leave blank.

Biological Information lines:

Fish # – Matches column used on scale card. The 5 scales from fish number 1 are mounted in the spaces in the 1<sup>st</sup> column, covering the numbers 1, 11, 21, 31, and the space below 31. Scales from fish number 2 are mounted in the spaces in the 2<sup>nd</sup> column over the numbers 2, 12, 22, 32, and below 32, etc.

Record maximum 9 fish per AWL form. Do not use the back side.

Sex -- Mark "M" or "F" for king salmon if sex was determined, but leave blank if sex was not determined. Do not guess on the sex of king salmon.

Status -- Record the maturity of every king salmon sampled using these codes:

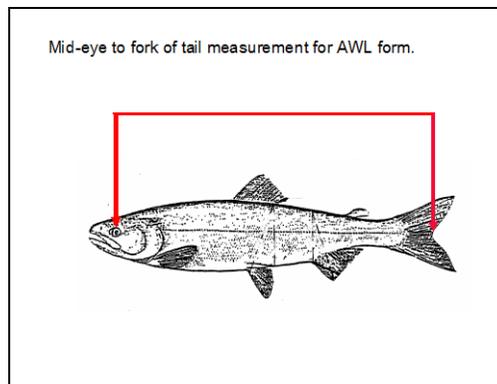
1 = Mature (spring or summer spawner)

2 = Immature (rearing fish; unlikely to spawn in 2013)

3 = Unknown.

Length –

Measure king salmon from mid-eye to fork of tail (MEF), to the nearest 5 mm. Measure the length while keeping the tape as straight as possible; do **not** measure around the curve of the fish.



Note that the MEF measurement is different than the total length (also called legal length) that is used to classify king salmon as greater or less than 28 inches.

For halibut, lingcod, and rockfish measure from tip of snout to tip of tail (total length). Not all of the groundfish have a fork in tail. Make certain that you are measuring in a straight plane—do **not** measure the curve of the fish.

Tag Number – Write the number of the **cinch strap** attached to the head taken from an adipose-clipped king salmon. Fill in the bubbles for the last 5 digits of this number.

Weight/Variable – If you collect a **genetic** sample, record the **vial number** here. Fill in bubbles for the last 3 digits. Sometimes the vials are not in numerical order, so verify the vial number before you write it down.

Rest of fields - Leave blank.

Example AWL form:

The data below is shown in a sample AWL (Figure A4).

During Interview 1, 3 king salmon were sampled: Fish 1 = male, mature, 1,020 mm MEF); Fish 2 = female, immature, 850 mm MEF, adipose fin clipped, cinch strap 662358 attached to the collected head; Fish 3 = mature, female, 790 mm. Genetic samples were not collected from these fish.

### **CODED WIRE TAG (CWT) RECOVERY SAMPLING FORM**

All king salmon must be checked for missing adipose fins. If the adipose fin is clipped, sample as other creel survey fish, collect the head, attach a cinch strap through the mouth and out the operculum, then fill out a CWT sampling form. Anglers may bring you heads from other adipose-clipped fish, and you will need to fill out a CWT sampling form for these fish, too. Heads should be placed in individual bags and kept frozen until you bring them in to the office. Freeze the head in a position where the strap number is visible.

If an angler wants to keep the head on to make a cast of the fish, attach a cinch strap, fill out a CWT sampling form, and arrange to collect the head later from the taxidermist. Record as much information as possible, especially the angler's name and address and where they will have the fish mounted. Stress to the angler that it is his or her obligation to ultimately provide the head to ADF&G.

There may be other circumstances in which you are unable to collect the head from an adipose-clipped king salmon, such as the fish being headed and gutted before returning to the harbor, but you see the adipose fin area was left intact. In this case, fill out a CWT sampling form and tape a cinch strap to the form.

In addition to adipose-clipped fish, there might be a king or coho salmon that has been Floy tagged by the National Marine Fisheries Service (NMFS) or a halibut tagged by the International Pacific Halibut Commission (IPHC). If you encounter fish with any of these tags, fill out a CWT form with all applicable information (including the tag number) but do not collect the head or put on a cinch strap. Return the forms with information about these types of tags to creel project biologists.

Line by line instructions for the CWT sampling form:

Interviewer Information:

Sample Number -- Leave blank.

Source – Sport.

Survey Site – Haines.

Sample Type –

- Random - the fish is randomly sampled during the creel survey.
- Select - the fish is voluntarily brought in by an angler from a sampled fishery (Haines).
- Voluntary - the fish was taken in an unsampled fishery (Hoonah, for example)

or if the fish was taken before or after the Haines creel survey .

Sampler – Your last name.

Name of Place Sampled – If sample type is Random, this is the harbor you are sampling. Leave blank if the sample is Select or Voluntary.

Date Sampled – Date you interviewed the angler. Leave blank for Select or Voluntary samples.

Stratification Information:

Sport Harvest Code – For Random samples only: MB (for Marine Boat). Otherwise, leave blank.

Fishing Site Code – Always blank.

Angler Information:

Name & Mailing Address – If more than one angler in a particular party caught an adipose-clipped fish, complete a separate form for each person. Try to determine only one contact person per boat.

Catch Information:

Date Caught – Date the fish was caught. Select or Voluntary recoveries caught on different days must be recorded on separate forms.

Water Type – Was the fish caught in salt water or fresh water? (Fresh water is closed to king salmon sport fishing.)

Name of Place Fished – Where fish was caught. Be specific.

Area Information – Refer to Figure 1 for statistical area code (five digits) where fish was caught.

Anadromous Stream # – Fresh water is closed to sport fishing for king salmon, so you should not encounter dead kings taken in fresh water. However, if you do, write the stream name in pencil and flag the form; and the Project Leader will complete this field.

Sampling Information:

Leave blank.

Head Recovery Information:

Head Number – Number of cinch strap attached to fish head. Use cinch straps in order.

Species Code –410 = king salmon, greater than 28 inches total length (**tip of snout to tip of tail**), or greater than 615mm MEF (mid-eye to fork of tail);

411 = “jack”, king salmon less than 28 inches total length, or 615mm or less MEF.

Length – **Mid-eye to fork of tail**, to the nearest 5 mm. Note that this measurement is different than that used for the species code. If an angler gives you a length measurement for a Select fish, ask them what type of measurement they made and note on form if they measured total length.

Clip Status – "Good" the adipose fin looks to be cleanly sliced off and healed;

"???" uncertain whether the adipose fin was clipped or not;

"Unkn" you did not check the adipose fin;

“No Ad Clip” the adipose fin is present (but you would have no reason to take a head from such a fish).

Chinook Flesh Color – For king salmon only, circle the appropriate flesh color if observed. For other fish, leave blank.

Example CWT sampling form:

The data below is recorded in a sample CWT sampling form (Figure A5).

During a creel survey interview, there was one adipose-clipped king in the party’s catch. The interviewer took the head and attached cinch strap 662358. The king was caught by J. Q. Public in Chilkat Inlet, was longer than 28 inches (tip of snout to tip of tail), had red flesh, and measured 830 mm MEF.

### **HAINES MARINE CREEL WEEKLY SUMMARY DATA**

In order to get an up-to-date estimate of how the sport fishery is going, you will calculate weekly summaries of your data. This summary will help you respond to questions, and the creel project leader will use the summaries to estimate weekly total harvests of king salmon  $\geq 28$ " in length.

Several worksheets are attached for calculating the data summaries. If you find a better system for tabulating weekly catches, you needn't use the Raw Data worksheet or the Daily Creel Summary worksheet, but you *must* complete the **Haines Marine Creel Weekly Summary Data** worksheet. It is a good idea to sum your data after each day’s sampling then summarize all days at the end of the week. The weekly summary is due at 8:30 on Monday morning.

#### Haines Marine Creel Daily King Salmon Sampling Data

Use a daily form to summarize data for **each sampling period**. This form helps you to calculate the king salmon effort, catch, and harvest for each boat party. Summing the data gives you the total sampled effort, catch, and harvest for the period if there were no interviews with unsampled king salmon and if there were no king salmon of unknown maturity.

Each line corresponds to 1 boat party (i.e., 1 interview) on the Marine Interview form. Record the number of rods fished per boat and the number of hours fished per boat; effort is the product of the rods times hours. For each boat party, group their king salmon catch by size, whether they were sampled or not, by their maturity, and by the adipose-clip status.

You may want to use a separate form to record halibut effort, catch and harvest.

#### Haines Marine Creel Daily Expansion Worksheet

Use this form to make an expanded estimate of the total period harvest of mature king salmon  $>28$ " with adipose fins if any of the following are true:

there were any boat parties not interviewed,

*or* if any king salmon kept were not sampled during the period,

*or* the maturity status of any king salmon  $>28$ " kept is unknown,

*or* you need to write down your calculations to estimate total harvest during the sample period.

If you did not miss any interviews *and* you sampled all the harvested king salmon *and* you determined the maturity of all the king salmon you sampled, then the estimate will be the sum of

all your interviews during the period. Whether you use this form or not, be sure you understand (and can apply) the mechanics of estimating TOTAL harvest in a period as described on the form. These totals will be used by the Project Leader to estimate weekly statistics and to project the next week's harvest.

#### Haines Marine Creel Weekly Summary Data

This form must be completed **each week**. Each line on this form corresponds to one sampling period. Sum the data from all the week's sampling periods to calculate the HPUE of large king salmon and halibut. This information is used by the Project Leader to estimate the total weekly harvests at Haines.

## HAINES MARINE CREEL DAILY KING SALMON SAMPLING DATA

Sampler \_\_\_\_\_

Date \_\_\_\_\_

Harbor \_\_\_\_\_

Starting Time \_\_\_\_\_

Rods Fishing	Hours Fished	Effort (rods*hrs)	Kings 28 Inches and Greater								Kings Less Than 28 Inches Released
			Kept But Not Sampled	Kept and sampled						Released	
				Mature		Immature		Unknown			
				No Ad-clip	Ad-clip	No Ad-clip	Ad-clip	No Ad-clip	Ad-clip		
Total											

**HAINES MARINE CREEL DAILY EXPANSION WORKSHEET**

Sampler \_\_\_\_\_

Date of Sample \_\_\_\_\_

Sample Location \_\_\_\_\_

Time of Sample \_\_\_\_\_

(1) Number of sport fishing boat-parties returning to dock \_\_\_\_\_

(2) Number of sport fishing boat-parties interviewed (see below) \_\_\_\_\_

*Exclude boat-parties that have KS >28"  
with an adipose fin and UNKNOWN maturity  
status and/or KS that were not sampled!*

*Include All other SF boat-parties interviewed!*

(3) Number of mature KS >28" with adipose fins that  
were sampled from boat-parties interviewed in (2) above \_\_\_\_\_

(4) **Expanded number of mature KS >28" with adipose  
fins harvested for the sample period** [(4) = (3) \* (1)/(2)] \_\_\_\_\_

*This number is entered in column 6 of the  
Haines Marine Weekly Summary Data form.*

(5) Number of boat-parties that have KS > 28"  
with an adipose fin and UNKNOWN maturity status \_\_\_\_\_

*(Keep the project leader aware of this  
number as the season proceeds).*

(6) Repeat these procedures similarly to estimate:

- **Total mature KS with ad clips** \_\_\_\_\_
- **Total immature KS >28" w/o ad clips** \_\_\_\_\_
- **Total immature KS >28" w/ ad clips** \_\_\_\_\_

(7) Summarize (sum or expand) the sampling data to estimate:

- **Total KS >28" released** \_\_\_\_\_
- **Total KS <28" released** \_\_\_\_\_
- **Total salmon effort during sample period** \_\_\_\_\_
- **Total halibut effort** \_\_\_\_\_
- **Total halibut kept** \_\_\_\_\_
- **Total halibut released** \_\_\_\_\_
- \_\_\_\_\_

(8) Record information from (4), (6) and (7) on the Weekly Summary Data form.

## HAINES MARINE CREEL WEEKLY SUMMARY DATA

Sampler \_\_\_\_\_ Date \_\_\_\_\_ Stat week \_\_\_\_\_

Date	Start Time	Harbor	Est. Salmon Effort	Kings Over 28 Inches						Est. Kings <28" Rel.	Est. Halibut Effort	Est. Halibut Kept	Est. Halibut Released
				Est. Total Kings Caught	Mature		Immature		Est. Total Kings Released				
					No Ad-clip*	Ad-clip	No Ad-clip	Ad-clip					

55

\* This number is calculated as (4) from the Haines Marine Daily Harvest Summary Worksheet.

- (A) Total Salmon Effort \_\_\_\_\_
- (B) Total Kings >28" Caught (Kept & Released) \_\_\_\_\_
- (C) Large King Salmon CPUE (B)/(A) \_\_\_\_\_
- (D) Total Halibut Effort \_\_\_\_\_
- (E) Total Halibut Caught (Kept & Released) \_\_\_\_\_
- (F) Halibut CPUE (E)/(D) \_\_\_\_\_

## GENETIC SAMPLING

### ADF&G Gene Conservation Laboratory, Anchorage, 2013

#### I. General information

The purpose of this project is to estimate the origins of legal size king salmon harvested in the Haines sport fishery during the 2013 fishing season. We will use axillary process ("spine", see photo on next page) tissue from individual fish sampled from this fishery to determine its genetic characteristics at several genetic markers. This information, along with scale samples and lengths, will provide a profile of the populations of fish contributing to this fishery, which can be used to estimate the stock composition of the harvest. The genetic sampling schedule is proportional to historic harvest, based on samples collected in 2000-2012.

#### II. Sampling schedule

Sample legal size ( $\geq 28$  inches total length) king salmon from the sport fishery. Sample goals are as follows:

Survey stratum	Biweek 1	Biweek 2 (non-Derby)	Derby	Biweek 3	Biweek 4	
Stratum 2013 start date	6-May	20-May	28-May	3-Jun	17-Jun	
Stratum 2013 end date	19-May	1-Jun	2-Jun	16-Jun	23-Jun	Total
2013 scheduled samples	1	3	9	10	2	25

Collect a genetic sample from the first legal size king salmon you encounter each stratum week until you reach the stratum goal. If you fall behind the sample schedule, take additional samples the following stratum to catch up.

#### III. Tissue sampling

##### A. Sampling supplies provided

- Dog toe nail clippers -for sampling axillary process "spine"
- Vials and caps -tubes for holding fin clip
- Vial rack - to hold tubes while sampling
- Squirt bottle -plastic "goose neck" bottle for filling cryovials with ethanol
- Large bottle -bulk ethanol for filling cryovials prior to sampling

##### B. General set up

To ensure that the axillary process tissues are kept fresh it is important to work quickly. Have your sampling area and supplies organized **before** you begin sampling the fish.

##### C. Tissue sampling

Set up your sampling rack with cryovials for the fish that you anticipate to sampling each period. Partially fill each cryovial with the ethanol prior to sampling the axillary process. For each fish sampled,

- Using the nail clippers, snip off approximately ½" - 1" of axillary tissue. Avoiding excess water or slime, place the axillary tissue into the cryovial. Top off the vial with ethanol so the tissue is bathed in ethanol, and the screw cap on tightly.
- Record the genetic vial number in the "Weight/Variable" column on the AWL form.
- Record sex, maturity, and length data on the AWL form as detailed in the AWL sampling section.

There is no need to clean the nail clippers between fish unless there is tissue remaining from the previously sampled fish. It is sufficient to rinse the cutting blade periodically to reduce slime or tissue to avoid cross contamination.

#### D. Sample storage

While you are sampling, avoid direct sun or rain and keep samples as cool as possible at all times. Make sure that the axillary tissue is covered with the ethanol so that the tissue is bathed in ethanol at all times. After sampling, the tissues must be kept in a cool and dry location and in an upright position. Refrigeration is not necessary when sampling with ethanol.

Axillary process or "spine" located above the pelvic fin. These clips should be small enough to maintain a ratio: 3 etoh/1 axillary clip in the vials for best results.



## **USES OF CREEL SURVEY INFORMATION**

You requested information about why you were questioned about your fishing trip when you returned to the dock. The purpose of the interview may not be obvious to you and you may feel that these surveys are a waste of money. This handout summarizes some of the uses of this interview information so that the anglers can understand their role in the management of sport fisheries.

The Alaska Department of Fish and Game conducts sport fish harvest survey programs in a variety of saltwater and freshwater fisheries throughout Southeast Alaska. These programs are designed to sample a random group of fishermen so that harvest and other statistics for an entire fishery can be estimated. Often creel technicians will not be stationed at the busiest docks because if they only sampled there, they would not interview the "random sample" of fishermen necessary to estimate total harvest.

Uses of information gathered by these programs are many. Of immediate concern to Haines fishermen, the fishery is being monitored as part of a long-term research project to determine optimal harvest levels for the Chilkat River Chinook salmon stock. Information gathered on catch rates help biologists monitor the health of the fishery so that steps can be taken to improve fishing. Creel survey information is also provided to the State of Alaska's Board of Fisheries and the International Pacific Halibut Commission during their consideration of proposed changes to sport fishing regulations. Also, the value of enhancement efforts such as stocking programs and hatcheries can be evaluated. Information gathered is also used in planning to formulate management goals based on what most anglers are interested in catching.

In addition, as part of the U.S.-Canada Pacific Salmon Treaty, catches of king salmon by sport fishermen, commercial fishermen, and subsistence users are being monitored closely in an attempt to rebuild depleted runs of king salmon. Scales taken from king salmon harvested by sport fishermen can be used to determine age and origin of these fish. Heads from adipose fin clipped king and coho salmon contain tiny tags that identify the exactly where the fish originated.

By becoming aware of the potential uses of the creel survey information, you will recognize that although it may be somewhat of a "bother" to be interviewed on the dock or at the stream, it is time well spent. Creel survey personnel are trying to get the best information possible, so please help them by answering their questions. They are also good sources of information on where fish are being caught as well as sport fishing regulations.

## **GUIDED SPORT FISHING CHARTER HALIBUT PERMITS**

Commercial halibut harvest, including that by guided charter anglers, is regulated by the federal government. Refer questions about the implementation of Charter Halibut Permits for sport charter businesses and vessels to the following NOAA/NMFS contacts:

### **Questions about Charter Halibut Permits**

NOAA Fisheries (NMFS),

Restricted Access Management (RAM)

1-800-304-4846 (press 2) or 907-586-7344, Fax 907-586-7354

Email: [ram.alaska@noaa.gov](mailto:ram.alaska@noaa.gov)

Website: <http://www.alaskafisheries.noaa.gov/sustainablefisheries/halibut/sport.htm>

### **Questions about Regulations**

NOAA Fisheries (NMFS),

Sustainable Fisheries Division

1-800-304-4846 (press 3) or 907-586-7228

Website: [www.alaskafisheries.noaa.gov](http://www.alaskafisheries.noaa.gov)

### **Questions about Enforcement**

NOAA Office of Law Enforcement

Alaska Region

PO Box 21767 709 W. 9th Street, Room M09C Juneau, AK 99802-1767

907-586-7225

### **Questions about Harvests**

Alaska Department of Fish and Game, Division of Sport Fish

Email: [sf1web@fishgame.state.ak.us](mailto:sf1web@fishgame.state.ak.us)

907-465-4270, 907-465-4180

Website: <http://www.sf.adfg.state.ak.us/statewide/>

1255 W. 8th Street

P.O. Box 115525

Juneau, AK 99811-5526

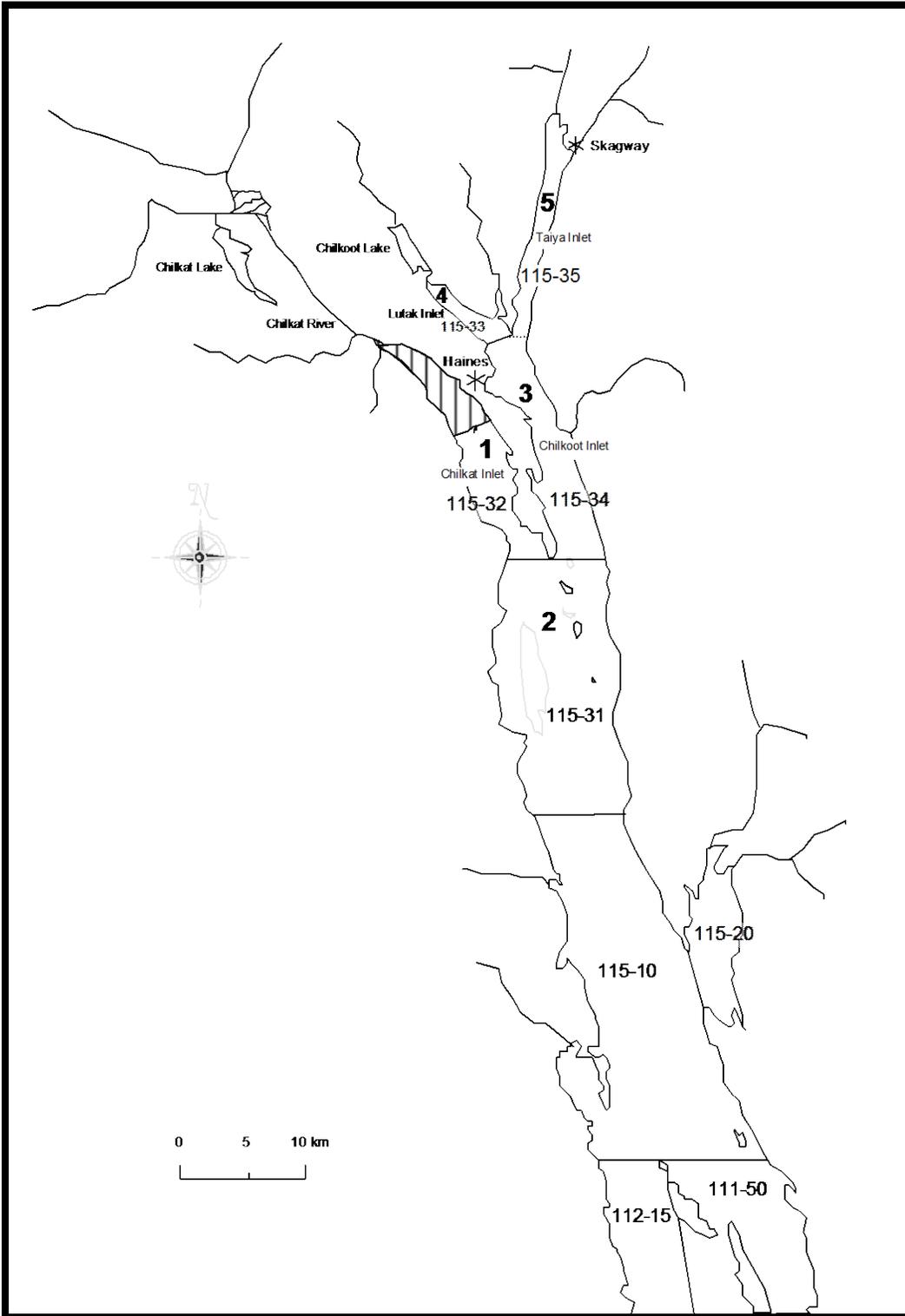


Figure A1.—Map of upper Lynn Canal showing Haines marine harvest survey fishing area codes (single-digit in **bold**) and statistical area codes (115-XX).

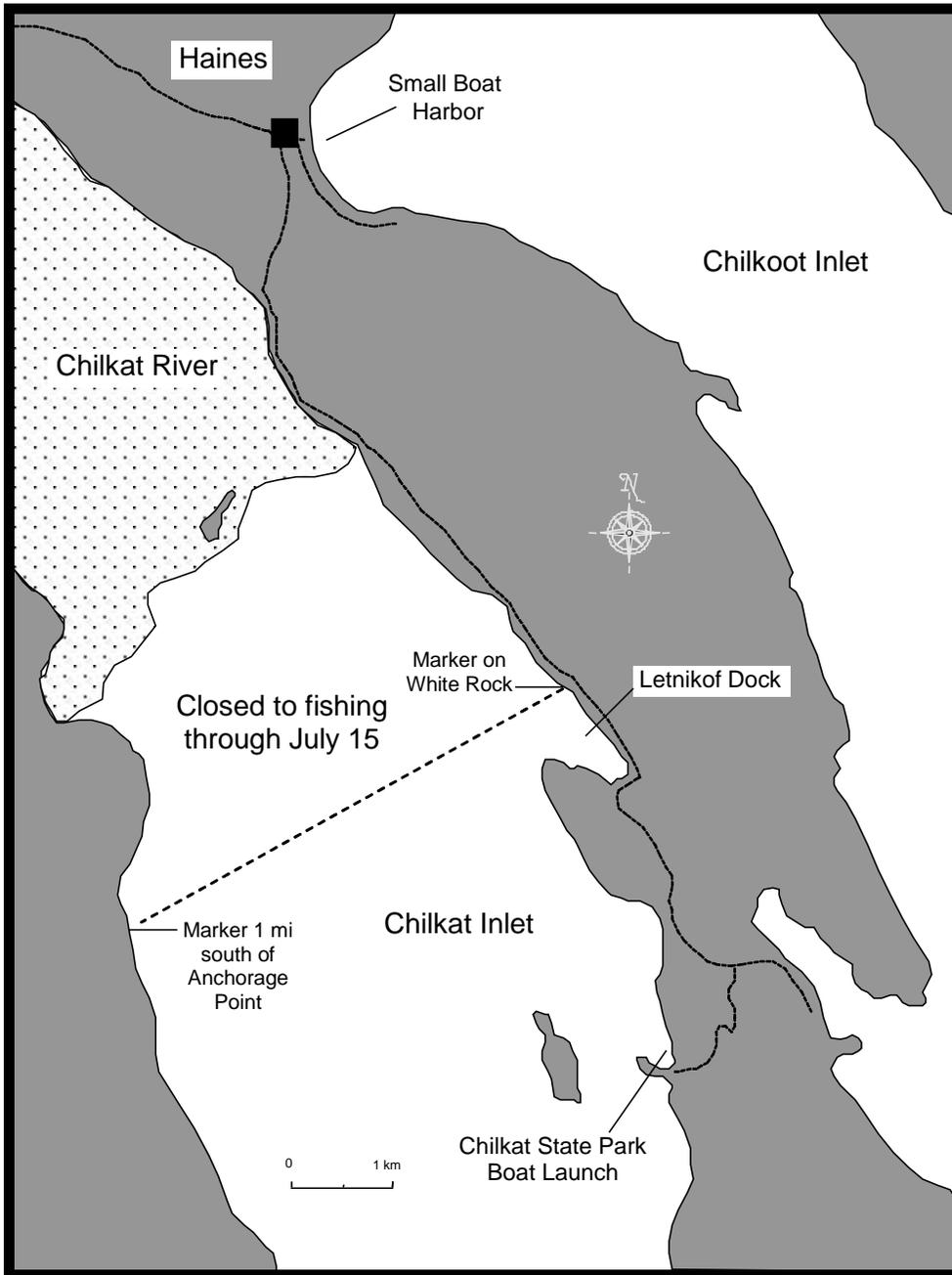


Figure A2.—Map of the Haines area showing the location of access sites and Chilkat Inlet area closed to king salmon fishing from April 15 to July 15.

20900  
DO NOT WRITE IN THIS AREA

Port: **HAINES** Name: **Jane Pascoe / LETNI KOF**

Alaska Department of Fish and Game  
Port Sampling Interview Form Ver 1.0

Page: 01  
Year: 07  
Month: 05  
Day: 16

Period start: 08:00 end: 14:30

Harbor: 01

Sub-Location: 01

Counted: 3  
Interviewed: 3

Interview Number: 1, 2, 3

Interview Area: Anglers

Num Rods / Anglers: 4, 1, 3, 4

Hours Fished: 4, 1, 4, 0 1/2

Logbook Number: 12345, 12345

VAR 1-5: 10, 10, 11, 11

Tens, Ones, Species, Disposition: 2 K53, 1 K54, 1 K5R, 2 HAV

VARIABLE

Figure A3.—Port sampling interview form example.

PLEASE DO NOT WRITE IN THIS MARGIN

16316

PLEASE DO NOT WRITE IN THIS AREA

CORRECT ORIENTATION OF SCALES:

10	9	8	7	6	5	4
20	19	18	17	16	15	14
30	29	28	27	26	25	24
40	39	38	37	36	35	34

PLEASE DO NOT WRITE IN THIS MARGIN

ALASKA DEPARTMENT OF FISH AND GAME ALTERNATE AGE WEIGHT LENGTH VER. 1.1

NAME: Samper Joe / Letniv of FISHERY: Haines Marine Spots

PAGE: \_\_\_\_\_ YEAR: 2006 MONTH: 05 DAY: 16 SURVEY AREA: \_\_\_\_\_ SITE: \_\_\_\_\_

100'S TENS ONES 100'S TENS ONES

LENGTH: 1020 TAG NUMBER: 662,358 WEIGHT: 790

1,000'S HUNDREDS TENS ONES 10,000'S 1,000'S HUNDREDS TENS ONES 100'S HUNDREDS TENS ONES

OPTION 1: \_\_\_\_\_ OPTION 2: \_\_\_\_\_ OPTION 3: \_\_\_\_\_ VARIABLE: \_\_\_\_\_

CARD # 1 CARD POSITION: \_\_\_\_\_ AGE: \_\_\_\_\_ AGE ERR: \_\_\_\_\_

100'S TENS ONES 100'S TENS ONES 100'S TENS ONES

Species: CHNOV Locality: LETNIV OF Card No: 16316

Stat. Code: 115-32 Sampling Date: Mo. 5 Day 16 Year 2006

Gear: SPOTS TRawl Collector(s): SAMPER

Remarks: 5 SCALES / FISH

EVA M PVE

Mark Replaces by NCS MM220727-1 054021 G599 Printed in U.S.A.

Figure A4.—Alternate age weight length form example.



**APPENDIX B: SALMON SPECIES IDENTIFICATION AND  
CHINOOK SALMON MATURITY EVALUATION**

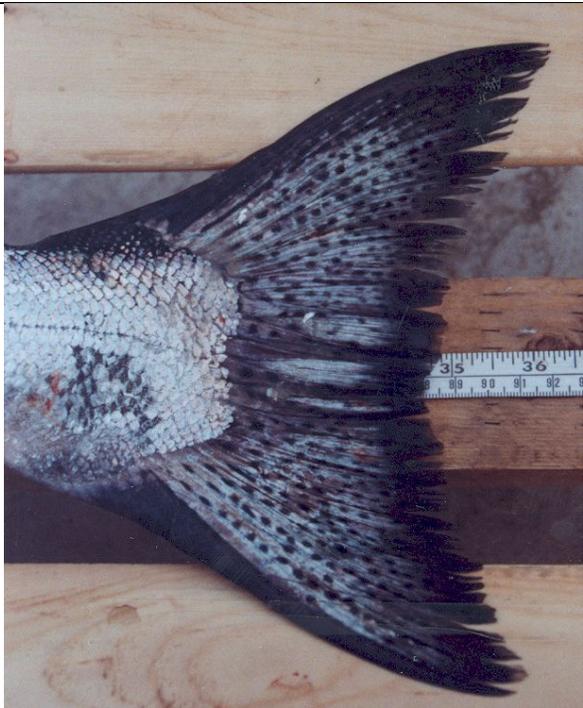
	
<p>Chum – some silver streaks on tail</p>	<p>King – numerous tail spots</p>
	
<p>Sockeye – no marks on tail</p>	<p>Coho – silver streaks and some spots on tail</p>

Figure B1.–Tail comparison photos for salmon species identification.

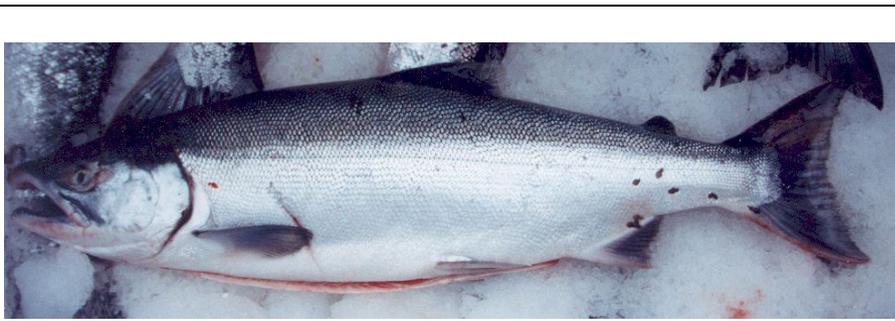
	<p><b>Chum</b></p> <p>No spots</p> <p>Large iris</p> <p>Narrow peduncle</p> <p>19-26 gill rakers per arch</p>
	<p><b>Sockeye</b></p> <p>No spots</p> <p>Bright red flesh</p> <p>Blue back</p> <p>30-40 gill rakers per arch</p>
	<p><b>King</b></p> <p>Irregular spots on back and both lobes of tail</p> <p>Black gums</p> <p><b>Immature (top)</b></p> <p>Scales easily removed</p> <p>White lower operculum</p> <p><b>Mature (bottom)</b></p> <p>Scales well attached</p> <p>Dark lower operculum</p>

Figure B2.—Photos for salmon species identification and king salmon maturity assessment.

## EVALUATION OF CHINOOK SALMON MATURITY

Mature (spring and summer spawner)

Fish is sexually maturing in April, May, June, or July during its final year of life.

A) Scales are difficult to remove with tweezers. In general:

- 1) scales won't flake off with knife, and
- 2) scales are not missing.

B) Reproductive tract is well developed. In general:

- 1) female - individual eggs are greater than 4.0 mm in diameter, or
- 2) male - gonads are large, easily located in body cavity.

C) Fish is darker in color, especially on lower operculum. Fish seen in June or July are generally very dark.

Immature (fall spawner)

Fish will not spawn during 2013, or fish will not enter freshwater to spawn until at least September 2013.

A) Scales are easily removed with tweezers. In general:

- 1) scales flake off easily using a knife, and
- 2) scales are often missing from landing the fish.

B) Reproductive tract is not well developed. In general:

- 1) female - eggs small, less than 4.0 mm in diameter (BB size), or
- 2) male - gonads are not easily located in the body cavity.

C) Fish are silver in color - fish is lighter in color than spring spawners.

See photos in Figure B2 for examples of mature and immature king salmon.

**APPENDIX C: 2013 SKAGWAY MARINE HARVEST  
SAMPLING  
TECHNICIAN MANUAL**

## INTRODUCTION

The purpose of the Skagway creel survey is to estimate the harvest of hatchery and wild king salmon in Taiya Inlet. Most wild and hatchery-reared king salmon smolt return to their natal waters or release site as adults 2 to 4 years after being released (Table C1).

Table C1.-Number of hatchery coded wire tagged Chinook salmon recently (since 1996) released into Lynn Canal by brood year, along with total release numbers and tagging percentage.

Tag code	Brood year	Release year	Facility	Total tagged	Total released	Marked fraction
	1996	1998	Burro Creek	7,423	15,956	0.47
	1996	1998	Jerry Myers	8,355	8,631	0.97
	1997	1999	Burro Creek	0	16,424	0.00
	1997	1999	Jerry Myers	1,856	1,856	1.00
	1998	2000	DIPAC	27,637	91,618	0.30
	1999	2001	DIPAC	29,746	32,123	0.93
	2000	2002	DIPAC	27,835	95,386	0.29
040394	2001	2003	DIPAC	30,781	58,793	0.52
040934	2002	2004	DIPAC	31,288	128,688	0.24
041117	2003	2005	DIPAC	28,179	219,620	0.13
041227	2004	2006	DIPAC	28,440	68,002	0.42
041457	2005	2007	DIPAC	34,107	168,135	0.20
041562	2006	2008	DIPAC	30,416	51,945	0.59
041973	2007	2009	DIPAC	31,004	276,262	0.11
042282	2008	2010	DIPAC	32,497	258,000	0.13
042668	2009	2011	DIPAC	25,494	128,619	0.20
042466	2010	2012	DIPAC	20,834	74,936	0.28
042467	2010	2012	DIPAC	20,589	119,667	0.17

*Note:* Shaded rows indicate brood years that will return as age-1.2 through -1.4 kings in 2013.

You will sample king salmon in the fishery for missing adipose fins and maturity information. There are photos at the end of this manual to help you with salmon species identification and king salmon maturity. If you have any questions about the manual or the sampling program, contact Richard Chapell or Brian Elliott by phone or email. If you have any suggestions for improving the manual or sampling program, please let us know.

Contact information:

Richard Chapell	766-3638 (w)	303-7204 (cell)	richard.chapell@alaska.gov
Brian Elliott	766-2625 (w)	314-0633 (cell)	brian.elliott1@alaska.gov

### 2013 SKAGWAY AREA KING SALMON REGULATIONS.

Resident and nonresident anglers may retain 1 king salmon 28 inches or more in length per day. There is no annual limit for resident anglers. Nonresident anglers must record all king salmon harvested on the back of their fishing license or on a King Salmon Catch Record for nonresident anglers under age 16. Nonresidents must comply with an annual limit of 3 king salmon through June 30. The annual limit drops to 2 king salmon during July 1-15, and drops again to 1 king salmon fish from July 16 through the end of 2013. All king salmon harvested earlier in the year apply to the annual limit for the whole year. King Salmon Catch Record cards are available at license vendors or through Fish and Game representatives and offices.

Starting July 1, the saltwater area near the mouth of Pullen Creek will be closed to sport fishing to allow king salmon to enter the stream for broodstock collection (Figure C3).

Anglers fishing for king salmon throughout the state are required to purchase and possess a sport fishing license and a king salmon stamp. These can be picked up at any sporting goods store for the fees listed in Table C2.

Table C2.-Sport fishing license and king salmon stamp fees, 2013.

	Alaska & Yukon		Other Non-Residents			
	Residents	1-day	3-day	7-day	14-day	1-year
Sport fish license	\$24.00	\$20.00	\$35.00	\$55.00	\$80.00	\$145.00
King salmon stamp	\$10.00	\$10.00	\$20.00	\$30.00	\$50.00	\$100.00

Yukon Territory residents may buy an Alaska nonresident sport fishing license and a king salmon tag for the same annual fee that Alaska residents pay. **Yukon residents are required to comply with nonresident restrictions, such as annual king salmon limits and recording harvested kings on the back of the sport fish license.**

## **DUTIES**

Your general duties are as follows:

1. Interview sport boat anglers at the Skagway small boat harbor.
2. Collect biological information (sex, maturity, length, adipose fin status, and scale samples) from the king salmon harvest and collect heads from king salmon that are missing their adipose fin.
3. Provide information to anglers on local sport fishing regulations.
4. **Carefully edit all data forms.**
5. Email sampling summaries to Rich or Brian as soon as you have completed sampling that week, but no later than 8:30 the following Monday morning.
6. Send collected king salmon heads to the Tag Lab in Juneau **weekly**.
7. Send collected biological data (AWL forms and scale samples) to Haines office monthly.
8. Email a completed time sheet on the 15<sup>th</sup> and last day of each month.

Because creel survey staff works without immediate supervision, we evaluate your performance largely through your completed data forms. We need weekly catch and effort data on time for in-season management. If difficulties in submitting data are anticipated, leave a voice mail including the weekly data at (907) 766-2625 on Sunday night or by 8:30 am Monday morning with catch rate summary information from the spreadsheet.

## **TIME SHEETS**

For each day you work, record your start and end times. For holidays, just record the hours you work. If you take any annual or sick leave, record the number of hours on your time sheet.

You must fill out a time sheet and email it to the Haines office twice per month on the day following the end of the pay period. The pay periods run from the 1<sup>st</sup> through the 15<sup>th</sup> and from the 16<sup>th</sup> through the last day of each month. If this form is not turned in on time, you will not get paid on time.

## **END OF SEASON**

Please turn in your sampling gear at the end of the season. You may also need to fill out a "Seasonal Acknowledgment of Responsibility" form which gives the date by which you are required to respond as to whether you are returning for another season (forms available at the office). It is important that you leave a forwarding address and phone number so that you can be notified of any changes in your job schedule or duties.

## EQUIPMENT NEEDED

Make sure you have the following equipment:

---

Clipboard	File box
Measuring tapes	Data forms:
Tweezers	-Skagway interview
Pencils	-Skagway daily sampling summary
Gum cards and wax paper	-Alternate age weight length (mark sense)
Scotch tape	-Coded wire tag (CWT) sampling
Calculator	District/Sub-District map for CWT sampling
Knife	Handouts:
Fish head bags	"Uses of Creel Survey"
Head cinch straps	Other handouts
Garbage bags	Sport fishing regulations
Paper towels	Genetic sampling kit
Cell phone	

---

You have been provided with an ADF&G cap. Please wear it while you are working so that people can readily identify you as an ADF&G employee.

## CHOOSING CREEL SURVEY DAYS

Interview sport boat anglers at the Skagway small boat harbor 2 days per week from May 27 to August 31. Choose sampling days to maximize the number of Chinook salmon encountered. High winds frequently keep sport fishing boats in the harbor, reducing the fishing effort and harvest on those days. On days when you can predict fishing effort will be low, shift your sampling effort to a subsequent day. Cruise ships provide most of the clients on charter boats in Taiya Inlet, and the peak in cruise ship dockings in Skagway occurs from Monday through Thursday, so Monday and Wednesday will be the primary sampling days. If windy weather keeps boats from leaving the harbor on either of those days, shift sampling effort from Monday to Tuesday, or from Wednesday to Thursday. There is considerable cruise ship traffic on Friday, so Friday could be a fallback sampling day if conditions prevent productive sampling on earlier days of the week.

## ANGLER INTERVIEW FORMAT

The sampling design used for the surveys requires that only anglers who have completed their trips be interviewed. If someone comes in for a quick (less than 15 minutes) stop with the intention of going right back out, don't interview that boat as a completed trip. If the people are coming in for lunch or to take at least a half hour break, then go ahead and interview the boat as a completed trip. Charter boats that drop off a boat party and take out another should also be interviewed as a completed trip. If boats have been on multi-day trips, record information from all days of the trip

with the following exception: if the boat could have been interviewed in Haines or Juneau on a prior day, don't include the data from those days when it could have been sampled then (I don't anticipate this will happen).

The following format for angler interviews is provided only as a guide and of course each interview will be unique. In conjunction with your interview, you may want to give anglers an information sheet on creel surveys. This summary may help people understand that they are providing important data for fishery management. Remember that you are sampling marine harvest only; interviews with freshwater anglers are unnecessary.

1. Contact boat parties of potential anglers coming in to the docks. Commercial fishing boats are sometimes also used for sport fishing.
2. Identify yourself and your affiliation with ADF&G.
3. Ask the party if they have been sport fishing and if they would mind if you sampled their catch.
4. Your primary goal is to sample as many king salmon as possible to see if the adipose fin is missing (adipose-clipped), which indicates the fish has a coded wire tag (CWT) in its head. Keep track of how many king salmon you examined by size class (**Large** = 28 inches or longer, **Small** = less than 28 inches, as measured from **snout to tip of tail**, Figure C1) and number of large and small fish missing adipose fins. If a king salmon is missing its adipose fin, collect the head, with angler consent, and fill out a CWT sampling form.
5. Your second priority is to sample all king salmon for length, sex, maturity, and scales. Whenever possible, sample all the fish in a party's bag. Measure the king salmon's length from the **middle of the eye to the fork of the tail (MEF)** in mm (Figure C1) while keeping the tape as straight as possible; do not measure around the curve of the fish.
6. Your third priority is to interview boat parties to find out the type (charter or private), what their target species was (salmon or halibut), how many anglers were aboard, how many rods were fishing, how long they fished, and the number of fish they kept and released by species. Do not record strikes or fish that got off the line by themselves as "released" fish.
7. Charter boats should have a 2013 sticker on the green and yellow Sport Fishing Guide Vessel decal on each side of their boat. For each charter trip interview, record the saltwater logbook number, the boat's name, the boat's AK number, and whether you personally saw and counted (verified) the fish kept from that trip.
8. After the interview is over, thank the fishing party for their time and the information.
9. Do not volunteer too much information about good or bad fishing spots, especially when the trip was a charter. Charter boat operators do not like their clients being told by an "authority" that they went to a lousy fishing area. Information of a general nature on fishing hot spots or techniques can be given to the public; however, data from a particular party or boat are considered confidential and cannot be given out. If a party wants additional information, tell them to call the Sport Fish office in Haines at 766-2625.

Tip of snout to tip of tail (“total” or “legal”) length, in inches

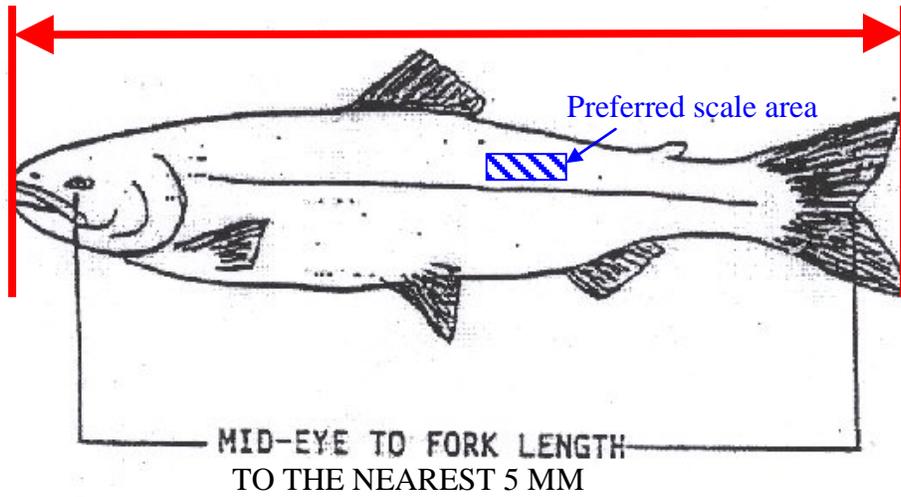


Figure C1.—Total length and mid-eye to fork (MEF) length measurements, and the preferred scale area.

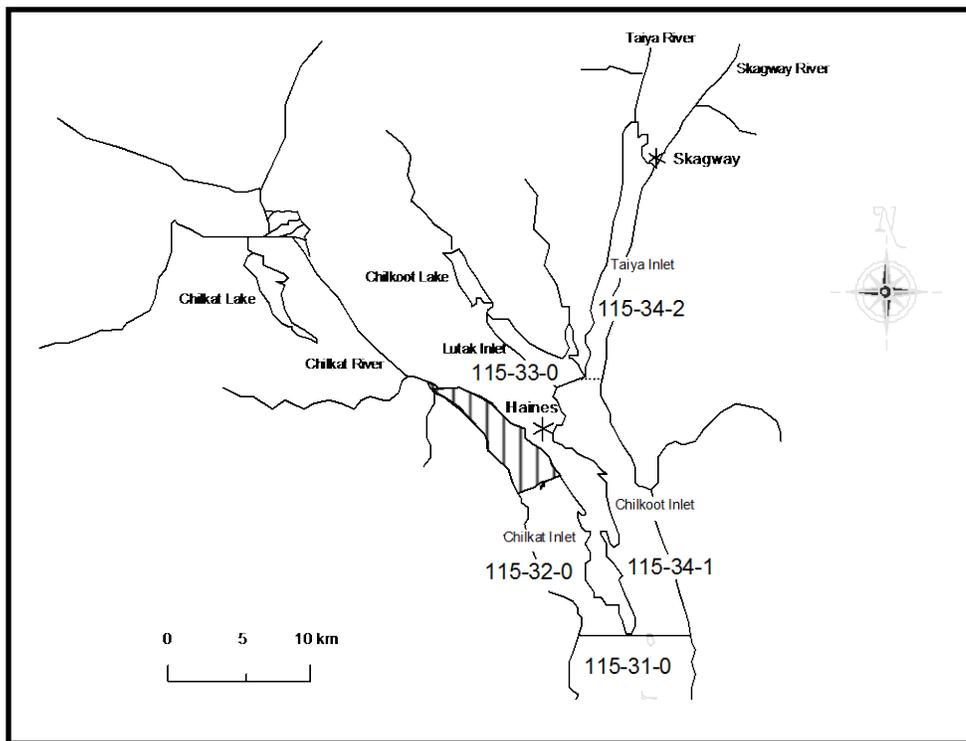
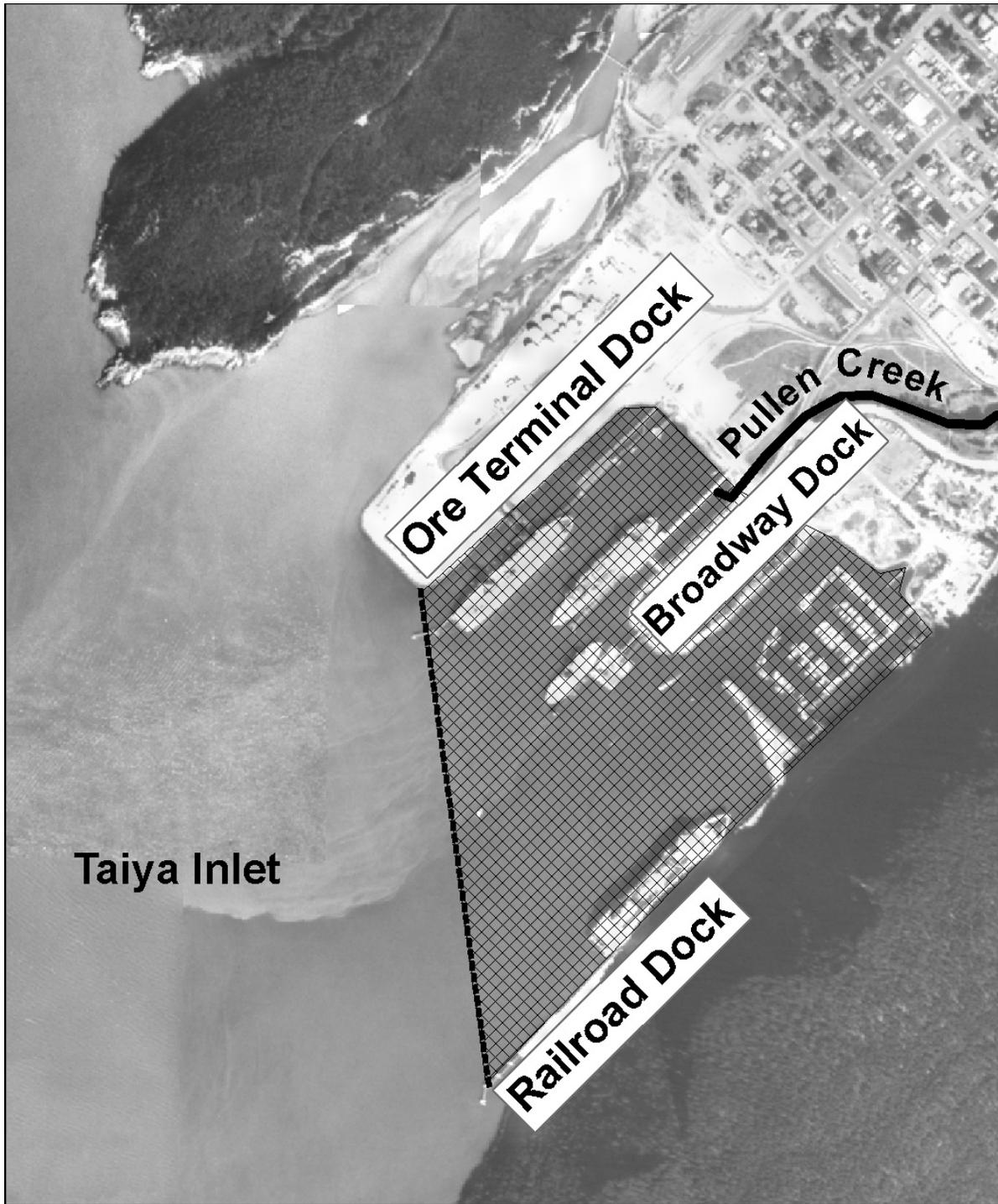


Figure C2.—Map of upper Lynn Canal showing statistical area codes.



 Salt water area closed to king salmon fishing starting July 1 to allow broodstock to enter Pullen Creek.

Figure C3.—Pullen Creek mouth and the Taiya Inlet salt water area closed in 2012 to protect broodstock waiting for high tides to enter Pullen Creek.

### **Sport fishing violations**

It is not your responsibility to be actively searching for sport fishing regulation violations. If you do notice violations, your **best course of action is to document what has occurred and immediately notify the Alaska Wildlife Troopers in Haines (766-2533) or Juneau (465-4005)**. Details that can make a case are what happened, when it happened, who did it, and identifying details such as boat or car license numbers. Also contact Rich or Brian at the Haines Fish and Game office (766-2625) so they can coordinate enforcement action. In the past, most problems have been with anglers bringing in undersized kings. Refer to Figure C1 for the correct way to measure legal length, which is the total length of the fish from tip of snout to tip of tail, not fork length.

### **GUIDED SPORT FISHING CHARTER HALIBUT PERMITS**

Commercial halibut harvest, including that by guided charter anglers, is regulated by the federal government. Refer questions about the implementation of Charter Halibut Permits for sport charter businesses and vessels to the following NOAA/NMFS contacts:

#### **Questions about Charter Halibut Permits**

NOAA Fisheries (NMFS),

Restricted Access Management (RAM)

1-800-304-4846 (press 2) or 907-586-7344, Fax 907-586-7354

Email: [ram.alaska@noaa.gov](mailto:ram.alaska@noaa.gov)

Website: <http://www.alaskafisheries.noaa.gov/sustainablefisheries/halibut/sport.htm>

#### **Questions about Regulations**

NOAA Fisheries (NMFS),

Sustainable Fisheries Division

1-800-304-4846 (press 3) or 907-586-7228

Website: [www.alaskafisheries.noaa.gov](http://www.alaskafisheries.noaa.gov)

#### **Questions about Enforcement**

NOAA Office of Law Enforcement

Alaska Region

PO Box 21767 709 W. 9th Street, Room M09C Juneau, AK 99802-1767

907-586-7225

#### **Questions about Harvests**

Alaska Department of Fish and Game, Division of Sport Fish

Email: [sf1web@fishgame.state.ak.us](mailto:sf1web@fishgame.state.ak.us)

907-465-4270, 907-465-4180

Website: <http://www.sf.adfg.state.ak.us/statewide/>

1255 W. 8th Street

P.O. Box 115525

Juneau, AK 99811-5526

## SKAGWAY CREEL SURVEY INTERVIEW FORM

Data can be recorded in a notebook or on paper forms while you are on the dock. For each sampling day, complete one Excel spreadsheet. Email the previous week's forms before 8:30 each Monday morning to [richard.chapell@alaska.gov](mailto:richard.chapell@alaska.gov) and [brian.elliott1@alaska.gov](mailto:brian.elliott1@alaska.gov).

Interview Number: Number the boat parties you interview, starting with 1 each day.

Class: Charter boats are identified by green and yellow decals on both sides of the boat.

### **Charter trips only:**

Ask the captain for his saltwater Logbook Number. You can read the Boat Name on the stern and the boat's AK Number on the hull near the bow (starts with "AK"). If the party was not a charter trip, we do not need this information.

Target: What was the primary target of rod & reel fishing effort? S = Salmon, H = Halibut, O = Other. If the party had different targets at different times, use the same interview number on the next line and record the second target effort and catch data there.

Interview Time: The time of day you interviewed the party.

Anglers on Board: How many anglers were on board? We ask this so we can figure out how often anglers fill their bag limits. Note that the captain and crew members on charter trips may not retain any fish while clients are on board.

Rods Fished: How many rods were fished? Anglers could have shared rods.

Hours Fished: How many hours did those rods fish?

Rod-Hours Effort: Multiply Rods Fished times Hours Fished for this measure of fishing effort. The Excel spreadsheet will calculate this automatically.

For all the king salmon that you count and sample, categorize them by large (total length 28 inches or longer) and small (less than 28 inches, only allowed when special regulations are in effect in Taiya Inlet, announced by a news release).

King Salmon  $\geq$  28 inches total length (large):

Kept: How many large kings the party brought to the dock.

Verified: For charter trips only, mark "V" if you saw all the large kings kept, and mark "N" if the party reported a larger catch than you saw.

Released: How many large kings the party intentionally let go.

Adipose-Clips: Number Sampled: Number of large kings you inspected for a clipped adipose fin.

Number Adipose-Clips: Number of large kings that had clipped adipose fins.

King Salmon  $<$  28 inches total length (small):

For each party, collect the same data for small kings as for large kings.

Halibut, and Other Fish Species:

As with kings, count how many fish the party Kept, how many they Released, and for charter trips, whether you Verified the number of kept fish with you own eyes. If the party caught more

than one of the Other Fish Species, use the same interview number and record the other fish species data on the next line.

### **AGE WEIGHT LENGTH FORM**

Sample king salmon for sex, maturity, mid-eye to fork length (MEF), and scales. Take total lengths from halibut, rockfish and lingcod as time allows. Use a separate **Age Weight Length** (AWL) form for each species. Sample only king salmon encountered during creel survey interviews, not adipose-clipped kings voluntarily brought to you. The object of creel sampling is to get a random sample from the fishery.

Use number 2 lead pencil to record data on the forms. Fill the bubbles completely, but do not use so much lead that marks rub off. I recommend that while you are on the docks you just write in the numbers and then fill in the bubbles during slack periods when you can take the time to do a thorough job. Handle the forms carefully; if you mutilate them they may not feed through scanner. To avoid mutilation of wet forms, you can pad the teeth of your clipboard with duct tape. Forms that are crinkled from being wet and then dried rapidly can be flattened by the scanner. Be careful about erasing while the forms are wet; it would be better to use a new line instead. If the form is too messy, transcribe data onto a new form. Please erase all stray pencil marks from the form.

Record a maximum 9 fish per AWL form. Do not use the back side of the AWL form. To match scale cards and AWL forms, do not use the 10<sup>th</sup> column on the scale card.

Line by line instructions for completing the AWL form follow:

Header fields:

Name – Sampler’s name and harbor sampled.

Fishery – Usually “Skagway marine boat sport”. Add “Derby entry” or “Non-derby entry” on derby days (check Pat Moore Memorial Derby dates, usually second weekend of July).

Page – Leave blank.

Year, Month, Day – Record only the last digit of the year (i.e. “13” for 2013). Use leading zeros on month and day. Note that these fields are additive. For example, 6 is recorded by filling “0” in the “Tens” row and both “5” and “1” in the “Ones” row ( $5 + 1 = 6$ ).

Survey Area, Site, Sublocation, and Period -- Leave blank.

Species – 410 = king salmon.

Next header field – 1 = Skagway Harbor

Last 3 header fields – Leave blank.

Biological Information lines:

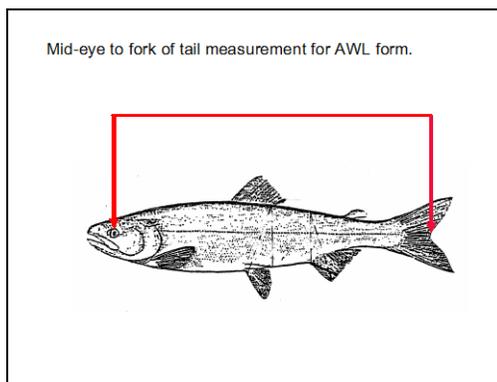
Fish # – Matches column used on scale card.

Sex – Mark "M" or "F" for king salmon if sex was determined. If you don’t have visual confirmation, e.g. if the fish was not processed on the dock, or can’t make an informed decision about sex, leave the field blank.

Status – Refer to Appendix B for criteria for evaluating maturity. Record the maturity of every king salmon sampled using the codes below:

- 1 = Mature (spring or summer spawner)
- 2 = Immature (rearing fish; unlikely to spawn in 2013)
- 3 = Unknown.

Length – Measure king salmon from mid-eye to fork of tail (MEF), to the nearest 5 mm. Measure the length while keeping the tape as straight as possible; do **not** measure around the curve of the fish.



Note that the MEF measurement is different than the total length (also called legal length) that is used to classify king salmon as greater or less than 28 inches.

For halibut, lingcod, and rockfish measure from tip of snout to tip of tail (total length). Not all of the groundfish have a fork in tail. Make certain that you are measuring in a straight plane—do **not** measure the curve of the fish.

Tag Number – Write the number of the **cinch strap** attached to the head taken from an **adipose-clipped** king salmon. Fill in the bubbles for the last 5 digits of this number.

Weight/Variable – If you collect a **genetic** sample, record the **vial number** here. Fill in bubbles for the last 3 digits. Sometimes the vials are not in numerical order, so verify the vial number before you write it down.

Rest of fields – Leave blank.

Status -- Use these codes below to record the maturity of every king salmon sampled. See Appendix B for maturity evaluation criteria and comparative photos.

- 1 = Mature (Spring/summer spawner)
- 2 = Immature (rearing fish; unlikely to spawn)
- 3 = Unknown.

Length – Measured from **middle of the eye to fork of tail**, to the nearest 5 mm (Figure C1).

Tag Number – Write the 6-digit cinch strap number used on the head from any adipose-clipped king salmon. Fill in the bubbles for the last 5 digits of this number.

Variable – If you took an axillary process sample from a fish, write the full vial number and fill in bubbles for the last 3 digits of the vial number.

Rest of fields – Leave blank.

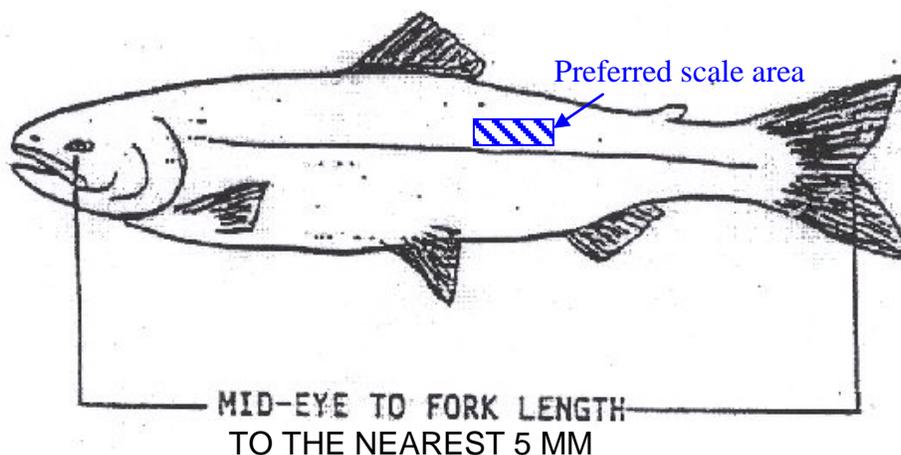
## Example AWL form

Example data is shown in Figure C4: Scales and lengths were taken from kings with tip of snout to fork of tail lengths of 1020 mm (mature male), 850 mm (immature male, adipose-clipped and given cinch strap # 201438), and 790 mm (mature female). Axillary process samples were clipped from these fish and put in vials 8, 9 and 10.

### SCALE SAMPLE COLLECTION

Remove 5 scales from the preferred area on the left side of each king salmon in one column of the scale card. The preferred area is the shaded rectangle in the illustration below. Mount the 5 scales from fish number 1 in the spaces in the 1<sup>st</sup> column, covering the numbers 1, 11, 21, 31, and the space below 31. Scales from fish number 2 are mounted in the spaces in the 2<sup>nd</sup> column over the numbers 2, 12, 22, 32, and below 32, etc. Moisten the scales and before pressing them onto the scale card. Mount all the scales oriented the same way (i.e. cuticles all facing down). Label the gum cards as shown in the Figure C4.

Tape the scale card to the front of the AWL form. One scale card will be matched to one AWL form. Refer to Figure C2 for the Stat. Code on the scale card. Use wax paper sheets as the backing for the gum card to keep damp cards from sticking together.



PLEASE DO NOT WRITE IN THIS MARGIN

16316

PLEASE DO NOT WRITE IN THIS AREA

NAME: Samuel Joe / Letnik of FISHERY: Haines Marine Sports

PAGE: \_\_\_\_\_ YEAR: 2006 MONTH: 05 DAY: 16 SURVEY AREA: \_\_\_\_\_ SITE: \_\_\_\_\_

ALASKA DEPARTMENT OF FISH AND GAME ALTERNATE AGE WEIGHT LENGTH VER. 1.1

FISH #	SEX	STATUS	LENGTH	TAG NUMBER	WEIGHT	OPTION 1	OPTION 2	OPTION 3	VARIABLE	CARD #	CARD POSITION	AGE	AGE ERR
1	M	+	1020	662,358						1			
2	F	-	990										
3	M	+	850										
4	M	+											
5	M	+											
6	M	+											
7	M	+											
8	M	+											
9	M	+											

CORRECT ORIENTATION OF SCALES:

10	9	8	7	6	5	4
20	19	18	17	16	15	14
30	29	28	27	26	25	24
40	39	38	37	36	35	34

EXHAMPVE

SAMPLER

Species: CHINOOK Card No: 16316

Locality: LETNIK OF

Stat. Code: 115-32

Sampling Date: Mo. 5 Day 16 Year 2006

Gear: SPORT TROLL

Collector(s): SAMPLER

Remarks: 5 SCALES/FISH

PLEASE DO NOT WRITE IN THIS MARGIN

Mark Replaces by NCS MW220727-1 054021 G599 Printed in U.S.A.

Figure C4.—Age weight length form example.

**Instructions for collecting genetic samples from the Skagway king salmon sport fishery  
ADF&G Gene Conservation Laboratory, Anchorage, 2013**

**I. General information**

The purpose of this project is to estimate the origins of legal size king salmon harvested in the Skagway sport fishery during the 2013 fishing season. We will use axillary process ("spine", Figure C5) tissue from individual fish sampled from this fishery to determine its genetic characteristics at several genetic markers. This information, along with scale samples and lengths, will provide a profile of the populations of fish contributing to this fishery, which can be used to estimate the stock composition of the harvest. The genetic sampling schedule is proportional to historic harvest, based on samples collected in 2000-2012.

**II. Sampling schedule**

Sample legal size ( $\geq 28$  inches total length) king salmon from the sport fishery. Sample goals are as follows:

Stat week	26	27	28	29	30	31	32	33	34	35	TOTAL
2013 week start	6/23	6/30	7/7	7/14	7/21	7/28	8/4	8/11	8/18	8/25	
2013 week end	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31	
Legal kings ( $\geq 28$ " )	1	2	2	3	2	2	2	3	1	2	20

Collect a genetic sample from the first legal size king salmon you encounter each stat week until you reach the weekly goal. If you fall behind the weekly sample goals, take additional samples the following week to catch up.

**III. Tissue sampling**

**A. Sampling supplies provided**

- Dog toe nail clippers -for sampling axillary process "spine"
- Vials and caps -tubes for holding fin clip
- Vial rack - to hold tubes while sampling
- Squirt bottle -plastic "goose neck" bottle for filling cryovials with ethanol
- Large bottle -bulk ethanol for filling cryovials prior to sampling

**B. General set up**

To ensure that the axillary process tissues are kept fresh it is important to work quickly. Have your sampling area and supplies organized before you begin sampling the fish.

### C. Tissue sampling

Set up your sampling rack with the cryovial for the fish that you anticipate to sampling each sampling. Partially fill each cryovial with the ethanol provided prior to sampling. For each fish sampled,

- Using the nail clippers, snip off approximately ½" - 1" of axillary tissue. Avoiding excess water or slime, place the axillary tissue into the cryovial. Top off the vial with ethanol so the tissue is bathed in ethanol, and the screw cap on tightly.
- Record the genetic vial number in the "Weight/Variable" column on the AWL form.
- Record sex, maturity, and length data on the AWL form as detailed in the AWL sampling section.

There is no need to clean the nail clippers between fish unless there is tissue remaining from the previously sampled fish. It is sufficient to rinse the cutting blade periodically to reduce slime or tissue to avoid cross contamination.

### D. Sample storage

While you are sampling, avoid direct sun or rain and keep samples as cool as possible at all times. Make sure that the axillary tissue is covered with the ethanol so that the tissue is being bathed in ethanol at all times. After sampling, the tissues must be kept in a cool and dry location and in an upright position. Refrigeration is not necessary when sampling with ethanol.

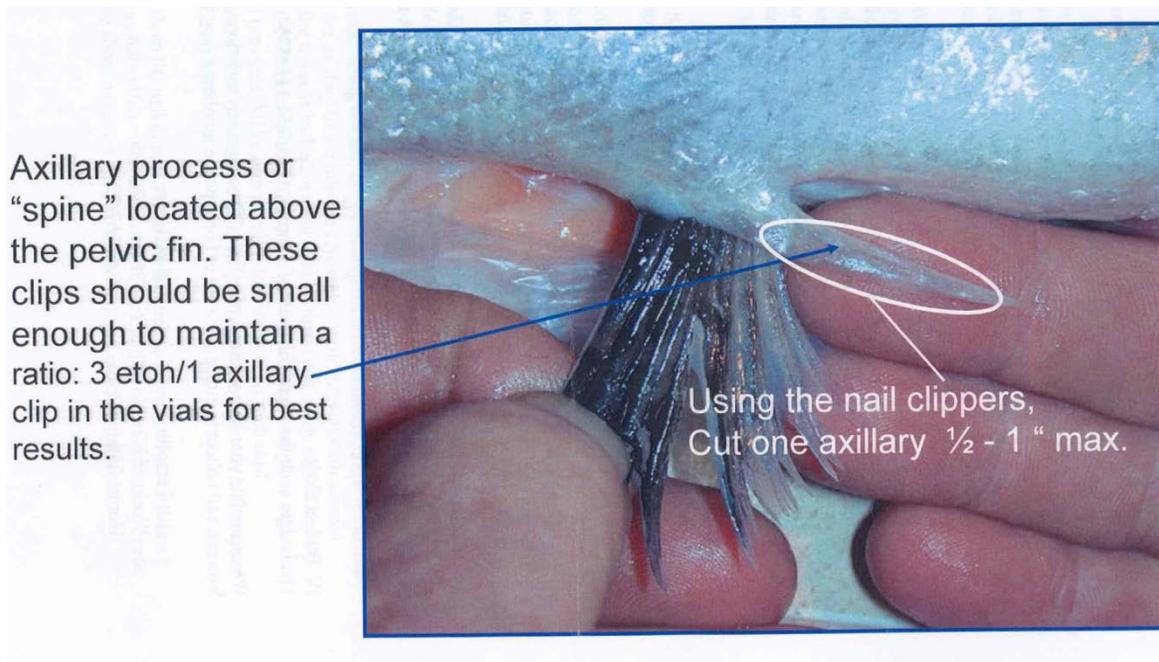


Figure C5.-Instructions for axillary process sampling.

## **CODED WIRE TAG (CWT) SAMPLING FORM**

All harvested king salmon must be checked for missing adipose fins. If you find an adipose-clipped fish, measure the MEF length, take the head, attach a cinch strap around the jaw, and fill out a CWT sampling form. Heads should be placed in individual bags and frozen in a position where the strap number is visible. Thoroughly frozen heads should be shipped weekly to the Mark, Tag, and Age Laboratory (Tag Lab) in Juneau by Wings of Alaska.

If an angler doesn't want to surrender the head of an adipose-clipped fish, attach a cinch strap to the jaw and fill out a CWT recovery form with as much information as possible. Make arrangements to collect the head after the angler has the fish mounted. Stress to the angler the importance of Fish and Game ultimately collecting the head.

There may be other circumstances in which you were unable to collect the head from an adipose-clipped king salmon, such as a king being headed and gutted before returning to the harbor, but the adipose fin area was left intact. In these cases, fill out a CWT sampling form and attach the cinch strap that you would have used to the CWT sampling form.

In addition to adipose-clipped fish, there might be a king or coho salmon which has been Floy tagged by the National Marine Fisheries Service (NMFS) or a halibut tagged by the International Pacific Halibut Commission (IPHC). If you encounter fish with any of these tags, fill out a CWT form with all applicable information (including the tag number) but do not collect the head or put on a cinch strap. Return the forms with information about these types of tags to me.

Line by line instructions for completing CWT sampling form:

### **Interviewer Information:**

Sample Number – Wait to assign a sample number until you are ready to make a weekly shipment of heads to the Tag Lab in Juneau (see next section).

Source – Sport.

Survey Site – Skagway.

Sample Type –

Random - the fish is randomly sampled by you during the creel survey.

Select - the fish is voluntarily brought in by an angler from a sampled fishery (Skagway).

Voluntary - the fish was taken in an unsampled fishery (Hoonah, for example)

or if the fish was taken when there was no creel survey in Skagway (before you start creel survey in June and after your last day of sampling in August).

Sampler – Your last name.

Name of Place Sampled – If sample type is Random, this is the harbor you are sampling. Leave blank if the sample is Select or Voluntary.

Date Sampled – Date you interviewed the angler. Leave blank for Select or Voluntary samples.

Stratification Information:

Sport Harvest Code – For Random samples only: MB (for Marine Boat). Otherwise, leave blank.

Fishing Site Code – Always blank.

**Angler Information:**

Name & Mailing Address – If more than one angler in a particular party caught an adipose-clipped fish, complete a separate form for each person. Try to determine only one contact person per boat.

**Catch Information:**

Date Caught – Date the fish was caught. Select or Voluntary recoveries caught on different days must be recorded on separate forms.

Water Type – Was the fish caught in salt water or fresh water? (Except when specifically allowed by Emergency Order, fresh waters are closed to king salmon sport fishing.)

Name of Place Fished – Where fish was caught. Be specific.

Area Information – Usually “113-34-2” and “saltwater” for Taiya Inlet. Refer to Figure C2 for other codes.

Anadromous Stream # – Fresh water is closed to sport fishing for king salmon. However, anglers may have caught and released king salmon while targeting another species. Write the stream name in pencil and flag the form; and the project leader will complete this field.

**Sampling Information:**

Leave blank.

**Head Recovery Information:**

Head Number – Number of cinch strap attached to fish head. Use cinch straps in order.

Species Code –410 = king salmon, greater than 28 inches total length (**tip of snout to tip of tail**);

411 = “jack”, king salmon less than 28 inches total length.

Fork Length – **Middle of eye to fork of tail**, to the nearest 5 mm. If an angler gives you a length measurement for a Select fish, ask them what type of measurement they made and note on form if they measured total length.

Clip Status – "Good" if the adipose fin looks to be cleanly sliced off and healed;

"???" if the adipose fin clip is questionable;

"Unkn" (Unknown) if you did not check the adipose fin.

King Flesh Color – For king salmon only, circle the appropriate flesh color.

**Example CWT Sampling Form:**

Example data is shown in Figure C6. An adipose finclipped king was sampled randomly during the creel survey and cinch strap #201438 was placed in its head. The king was caught by J.Q. Public in Taiya Inlet, and was immature, had red flesh, and a tip of snout to fork length of 850 mm.



EXAMPLE

# Alaska Department of Fish and Game Coded Wire Tag Sampling Form

Personal Use, Sport and Subsistence Fisheries  
Southeast Region

Page Info for this Sample Number only See Instructions  PAGE OF  PAGES

CONFIDENTIAL INFORMATION

**INTERVIEWER INFORMATION**

SAMPLE NUMBER:

SOURCE: (circle one) personal use  sport  subsistence

SURVEY SITE: SKAGWAY

SAMPLE TYPE: random  select  voluntary

SAMPLER: THOMAS

NAME OF PLACE SAMPLED: TAIYA INLET

DATE SAMPLED:

**EXPLANATION OF SAMPLE TYPES**

random: CWT recoveries made during the course of random sampling for a creel survey.

select: CWT recoveries made in an area having a creel survey, but not taken in the random sampling process.

voluntary: CWT recoveries made in an area which isn't covered by a random creel survey (e.g. Hoonah)

**STRATIFICATION INFORMATION**

SPORT HARVEST CODE (RANDOM SPORT SAMPLES ONLY)

FISHING SITE CODE

DE---Derby Entered FF---Freshwater Fishery MR---Marine Roadside  
DT---Derby Takehome MB---Marine Boat TF---Terminal Fishery

A-Z (See Instructions: Fishing Site Code may be blank)

**ANGLER INFORMATION** (Please print legibly)

ANGLER'S NAME:

MAILING ADDRESS:

**CATCH INFORMATION**

DATE CAUGHT:

WATER TYPE: saltwater  freshwater

NAME OF PLACE FISHED: TAIYA INLET

AREA INFORMATION: (DISTRICT(S) - SUBDISTRICT(S))

ANADROMOUS STREAM# (FRESHWATER- ONLY)

SAMPLING INFORMATION				HEAD RECOVERY INFORMATION				CHINOOK Flesh Color
SPECIES (CODE)	TOTAL # FISH CHECKED		WERE ALL CHECKED	HEAD NUMBER	SPECIES CODE	LENGTH (mid-eye to fork in mm)	CLIP STATUS	
	FOR AD-CLIPS	# SEEN						
(410)CHIN			y n	1	410	820	Good ??? Unkn No Ad Clip	R W
(411)JACK (CHIN-ONLY)			y n	2			Good ??? Unkn No Ad Clip	R W
(420)SOCK			y n	3			Good ??? Unkn No Ad Clip	R W
(430)COHO			y n	4			Good ??? Unkn No Ad Clip	R W
(440)PINK			y n	5			Good ??? Unkn No Ad Clip	R W
(450)CHUM			y n	6			Good ??? Unkn No Ad Clip	R W
(540)STHD			y n				Good ??? Unkn No Ad Clip	R W

T:\FORMS\2006\VISIO\SPORTSE\2006.VSD 02/17/06 04:24

Not for use in SE for Sport Samples

(PUT COMMENTS ON BACK)

Figure C6.-Coded wire tag sampling form example.

## **Instructions for completing CWT head shipment forms:**

### **Assignment of sample numbers:**

Assign one number for each CWT sampling form you complete. Use sample numbers sequentially and record the numbers you use for each weekly shipment so you know where to resume numbering the next week. See example in Figure C7.

### **Shipment summary form:**

Source: “Sport”

Survey Site: “Skagway”

Heads recovered from statistical week: Refer to the calendar in the head shipment folder for the statistical week number when the ad-clipped fish were caught.

Beginning sample #: The first sample number used on the CWT forms associated with heads in this shipment.

Ending sample #: The last sample number on the CWT forms associated with heads in this shipment.

Dates recovered: First and last dates that the heads in this shipment were caught.

# of heads listed on sampling forms: Should be the number of heads in this shipment. As you box up heads for shipment, fill in the check box for each head on its CWT sample form.

# of heads shipped without data (Figure C8): Put a cinch strap on every head you collect and record whatever information you have about the fish it came from on a CWT sampling form. If you have incomplete information about the fish, keep track of the head number so you can send updated sampling information when available to the Tag Lab.

# of heads not shipped: If you sampled an adipose-clipped fish but could not collect the head or lost the head, count it here and list the head number in area B, “heads not shipped”. If you recover the head at a later time, send it in and it will be matched to the cinch strap number that you previously reported on a CWT sampling form.

### **Packaging heads for shipment:**

Put all heads (still in their individual head bags and thoroughly frozen) in a sturdy garbage bag, tie it shut, place the bag in a sturdy cardboard box, tape the box shut, and stick an address label on the box. Take the box to Wings of Alaska to go on their next flight to Juneau, preferably within a few hours. Call or email the Tag Lab, to let Detlef Buettner or Kristeen Brooks know the approximate arrival time of the shipment:

Detlef Buettner, (907) 465-3496, [detlef.buettner@alaska.gov](mailto:detlef.buettner@alaska.gov)

Kristeen Brooks, (907) 465-3483, [kristeen.brooks@alaska.gov](mailto:kristeen.brooks@alaska.gov)

Charge the shipment cost to a credit card number that Wings of Alaska will have on file for this purpose only. **Get paper receipts** for the freight shipment and credit card charge and mail the receipts at the end of each month to the Haines ADF&G office. Stamped envelopes are provided in your file box for this purpose.



