Pacific Salmon Commission, Northern Fund Final Report

Northern & Transboundary Sockeye Salmon Matched Scale-Tissue Sampling – Final Report for Northern Fund, COOP-14-006; NF-2013-I-7

By

Anna R. Buettner

and

Anne M. Reynolds

July 2014

Alaska Department of Fish and Game **Division of 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, Special Publications and the Division of Commercial Fisheries Regional Reports. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

PACIFIC SALMON COMMISSION, NORTHERN FUND FINAL REPORT

NORTHERN & TRANSBOUNDARY SOCKEYE SALMON MATCHED SCALE-TISSUE SAMPLING YEAR 6

(COOP-14-006; NF-2013-I-7)

Anne M. Reynolds
Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas

Alaska Department of Fish and Game
Division of Commercial Fisheries, Publications Section
P.O. Box 110024
Juneau, Alaska 99811-0024

July 2014

This investigation was financed by the Pacific Salmon Commission Northern Fund.

The Regional Information Report Series was established in 1987 and was redefined in 2007 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as project operational plans, area management plans, budgetary information, staff comments and opinions to Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at: http://www.sf.adfg.ak.us/statewide/divreprots/htlm/intersearch.cfm.

Anna Buettner
Alaska Department of Fish and Game, Division of Commercial Fisheries,
2030 Sea Level Dr. Suite 205, Ketchikan, Alaska USA

Anne Reynolds
Alaska Department of Fish and Game, Division of Commercial Fisheries,
802 3rd Street, Douglas, Alaska, USA

This document should be cited as:
Buettner, A.R, and Reynolds, Anne M., 2014. Northern & Transboundary Sockeye Salmon Matched Scale-Tissue Sampling – final report for COOP-14-006; NF-2013-I-7. Alaska Department of Fish and Game, Pacific Salmon Commission, Northern Fund Final Report

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ABSTRACT

Correct estimates of the Nass, Skeena, Stikine River, and Taku River sockeye salmon contribution to the commercial catch in Southeast Alaska must be calculated to fulfill Pacific Salmon Treaty harvest-sharing agreements. Matched sockeye salmon scale and tissue samples for stock identification analyses were collected from the weekly catches in the 2013 and early 2014 Southeast Alaska drift gillnet fishing districts 101, 106, 108, and 111. Matched samples were also collected from sockeye harvested in the Southeast Alaska purse seine fisheries in districts 101, 102, 103, and 104. A total of 14,851 matched samples were collected from July 1–August 25, 2013 and 3,111 matched samples were collected from June 1–June 30, 2014. These matched samples will be used to determine the age composition (scales), hatchery contribution (otoliths), and stock composition proportions (DNA) of the sockeye caught in commercial net fisheries in Southeast Alaska.

Key words: sockeye salmon, *Oncorhynchus nerka*, matched biological sampling, scale pattern analysis, Southeast Alaska, Canada, Northern Boundary Area, Transboundary Area

INTRODUCTION

Provisions of the 2009 Pacific Salmon Treaty (PST) specify abundance-based harvest sharing agreements for Canadian Nass and Skeena River and Transboundary Stikine River and Taku River sockeye salmon in selected Southeast Alaska fisheries. In these fisheries the United States is allowed to harvest a fixed percentage of the return of Nass, Skeena, Stikine, and Taku sockeye stocks. Accurate estimates of the catch of these stocks of sockeye salmon in all United States and Canadian commercial fisheries is required, along with escapement estimates, to calculate their total return, and the percentage of that return caught in treaty-limited fisheries.

In the District 101 gillnet fishery the United States is allowed to harvest 13.8% of the Annual Allowable Harvest (AAH) of Nass River sockeye stocks. In the District 104 purse seine fishery, prior to statistical week 31 (late July), the United States is allowed to harvest 2.45% of the combined AAH of Nass and Skeena River sockeye salmon returns. In the Southeast Alaska fishing Districts 106 and 108 the United States is allowed to harvest 50% of the Total Allowable Catch (TAC) of Stikine River sockeye salmon each week as determined by the pre-season forecast and in-season model. In Southeast Alaska fishing District 111 the PST specifies that the United States and Canada will manage the return of Taku River sockeye to ensure that each country obtains catches equivalent to their share of wild sockeye and a 50% share of enhanced sockeye. The relative strength of the wild and enhanced returns of sockeye salmon need to be assessed in season by inspecting otoliths for thermal marks to avoid over-harvest of wild stocks.

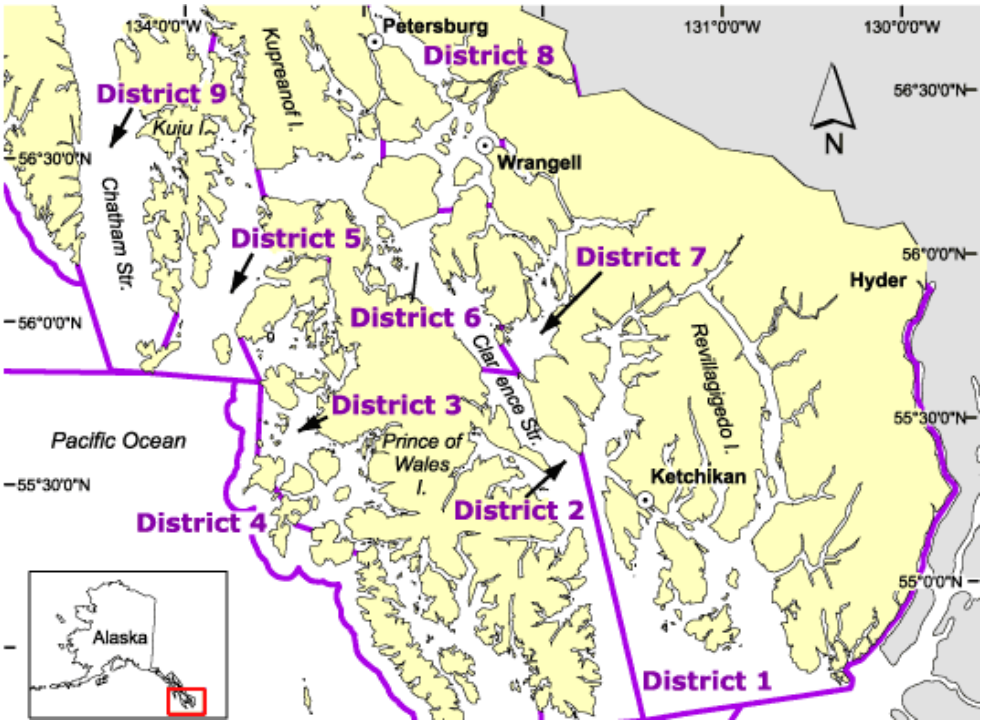

Figure 1. – Geographic location of ADF&G commercial fishing districts 101-109. Map obtained from the ADF&G web page (http://www.cf.adfg.state.ak.us/region1/finfish/salmon/maps).

In the District 106, 108 and 111 gillnet fisheries the United States is allowed to harvest 50% of the annual Total Allowable Catch (TAC) of Stikine River wild and enhanced sockeye salmon (Figure 1 and Figure 2). Significant numbers of enhanced sockeye propagated under treaty agreement are caught in the District 106, 108 and 111 gillnet fisheries and the relative strength of the wild and enhanced returns need to be assessed in season by inspecting otoliths for thermal marks to avoid over-harvest of wild stocks.

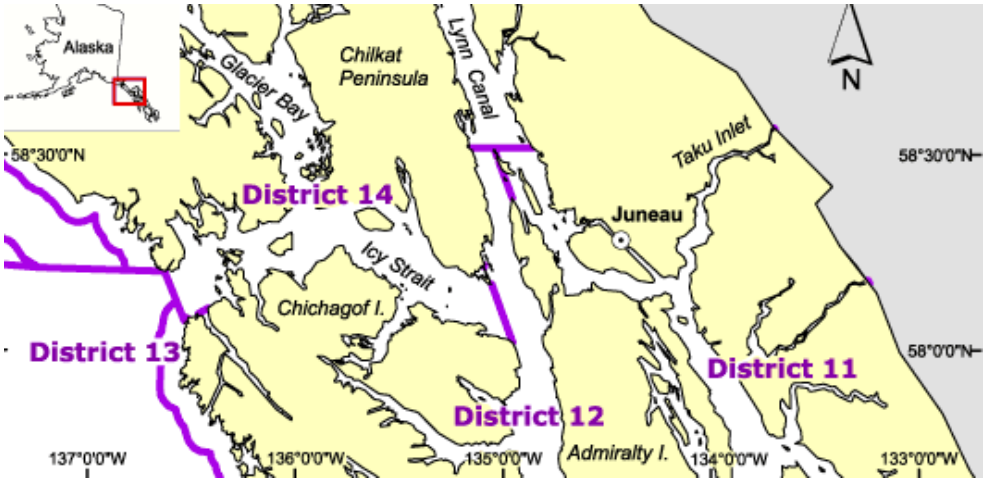

Figure 2. – Geographic location of ADF&G commercial fishing district 111 (labeled District 11). Map obtained from the ADF&G web page (http://www.cf.adfg.state.ak.us/region1/finfish/salmon/maps).

In 1982 the Alaska Department of Fish and Game conducted a study to determine if scale pattern analysis (SPA) of sockeye salmon scales was useful in discriminating stocks harvested in Southeast Alaska (Marshall, 1984). Results of this study showed that SPA could accurately distinguish sockeye scales

From 1982–2010 the catch of Canadian Nass and Skeena sockeye salmon in the District 101, 106, and 108 gillnet fisheries and the Districts 101-104 purse seine fisheries has been estimated using scale pattern analysis (SPA). SPA has also been used from 1982–2011 to estimate the catch of Transboundary Stikine River sockeye salmon in the District 106 and 108 gillnet fisheries and the catch of Transboundary Taku River sockeye salmon in the District 111 gillnet fishery.

Scale pattern stock identification analysis of sockeye salmon, primarily based on patterns of freshwater rearing growth, can only identify relatively large groups of stocks; e.g. Alaska, Nass, Skeena, and Stikine. Scale analysis is not cost effective, is labor intensive, time consuming and requires yearly sampling of escapements to form an annual baseline which precludes its use in-season. These and other problems in accurately estimating stock-specific catches and total returns of sockeye salmon resulted in an extensive investigation by the Northern Boundary Technical Committee (NBTC) of the run reconstruction modeling process currently used. The NBTC concluded that improved stock identification techniques capable of accurately estimating specific groups of stocks are needed to accurately evaluate effectiveness of and improve, if possible, existing run reconstruction methods.

Genetic Stock Identification (GSI) analyses are a powerful and well documented technology. Various types of genetic stock identification techniques, including mitochondrial (mDNA) and single nucleotide polymorphism (SNP) analyses, have demonstrated accuracy in estimating the contribution of specific sockeye salmon stocks to mixed stock fisheries in Southeast Alaska and northern British Columbia. Fisheries and Oceans Canada (DFO) started using mixed stock analysis (MSA) based on genetic markers as a marine stock identification tool in 1996. This method has been used along with SPA for stock separation of Canadian Nass and Skeena in-river fisheries and DFO has a long-term plan to use MSA solely in their analysis.

Matched scale-tissue samples have allowed side-by-side comparison of GSI and SPA based stock identification estimates in Southeast Alaska fisheries. This will be useful in indexing the new GSI estimates to the SPA estimates which go back to 1982 and were used in calculating the current harvest sharing agreements.

OBJECTIVE

The objective of this study was to representatively collect matched scale and tissue samples from sockeye that were commercially harvested each statistical week from the Districts 101, 106, 108 and 111 gillnet fisheries, the District 182-30 set gillnet fishery, and the Districts 101, 102, 103, and 104 purse seine fisheries. Matched samples are required for several PST related stock identification projects including: 1) Boundary Area Alaska-Nass-Skeena run reconstruction, 2) McDonald Lake run reconstruction, 3) Stikine River run reconstruction, and 4) Taku-Snettisham run reconstruction. Scales were used for age composition and DNA tissues were used for stock

identification. Otoliths are used in-season to estimate the relative strength of wild and enhanced McDonald, Taku, Snettisham, and Stikine sockeye returns.

This report covers only matched sampling collection as performed by the Alaska Fish and Game Commercial Fisheries Port Sampling Project. GSI and otolith analysis are separate projects.

METHODS

ADF&G commercial port samplers were stationed onboard tenders buying fish on the fishing grounds and in port during dockside deliveries in Ketchikan, Petersburg, Wrangell, and Juneau. Port samplers determined where a specific boat was fishing or from what fishing districts a tender bought fish and collected up to 40 sockeye from each boat or up to 200 from a tender. Port samplers also collected biological data from each fish, including scale samples, sex, and an axillary fin clip. A measurement (nearest 5mm mid-eye to fork) was collected for a sub-set of fish that were sampled. Scale samples were collected from the left side of the fish; two rows above the lateral line on the diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin. Scales were mounted on gum cards with forceps. Scale samples were sent to the ADF&G Region 1 Scale Aging Laboratory in Douglas weekly for age processing. Impressions of the scales were made in cellulose acetate. Scale impressions were then examined under moderate (70x) magnification to determine age. Criteria used to assign ages were similar to those of Mosher (1968), and ages were reported in European notation (Koo 1962).

For those sockeye sampled from fishing Districts 106, 108, and 111 port samplers applied a uniquely numbered six digit coordination tag to the fish head so it could later be collected in a processing plant. The six digit coordination tag number was recorded in the right margin of the ADF&G Commercial Fisheries Age-Sex-Length (ASL) form and on the back of the form for upload into the ADF&G Southeast Region database. Tagged heads were recovered at processing plants and shipped to the ADF&G Thermal Mark Laboratory in Juneau for otolith extraction and processing. The coordination tag number linked the otolith tray and specimen numbers to the scale and DNA specimens.

Approximately 0.5-1 inch of the axillary process or “spine” located above the pelvic fin was collected for DNA from each sockeye using clippers. Each axillary process was placed in a uniquely numbered 2ml cryovial filled with ethanol to preserve the tissue. The vial number was recorded next to the corresponding coordination tag number on the ADF&G Matched Sample Form. The DNA vial number was entered into the ADF&G Region database by technicians working in the Douglas Scale Aging Laboratory on a weekly basis.

The DNA tissue samples were processed and analyzed by the ADF&G Gene Conservation Laboratory and the Auke Bay Laboratories/Ted Stevens Marine Research Institute.

RESULTS

A total of 17,962 matched scale-tissue samples were collected from July 1, 2013- June 30, 2014 (Tables 1-11). Weekly sampling goals were sometimes not achieved due to low catches or catches from different fisheries being mixed onboard fish tenders before being delivered to processors. Sub district specific purse seine samples in particular are difficult to obtain since numerous areas are open at the same time and seiners move between areas frequently seeking concentrations of fish resulting in mixed sub-area deliveries in port.

Scale age analysis shows that sockeye harvested in the seine and gillnet fisheries were dominated by four year old fish (Table 12). Genetic analysis is on-going.

DISCUSSION

Pacific Salmon Treaty based harvest sharing agreements were renewed in 2009 for the Northern Boundary area fisheries -Alaska District 104 purse seine, Alaska District 101 drift gillnet, Canadian Area 3 net, and Canadian Area 1 troll. The agreements are "abundance based" where the allowable harvest is a percentage of the Annual Allowable Harvest (AAH).

In Alaska's District 104 purse seine fishery, the Nass and Skeena sockeye salmon run size determines the AAH of these stocks prior to Statistical Week 31. In the District 104 purse seine fishery the agreement specifies a harvest, from the beginning of the season through Statistical Week 30, of 2.45% of the combined AAH of both the Nass and Skeena River runs. The fishery opens the first Sunday in July; in 2013 the initial opening was July 7 (Week 28). The pre-week 31 fishing plan for District 104 was based on the preseason Canadian Department of Fisheries and Oceans (DFO) forecast returns of approximately 1,152,000 Nass and Skeena sockeye salmon. In the 2013 Treaty period (Alaska statistical weeks 27-30), 13,102 sockeye were harvested during one 12-hour openings in Week 28; one 12-hour openings in Week 29, and one 12-hour and one 10-hour opening in week 30 (Table 1). A total of 36 purse seine vessels fished at some time in the district during the Treaty period. In past years 60% to 80% of Treaty-period sockeye salmon have been of Nass and Skeena origin, therefore we would anticipate between 7,900 and 10,500 Nass and Skeena sockeye salmon may have been harvested in the District 104 purse seine fishery during the 2013 Treaty period. The final number of Nass and Skeena sockeye salmon harvested, and the actual catch by stock, will not be available until catch, escapement, and stock composition estimates are finalized for the year (2013 Northern Boundary Technical Committee Bilateral Report).

In Alaska's District 101 gillnet fishery, the AAH is based solely on the run size of Nass River sockeye salmon. The AAH is calculated as the total run of Nass sockeye salmon minus either the escapement requirement of 200,000 or the actual in-river escapement, whichever is less. In the District 101 (Tree Point) drift gillnet fishery, the agreement specifies a harvest of 13.8 percent of the AAH of the Nass River sockeye salmon run. The return of Nass sockeye salmon was forecast at 452,000 in 2013 which, minus an escapement goal of 200,000, would result in an AAH of about 252,000. Using this forecast the 2013 allowable harvest in the District 101 gillnet fishery was about 34,000 Nass River sockeye salmon (2013 Northern Boundary Technical Committee Bilateral Report).

In 2013 progress in achieving sampling goals, sample quality control, and the quality of record keeping necessary to match stock composition estimates, were monitored on a daily basis by port sampling supervisors in Juneau, Ketchikan and Petersburg and on a weekly basis by the regional data coordinator and project supervisor in Juneau. Representative sampling of the landed catch was assured by: 1) sampling landings in Petersburg, Wrangell, Ketchikan, Juneau, and Yakutat; 2) collecting no more than 40 samples from individual fishing boat deliveries or 200 from individual tender deliveries; 3) placing samplers onboard vessels purchasing fish on the grounds to obtain unmixed sub district specific samples; 4) sampling throughout the duration of each weekly opening; and 5) interviewing vessel personnel and checking fish tickets to assure that all fish onboard were caught in the targeted fishery. Sockeye salmon catches in traditional Alaska

boundary area gillnet and purse seine fisheries, including treaty fisheries, were below average in all areas.

Replacement of SPA with an accurate, genetically based, stock identification techniques has facilitated: 1) reduced sampling costs since the annual baseline escapement samples needed for scale analysis will no longer be needed; 2) much finer resolution of individual stocks allowing stock specific migratory routing and timing studies; 3) the potential for in season stock identification analyses which cannot be done with scale analysis because the baseline samples required cannot be collected until early fall; 4) stock specific spawner-recruit analyses; and 5) providing managers with the ability to shift time and area openings to access surplus stocks or avoid weak stocks.

The negotiated percentages of the annual allowable harvest of Nass and Skeena sockeye that can be taken in Alaska's District 101 gillnet and 104 purse seine fisheries are based on average interception rates in these fisheries estimated by scale pattern analyses between 1985 and 1997. Having matched scale-tissue samples has allowed direct comparison of the two techniques which will allow researchers to determine if any apparent changes in interception rates are real or are due to differences in estimates produced by the two techniques. At this time the comparison of both scale patterns analysis and DNA for years 2004-2008 is complete and digitizing of sockeye scales collected in Southeast Alaska Districts 101-104 will no longer be conducted following the 2009 collection year. Comparative analysis of Districts 106, 108 and 111 Gillnet is on-going.

ACKNOWLEDGMENTS

We would like to particularly thank Jeffrey Rice and Anna Buettner who coordinated the collection of samples from the ports of Petersburg and Ketchikan. We would also like to thank all the ADF&G Port Samplers and staff who assisted in sample collection throughout the region.

REFERENCES

Koo, T. S. Y. 1962. Age designation in salmon. Pages 37–48 in T. S. Y. Koo, editor, Studies of Alaska red salmon. University of Washington Press, Seattle, Washington.

Mosher, K. H. 1968. Photographic atlas of sockeye salmon scales. Fishery Bulletin 67(2):243 279.

Pacific Salmon Commission Bilateral Northern Boundary Technical Committee. 2013. U.S./Canada Northern Boundary Area 2012 Salmon Fisheries Management Report and 2013 Preliminary Expectations. Pacific Salmon Comm. Tech. Rep. No. (13)-1: 70 p.

Table 1.–Weekly matched scale-tissue samples collected for stock identification analysis from Alaska's District 101 gillnet fishery July 1, 2013–June 30, 2014.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 6, 2013	27	8,931	300
July 13, 2013	28	7,878	260
July 20, 2013	29	7,967	261
July 27, 2013	30	6,646	260
August 3, 2013	31	5,688	260
August 10, 2013	32	1,986	238
August 17, 2013	33	828	188
August 24, 2013	34	617	135
June 21, 2014	25	5,472	200
June 28, 2014	26	7,372	260
Total		53,385	2,362

Table 2.–Weekly matched scale-tissue samples collected for stock identification analysis from Alaska's District 106 gillnet fishery July 1, 2013–June 30, 2014.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 6, 2013	27	9,173	600
July 13, 2013	28	8,514	600
July 20, 2013	29	9,360	380
July 27, 2013	30	5,186	600
August 3, 2013	31	3,876	350
August 10, 2013	32	1,432	460
August 17, 2013	33	808	93
June 21, 2014	25	3,218	300
June 28, 2014	26	2,626	230
Total		44,193	3,613

Table 3.–Weekly matched scale-tissue samples collected for stock identification analysis from Alaska's District 108 gillnet fishery July 1, 2013–June 30, 2014.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 6, 2013	27	4,596	203

July 13, 2013	28	2,571	348
July 20, 2013	29	2,966	380
July 27, 2013	30	1,562	300
August 3, 2013	31	879	299
August 10, 2013	32	523	134
August 17, 2013	33	295	96
June 21, 2014	25	1,567	320
June 28, 2014	26	2,666	440
Total		17,625	2,520

Table 4.–Weekly matched scale-tissue samples collected for stock identification analysis from Alaska's District 111 gillnet fishery July 1, 2013–June 30, 2014.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 6, 2013	27	11,399	480
July 13, 2013	28	33,188	520
July 20, 2013	29	36,681	620
July 27, 2013	30	20,477	500
August 3, 2013	31	17,906	534
August 10, 2013	32	4,615	0
August 17, 2013	33	2,462	0
June 21, 2014	25	1,588	350
June 28, 2014	26	2,145	375
Total		130,461	3,379

Table 5.–Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 101 purse seine fishery July 1, 2013–August 25, 2013.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 14, 2013	28	3,919	260
July 21, 2013	29	7,377	260
July 28, 2013	30	8,639	260
August 4, 2013	31	5,880	260
August 11, 2013	32	1,969	180
August 18, 2013	33	1,266	197
August 25, 2013	34	970	37
Total		30,020	1,454

Table 6.-Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 102 purse seine fishery July 1, 2013 - June 30, 2014.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 6, 2013	27	7,651	260
July 13, 2013	28	10,539	262
July 20, 2013	29	3,077	80
July 27, 2013	30	5,246	260
August 3, 2013	31	6,993	260
August 10, 2013	32	2,970	106
August 17, 2013	33	1,204	110
August 24, 2013	34	1,076	151
June 21, 2014	25	323	40
June 28, 2014	26	1,419	260
Total		40,498	1,789

Table 7.–Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 103 purse seine fishery July 1, 2013–August 25, 2013.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 27, 2013	30	743	27
August 3, 2013	31	1,997	103
August 10, 2013	32	1,420	18
August 17, 2013	33	1,684	42
August 24, 2013	34	1,356	76
Total		7,200	266

Table 8.–Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 104 purse seine fishery July 1, 2013–August 24, 2013.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 13, 2013	28	5,152	160
July 20, 2013	29	3,250	120
July 27, 2013	30	4,700	180
August 3, 2013	31	11,408	180
August 10, 2013	32	15,995	160
August 17, 2013	33	25,454	260
August 24, 2013	34	10,873	140

Total	76,832	1,200

Table 9.- Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 105 purse seine fishery July 1, 2013–August 17, 2013.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 27, 2013	30	32	10
August 3, 2013	31	193	0
August 10, 2013	32	33	15
August 17, 2013	33	5	0
August 25, 2013	34	144	17
Total		407	42

Table 10.–Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 107 purse seine fishery July 1, 2013–August 23, 2013.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 13, 2013	28	589	107
July 20, 2013	29	1,417	129
July 27, 2013	30	1,699	260
August 3, 2013	31	1,246	0
August 10, 2013	32	478	67
August 17, 2013	33	232	86
Total		5,661	649

Table 11.–Weekly matched scale-tissue samples collected for scale pattern analysis from Alaska's District 182-30 set gillnet fishery July 1, 2013–June 30, 2014.

Week Ending	Statistical Week	Sockeye Catch	Matched Scale-Tissue Samples
July 6, 2013	27	659	100
July 13, 2013	28	718	80
July 20, 2013	29	1,008	80
July 27, 2013	30	918	40
August 3, 2013	31	142	40
August 10, 2013	32	2,188	40
August 17, 2013	33	65	14
June 8, 2014	23	2,517	79

June 15, 2014	24	3,193	80
June 22, 2014	25	6,962	77
June 29, 2014	26	1,371	100
Total		19,741	730

Table 12.–Age composition of sockeye salmon scale samples collected from July 1, 2013–August 25, 2013 in Southeast Alaska net fisheries (ages for late June 2014 samples are pending).

		Age Class													
Gear	District	0.2	0.3	0.4	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.2	3.3	4.2
Seine	101	4	4		42	360	124		39	304	245		3	2	
	102	1	8		50	400	134	1	44	199	282	1	3	3	1
	103				13	77	38		5	46	27				
	104		6		35	461	160	1	3	185	136	1		2	
	107		8		55	107	29		78	150	90			2	
Gillnet	101	1	20			157	273	6	1	601	473	1	8	4	
	106	3	57		2	566	713	12	3	416	891	3	16	11	
	108	1	96	1		191	834	17		60	173	1	9	2	
	111	6	194	4		331	1549	4		28	171				
Set net	182	36	604	2	2	368	677	1	4	82	207				

BUDGET SUMMARY

The budget allocation for this project was as follows:

Salary for ADF&G port sampling personnel:		$138,745
Travel; to/from Juneau, Ketchikan, Petersburg, Wrangell		$1,740
Contractual; pay to tenders for onboard samplers, cell phone charges, shipping, etc.		$10,000
Supplies; vials, forms, tags, gloves, etc.		$14,950
Subtotal Direct	$165,435	
ADF&G Overhead: $165,435 x 14%		$23,161
TOTAL		$188,596

Actual direct expenditures for this project were as follows:

Line 100, salaries and benefits		$60,111.38
Line 200, travel		$2,035.45
Line 300 Contractual		$4,036.89
Line 400 Commodities		$10,000.54
Subtotal Direct	$76,184.26	

Total direct project expenditures by Alaska Fish and Game totaled $76,184.26. Project expenditures differed from the project proposal due to vacancy factor in another available fund. All project expenditures by Alaska Fish and Game were for personnel, travel, contractual and commodities related to matched sample collection in Ketchikan, Petersburg, Wrangell, and Juneau as well as project supervision from Juneau. ADF&G personnel coded to this project included: 1) Tessa Minicucci; Juneau port sampling, 2) Lezlie Rice; Wrangell port sampling; 3) Jason McGinley, Richard Cowie, Zachary Hamilton, Austin Otos, and Timothy Glore Tyson Hewitt; Ketchikan port sampling, 4) Vera Goudima and Abbey Jackson; Petersburg port sampling.