

**Fish Creek Sockeye and Coho Salmon Escapement  
2013 and 2014**

by

**Suzanne Hayes**

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November 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	≥
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	≤
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	°C	registered trademark	®	percent	%
degrees Fahrenheit	°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.2A.2013.22***

**FISH CREEK SOCKEYE AND COHO SALMON ESCAPEMENT 2013  
AND 2014**

by

Suzanne Hayes

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

Alaska Department of Fish and Game  
Division

November 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/>

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**OPERATIONAL PLAN FY13**

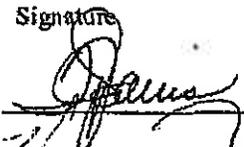
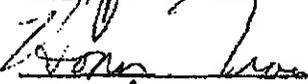
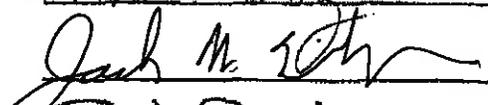
**INVESTIGATING ABSENCE/PRESENCE OF NONNATIVE CRAYFISH  
IN THE BUSKIN WATERSHED, KODIAK**

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Assisting Personnel: Daniel Reed, Project Biometrician III  
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Date Submitted: July 10, 2013

APPROVED

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## PURPOSE

Fish Creek escapement information is needed by the Alaska Department of Fish and Game (ADF&G) to manage the commercial, sport and personal use fisheries that utilize the Fish Creek sockeye salmon *Oncorhynchus nerka* and coho salmon *Oncorhynchus kisutch* stocks. Fish Creek origin sockeye and coho salmon are currently harvested in mixed-stock commercial fisheries in Upper Cook Inlet. They are also harvested in a weekend-only sport fishery in August and September, in the Fish Creek personal use dipnet fishery, and in educational permit fisheries. Sockeye and Coho salmon escapement is measured with the weir above the sport fishery (Figure 1.) The sustainable escapement goals SEG for Fish Creek salmon are 20,000 – 70,000 sockeye salmon, (Fair et al. 2007), and 1,200 – 4,400 coho salmon (Fair et al. 2010). A run of 61,000 sockeye salmon is forecasted for Fish Creek in 2013, of which approximately 50% are expected to be harvested in the mixed stock commercial fishery (Eggers 2013). There is no coho salmon forecast for Fish creek.

## BACKGROUND

### Sockeye

The Fish Creek sockeye salmon escapement is assessed jointly by the Division of Sport Fish Palmer (SF) and the Division of Commercial Fisheries in Soldotna (CF). CF is the primary manager of the stock but SF is the closest field office and operates the Fish Creek weir. CF will establish objective criteria, read the sockeye salmon scales, calculate age and sex composition, length-at-age, and report the results. Inseason escapement information will be used by SF to manage the personal use dip net fishery. Escapement and age information will be used by CF to estimate the stock composition of the commercial harvest, construct brood tables and forecast future adult returns of Fish Creek sockeye salmon.

From 2001 to 2012, Fish Creek sockeye weir counts have ranged from 14,215 (2005) to 126,836 (2010), and averaged 53,162 sockeye salmon (Table 1). Hatchery supplementation of Fish Creek sockeye salmon began in 1976 and continued through 2008. The hatchery contribution to total sockeye salmon escapement in Fish Creek ranged from 36% (2009) to 73% (2006) with the average of 58%. The sockeye salmon run to Fish creek is no longer enhanced.

### Coho

The Fish creek weir counts for complete coho runs, 1998-2003, 2009 - 2010, and 2012 ranged from 1,237 to 14,651. In years when funding was not available for enumerating the entire coho run the weir was pulled on August 15. In 2013 and 2014, the Fish Creek weir will be operated until late September to count the entire coho escapement. The USFWS is providing funding to run the weir in August and September. The USFWS has PIT (Passive Integrated Transponder) tagged juvenile coho salmon in the Big Lake drainage, in Fish and Meadow creeks. The weir on Fish creek will be used to recover returning adult coho salmon that were tagged with PIT tags in 2011, 2012 and 2013, in order to determine run timing of individually PIT tagged fish, and if possible to determine age and growth statistics for those fish. In addition the SF crew will also collect tissue samples from coho salmon to establish a Fish Creek genetics baseline sample for the ADFG gene conservation laboratory.

## **OBJECTIVES**

1. Count the number of adult sockeye and coho salmon in Fish Creek that pass through the weir from July 5 to September 25.
2. Estimate the age and sex composition of the adult sockeye salmon escapement in Fish Creek such that these estimates are within 5 percentage points of the true values 90% of the time.
3. Count the number of adult coho, sockeye, and other salmon species downstream of the weir on the day that the weir is taken out.

## **SECONDARY OBJECTIVES**

1. Collect tissue samples from 100 Fish Creek coho salmon for the CF Gene Conservation Laboratory.
2. Collect scales, measure length, determine sex and determine age from all PIT tagged adult coho salmon migrating through the weir at Fish Creek from August 1 to September 25.

## **METHODS**

### **Escapement**

A rigid, aluminum-picket weir will be installed on Fish Creek about 0.5 river miles upstream of Lewis Road (Figure 1) on or about July 7 and will operate until September 25 each year. Spacing between pickets on the weir and live trap will be  $\leq 38$  mm (1.5 in). All salmon will be identified and counted as they swim through a live trap or as they are released upstream of the weir after being sampled for age, length, and sex (Objectives 1, 2). The weir will be staffed by one SF Fish and Wildlife Technician at a time, and fish will be counted during daylight hours. The weir will be regularly cleaned of debris and inspected for gaps that would allow salmon to pass upstream undetected.

Salmon may be present downstream of the weir at Fish Creek when the weir is removed, and salmon between the weir and tide water will be identified and counted by species in a single foot survey and recorded as live or dead ( Objective 3). The weir escapement for each species will be the number counted at the weir, however, the number of fish of each species downstream of the weir on the last day of weir operations will be noted in the inseason13.xls (inseason13.xls in 2013 and inseason14.xls in 2014) files and in the NCI escapement timing.xls file after each season.

### **Biological Samples**

#### **Sockeye Salmon**

Five hundred (500) age, length, sex (ALS) samples will be collected to estimate the age composition of the Fish Creek sockeye salmon escapement (Objective 2). The forecasted 2013 escapement of sockeye salmon for Fish Creek is 30,500, based on the total run forecast of 61,000 (Eggers et al. 2013) and an assumed commercial exploitation rate of 50%.

The sampling ratio will start each year at 1 in 61 (500/30,500) unless an addendum is attached to this operational plan. If the escapement forecast is realized, this ratio should yield approximately 500 samples. Sockeye salmon will be sampled in proportion to the daily escapement, and each

day's sample will be based on the previous day's escapement. The number of fish sampled will be evaluated after each quartile of the historic run timing and adjustments to the sampling ratio will be made to ensure adequate samples are collected throughout the escapement. The 1978-2010 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> quartiles have averaged July 22, 25, and 30, respectively.

Sample size for age composition is based on a multinomial distribution and a scale regeneration rate of 20%. A sample size of 403 readable scales is needed to estimate age composition of the sockeye salmon escapement within 5% of the true proportion 90% of the time (Thompson 1987). Given the expected number of unreadable scales (approximately 100), we will collect a total of 500 scales in proportion to the daily escapement.

### **Coho Salmon genetic sample and PIT tag recovery**

The sample size goal for creating a genetic baseline for Fish creek coho salmon is 100 coho salmon annually, axillary processes will be removed from 25 coho salmon per sample period (7 days), starting on August 11 and ending September 7 (Secondary objective 1).

Age, length, sex (ALS) samples will be collected from every PIT tag coho salmon detected and collected (Secondary Objective 2). USFWS will provide the tag detection equipment and perform detection tests. As of July 9<sup>th</sup> 2013 USFWS has not provided PIT tag detection equipment or instruction. Once the equipment is installed the SF technician will attempt to capture those coho migrating through the trap that have a tag. The number of coho expected to have a PIT tag is less than 60 in 2013, and less than 200 in 2014. These numbers are based on the number of smolt out migrating in 2012 and 2013 with PIT tags (339 in 2012 and 1,600 in 2013) and a 20% survival rate from smolt to adult.

## **DATA COLLECTION**

### **ESCAPEMENT**

The following information will be collected each day and reported to the Palmer ADF&G office before 8:00 a.m. the following day:

1. The number of sockeye salmon adults passed upstream of the weir.
2. The number of jack sockeye salmon passed upstream of the weir.
3. The number of sockeye salmon sampled for ALS information.
4. The number of coho salmon passed upstream of the weir.
5. The number of coho salmon with PIT tags sampled for ALS information.
6. The number of coho salmon sampled for genetic tissue.
7. The number and species of other fish passed through the live trap of the weir.
8. Water temperature and water stage at 9:00 AM.
9. Any comments regarding the ability to accurately count salmon through the live trap.

The information detailed above will be recorded on a daily report form (Appendix A1). In addition, daily and cumulative values of sockeye salmon counted and sampled for ALS will be recorded in a Rite-in-the-Rain note book that will be returned to the project biologist at the end of the season.

## **AGE-LENGTH-SEX COMPOSITION AND GENETIC SAMPLING**

Scales will be taken from the preferred area on the left side of the body at a point on a diagonal line from the posterior edge of the dorsal fin to the anterior edge of the anal fin and two rows above the lateral line (Appendix A2, Clutter and Whitesel, 1956). The sex of each sampled fish will be identified from external sexual characteristics. Mid-eye to tail fork (MEF) length will be measured to the nearest 1 mm. (Appendix A3).

Scales will be mounted on gum cards, with one scale taken from each sampled sockeye salmon and three scales taken from each coho salmon (Appendix A2). The sockeye salmon gum card will have 40 locations for scales, the coho gum card will have 30 locations for scales from 10 fish. All ALS data will initially be recorded in a “Rite-in-the-Rain” book., any PIT tag numbers detected will be recorded in the Rite in the rain notebook with corresponding scale number and ALS data. The PIT tag numbers will also be recorded on the Upper Cook Inlet Adult Salmon Age-Length forms under comments. Sockeye and coho salmon length and sex data will be transcribed on the Upper Cook Inlet Adult Salmon Age-Length forms (Appendices A4, A5).

The axillary process will be taken from 25 coho salmon per week starting on August 11. The sample will be cleaned of sand and slime and will be placed in a small numbered plastic vial (please see Appendix A6 for complete instructions). The vial number will be recorded in the Rite-In-the-Rain® notebooks while sampling. The vial number will be recorded as a genetics number, on the Upper Cook Inlet Adult Salmon Age-Length form.

## **DATA REDUCTION**

The field technician will maintain the daily report form (Appendix A1) and a field notebook of daily information at the weir camp. Daily weir counts, water data and comments will be reported by telephone to the Palmer Office (746-6328). A Palmer biologist will enter the data into an Excel spreadsheet (following the structure of the form described in Appendix A1) located in the O:\SF\INSEASON\2013 (in 2013), O:\SF\INSEASON\2014 (in 2014). The data will then be uploaded to the SF intranet (<http://docushare.sf.adfg.state.ak.us/dsweb/View/Collection-6451>) for access by both SF and CF biologists for management decisions. Sockeye and coho salmon counts will be available for public viewing on the SF Internet site: “Fish Count Database”.

At the end of the season, the data in the daily report form will be reconciled with the data that was recorded via telephone during the season. If discrepancies occur, the assistant project biologist and field crew will confer to determine the appropriate values.

Sockeye salmon sex-length data and scale cards will be sent mid season and post season to Wendy Gist (Fisheries Biologist I) in charge of catch and escapement sampling program in Soldotna CF . Coho salmon sex-length data and scale cards will be sent post season to Wendy Gist for ageing.

## SCHEDULES AND DELIVERABLES

Dates of sampling events and other field and office activities are summarized below. Results will be published in a Report to the Board of Fisheries (FMR), in 2014, and data from 2014 and 2015 will be reported in the Area Management Report for the recreational fisheries of Northern Cook Inlet, 2014 and 2015.

Activity	Dates
July 7 – September 25	Escapement Counts
July 25 and August 30	Sockeye Scales Shipped to Soldotna CF
August 1 – September 25	PIT Tag detection
October 1	Coho Scales Shipped to Soldotna CF
October 15	Coho Genetic samples sent to Gene Lab
December 31	PIT tag summary Memo to USFWS

## RESPONSIBILITIES

Fishery Biologist II (SF) Oversees project by writing operational plan, preparing budgets, hiring and supervising crewmembers, tracking implementation of operational plan, providing assistance and direction when needed.

Fishery Biologist I (SF). Establishes safe and effective weir and camp. Maintains daily contact with and supervises field crew. Reviews daily reporting and summarization of data. Provides necessary level of training. Provides assistance and direction to the crew when needed. Completes routine administrative duties such as reviewing time sheets and approving leave. Tracks the budget and authorizes purchases. Routinely visits with the crew to observe activities, provide assistance and support, and discusses weir operation. Acquires daily data numbers from crew and updates, inseason and public data bases. Prepares and ships data and scales to CF in Soldotna., and genetic samples to CF in Anchorage. Reviews PIT tag information and acts as second reader for coho scales.

Biometrician III (SF) Assists in sampling design, sample size selection, and writing of operational plan.

Fish and Wildlife Technician II (SF): Conduct all aspects of field sampling according to the operational plan and verbal instructions. Perform routine maintenance on all state issued equipment. Report to the Palmer office daily and to the Assistant Project Biologist on holidays and weekends. Purchase all routine and expected supplies. Provide Assistant Project Leader with all receipts for purchases. Turn in completed timesheets on the 1<sup>st</sup> and 16<sup>th</sup> of each month.

Expeditor, Assists with acquisition of supplies for weir crew. Helps with ALS sampling when needed. Acts as a crew member in the event of an absence. Provides Assistant Project Leader with all receipts for purchases. Turns in completed timesheets on the 1<sup>st</sup> and 16<sup>th</sup> of each month.

Assisting Personnel, Fisheries Biologist III (CF): Provides the sample sizes CF requires for sockeye salmon, analyzes and publishes sockeye salmon results.

Assisting Personnel, Fisheries Biologist I (CF): Provides instruction for sampling methods and manuals for salmon ALS sampling. Ages salmon scales, compiles data and writes data reports.

Assisting Personnel, Jonathon Gerkin (USFWS ): Provides instruction and equipment for coho salmon PIT tag detection.

## **FY 14 BUDGETS**

Project: Fish Creek Sockeye

Project Number SF-2258

Dates July 1 – August 15

FY 2014 Allocation

Line	Description	Amount (x\$1,000)
100	Personnel	15.2
200	Travel	0.0
300	Services	0.7
400	Supplies	3.7
500	Equipment	0.0
Total		19.2

Project grant 44708

Big Lake Barrier Optimization Model

ADF&G SF Budget FY 13 - 15

Line	Description	Amount (x\$1,000)
100	Personnel	57.8
200	Travel	0.0
300	Services	1.0
400	Supplies	4.8
500	Equipment	0.0
600	Indirect	8.9
Total		72.6

## REFERENCES CITED

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- Thompson, S. K. 1987. Sample size for estimating multinomial proportions. The American Statistician 41:42-46.



## **TABLES AND FIGURES**

Table 1.—Recent weir counts for sockeye salmon at Fish Creek.

Year	Number of Sockeye Salmon
1993	116,419
1994	100,795
1995	115,101
1996	63,265
1997	55,035
1998	22,865
1999	26,725
2000	19,528
2001	43,500
2002	90,482
2003	91,921
2004	22,157
2005	14,215
2006	32,562
2007	27,948
2008	19,339
2009	83,480
2010	126,836
2011	66,678
2012	18,823

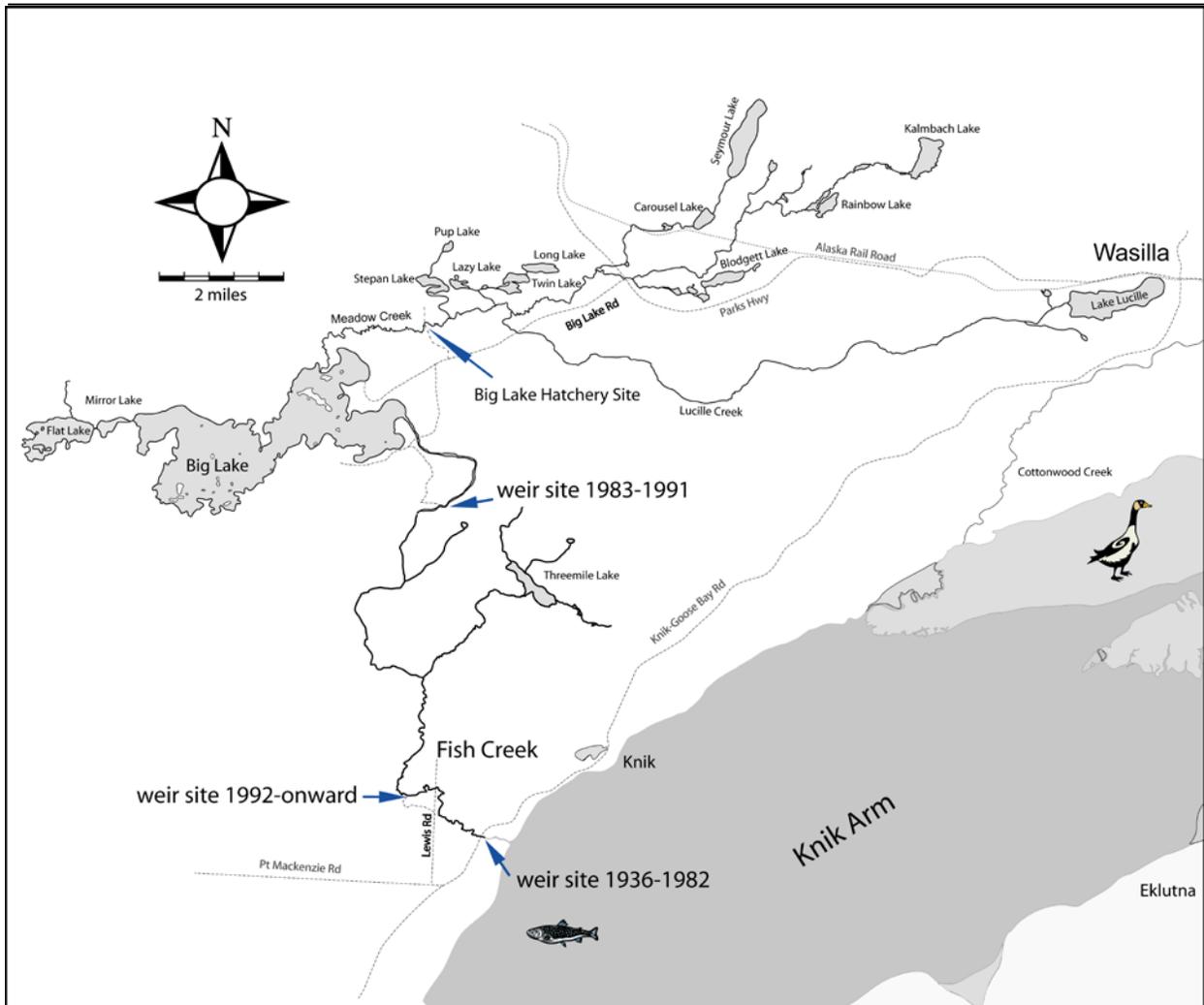


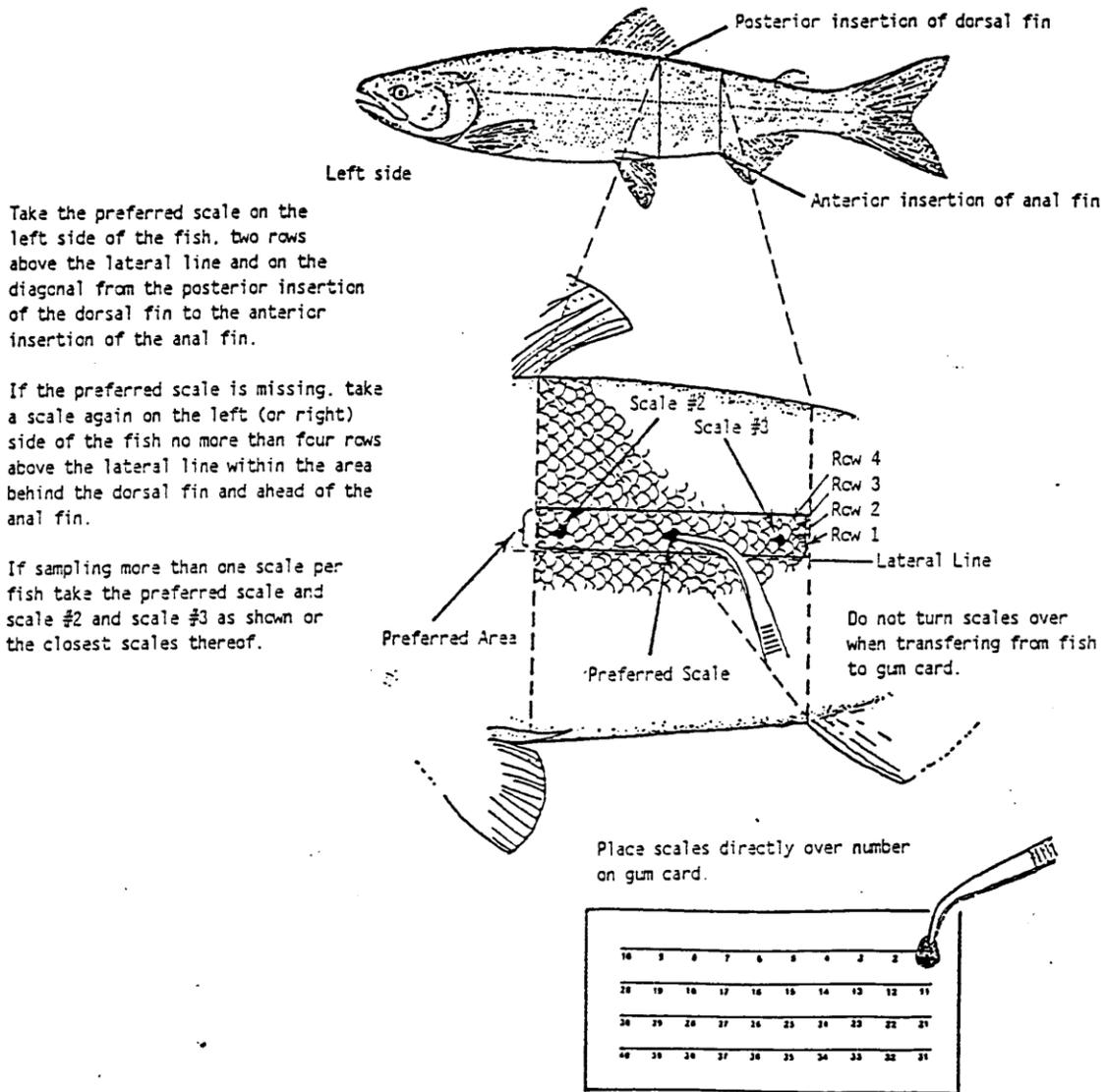
Figure 1. – Location of Fish Creek weir and the Big Lake watershed.



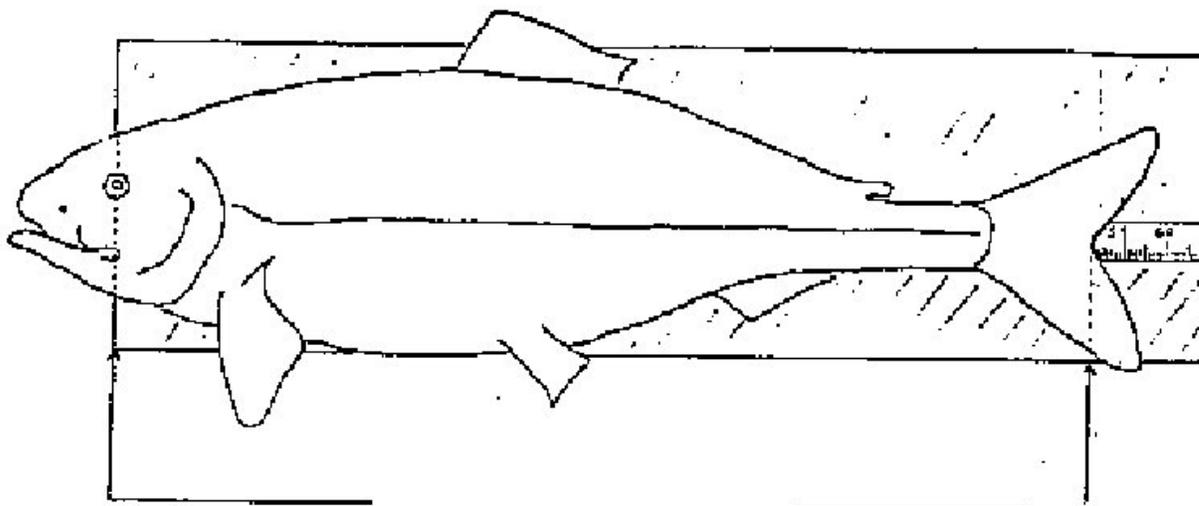
## **APPENDICES**



Appendix A2.-Collecting scales.



**DO NOT flip scale upside down and do not get gum card wet**



Because the length and form of the snout of salmon changes as the fish approaches sexual maturity, length measurements are made from the middle of the eye to the fork of the tail. Length of live fish is recorded to the nearest 5 millimeters. The procedure for measuring length (mid-eye to fork of tail) of the salmon is as follows.

1. Place the salmon flat on the board with the head to your left and the dorsal fin away from you.
2. Make sure the eye is directly over the end of the board. Line the eye of the salmon up with the edge of the board and hold the head in place with your left hand.
3. Flatten and spread the tail against the board with right hand. Line up the middle of the eye of the salmon with the end of the measuring tape while holding the fish in place with your left hand.
4. Read the mid-eye to fork-of-tail length to the nearest **1 millimeter**.

### **Fish Sampling Procedures**

1. Check species of each intended sample.
2. Sex the fish. If any difficulty is encountered in species identification or sexing, ask your supervisor for help as soon as possible before sampling any additional fish.
3. Measure all species' length from the middle of the eye to the fork of the tail to the nearest 1 millimeter (Appendix A3).

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-continued-

4. Take one sockeye scale from the "preferred area" of the fish using forceps. The "preferred scale" is located on 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 (Appendix A2). If the "preferred scale" is missing, select a scale within the preferred area on either the left or right side of the fish. If no scales are present in the "preferred area" on either the left or right side of the fish and sufficient numbers of fish are available for sampling, disregard the fish. If the number of fish is limited and scales are absent in the "preferred area" on both sides of the fish, sample a scale as close to the preferred area as possible and note on the AWL form.
5. Take a close look at the scale to assess whether it is regenerated or reabsorbed. If it is, pull another.
6. Remove all slime, grit, and skin from the scale by moistening and rubbing between fingers.
6. If the scale is stuck or dried, moisten and pull toward the head of the fish gently rather than straight back.
7. Clean, moisten and mount scale on gum card directly over number 1 (Appendix A2). The side of the scale facing up on the gum card is the same as the side facing up when it was adhered to the fish. This outward facing side is referred to as the "sculptured" side of the scale. The ridges on this sculpture side can be felt with a fingernail or forceps. Position each scale on the card vertically, with the posterior part of the scale consistently either at the top or the bottom.
8. Repeat steps 1 through 7 for up to 40 fish on each ALS form.
9. Make sure the scale card is filled out with the correct data; species, locality, date, collectors. Do not put several days' scales on one card.
10. Cover the completed dried gum card with waxed paper.
11. Store the cards in order between 2 pieces of plywood in a dry, safe place.
12. Fill out the daily ALS form when you are finished sampling for the day

General guidelines

1. Note which number to begin with, for each sample location, for the date in question.
2. Prior to sampling, cards may be filled out with species, date, gear, location, and collector's name. They may also be numbered when the total cards for a given area are known for that date. These must be carefully checked when scales are to be fixed to assure correct information.
3. On location before mounting scales, remaining pertinent information should be completed on that card, in pencil.

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Card information explanation

1. Species: (O. nerka or reds) Scientific or common name of sample (Sockeye for Fish Creek).
2. Card No.: Consecutive for this area and species.
3. Locality: Name of beach, river or area and may include cannery or site name (Fish Creek) .
4. Stat. code: and Sampling date: Transfer the appropriate digits from the AWL form.
6. Sampling date: mo./day/year that the scales were taken for escapement samples.
7. Collector: last name(s) of person(s) collecting scales and data.
8. Remarks: Include anything unusual about weather, the sample or anything else considered pertinent by collectors.

**Miscellaneous**

1. Protect the scale cards from getting wet. When scales are sampled in wet conditions, it is difficult to mount scales to get good impressions. Glue often obscures scale features and scales adhere poorly to the card. Cover card with plastic while sampling, keep in closed clipboard, use an umbrella, or build a shelter.
2. Write in all comments explicitly and completely under remarks.
3. Responsibility for accuracy lies first with the primary data collector(s). The crew supervisor will return sloppy or incomplete data to individual collectors. After editing a form, write samplers initials on the form.

**REMEMBER**

**DO'S**

- 1) Do - Carefully and completely label each gum card and its corresponding AWL form
- 2) Do - Number gum cards and AWL's sequentially throughout the season for each sampling location (port, river, lake) for each species.
- 3) Do - Take the preferred scale if available.
- 4) Do - Clean the scale thoroughly before mounting.
- 5) Do - Mount scales sculptured side up in straight rows and columns, and consistently position the scales in one direction.
- 6) Do - Carefully store and protect completed gum cards and AWL's.
- 7) Do - Remount rain-soaked or damaged gum cards.

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**DONT'S**

- 1) Don't - Put scales from different locations, dates or species on one gum card.
- 2) Don't - Take scales from other than the preferred area.
- 3) Don't - Mount dirty or damaged scales.
- 4) Don't - Put wax paper on wet scale cards - wait for the card to dry.

**Use Division of Commercial Fisheries Age-Length Form.**

Card: *Gum cards will be number sequentially with the first letter of Creek Name:*

*Fish Creek – F 001 is the first card number,*

*Each Age Length Form will have a corresponding gum card.*

Date: *Enter the date of the sample.*

Samplers: *Enter the last name of the samplers*

Sex: *Enter either a 1- male or 2- female. Determine sex by external characteristics.*

Length: *Enter the mid-eye to fork in the tail length to nearest millimeter.*

On the yellow side of the gum card enter:

- a. Species of fish : Sockeye
- b. Location: Fish Creek
- c. Stat Code: 247-50-000-801
- d. Date : Month Day Year
- e. Gear : Weir
- f. Name(s) of samplers: Last Name
- g. Remarks: weather, weir, sampling conditions, etc.



## Non-lethal Sampling Finfish Tissue for DNA Analysis

ADF&G Gene Conservation Lab, Anchorage

### I. General Information

We use axillary tissue samples from individual fish to determine the genetic characteristics and profile of a particular run or stock of fish. The most important thing to remember in collecting samples is that **only quality tissue samples give quality results**. If sampling from carcasses: tissues need to be as “fresh” and as cold as possible and recently moribund, do not sample from fungal fins.

Sample preservative: Ethanol (EtOH) preserves tissues for later DNA extraction without having to store frozen tissues. Avoid extended contact with skin.

### II. Sample procedure:

1. Tissue type: Axillary process; clip one axillary process from each fish (see attached print out).
2. Prior to sampling, fill the tubes half way with EtOH. Fill only the tubes that you will use for a particular sampling period. The squirt bottle is for day use only since it will leak if unattended.
3. To avoid any excess water or fish slime in the vial, wipe the axillary process dry prior to sampling. Using the dog toe nail clipper or scissors, clip off axillary process (**1/2 -1” max**) to fit into the cryovial.
4. Place axillary process into EtOH. The ethanol/tissue ratio should be **slightly less than 3:1** to thoroughly soak the tissue in the buffer.
5. Top up tubes with EtOH and screw cap on securely. Invert tube twice to mix EtOH and tissue. Periodically, wipe or rinse the clippers so not to cross contaminate samples.
6. Data to record: Record each vial number to **paired data** information, electronic copy preferred.
7. Discard remaining ethanol from the 500ml bottles before shipping. **Tissue samples must remain in 2ml ethanol**, these small quantities require HAZMAT paperwork. Please follow packing instructions for HAZMAT items. Store vials containing tissues at room temperature, but away from heat. In the field: keep samples out of direct sun, rain and store capped vials in a dry, cool location. Freezing not required.

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III. Supplies included with sampling kit:

1. Clippers - used for cutting the axillary process.
2. Cryovial - 2.0ml pre-labeled plastic vial or tube.
3. Caps – cap for each vial.
4. Sampling rack- plastic box for holding cryovials during sampling.
5. Ethanol (EtOH) – in Nalgene bottle(s).
6. Squirt bottle – to fill and/or “top off” each cryovial with EtOH
7. Sampling instructions
8. Laminated “return address” labels

