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Contribution of Alaskan, Canadian, and Transboundary Sockeye Salmon Stocks to Catches in Southeast Alaska Purse Seine and Gillnet Fisheries, Districts 101–108, Based on Analysis of Scale Patterns, 2004

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Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

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

FISHERY DATA REPORT NO. 11-17

CONTRIBUTION OF ALASKAN, CANADIAN, AND TRANSBOUNDARY SOCKEYE SALMON STOCKS TO CATCHES IN SOUTHEAST ALASKA PURSE SEINE AND GILLNET FISHERIES, DISTRICTS 101–108, BASED ON ANALYSIS OF SCALE PATTERNS, 2004

by

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ABSTRACT

Sockeye salmon (Oncorhynchuus nerka) harvested in southern Southeast Alaska's 2004 gillnet and purse seine fisheries were classified to nation and/or stock group of origin using linear discriminant function analysis of scale patterns and age composition data. Measurements of spacing between circuli were used to characterize stock-specific differences in scale patterns, and were measured using image processing techniques on digital images of scales. A total of 905,563 sockeye salmon harvested in purse seine and gillnet fisheries in 2004 was very similar to the 1982–2003 average of 1.08 million annually. This catch was classified to nation of origin to estimate that 257,735 fish (28.5%) were of Alaska origin, 525,502 fish (58%) were of Canadian origin, and 122,327 fish (13.5%) were of Stikine River (transboundary) origin.

Key words: sockeye salmon, *Oncorhynchus nerka*, stock composition, linear discriminant function, scale pattern analysis, image processing, Southeast Alaska, Canada, Boundary Area

INTRODUCTION

Sockeye salmon (*Oncorhynchus nerka*) harvested in southern Southeast Alaskan commercial fisheries include drift gillnet fisheries that target primarily sockeye salmon in Alaska Districts 101, 106 and 108, as well as purse seine fisheries in Alaska Districts 101 through 104 that primarily target other species and harvest sockeye salmon only incidentally. These sockeye salmon stocks originate from numerous rivers in Southeast Alaska and British Columbia (Figure 1). The rivers can be entirely contained within Alaskan or Canadian boundaries, or if they cross an international border they are referred to as transboundary rivers (Rich and Morton 1930; Verhoeven 1952; Norenberg 1959; Logan 1967; Simpson 1968; Hoffman et al. 1983).

Sockeye salmon that spawn in rivers entirely within Alaskan borders originate primarily from numerous low to moderately productive systems in the immediate vicinity (Figure 2). Sockeye salmon from drainages entirely within Canadian borders originate principally from the Nass River, which flows into Portland Canal, and from the Skeena River, which flows into Chatham Sound, just south of the Alaska-Canada border (Figure 3). These harvests may also include a few sockeye salmon bound for northern Southeast Alaska, Prince William Sound, and Washington State, but their low numbers preclude estimates of stock of origin. In some years, migration patterns change for sockeye salmon from southern British Columbia, and increased numbers are caught in the Alaska District 104 purse seine fishery along the outer coast of Alaska and just north of the Alaska-Canada border. These fish are thought to originate primarily from the Fraser River. Several transboundary river systems contribute to sockeye salmon catches in Southeast Alaska, including the Taku, Stikine, and Alsek Rivers. In southern Southeast Alaska, the District 108 and 106 gillnet fisheries are the only ones that regularly harvest transboundary river sockeye stocks in quantifiable numbers, primarily stocks from the Stikine River drainage.

In 1982, the Alaska Department of Fish and Game began using scale pattern analysis (Marshall et al., 1984) to estimate the numbers of salmon bound for specific Canadian river systems. Scale pattern analysis is based on differences in patterns of arrangement of circuli on scales, which reflect average differences in fish growth history over broad geographic areas. Significant and persistent differences between sockeye salmon stock groups originating in Alaska and Canada have been documented in the patterns of scale growth during freshwater and early marine life history (Oliver et al. 1984; Oliver and Walls 1985; Oliver and Jensen 1986; Oliver et al. 1987; Oliver *Unpublished Report*; Oliver and Farrington 1989; Oliver et al. 1990; Farrington and Oliver 1994; Farrington et al. 1996a–c; Farrington et al. 1998a–b; Farrington et al. 1999a–b; Bloomquist et al. 2005 and 2010; Wilcock et al. 2011).

The purpose of this study is to determine the national origin of major sockeye salmon stocks contributing to commercial gillnet and purse seine fishery catches in southern Southeast Alaska (Figure 1). Under the Pacific Salmon Treaty of 1985 and its later annexes, catches by fishermen of either country of their neighboring country's stocks are restricted in selected fisheries. In particular, the catch of Nass and Skeena sockeye salmon in Alaska District 101 gillnet and District 104 purse seine fisheries are limited, over a ten-year period, to a percentage of the total return of these stocks. Annual stock-specific run reconstructions (catch plus escapement) are required to accurately estimate relative contribution of each stock caught in these restricted fisheries. Estimates of national origin of contributing stocks from this study provide the most reliable information currently available to complete these run reconstructions, and are used to evaluate stock-specific productivity and to revise pre-season forecasts.

METHODS

COMMERCIAL HARVEST INFORMATION

The number of fish harvested by gear type, district, and week were obtained from an ADF&G statewide commercial harvest database of commercial salmon sales receipts dating back to 1960. Catches were summarized by statistical weeks (weeks), which began on Sunday at 12:01 a.m. and ended the following Saturday at midnight. These weeks were numbered sequentially starting from the beginning of the calendar year.

BIOLOGICAL DATA COLLECTION AND PROCESSING

ADF&G Division of Commercial Fisheries personnel collected biological information and scales of sockeye salmon from southern Southeast Alaska commercial gillnet and purse seine landings at fish processing facilities in Petersburg, Ketchikan, Craig, and Wrangell. A sample size of 520 fish per stratum was sufficient to describe the estimated sockeye salmon age composition with a precision of ± 5% and a probability of 0.10 (Thompson 1987). Technicians collected samples from multiple vessels and tenders for each district. Samples were collected throughout unloading, selecting no more than 40 fish from any single delivery. Deliveries containing catches mixed from more than one gear type or more than one district were not sampled.

Gender was determined visually from external physical characteristics and recorded for each fish sampled. Mid-eye to fork-of-tail length was recorded for 25% of the fish sampled, except for District 101 and District 104 where length was recorded for all fish sampled. Scales were taken from the preferred area above the lateral line on the left side of the fish on a diagonal downward from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin (INPFC 1963).

ADF&G Division of Commercial Fisheries personnel collected scales from a variety of major sockeye salmon escapement lake and stream systems in southern Southeast Alaska. In northern British Columbia, Canadian Department of Fisheries and Oceans (DFO) personnel collected scales from daily gillnet catches in test fisheries operating near or in the lower reaches of the Skeena River. LGL Ltd. personnel under contract to the Nisga'a First Nation in British Columbia, Canada, collected scales from daily fishwheel catches in test fishery in the lower Nass River. The Pacific Salmon Commission (PSC) provided scales from commercial net fishery catches in British Columbia and Washington State waters that were used to represent south migrating stocks.

Scales were mounted on gum cards and impressions made in cellulose acetate (Clutter and Whitesel 1956). Scales were 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).

DIGITIZING OF SCALES

Counts and measurements were made on a selected radius along or near the longest axis of the scale (Figure 4) (Anas and Murai 1969). Measurements and counts were collected along this axis line from the scale focus to end of the first marine annular zone. Methods used in 2004 to measure fish growth characteristics from scale circuli were based on image analysis techniques, which have been used since 2003. Prior methods projected scale impressions onto a digitizing tablet at 100x magnification to obtain measurements using equipment similar to that described by Ryan and Christie (1976).

Beginning in 2003, scale impressions were projected onto the screen of a ScreenScan® Model PC scanning microfiche reader at 42x magnification, similar to equipment described by Hagen (2001). The projected image was digitally rendered using ScreenScan® image capture software, and each scale image stored as a single Tagged Image File Format (TIFF) file. Image files representing scales from district and weekly strata, and from escapement locations, were stored in computer directories organized according to collection location and week.

Images files were processed using Optimate® 6.51 image analysis software running customized macros developed specifically for measuring salmon scales. Macros used to process sockeye salmon for these studies were written in the Optimas® proprietary programming language ALI, and were modified from routines originally developed by Hagen (2001). ALI code for the modified macros is documented in the detailed project operational plan for the Southeast Alaska regional scale lab in Douglas, Alaska.

The scale image processing macro permitted the scale reader to use a series of mouse clicks and key commands to extract circuli measurement data within growth pattern zones from each scale image file. Images were processed in the following sequence:

1) Open an image file.
2) Using successive mouse clicks, establish location of an axis line by setting a rubber band line start point in the visual center of the scale focus, and end point a few circuli beyond the first marine annulus.
3) Manually place a marker for each growth zone with a mouse click along the axis line, a short distance beyond the outside edge of the last circulus of each zone.
4) Invoke an edge detection algorithm to automatically identify and mark the intersection of the leading edge of each circulus with the transect line.
5) Manually adjust circulus markers placed incorrectly due to natural variations in scale circuli and poor image quality.
6) Calculate distance measurements between each adjacent circulus and append zone indicator codes and distance measurements to a specified comma delimited text file.

DATA ANALYSIS

Linear discriminant function (LDF) analysis (Fisher 1936) of scale patterns has been used to estimate stock contributions to southern Southeast Alaska mixed stock sockeye salmon fisheries based on observed differences between stocks since 1982 (Oliver et al. 1984; Oliver and Walls 1985; Oliver and Jensen 1986; Oliver et al. 1987; Oliver *Unpublished Report*; Oliver and Farrington 1989; Oliver et al. 1990; Farrington and Oliver 1994; Farrington et al. 1996a–c; Farrington et al. 1998a–b; Farrington et al. 1999a–b; Bloomquist et al. 2005 and 2010.).

Age-specific LDF models for each gear type and District were assembled for the three distinct geographic areas (Appendices A2–A4) from 2004 escapement samples based on stock-specific migration patterns observed in tagging studies from the early 1980s (Hoffman et al. 1983, English et al. 1984). Construction of separate age-specific models from potential contributing stock groups within the Districts 106 and 108 gillnet fisheries also considered observed run timing differences (K. A. Jensen, Commercial Fishery Research Biologist, ADF&G, Douglas; personal communication).

Weekly commercial catches in each district were classified to potential contributing stocks using age-specific LDF models for four major age groups (1.2, 1.3, 2.2 and 2.3) that generally comprise more than 98% of commercial catches. Up to 100 scales per temporal stratum for each major age class in a district and fishery were analyzed to provide estimates of stock proportions with a precision of ± 10% with probability of 0.10. The stock apportionment of the other (minor) age classes not directly classified using LDF assumes that the proportion of the minor ages belonging to any given stock is equal to the combined proportion of all classified age classes. Age specific models were used in the analysis to 1) account for differences in age composition between stocks, 2) remove potential bias due to differences in migratory timing of different aged fish and 3) eliminate the effect of different environmental conditions on the scale patterns of different age fish. Stock contributions were estimated for each week to track temporal patterns. Stock contribution estimates for weekly district catches for which no scale samples were collected (primarily early and late in the season) were generally approximated using the age and stock composition results from the nearest temporal stratum for that district. Stock contribution estimates for catches from districts for which few samples were available for relatively small catches over a period of weeks, were approximated using stock composition results from an adjacent temporal stratum to estimate pooled catch contributions for the weekly catches.

Variances of weekly and seasonal stock composition estimates were approximated with the delta method (Seber 1982). Variance estimates were functions of the variances associated with the weekly: 1) estimated age composition of the catch, 2) age specific stock composition estimates, 3) sample size of the age composition, and 4) catch size. Use of a maximum likelihood procedure to constrain the stock proportion estimates did provide a variance estimate for stock(s) contributing zero fish.

RESULTS

NATIONAL ORIGIN OF SOUTHERN SOUTHEAST SOCKEYE SALMON CATCHES

The total sockeye salmon harvest in the southern Southeast Alaska (Districts 101–108) seine and gillnet fisheries was 905,563 fish in 2004. Catches from these net fisheries were classified by

nation of origin (Table 1). The estimated U.S. contribution was 257,735 fish (28.5%), estimated Canadian contribution was 525,502 fish (58%), and estimated transboundary contribution was 122,327 fish (13.5%).

STOCK COMPOSITION OF SOUTHERN SOUTHEAST SOCKEYE SALMON CATCHES

The total number of sockeye salmon classified to stock group of origin was 905,563 fish (Table 2). Of these, it was estimated that: 257,735 fish (28.5%) were of Alaska origin; 285,552 fish (31.5%) were Nass River origin; 178,851 (19.8%) were Skeena River origin; 61,099 (6.7%) were south-migrating stock origin (primarily Fraser River); 91,367 (10.1%) were transboundary Tahltan Lake origin; 26,714 (3%) were transboundary Stikine River origin; and 4,245 (<1%) were transboundary Tuya Lake origin.

District 101-11 Gillnet Stock Composition

Weekly stock composition estimates comprised Alaska, Nass, and Skeena stock groupings. Of the season catch of 142,357 sockeye salmon, the estimated stock contributions were: 18,555 fish from the Alaska stock grouping for 13% of the total; 110,415 Nass River fish (77.6%); and 13,386 Skeena River fish (9.4%) (Table 3). Nass was the largest stock component in all weekly strata.

District 101 Purse Seine Stock Composition

Weekly and stock composition estimates comprised Alaska, Nass, and Skeena stock groupings. The season catch total was 124,936 sockeye. The estimated stock contributions were 74,003 fish from the Alaska stock grouping (59.2%), 32,214 Nass River fish (25.8%), and 18,719 Skeena River fish (15%) (Table 4). Alaska was the largest stock component in all weekly time strata, except the first week of the season, when Nass was the largest component.

District 102 Purse Seine Stock Composition

Where possible, weekly stock composition estimates were made for Alaska, Nass, and Skeena stock groupings. Of the catch of 45,560 sockeye salmon caught over the entire season (weeks 26–39), the estimated stock contributions were: 31,516 fish from the Alaska stock grouping (69.2%); 6,924 Nass River fish (15.2%); and 7,120 Skeena River fish (15.6%) (Table 5). Because landings for this district are frequently mixed with catches from other districts, stock contribution estimates for most weekly strata were approximated using district-specific samples collected successfully during only 4 weeks of the fishery.

District 103 Purse Seine Stock Composition

Sockeye salmon harvested in the District 103 purse seine fishery totaled 23,920 fish. The estimates for contributions by stock group were: 18,390 (76.9%) from Alaska, 2,584 (10.8%) from Nass, and 2,945 (12.3%) from Skeena (Table 6). Stock composition estimates for the earliest and latest weeks for this district were approximated using samples from adjacent weekly strata.

District 104 Purse Seine Stock Composition

Weekly stock compositions comprised Alaska, Nass, Skeena, and south-migrating groupings. Of the season total of 349,139 sockeye salmon caught, the estimated stock contributions were:

46,886 fish from the Alaska stock grouping (13.4%); 112,849 Nass River fish (32.3%); 127,305 Skeena River fish (36.7%); and 61,099 (17.5%) fish from the south-migrating stock grouping (Table 7).

District 106 and 108 Gillnet Stock Composition

A total of 116,259 sockeye salmon were caught in the District 106 gillnet fishery, and 103,392 sockeye salmon in the District 108 gillnet fishery. Alaska stocks contributed 58,005 sockeye (49.9%) to the District 106 gillnet fishery and 10,379 sockeye (10%) to the District 108 gillnet fishery. Canadian stocks contributed 25,809 (22.2%) fish to the District 106 gillnet fishery and 3,131 (3%) fish to District 108 gillnet. Transboundary stocks contributed 32,445 (27.9%) fish to District 106 gillnet and 89,882 (86.9%) fish to the District 108 gillnet fishery.

DISCUSSION

The total sockeye salmon harvest in the southern Southeast Alaska (Districts 101–108) seine and gillnet fisheries in 2004 (905,563) was slightly below the 1982–2002 average annual harvest of 1,083,260 sockeye salmon (Table 1). Catches for purse seine and gillnet fisheries in Districts 101 and 102 were similar to the 1982–2002 averages. However, the District 104 purse seine and 108 gillnet fisheries were each approximately 2,000 fish above the 1982–2002 average. The 2004 harvest was greater than the record low harvests of the previous two years.

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TABLES AND FIGURES

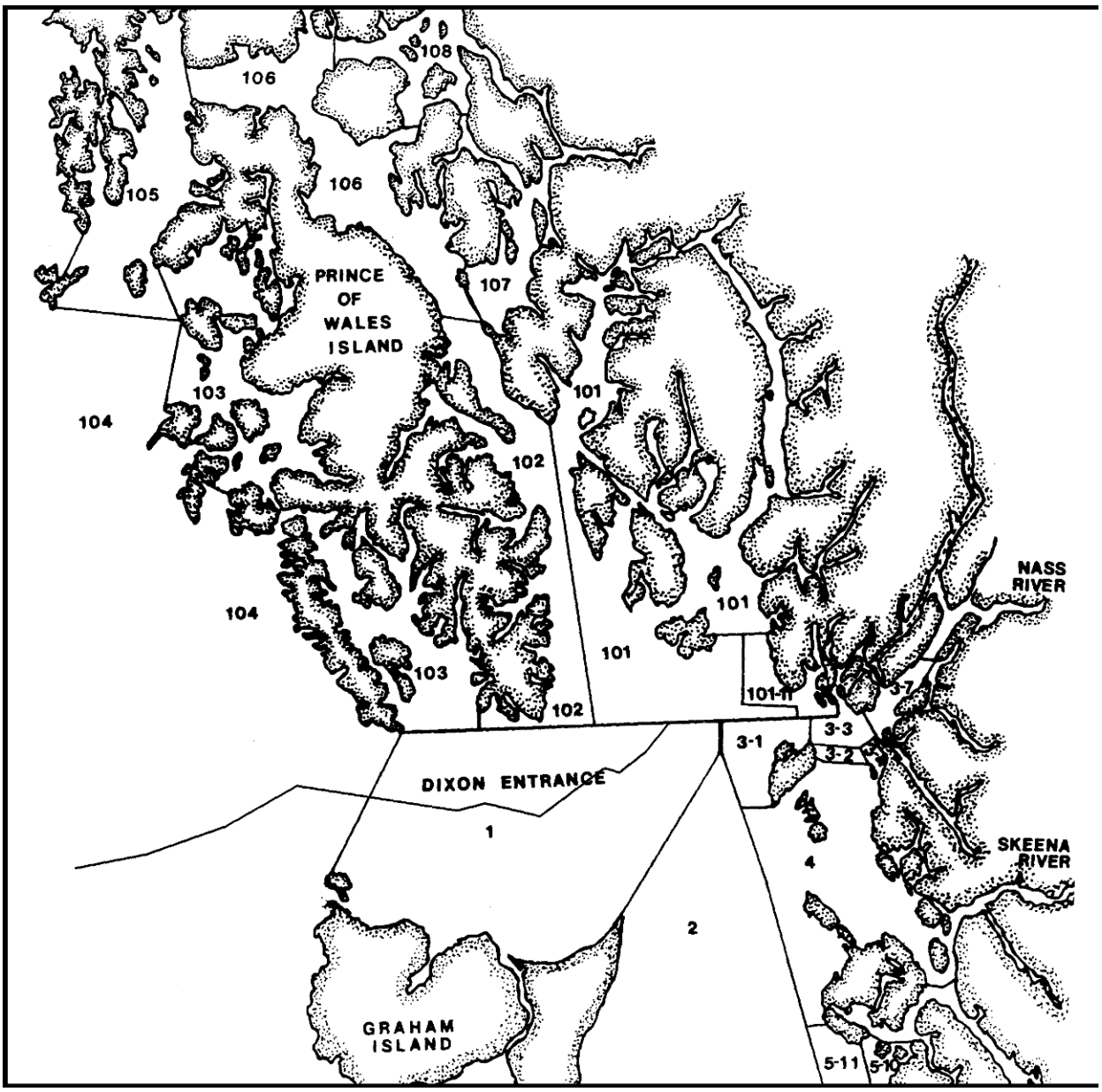

Figure 1.–Fishery management districts in southern Southeast Alaska and northern British Columbia waters.

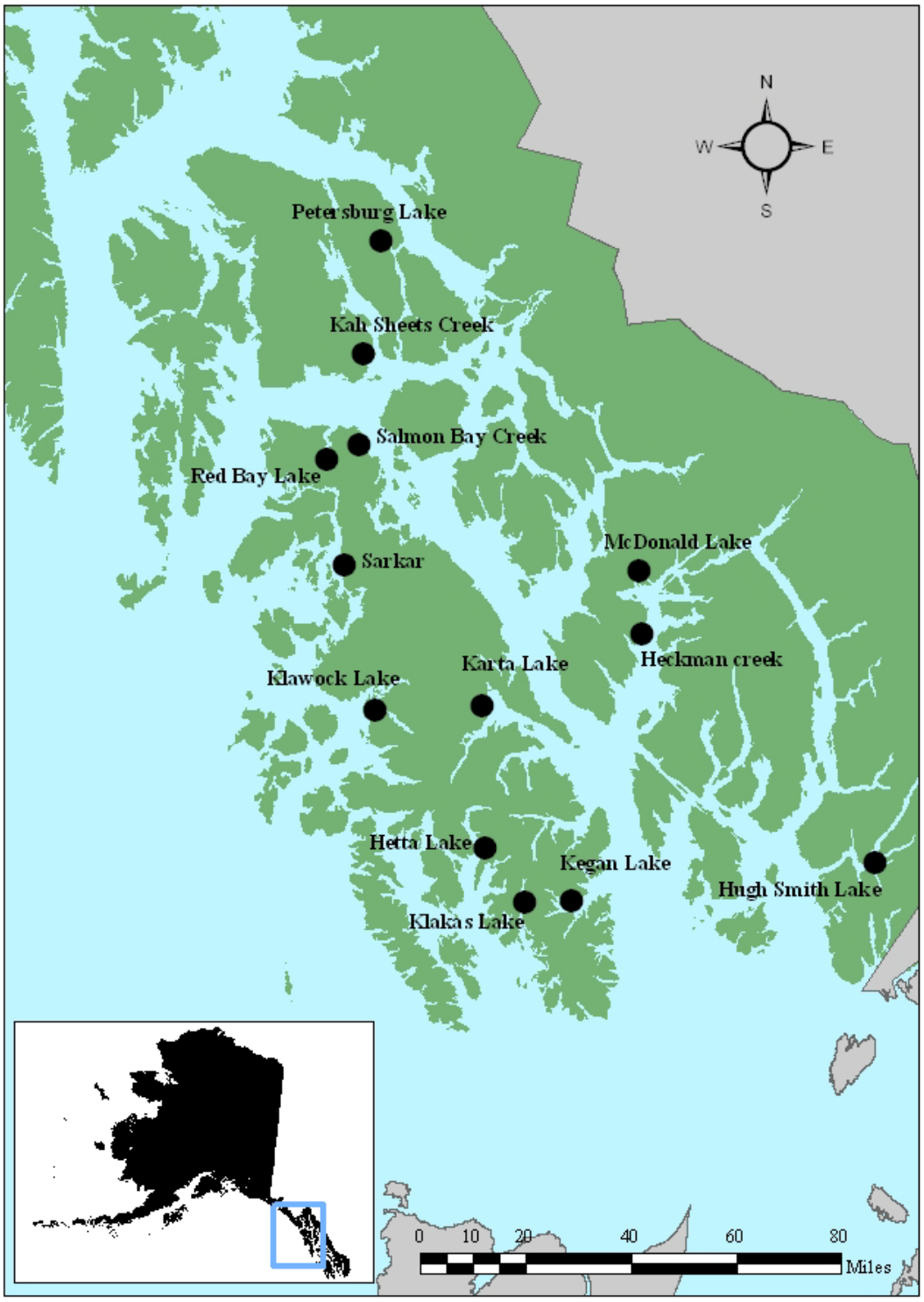

Figure 2.–Major sockeye salmon systems of Southeast Alaska sampled for scales used in scale pattern analysis stock discrimination studies.

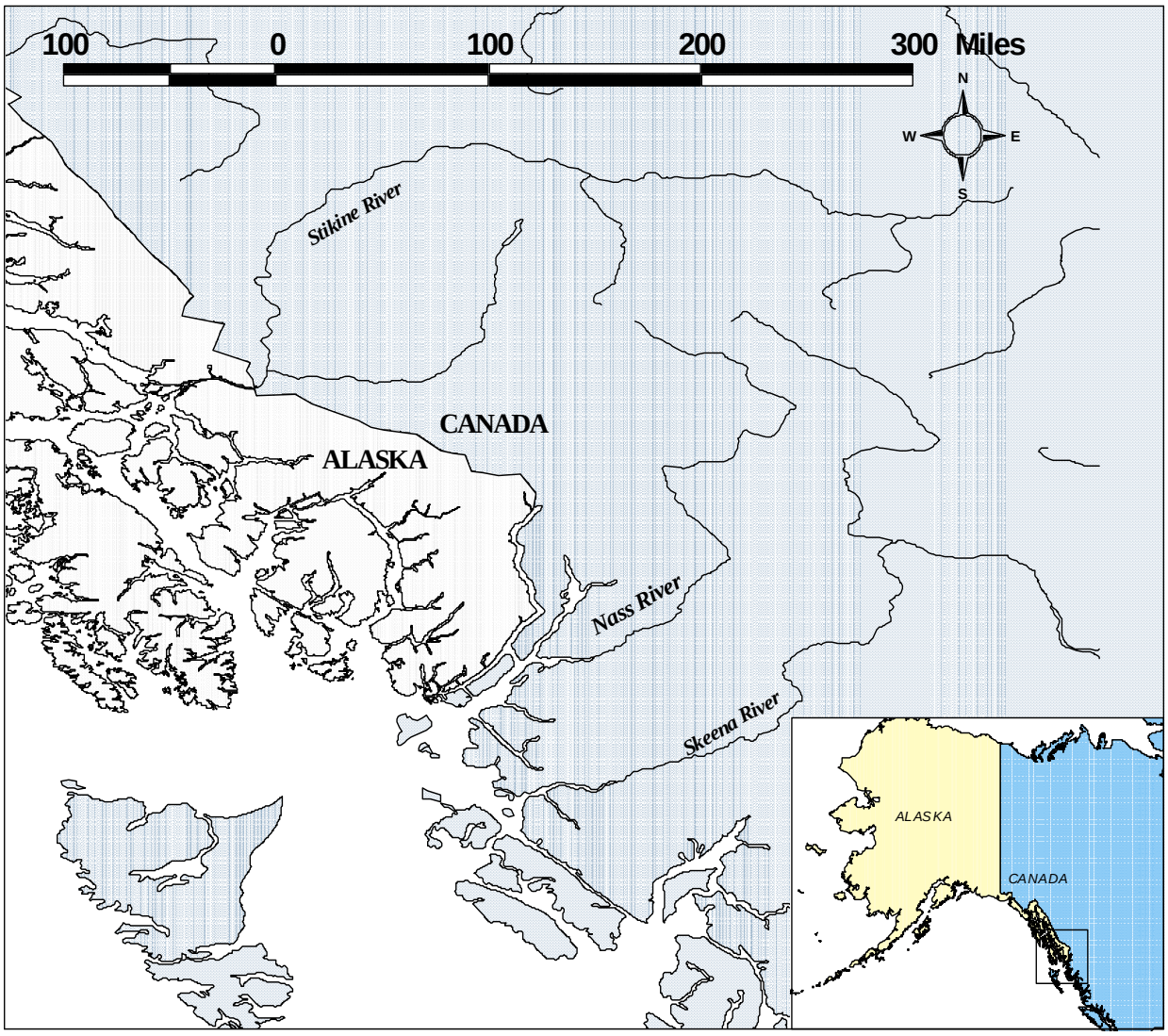

Figure 3.–The Canadian Nass and Skeena Rivers and the transboundary Stikine River.

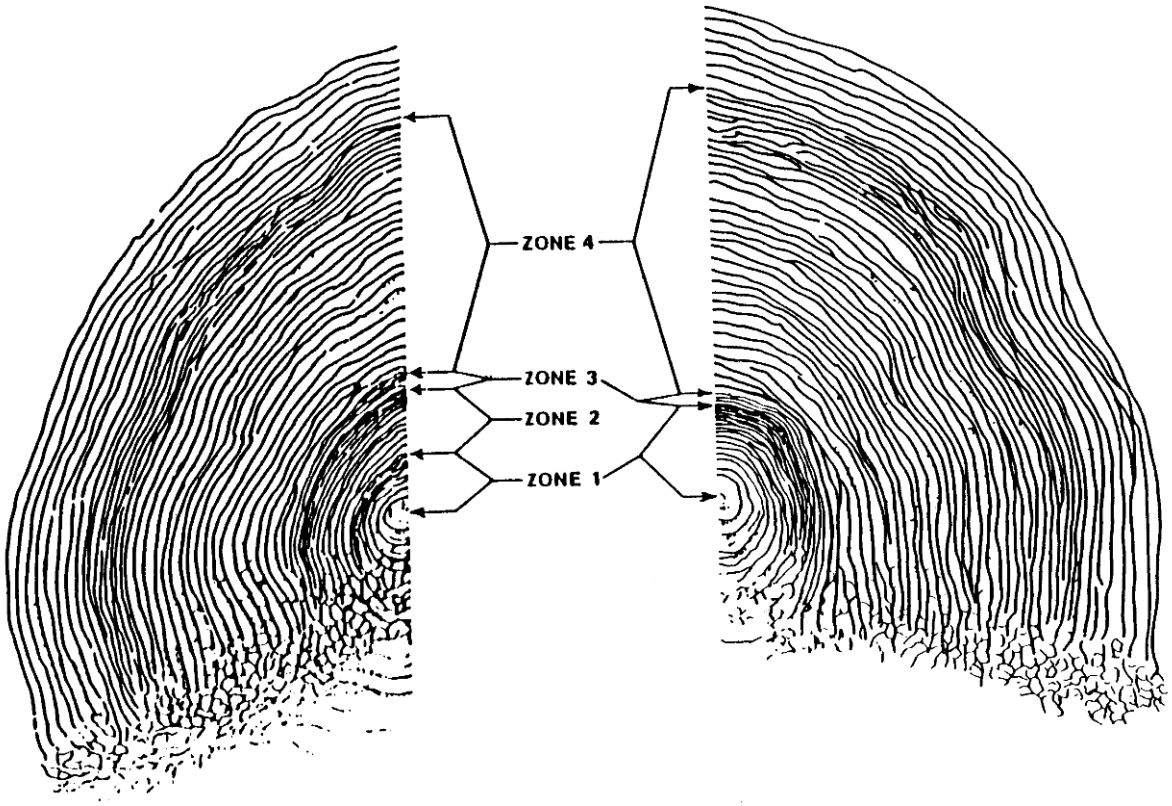

Figure 4.–Typical scales with two and one freshwater growth zones showing the zones used for scale pattern analysis.

Table 1.–Estimated sockeye salmon contributions by nation of origin to southern Southeast Alaska Districts 101–108 net fisheries, 1982–2004.

District	Type	Stock Group	1982	(%)	1983	(%)	1984	(%)	1985	(%)	1986	(%)	1987	(%)	1988	(%)	1989	(%)	1990	(%)
101	**Gillnet**	**US**	69,483	36	48,905	36	34,843	39	30,946	18	12,738	9	25,073	23	14,796	13	31,406	22	13,862	16
		Canada	121,325	64	86,998	64	53,588	61	142,154	82	132,961	91	82,430	77	101,319	87	113,530	78	71,829	84
		Total	190,808		135,903		88,431		173,100		145,699		107,503		116,115		144,936		85,691	
101[a]	**Purse Seine**	**US**	39,518	56	20,376	43	49,348	60	82,311	69	50,313	67	30,071	69	12,799	41	37,236	32	29,498	51
		Canada	30,941	44	27,263	57	32,537	40	37,159	31	24,510	33	13,233	31	18,340	59	80,622	68	27,809	49
		Total	70,459		47,639		81,885		119,470		74,823		43,304		31,139		117,858		57,307	
102	**Purse Seine**	**US**	18,672	80	6,482	59	17,857	82	28,417	78	24,030	73	16,211	94	10,347	70	35,807	62	38,384	75
		Canada	4,542	20	4,498	41	3,808	18	7,887	22	8,681	27	1,064	6	4,455	30	21,834	38	12,838	25
		Total	23,214		10,980		21,665		36,304		32,711		17,275		14,802		57,641		51,222	
103	**Purse Seine**	**US**			7,098	68			19,560	74	9,883	72	1,401	98	790	33	20,551	96	14,226	74
		Canada			3,357	32			6,703	26	3,806	28	34	2	1,587	67	936	4	5,124	26
		Total			10,455				26,263		13,689		1,435		2,377		21,487		19,350	
104	**Purse Seine**	**US**	106,786	38	155,967	24	78,954	27	94,005	22	101,121	23	68,647	40	104,042	18	73,026	14	123,420	15
		Canada	176,572	62	487,301	76	215,208	73	337,648	78	343,550	77	102,332	60	487,243	82	443,575	86	673,378	85
		Total	283,358		643,268		294,162		431,653		444,671		170,979		591,285		516,601		796,798	
106	**Gillnet**	**US**	94,320	49	32,583	67	60,597	66	126,914	48	100,268	69	112,893	83	80,868	87	126,603	66	112,983	61
		Canada	62,063	32	10,582	22	24,755	27	111,017	42	42,756	29	21,190	15	9,784	11	59,959	31	68,921	37
		Transboundary	37,418	19	5,580	11	6,787	7	27,056	10	2,685	2	2,344	2	1,877	2	6,172	3	3,901	2
		Total	193,801		48,842		92,139		264,987		145,709		136,427		92,529		192,734		185,805	
108	**Gillnet**	**US**	1,784	25							930	22			265	21	1,180	12	4,576	40
		Canada	4,139	58							73	2			48	4	545	5	1,479	13
		Transboundary	1,213	17							3,184	76			933	75	8,358	83	5,519	48
		Total	7,136								4,185				1,246		10,083		11,574	
Total		**US**	330,562	43	271,411	30	241,599	42	382,152	36	299,284	35	254,296	53	223,907	27	325,809	31	336,949	28
		Canada	399,583	52	619,998	69	329,896	57	642,569	61	556,336	64	220,283	46	622,776	73	721,001	68	861,378	71
		Transboundary	38,631	5	5,580	1	6,787	1	27,056	3	5,869	1	2,344	1	2,810	0	14,530	1	9,420	1
		Total	768,776		896,989		578,282		1,051,777		861,489		476,923		849,493		1,061,340		1,207,747	

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Table 1.–Page 2 of 3.

District	Type	Stock Group	1991	(%)	1992	(%)	1993	(%)	1994	(%)	1995	(%)	1996	(%)	1997	(%)	1998	(%)	1999	(%)
101	**Gillnet**	**US**	13,599	10	49,771	20	42,337	11	14,008	14	13,056	8	29,745	14	32,028	19	15,884	10	15,030	9
		Canada	117,893	90	194,878	80	351,761	89	86,369	86	151,238	92	182,658	86	137,446	81	144,622	90	144,998	91
		Total	131,492		244,649		394,098		100,377		164,294		212,403		169,474		160,506		160,028	
101[a]	**Purse Seine**	**US**	34,193	57	83,065	74	246,662	75	18,991	33	63,279	29	396,178	89	84,519	80	47,485	67	77,174	88
		Canada	26,227	43	28,954	26	83,820	25	39,100	67	154,699	71	47,653	11	21,691	20	22,916	33	10,420	12
		Total	60,420		112,019		330,482		58,091		217,978		443,831		106,210		70,401		87,594	
102	**Purse Seine**	**US**	32,413	75	30,075	90	115,916	94	18,521	65	56,518	77	60,026	90	45,908	84	23,111	79	35,518	91
		Canada	10,841	25	3,377	10	7,991	6	10,158	35	16,907	23	6,767	10	8,503	16	6,303	21	3,591	9
		Total	43,254		33,452		123,907		28,679		73,425		66,793		54,411		29,414		39,109	
103	**Purse Seine**	**US**	13,867	74	3,277	74	37,251	74	11,242	74	7,532	74	24,009	99	24,666	82	14,873	85	7,925	100
		Canada	4,995	26	1,180	26	13,419	26	4,050	26	2,713	26	178	1	5,306	18	2,582	15	31	0
		Total	18,862		4,457		50,670		15,292		10,245		24,187		29,972		17,455		7,956	
104	**Purse Seine**	**US**	166,794	20	198,080	18	205,108	22	212,854	19	68,952	14	209,567	24	210,524	17	65,348	13	63,013	38
		Canada	683,037	80	873,959	82	740,177	78	923,284	81	428,193	86	650,872	76	1,034,156	83	421,882	87	101,844	62
		Total	849,831		1,072,039		945,285		1,136,138		497,145		860,439		1,244,680		487,230		164,857	
106	**Gillnet**	**US**	78,577	55	120,977	60	82,301	40	122,118	58	65,544	32	165,221	53	97,101	58	67,890	60	70,334	67
		Canada	47,695	33	47,207	23	69,616	34	53,683	25	116,075	56	83,271	27	45,665	27	34,811	31	9,692	9
		Transboundary	17,832	12	34,971	17	54,038	26	35,247	17	25,679	12	62,608	20	25,752	15	10,734	9	24,809	24
		Total	144,104		203,155		205,955		211,048		207,298		311,100		168,518		113,435		104,835	
108	**Gillnet**	**US**	3,116	17	8,604	16	17,758	23	31,715	33	10,374	14	15,755	10	5,381	6	2,541	12	5,263	14
		Canada	2,117	12	2,696	5	8,742	11	20,250	21	15,641	20	12,618	8	12,152	13	2,376	11	1,314	4
		Transboundary	12,754	71	41,417	79	50,374	66	45,259	47	50,741	66	125,777	82	75,506	81	17,114	78	30,024	82
		Total	17,987		52,717		76,874		97,224		76,756		154,150		93,039		22,031		36,601	
Total		**US**	342,560	27	493,849	29	747,333	35	429,450	26	285,255	23	900,501	43	500,127	27	237,132	26	274,257	46
		Canada	892,804	71	1,152,251	67	1,275,526	60	1,136,893	69	885,466	71	984,017	48	1,264,919	68	635,492	71	271,890	45
		Transboundary	30,585	2	76,388	4	104,412	5	80,506	5	76,420	6	188,385	9	101,258	5	27,848	3	54,833	9
		Total	1,265,950		1,722,488		2,127,271		1,646,849		1,247,141		2,072,903		1,866,304		900,472		600,980	

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District	Type	Stock Group	2000	(%)	2001	(%)	2002	(%)	2003	(%)	2004	(%)
101	**Gillnet**	**US**	16,727	18	10,915	14	14,462	12	14,723	14	18,555	13
		Canada	77,924	82	69,126	86	105,891	88	90,540	86	123,802	87
		Total	94,651		80,041		120,353		105,263		142,357	
101[a]	**Purse**	**US**	71,168	56	96,511	61	16,567	64	57,046	76	74,003	59
		Canada	55,942	44	61,172	39	9,122	36	17,604	24	50,933	41
		Total	127,110		157,683		25,689		74,650		124,936	
102[b]	**Purse**	**US**	26,265	78	36,987	68	23,759	80	35,098	92	31,516	69
		Canada	7,305	22	17,045	32	5,908	20	3,259	8	14,044	31
		Total	33,570		54,032		29,667		38,357		45,560	
103[c]	**Purse**	**US**	14,240	86	11,393	42	4,670	82	18,929	77	18,390	77
		Canada	2,384	14	15,566	58	1,055	18	5,725	23	5,530	23
		Total	16,624		26,959		5,725		24,654		23,920	
104	**Purse**	**US**	78,727	35	82,358	15	10,169	30	111,492	34	48,468	14
		Canada	148,312	65	454,276	85	24,018	70	218,226	66	300,671	86
		Total	227,039		536,634		34,187		329,719		349,139	
106	**Gillnet**	**US**	57,923	64	86,078	52	42,573	76	86,626	74	58,005	50
		Canada	21,007	23	54,512	33	5,487	10	12,527	11	25,809	22
		Transboundary[d]	11,146	12	23,423	14	8,075	14	17,751	15	32,445	28
		Total	90,076		164,013		56,135		116,904		116,259	
108	**Gillnet**	**US**	3,319	21	473	78	182	88	8,675	21	10,379	10
		Canada	2,025	13	60	10	25	12	4,563	11	3,131	3
		Transboundary	10,489	66	77	13	1	0	28,920	69	89,882	87
		Total	15,833		610		208		42,158		103,392	
Total		**US**	268,369	44	324,715	32	112,382	41	332,558	45	259,316	53
		Canada	314,899	52	671,757	66	151,506	56	352,445	48	523,920	32
		Transboundary	21,635	4	23,500	2	8,076	3	46,671	6	122,327	15
		Total	604,903		1,019,972		271,964		731,704		905,563	

[a] Includes catches from Yes Bay (West Behm Canal) terminal area fisheries.

[b] District 102 includes fish taken in terminal area fisheries after week 35.

[c] District 103 estimates are average of the preceding years, except the direct estimates of 1996 and 2004.

[d] Includes Stikine, Tahltan, and Tuya River spawning stock groups.

Table 2.–Estimated contribution by stock group of origin of sockeye salmon harvested in commercial net fisheries in Alaska Districts 101–108, 2004.

						90% CI	
District	**Gear Type**	**Stock Group**	**Number**	**Percent**	**SE**	**Lower**	**Upper**
101	**Gillnet**	**Alaska**	18,555	13.0	617	17,540	19,571
		Nass	110,415	77.6	692	109,278	111,553
		Skeena	13,386	9.4	335	12,836	13,937
		Total	142,357				
101	**Purse seine**	**Alaska**	74,003	59.2	607	73,004	75,001
		Nass	32,214	25.8	814	30,876	33,553
		Skeena	18,719	15.0	673	17,613	19,825
		Total	124,936				
102	**Purse seine**	**Alaska**	31,516	69.2	498	30,697	32,336
		Nass	6,924	15.2	646	5,862	7,987
		Skeena	7,120	15.6	479	6,331	7,908
		Total	45,560				
103	**Purse Seine**	**Alaska**	18,390	76.9	156	18,133	18,647
		Nass	2,584	10.8	160	2,321	2,848
		Skeena	2,945	12.3	125	2,740	3,151
		Total	23,920				
104	**Purse seine**	**Alaska**	48,468	13.9	1,761	45,571	51,365
		Nass	116,903	33.5	3,650	110,899	122,908
		Skeena	132,679	38.0	3,787	126,450	138,908
		South Migrating	51,088	14.6	1,911	47,945	54,232
		Total	349,139				
106	**Gillnet**	**Alaska I**	56,012	48.2	239.4	55,618	56,405
		Alaska II	1,993	1.7	170.1	1,714	2,273
		Nass	18,851	16.2	209.1	18,507	19,194
		Skeena	6,958	6.0	195.2	6,637	7,279
		Tahltan	28,020	24.1	201.0	27,690	28,351
		Stikine	2,048	1.8	173.6	1,763	2,334
		Tuya	2,377	2.0	70.0	2,262	2,492
		Total	116,259				
108	**Gillnet**	**Alaska I**	9,924	9.6	437	9,205	10,642
		Alaska II	455	0.4	145	217	693
		Nass	1,714	1.7	299	1,221	2,206
		Skeena	1,418	1.4	179	1,124	1,712
		Tahltan	63,347	61.3	746	62,119	64,575
		Stikine	24,666	23.9	795	23,359	25,973
		Tuya	1,869	1.8	163	1,601	2,136
		Total	103,392				
Total	**Total**	**Alaska**	259,316	53.2	10532	184214	218866
		Nass	289,606	20.9	21548	223368	294260
		Skeena	183,226	6.3	19217	143371	206597
		South Migrating	51,088	4.4	9851	182907	215317
		Tahltan	91,367	7.3	1233	3820	7876
		Stikine	26,714	2.7	1089	5806	9388
		Tuya	4,245	5.2	1119	12563	16243
		Total	905,563				

Table 3.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 101 (Tree Point) drift gillnet fishery, 2004.

		Catch By Age Class								90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 26	**Alaska**	165	393	656	175	32	1,421	6.5	221.9	1,056	1,786
6/20–6/26	**Nass**	2,729	5,584	9,539	1,962	453	20,269	92.5	238.6	19,876	20,661
	Skeena	0	211	0	0	5	216	1.0	86.8	73	359
	Total	2,894	6,189	10,196	2,137	490	21,905				
Week 27	**Alaska**	779	597	1,435	738	14	3,562	7.5	491.9	2,753	4,371
6/27–7/3	**Nass**	9,498	9,879	21,139	2,933	169	43,618	91.9	513.5	42,773	44,463
	Skeena	0	260	0	0	1	261	0.6	148.3	17	505
	Total	10,277	10,736	22,573	3,670	184	47,441				
Week 28	**Alaska**	508	189	991	271	31	1,989	11.9	196.5	1,666	2,312
7/04–7/10	**Nass**	2,571	2,950	7,842	462	216	14,040	84.0	205.0	13,703	14,378
	Skeena	0	672	0	0	10	683	4.1	83.4	546	820
	Total	3,079	3,812	8,832	733	257	16,712				
Week 29	**Alaska**	918	759	275	308	14	2,275	14.5	158.8	2,014	2,536
7/11–7/17	**Nass**	1,933	3,094	5,648	703	70	11,447	73.1	215.2	11,093	11,801
	Skeena	110	1,752	0	71	12	1,945	12.4	149.5	1,699	2,191
	Total	2,961	5,604	5,923	1,083	96	15,667				
Week 30	**Alaska**	860	744	88	145	19	1,855	21.9	76.4	1,729	1,980
7/18–7/24	**Nass**	1,148	1,222	1,542	483	45	4,441	52.4	119.5	4,244	4,637
	Skeena	489	1,391	178	95	22	2,174	25.7	97.4	2,014	2,335
	Total	2,496	3,357	1,808	723	86	8,470				
Week 31	**Alaska**	375	619	576	198	7	1,775	20.4	74.2	1,653	1,897
7/25–7/31	**Nass**	1,199	1,621	1,568	100	18	4,506	51.8	118.4	4,311	4,700
	Skeena	1,500	609	118	185	10	2,422	27.8	112.9	2,237	2,608
	Total	3,074	2,849	2,262	484	35	8,703				
Week 32	**Alaska**	925	1,347	489	301	6	3,068	29.0	93.5	2,914	3,222
8/01–8/07	**Nass**	788	1,278	1,859	148	8	4,081	38.6	158.0	3,821	4,341
	Skeena	2,160	877	0	375	7	3,418	32.3	144.9	3,179	3,656
	Total	3,873	3,502	2,348	824	21	10,567				
Week 33	**Alaska**	633	507	187	93	6	1,424	16.6	72.6	1,305	1,544
8/8–8/14	**Nass**	1,438	1,619	2,318	398	23	5,795	67.5	122.0	5,594	5,995
	Skeena	1,034	245	0	77	5	1,362	15.9	94.2	1,207	1,517
	Total	3,105	2,371	2,504	568	33	8,581				
Week 34	**Alaska**	138	86	74	58	1	358	23.7	13.0	336	379
8/15–8/21	**Nass**	268	295	232	36	3	835	55.2	20.1	802	868
	Skeena	193	110	0	14	1	319	21.1	17.6	290	348
	Total	600	492	306	108	6	1,512				
Week 35	**Alaska**	193	139	187	136	6	661	36.0	18.5	631	691
8/22–8/28	**Nass**	279	223	259	46	7	813	44.3	23.4	775	852
	Skeena	277	56	0	26	3	363	19.8	21.9	327	399
	Total	749	417	446	209	16	1,837				
Week 36–40[a]	**Alaska**	32	19	105	12	0	168	17.4	14.7	144	192
8/29–10/02	**Nass**	117	229	132	93	0	571	59.4	14.8	547	596
	Skeena	115	101	0	7	0	223	23.2	16.7	195	250
	Total	265	349	237	112	0	962				
Season	**Alaska**	5,526	5,398	5,061	2,435	135	18,555	13.0	617	17,540	19,571
Total	**Nass**	21,968	27,994	52,078	7,364	1,011	110,415	77.6	692	109,278	111,553
	Skeena	5,879	6,285	296	851	76	13,386	9.4	335	12,836	13,937
	Total	33,373	39,677	57,435	10,650	1,222	142,357				

[a] Age and stock composition for week 36-40 estimated using 138 samples collected during week 36.

Table 4.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 101 purse seine fishery, 2004.

		Catch By Age Class								90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 28	**Alaska**	1,051	359	99	0	25	1,534	31.7	83.1	1,397	1,671
7/04–7/10	**Nass**	386	256	1,670	31	39	2,383	49.2	104.6	2,210	2,555
	Skeena	247	444	124	98	15	928	19.2	62.2	826	1,031
	Total	1,685	1,059	1,893	128	80	4,845				
Week 29	**Alaska**	1,907	760	307	285	27	3,287	49.2	90.8	3,137	3,436
7/11–7/17	**Nass**	415	937	775	0	18	2,145	32.1	98.4	1,983	2,307
	Skeena	489	673	75	9	10	1,256	18.8	68.0	1,144	1,368
	Total	2,811	2,370	1,157	294	55	6,687				
Week 30	**Alaska**	4,123	1,545	741	627	108	7,144	57.1	151.5	6,895	7,393
7/18–7/24	**Nass**	869	1,151	1,804	51	59	3,934	31.5	185.6	3,629	4,240
	Skeena	789	541	0	76	22	1,428	11.4	109.6	1,247	1,608
	Total	5,782	3,236	2,545	754	189	12,506				
Week 31	**Alaska**	8,269	2,557	1,599	332	162	12,919	65.8	204.2	12,583	13,255
7/25–7/31	**Nass**	1,560	791	2,066	64	57	4,537	23.1	258.0	4,113	4,961
	Skeena	1,245	590	125	195	27	2,182	11.1	186.8	1,875	2,489
	Total	11,074	3,937	3,790	591	246	19,638				
Week 32	**Alaska**	14,475	7,305	3,569	1,991	194	27,535	56.6	462.1	26,775	28,296
8/01–8/07	**Nass**	10,334	2,385	2,602	0	109	15,431	31.7	661.2	14,343	16,518
	Skeena	3,764	1,510	0	409	40	5,724	11.8	549.2	4,821	6,627
	Total	28,574	11,201	6,172	2,400	343	48,690				
Week 33	**Alaska**	7,874	2,891	934	888	260	12,847	70.3	242.6	12,448	13,246
8/08–8/14	**Nass**	285	217	1,456	0	40	1,998	10.9	290.0	1,521	2,475
	Skeena	3,313	0	52	0	70	3,434	18.8	247.1	3,028	3,841
	Total	11,471	3,108	2,442	888	370	18,280				
Week 34	**Alaska**	2,956	1,070	834	466	54	5,379	63.5	89.9	5,231	5,527
8/15–8/21	**Nass**	211	708	351	0	13	1,283	15.2	127.7	1,073	1,493
	Skeena	1,786	0	0	0	18	1,804	21.3	137.7	1,578	2,031
	Total	4,953	1,778	1,185	466	85	8,466				
Week 35[a]	**Alaska**	914	503	586	257	0	2,259	57.6	81.0	2,126	2,393
8/22–8/28	**Nass**	0	203	108	28	0	339	8.7	46.5	263	416
	Skeena	1,250	71	0	0	0	1,321	33.7	111.5	1,138	1,505
	Total	2,164	776	694	286	0	3,920				
Week 36[a]	**Alaska**	444	244	285	125	0	1,097	57.6	39.3	1,033	1,162
8/29–9/04	**Nass**	0	98	53	14	0	165	8.7	22.6	128	202
	Skeena	607	34	0	0	0	642	33.7	54.1	553	731
	Total	1,051	377	337	139	0	1,904				
Season	**Alaska**	42,012	17,234	8,955	4,972	830	74,003	59.2	607	73,004	75,001
Totals	**Nass**	14,061	6,745	10,885	188	335	32,214	25.8	814	30,876	33,553
	Skeena	13,491	3,864	376	786	202	18,719	15.0	673	17,613	19,825
	Total	69,564	27,842	20,216	5,946	1,368	124,936				

[a] Age and stock composition for week 36 estimated using 96 samples collected during week 35.

Table 5.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 102 purse seine fishery, 2004.

		Catch By Age Class.								90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 26[a]	**Alaska**	39	21	2	3	1	66	72.4	2.1	63	69
6/20–6/26	**Nass**	0	7	12	0	0	21	22.7	2.2	17	24
	Skeena	4	0	0	0	0	4	4.9	0.5	4	5
	Total	43	28	15	4	2	91				
Week 27[a]	**Alaska**	882	471	52	72	29	1,506	72.4	47.0	1,428	1,583
6/27–7/3	**Nass**	0	169	285	8	9	471	22.7	50.0	389	553
	Skeena	91	0	9	0	2	102	4.9	12.1	82	122
	Total	973	640	347	80	40	2,079				
Week 28	**Alaska**	2,005	1,071	119	163	66	3,423	72.4	106.8	3,248	3,599
7/4–7/10	**Nass**	0	384	648	19	21	1,071	22.7	113.7	884	1,258
	Skeena	207	0	21	0	4	233	4.9	27.5	187	278
	Total	2,212	1,454	788	182	91	4,727				
Week 29	**Alaska**	1,528	798	386	106	57	2,875	72.0	81.8	2,741	3,010
7/11–7/17	**Nass**	133	98	820	0	21	1,073	26.9	83.6	936	1,211
	Skeena	0	33	0	13	1	47	1.2	11.9	27	66
	Total	1,661	930	1,206	119	79	3,995				
Week 30[b]	**Alaska**	626	327	158	43	23	1,178	72.0	33.5	1,123	1,233
7/18–7/24	**Nass**	55	40	336	0	9	440	26.9	34.3	383	496
	Skeena	0	14	0	5	0	19	1.2	4.9	11	27
	Total	681	381	494	49	32	1,637				
Week 31[c]	**Alaska**	147	39	17	15	5	223	59.3	9.3	208	238
7/25–87/31	**Nass**	2	7	37	0	1	46	12.4	13.4	24	68
	Skeena	104	0	0	0	2	107	28.3	11.2	88	125
	Total	253	46	54	15	8	376				
Week 32	**Alaska**	4,957	1,322	571	518	153	7,521	59.3	315.4	7,002	8,040
8/1–8/7	**Nass**	63	231	1,241	0	32	1,567	12.4	451.1	825	2,309
	Skeena	3,522	0	0	0	73	3,596	28.3	378.7	2,973	4,219
	Total	8,542	1,553	1,812	518	259	12,684				
Week 33[c]	**Alaska**	3,709	989	427	387	115	5,627	59.3	236.0	5,239	6,015
8/8–8/14	**Nass**	47	173	928	0	24	1,173	12.4	337.5	618	1,728
	Skeena	2,635	0	0	0	55	2,690	28.3	283.4	2,224	3,156
	Total	6,391	1,162	1,356	387	194	9,490				
Week 34	**Alaska**	3,375	453	1,723	431	374	6,355	86.8	254.8	5,936	6,774
8/15–8/21	**Nass**	290	409	0	0	44	742	10.1	262.4	310	1,174
	Skeena	212	0	0	0	13	225	3.1	66.5	115	334
	Total	3,876	861	1,723	431	431	7,322				
Week 35[d]	**Alaska**	1,036	139	529	132	115	1,950	86.8	78.2	1,822	2,079
8/22–8/28	**Nass**	89	125	0	0	13	228	10.1	80.5	95	360
	Skeena	65	0	0	0	4	69	3.1	20.4	35	103
	Total	1,190	264	529	132	132	2,247				
Week 36[d]	**Alaska**	307	41	157	39	34	578	86.8	23.2	540	616
8/29–9/4	**Nass**	26	37	0	0	4	67	10.1	23.9	28	107
	Skeena	19	0	0	0	1	20	3.1	6.0	11	30
	Total	353	78	157	39	39	666				

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Table 5.–Page 2 of 2.

		Catch By Age Class.								90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 38-39[de]	**Alaska**	113	15	58	14	13	214	86.8	8.6	199	228
	Nass	10	14	0	0	1	25	10.1	8.8	10	39
	Skeena	7	0	0	0	0	8	3.1	2.2	4	11
	Total	130	29	58	14	14	246				
Season	**Alaska**	18,723	5,686	4,199	1,924	984	31,516	69.2	498	30,697	32,336
Totals	**Nass**	715	1,694	4,308	28	179	6,924	15.2	640	5,871	7,977
	Skeena	6,867	47	31	18	157	7,120	15.6	479	6,332	7,907
	Total	26,305	7,427	8,538	1,969	1,321	45,560				

[a.] Age and stock composition for weeks 26–27 estimated using 156 samples collected during week 28.

[b] Age and stock composition for week 30 estimated using 202 samples collected during week 29.

[c] Age and stock composition for weeks 31 and 33 estimated using 49 samples collected during week 32.

[d] Age and stock composition for weeks 35–39 estimated using 17 samples collected during week 34.

[e] No fishing occurred in week 37.

Table 6.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 103 purse seine fishery, 2004.

		Catch By Age Class								90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 31[a]	**Alaska**	4,420	2,047	2,458	0	0	8,925	86.3	114.2	8,737	9,113
7/25–7/31	**Nass**	0	612	0	0	0	612	5.9	109.8	431	792
	Skeena	701	107	0	0	0	808	7.8	84.4	669	947
	Total	5,121	2,765	2,458	0	0	10,345				
Week 32	**Alaska**	1,308	606	728	0	0	2,642	86.3	33.8	2,586	2,697
8/1–8/7	**Nass**	0	181	0	0	0	181	5.9	32.5	128	235
	Skeena	208	32	0	0	0	239	7.8	25.0	198	280
	Total	1,516	819	728	0	0	3,062				
Week 33	**Alaska**	1,380	792	239	131	102	2,644	48.8	79.7	2,513	2,775
8/8–8/14	**Nass**	569	98	519	0	48	1,233	22.8	93.6	1,079	1,387
	Skeena	1,269	131	79	0	59	1,538	28.4	84.2	1,399	1,676
	Total	3,218	1,020	837	131	209	5,415				
Week 34	**Alaska**	883	1,911	386	169	152	3,502	89.9	59.4	3,405	3,600
8/15–8/21	**Nass**	133	122	122	0	17	395	10.1	59.4	297	492
	Skeena	0	0	0	0	0	0	0.0	0.0	0	0
	Total	1,017	2,033	508	169	169	3,897				
Week 35	**Alaska**	324	94	214	0	0	632	56.4	19.6	600	664
8/22–8/28	**Nass**	68	32	53	0	0	153	13.6	15.8	127	179
	Skeena	309	0	27	0	0	336	30.0	27.1	292	381
	Total	701	126	294	0	0	1,121				
Week 36[b]	**Alaska**	23	7	15	0	0	45	56.4	1.4	43	47
8/29–9/04	**Nass**	5	2	4	0	0	11	13.6	1.1	9	13
	Skeena	22	0	2	0	0	24	30.0	1.9	21	27
	Total	50	9	21	0	0	80				
Season	**Alaska**	8,338	5,456	4,041	300	254	18,390	76.9	156	18,133	18,647
Total	**Nass**	775	1,047	697	0	65	2,584	10.8	160	2,321	2,848
	Skeena	2,509	269	108	0	59	2,945	12.3	125	2,740	3,151
	Total	11,622	6,773	4,846	300	379	23,920				

[a] Age and stock composition for week 31 estimated using 101 samples collected during week 32.

[b] Age and stock composition for week 36 estimated using 80 samples collected during week 35.

Table 7.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 104 purse seine fishery, 2004.

		Catch By Age Class								90% CI	
Date	Stock Group	1.2	1.3	2.2	2.3	Other	Total	Percent	SE	Lower	Upper
Week 28	Alaska	328	175	140	59	7	709	20.2	54.9	618	799
7/04-7/10	Nass	897	329	601	99	19	1,946	55.6	81.5	1,811	2,080
	Skeena	161	71	121	27	4	383	10.9	64.1	278	489
	South Migrating	371	85	1	0	6	464	13.2	37.3	402	525
	Total	1,757	660	863	186	37	3,501				
Week 29	Alaska	889	478	136	226	29	1,758	36.2	82.9	1,622	1,894
7/11-7/17	Nass	724	300	636	94	29	1,784	36.7	112.3	1,599	1,968
	Skeena	636	284	75	15	17	1,027	21.1	89.7	879	1,174
	South Migrating	230	53	1	0	4	288	5.9	34.3	231	344
	Total	2,480	1,116	847	335	79	4,856				
Week 30	Alaska	2,938	1,923	804	374	70	6,108	27.3	336.3	5,555	6,661
7/18-7/24	Nass	3,177	1,020	2,502	617	85	7,400	33.0	501.4	6,575	8,225
	Skeena	5,537	783	863	83	84	7,350	32.8	468.7	6,579	8,121
	South Migrating	1,233	284	4	0	22	1,542	6.9	178.4	1,249	1,836
	Total	12,885	4,010	4,172	1,074	260	22,401				
Week 31	Alaska	3,833	1,377	869	773	89	6,940	10.1	677.1	5,826	8,054
7/25-7/31	Nass	10,599	5,407	3,665	857	266	20,794	30.4	1,582.9	18,190	23,398
	Skeena	25,416	3,882	1,439	218	401	31,357	45.8	1,636.4	28,665	34,049
	South Migrating	7,505	1,727	23	0	131	9,387	13.7	757.2	8,142	10,633
	Total	47,354	12,392	5,996	1,849	887	68,478				
Week 32	Alaska	3,845	1,688	2,741	1,150	22	9,446	11.2	904.1	7,959	10,933
8/01-8/07	Nass	19,483	3,321	3,736	1,163	65	27,769	33.0	2,047.1	24,401	31,136
	Skeena	33,132	2,892	1,040	0	87	37,152	44.2	2,198.4	33,535	40,768
	South Migrating	7,720	1,777	24	0	135	9,656	11.5	927.6	8,130	11,181
	Total	64,180	9,679	7,541	2,313	310	84,022				
Week 33	Alaska	7,070	4,059	1,489	1,600	68	14,286	16.9	1,023.3	12,603	15,969
8/08-8/14	Nass	15,342	6,818	2,884	657	123	25,825	30.5	1,840.9	22,797	28,853
	Skeena	18,797	4,980	2,395	257	127	26,556	31.4	1,843.7	23,523	29,589
	South Migrating	14,289	3,289	45	0	250	17,873	21.1	1,072.2	16,109	19,637
	Total	55,499	19,146	6,813	2,514	568	84,540				
Week 34	Alaska	3,239	1,171	1,155	300	0	5,866	9.4	774.8	4,591	7,140
8/15-8/21	Nass	20,055	804	129	0	0	20,988	33.6	1,648.9	18,275	23,700
	Skeena	14,499	3,683	287	328	0	18,797	30.1	1,711.8	15,981	21,613
	South Migrating	13,438	3,093	42	0	235	16,808	26.9	973.1	15,207	18,409
	Total	51,231	8,750	1,614	629	235	62,459				
Week 35[a]	Alaska	979	354	349	91	0	1,773	9.4	234.2	1,388	2,159
8/22-8/28	Nass	6,063	243	39	0	0	6,345	33.6	498.5	5,525	7,165
	Skeena	4,383	1,113	87	99	0	5,683	30.1	517.5	4,831	6,534
	South Migrating	4,062	935	13	0	71	5,081	26.9	294.2	4,597	5,565
	Total	15,488	2,645	488	190	71	18,882				
Season	Alaska	23,121	11,226	7,682	4,572	285	46,886	13.4	1,761	43,989	49,783
Totals	Nass	76,341	18,242	14,191	3,488	588	112,849	32.3	3,650	106,845	118,854
	Skeena	102,562	17,688	6,307	1,028	720	128,305	36.7	3,787	122,075	134,534
	South Migrating	48,848	11,242	153	0	855	61,099	17.5	1,911	57,955	64,242
	Total	250,873	58,398	28,333	9,088	2,447	349,139				

[a] Age and stock composition from week 35 estimated from 188 samples collected during week 34.

Table 8.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 106 drift gillnet fishery, 2004.

		Catch By Age Class								90% CI	
Date	Stock Group	1.2	1.3	2.2	2.3	Other	Total	Percent	SE	Lower	Upper
Week 25 [a]	Alaska I	111	168	115	20	5	5	424	35.2	13	403
6/13–6/19	Alaska II	0	0	0	0	0	0	0	0.0	0	0
	Nass	14	261	104	31	5	5	421	34.9	25	380
	Skeena	0	39	31	0	1	1	71	5.9	12	51
	Tahltan	136	26	2	7	2	2	176	14.6	25	135
	Stikine	39	0	0	0	1	1	40	3.4	10	25
	Tuya	0	41	19	10	1	1	72	6.0	9	58
	Total	301	534	271	68	15	15	1,204			
Week 26 [b]	Alaska I	698	782	242	70	33	10	1,834	20.7	79	1,705
6/20–6/26	Alaska II	0	7	0	0	0	0	7	0.1	2	4
	Nass	448	944	866	76	47	14	2,395	27.0	138	2,167
	Skeena	42	17	335	10	8	2	414	4.7	105	241
	Tahltan	1,602	1,701	54	130	71	21	3,579	40.4	165	3,309
	Stikine	330	0	32	0	7	2	372	4.2	86	230
	Tuya	0	48	82	115	5	1	251	2.8	50	170
	Total	3,120	3,498	1,611	402	171	51	8,853			
Week 27 [b]	Alaska I	3,708	1,941	1,451	181	32	54	7,368	26.5	233	6,985
6/27–7/3	Alaska II	0	71	0	0	0	0	71	0.3	19	40
	Nass	2,021	861	2,842	0	32	53	5,808	20.9	348	5,236
	Skeena	0	0	23	376	2	4	406	1.5	91	255
	Tahltan	4,779	6,222	1,935	415	79	131	13,560	48.8	357	12,973
	Stikine	0	0	0	0	0	0	0	0.0	0	0
	Tuya	0	0	0	549	3	5	557	2.0	106	382
	Total	10,508	9,095	6,251	1,521	148	247	27,770			
Week 28 [b]	Alaska I	3,195	3,153	826	413	62	21	7,669	43.1	171	7,387
7/4–7/10	Alaska II	0	105	0	0	0	0	105	0.6	28	59
	Nass	549	906	1,744	133	35	12	3,378	19.0	223	3,011
	Skeena	121	0	34	90	2	1	248	1.4	82	113
	Tahltan	1,872	2,314	922	136	65	22	5,331	29.9	190	5,018
	Stikine	520	0	47	0	7	2	577	3.2	146	336
	Tuya	0	249	0	248	6	2	505	2.8	82	371
	Total	6,257	6,727	3,573	1,020	178	59	17,814			
Week 29	Alaska I	4,365	5,016	1,760	298	86	86	11,609	55.5	233	11,226
7/11–7/17	Alaska II	0	948	0	0	9	9	967	4.6	130	753
	Nass	380	1,021	932	0	18	18	2,368	11.3	197	2,044
	Skeena	455	263	807	431	23	23	2,002	9.6	186	1,697
	Tahltan	1,343	1,220	270	111	34	34	3,011	14.4	217	2,654
	Stikine	382	0	0	0	5	5	391	1.9	121	192
	Tuya	0	401	90	46	7	7	551	2.6	85	412
	Total	6,924	8,869	3,859	886	181	181	20,900			
Week 30	Alaska I	2,631	3,372	997	508	66	0	7,573	76.3	93	7,420
7/18–7/24	Alaska II	0	342	0	0	4	0	346	3.5	53	259
	Nass	73	177	212	38	5	0	505	5.1	58	409
	Skeena	147	0	371	77	5	0	600	6.1	53	513
	Tahltan	343	307	0	73	7	0	730	7.4	57	636
	Stikine	0	34	0	0	0	0	35	0.3	40	-31
	Tuya	0	106	15	11	1	0	134	1.3	28	87
	Total	3,193	4,338	1,594	707	89	0	9,922			
Week 31	Alaska I	2,385	3,100	953	339	40	66	6,883	70.9	100	6,718
7/25–87/31	Alaska II	0	118	0	0	1	1	120	1.2	50	37
	Nass	232	616	542	64	8	15	1,477	15.2	70	1,361
	Skeena	187	0	96	242	3	5	533	5.5	47	455
	Tahltan	594	0	0	0	4	5	604	6.2	43	533
	Stikine	0	64	0	0	1	1	65	0.7	35	8
	Tuya	0	0	26	6	0	0	32	0.3	7	21
	Total	3,398	3,898	1,617	650	57	93	9,713			

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Table 8.–Page 2 of 2.

		Catch By Age Class								90% CI	
Date	Stock Group	1.2	1.3	2.2	2.3	Other	Total	Percent	SE	Lower	Upper
Week 32	**Alaska I**	3,347	3,583	1,174	736	79	29	8,949	65.0	141	8,717
8/01–8/07	**Alaska II**	0	241	0	0	2	2	244	1.8	59	147
	Nass	289	247	1,123	16	15	6	1,696	12.3	114	1,508
	Skeena	1,178	0	318	177	15	6	1,693	12.3	96	1,534
	Tahltan	731	69	0	0	7	4	811	5.9	65	703
	Stikine	0	1	160	0	2	0	163	1.2	49	83
	Tuya	0	216	0	0	2	1	218	1.6	36	159
	Total	5,545	4,357	2,776	929	120	48	13,774			
Week 33	**Alaska I**	1,015	1,139	277	211	3	62	2,708	69.3	40	2,642
8/08–8/14	**Alaska II**	0	55	0	0	0	1	56	1.4	19	26
	Nass	0	116	175	46	0	8	346	8.9	34	290
	Skeena	421	0	87	31	1	13	552	14.1	48	474
	Tahltan	80	0	0	4	0	2	86	2.2	12	66
	Stikine	0	91	64	0	0	4	158	4.1	28	112
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	1,517	1,400	603	292	5	90	3,906			
Week 34	**Alaska I**	109	220	218	29	0	0	577	33.1	68	464
8/15–8/21	**Alaska II**	0	48	0	0	0	0	48	2.7	12	28
	Nass	159	101	114	6	0	0	380	21.8	27	336
	Skeena	408	0	0	0	0	0	408	23.4	58	313
	Tahltan	74	0	0	0	0	0	74	4.2	17	46
	Stikine	181	18	47	0	0	0	247	14.2	27	202
	Tuya	0	9	0	0	0	0	9	0.5	3	4
	Total	931	396	379	36	0	0	1,742			
Week 35	**Alaska I**	26	52	13	6	0	0	97	55.4	4	91
8/22–8/28	**Alaska II**	0	9	0	0	0	0	9	5.0	2	6
	Nass	2	0	21	1	0	0	25	14.2	6	15
	Skeena	10	0	0	0	0	0	10	5.7	2	6
	Tahltan	20	0	0	0	0	0	20	11.5	4	13
	Stikine	0	0	0	0	0	0	0	0.0	0	0
	Tuya	0	14	0	0	0	0	14	8.2	3	10
	Total	59	76	35	7	0	0	176			
Week 36–40	**Alaska I**	51	118	11	140	0	0	321	66.1	20	288
8/29–10/02	**Alaska II**	0	20	0	0	0	0	20	4.1	7	8
	Nass	4	0	18	30	0	0	53	10.9	19	22
	Skeena	19	1	0	0	0	0	20	4.1	9	5
	Tahltan	39	0	0	0	0	0	39	8.1	18	10
	Stikine	0	0	0	0	0	0	0	0.0	0	0
	Tuya	0	33	0	0	0	0	33	6.7	11	14
	Total	114	171	29	171	0	0	485			
		21,641	22,644	8,036	2,951	406	333	56,012	48.2	435	55,296
Season	**Alaska I**	0	1,964	0	0	16	14	1,993	1.7	165	1,721
Total	**Alaska II**	4,172	5,248	8,693	443	164	130	18,851	16.2	503	18,023
	Nass	2,988	319	2,101	1,435	60	55	6,958	6.0	284	6,491
	Skeena	11,614	11,860	3,182	875	268	221	28,020	24.1	498	27,200
	Tahltan	1,452	209	351	0	22	14	2,048	1.8	224	1,679
	Stikine	0	1,117	232	985	26	17	2,377	2.0	173	2,092
	Tuya	41,866	43,361	22,595	6,689	963	784	116,259			
	Total	3,347	3,583	1,174	736	79	29	8,949	65.0	141	8,717

[a] Age and stock composition for statistical week 25 estimated using statistical area 106-41.

[b] Age and stock composition for statistical area 106-30 weeks 26–28 estimated using 131 samples collected during week 29.

Table 9.–Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 108 drift gillnet fishery, 2004.

		Catch By Age Class									90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**0.**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 25	**Alaska I**	0	0	33	8	0	1	41	3.1	9.5	25	57
6/13-6/19	**Alaska II**	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	12	0	0	9	0	0	21	1.6	3.7	15	27
	Skeena	0	0	0	0	0	0	0	0.0	0.0	0	0
	Tahltan	81	636	18	23	0	11	769	57.2	25.3	727	810
	Stikine	43	174	0	10	245	3	476	35.4	25.6	434	518
	Tuya	0	0	0	36	0	1	37	2.7	7.8	24	49
	Total	136	810	51	86	245	16	1,343				
Week 26	**Alaska I**	208	268	312	0	0	9	797	4.4	111.2	614	980
6/20-6/26	**Alaska II**	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	0	0	180	0	0	2	182	1.0	45.3	108	257
	Skeena	164	0	91	0	0	3	258	1.4	94.0	104	413
	Tahltan	5,206	7,910	854	469	0	168	14,606	81.2	339.2	14,048	15,164
	Stikine	41	0	0	0	1,685	0	1,726	9.6	320.7	1,199	2,254
	Tuya	0	0	186	218	0	5	409	2.3	76.2	283	534
	Total	5,618	8,177	1,623	687	1,685	187	17,978				
Week 27	**Alaska I**	756	0	117	0	0	8	880	4.7	75.4	756	1,004
6/27-7/03	**Alaska II**	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	0	0	0	87	0	1	88	0.5	24.5	47	128
	Skeena	0	0	0	0	0	0	0	0.0	0.0	0	0
	Tahltan	4,872	7,808	1,031	311	0	130	14,151	76.0	230.2	13,772	14,530
	Stikine	0	1,435	81	117	1,446	15	3,094	16.6	230.0	2,716	3,473
	Tuya	0	0	155	240	0	4	398	2.1	58.3	303	494
	Total	5,628	9,243	1,383	755	1,446	157	18,612				
Week 28	**Alaska I**	786	1,359	1,008	271	0	21	3,445	10.3	302.4	2,948	3,943
7/04-7/10	**Alaska II**	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	0	0	87	150	0	1	239	0.7	69.3	125	353
	Skeena	0	0	258	0	0	2	260	0.8	107.6	83	437
	Tahltan	8,111	10,785	1,769	362	0	131	21,158	63.0	464.6	20,394	21,922
	Stikine	674	4,183	0	0	3,315	30	8,202	24.4	516.5	7,353	9,052
	Tuya	0	0	6	280	0	2	287	0.9	75.4	163	411
	Total	9,571	16,326	3,128	1,063	3,315	188	33,591				
Week 29	**Alaska I**	1,412	1,325	101	104	0	19	2,961	12.7	263.2	2,528	3,394
7/11-7/17	**Alaska II**	0	365	0	0	0	2	367	1.6	138.4	139	595
	Nass	380	444	0	0	0	5	830	3.6	282.3	365	1,294
	Skeena	0	0	0	0	0	0	0	0.0	0.0	0	0
	Tahltan	3,941	5,953	171	510	0	67	10,642	45.6	405.0	9,976	11,309
	Stikine	902	3,057	489	130	3,381	29	7,988	34.2	433.2	7,275	8,700
	Tuya	0	0	428	132	0	4	563	2.4	103.6	393	734
	Total	6,636	11,143	1,189	876	3,381	125	23,351				
Week 30	**Alaska I**	396	599	173	140	0	4	1,312	18.5	86.5	1,170	1,454
7/18-7/24	**Alaska II**	0	88	0	0	0	0	88	1.2	42.1	19	158
	Nass	46	0	145	0	0	1	192	2.7	34.5	135	248
	Skeena	0	0	253	94	0	1	348	4.9	50.5	265	431
	Tahltan	749	1,234	27	5	0	6	2,021	28.5	91.8	1,870	2,172
	Stikine	375	1,163	43	0	1,431	5	3,017	42.6	133.3	2,797	3,236
	Tuya	0	0	109	0	0	0	109	1.5	18.0	79	139
	Total	1,567	3,084	750	239	1,431	17	7,087				

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Table 9.–Page 2 of 2.

		Catch By Age Class									90% CI	
Date	**Stock Group**	**1.2**	**1.3**	**2.2**	**2.3**	**Other**	**0.**	**Total**	**Percent**	**SE**	**Lower**	**Upper**
Week 33-39	**Alaska I**	81	162	200	44	0	0	487	34.1	66.5	378	597
7/25-9/25	**Alaska II**	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	40	0	73	50	0	0	163	11.4	34.2	106	219
	Skeena	288	86	0	178	0	0	552	38.6	94.5	397	707
	Tahltan	0	0	0	0	0	0	0	0.0	0.0	0	0
	Stikine	0	163	0	0	0	0	163	11.4	52.4	77	249
	Tuya	0	65	0	0	0	0	65	4.6	21.8	30	101
	Total	409	477	272	272	0	0	1,430				
	Alaska I	3,639	3,712	1,943	568	0	62	9,924	9.6	436.7	9,205	10,642
	Alaska II	0	453	0	0	0	3	455	0.4	144.7	217	693
Season	**Nass**	478	444	484	297	0	10	1,714	1.7	299.2	1,221	2,206
Totals	**Skeena**	452	86	603	271	0	6	1,418	1.4	178.6	1,124	1,712
	Tahltan	22,961	34,325	3,869	1,680	0	512	63,347	61.3	746.4	62,119	64,575
	Stikine	2,035	10,175	613	257	11,504	83	24,666	23.9	794.6	23,359	25,973
	Tuya	0	65	884	905	0	15	1,869	1.8	162.7	1,601	2,136
	Total	29,565	49,260	8,396	3,978	11,504	690	103,39				

APPENDICES

Appendix A.–Scale measurement and count characters calculated from intercirculus distances and evaluated for use in linear discriminant function analysis.

Variable Code	Growth Zone	Scale Character
Z1	1st Freshwater Annular	Number of circuli (NC1FW)
Z2		Width of zone (S1FW)
Z3		Distance from scale focus (C0) to circulus 2 (C2)
Z4		Distance from scale focus to circulus 4 (C0 - C4)
Z5		Distance from scale focus to circulus 6 (C0 - C6)
Z6		Distance from scale focus to circulus 8 (C0 - C8)
Z12		Distance from fourth-to-last circulus to end of zone, C(NC1FW-4) - EOZ
Z13		Distance from second-to-last circulus to end of zone, C(NC1FW-2) - EOZ
Z28		Number of circuli in first 3/4 of zone
Z30		Relative width, (variable 29)/S1FW
Z31	2nd Freshwater Annular	Number of circuli (NC2FW)
Z32		Width of zone (S2FW)
Z33		Distance from end of first annular zone (E1FW) to circulus 2 (C2)
Z34		Distance from end of first annular zone to circulus 4 (E1FW - C4)
Z35		Distance from end of first annular zone to circulus 6 (E1FW - C6)
Z36		Distance from end of first annular zone to circulus 8 (E1FW - C8)
Z42		Distance from fourth-to-last circulus to end of zone, C(NC2FW-4) - EOZ
Z43		Distance from second-to-last circulus to end of zone, C(NC2FW-2) - EOZ
Z57		Average interval between circuli (S2FW/NC2FW)
Z58		Number of circuli in first 3/4 of zone
Z61	Freshwater Plus Growth	Number of circuli (NCPGZ)
Z62		Width of zone (SPGZ)
Z63	All Freshwater	Total number of annular circuli (NC1FW + NC2FW)
Z64		Total width of annular zones (S1FW + S2FW)
Z65		Total number of freshwater circuli (NC1FW + NC2FW + NCPGZ)
Z66		Total width of freshwater zones (S1FW + S2FW + SPGZ)
Z70	1st Marine Annular	Number of circuli (NC1OZ)
Z71		Width of zone (S1OZ)
Z72		Distance from end of freshwater growth (EFW) to circulus 3 (C3)
Z73		Distance from end of freshwater growth to circulus 6 (EFW - C6)
Z74		Distance from end of freshwater growth to circulus 9 (EFW - C9)
Z75		Distance from end of freshwater growth to circulus 12 (EFW - C12)
Z76		Distance from end of freshwater growth to circulus 15 (EFW - C15)
Z85		Distance from sixth-to-last circulus to end of zone, C(NC1OZ-6) - EOZ
Z86		Distance from third-to-last circulus to end of zone, C(NC1OZ-3) - EOZ
Z87		Distance from circulus 3 to end of zone (C3 - EOZ)
Z88		Distance from circulus 9 to end of zone (C9 - EOZ)
Z89		Distance from circulus 15 to end of zone (C15 - EOZ)
Z105		Average interval between circuli (S1OZ/NC1OZ)
Z106		Number of circuli in first 1/2 of zone

Appendix B.–Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the District 101 gillnet fishery, and Districts 101–103 purse seine fisheries, 2004.

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix				
					Classified As (number and percent)			
Age Class	**Run**	**Variable**	**F-Statistic**	**True Stock**	**Alaska**	**Nass**	**Skeena**	**Total**
12	**Season**	z4	238.73	**Alaska**	150	35	13	
	Total	z71	83.91		75.76%	17.68%	6.57%	198
		z86	24.64	**Nass**	23	119	41	
		z13	16.67		12.57%	65.03%	22.4%	183
				Skeena	3	40	157	
					1.5%	20%	78.5%	200
				Total	176	194	211	581
13	**Season**	z4	308.3	**Alaska**	153	29	17	
	Total	z71	77.46		76.88%	14.57%	8.54%	199
		z76	25.12	**Nass**	13	141	51	
		z1	26.39		6.34%	68.78%	24.88%	205
		z70	10.8	**Skeena**	11	58	136	
					5.37%	28.29%	66.34%	205
				Total	177	228	204	609
22	**Season**	z5	172.82	**Alaska**	96	16	21	
	Total	z34	16.1		72.18%	12.03%	15.79%	133
		z71	11.13	**Nass**	15	138	44	
		z3	7.94		7.61%	70.05%	22.34%	197
		z2	6.88	**Skeena**	5	7	15	
					18.52%	25.93%	55.56%	27
				Total	116	161	80	357
23	**Season**	z4	119.5	**Alaska**	92	11	13	
	Total	z35	54.76		79.31%	9.48%	11.21%	116
		z76	40.12	**Nass**	23	89	38	
		z65	10.43		15.33%	59.33%	25.33%	150
		z72	3.91	**Skeena**	4	8	36	
					8.33%	16.67%	75%	48
				Total	119	108	87	314

Appendix C.–Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the District 104 purse seine fishery, 2004.

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix					
				True	Classified As (number and percent)				
Age Class	Timing	Variable	F-Statistic	Stock	Fraser	Alaska	Nass	Skeena	Total
12	**Season**	z4	149.64	**Fraser**	54	10	29	36	
	Total	z71	74.13		41.86%	7.75%	22.48%	27.91%	129
		z86	24.25	**Alaska**	17	141	30	10	
		z28	17.91		8.59%	71.21%	15.15%	5.05%	198
		z2	14.41	**Nass**	48	23	83	29	
		z76	11.19		26.23%	12.57%	45.36%	15.85%	183
		z13	10.6	**Skeena**	40	2	23	135	
		z1	4.48		20%	1%	11.5%	67.5%	200
				Total	159	176	165	210	710
13	**Season**	z4	271.18	**Alaska**		149	35	16	
	Total	z71	82.2			74.5%	17.5%	8%	200
		z76	25.13	**Nass**		16	138	51	
		z65	27.92			7.8%	67.32%	24.88%	205
				Skeena		12	57	136	
						5.85%	27.8%	66.34%	205
				Total		177	230	203	610
22	**Season**	z5	164.74	**Alaska**		97	14	20	
	Total	z66	77.34			74.05%	10.69%	15.27%	131
		z88	13.01	**Nass**		17	134	46	
		z1	9.19			8.63%	68.02%	23.35%	197
		z3	8.86	**Skeena**		5	7	15	
						18.52%	25.93%	55.56%	27
				Total		119	155	81	355
23	**Season**	z4	127.69	**Alaska**		95	14	13	
	Total	z32	55.62			77.87%	11.48%	10.66%	122
		z65	41.53	**Nass**		21	92	37	
		z76	23.22			14%	61.33%	24.67%	150
		z106	24.99	**Skeena**		4	9	35	
		z58	8.71			8.33%	18.75%	72.92%	48
				Total		120	115	85	320

Appendix D.–Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the Districts 106 and 108 drift gillnet fisheries, 2004.

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix								
					Classified As (number and percent)							
Age Class	Timing	Variable	F-Statistic	True Stock	McDonald	Alaska	Nass	Skeena	Stikine	Tahltan	Tuya	Total
12	**Early**	z5	142.71	**Alaska**		134	10	2	33	19	2	
		z71	61.59			67%	5%	1%	16.5%	9.5%	1%	200
		z1	24.44	**Nass**		15	65	15	42	30	16	
		z74	22.12			8.2%	35.52%	8.2%	22.95%	16.39%	8.74%	183
		z76	10.13	**Skeena**		2	19	80	5	51	43	
						1%	9.5%	40%	2.5%	25.5%	21.5%	200
				Stikine		17	14	3	14	5	6	
						28.81%	23.73%	5.08%	23.73%	8.47%	10.17%	59
				Tahltan		9	24	44	6	90	26	
						4.52%	12.06%	22.11%	3.02%	45.23%	13.07%	199
				Tuya		0	2	6	0	3	5	
						0%	12.5%	37.5%	0%	18.75%	31.25%	16
				Total		177	134	150	100	198	98	857
12	**Late**	z5	191.74	**Alaska**		141	13	11	35			
		z71	62.04			70.5%	6.5%	5.5%	17.5%			200
		z28	29.01	**Nass**		17	77	41	48			
		z76	17.58			9.29%	42.08%	22.4%	26.23%			183
		z13	7.96	**Skeena**		3	31	158	8			
		z66	7.92			1.5%	15.5%	79%	4%			200
		z86	6.05	**Stikine**		18	20	6	15			
						30.51%	33.9%	10.17%	25.42%			59
				Total		179	141	216	106			642
13	**Early**	z2	447.42	**McDonald**	128	16	0	0	1	1	0	146
		z5	134.92		87.67%	10.96%	0%	0%	0.68%	0.68%	0%	
		z71	75.97	**Alaska**	53	67	18	2	34	16	9	199
		z1	43.11		26.63%	33.67%	9.05%	1.01%	17.09%	8.04%	4.52%	
		z76	30.94	**Nass**	1	6	115	29	27	15	12	205
					0.49%	2.93%	56.1%	14.15%	13.17%	7.32%	5.85%	
				Skeena	1	4	39	77	18	23	43	205
					0.49%	1.95%	19.02%	37.56%	8.78%	11.22%	20.98%	
				Stikine	12	58	50	10	45	18	12	205
					5.85%	28.29%	24.39%	4.88%	21.95%	8.78%	5.85%	
				Tahltan	1	10	21	24	18	88	42	204
					0.49%	4.9%	10.29%	11.76%	8.82%	43.14%	20.59%	
				Tuya	1	3	9	30	7	38	117	205
					0.49%	1.46%	4.39%	14.63%	3.41%	18.54%	57.07%	
				Total	197	164	252	172	150	199	235	1369
13	**Late**	z5	304.35	**McDonald**	127	16	0	1	2			146
		z1	141.58		86.99%	10.96%	0%	0.68%	1.37%			
		z76	42.93	**Alaska**	53	76	18	14	38			199
		z73	30.66		26.63%	38.19%	9.05%	7.04%	19.1%			
		z106	23.24	**Nass**	1	7	117	48	32			205
		z6	9.49		0.49%	3.41%	57.07%	23.41%	15.61%			
				Skeena	1	8	43	132	21			205
					0.49%	3.9%	20.98%	64.39%	10.24%			
				Stikine	11	63	50	30	51			205
					5.37%	30.73%	24.39%	14.63%	24.88%			
				Total	193	170	228	225	144			960

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Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix							
				True	Classified As (number and percent)						
Age Class	Timing	Variable	F-Statistic	Stock	McDonald Alaska	Nass	Skeena	Stikine	Tahltan	Tuya	Total
22	**Total**	z65	396.48	**Alaska**	125	41			24	5	
	Season	z71	147.81		64.1%	21.03%			12.31%	2.56%	195
		z5	122.38	**Nass**	24	147			16	10	
		z35	29.95		12.18%	74.62%			8.12%	5.08%	197
				Tahltan	7	1			38	15	
					11.48%	1.64%			62.3%	24.59%	61
				Tuya	1	9			35	125	
					0.59%	5.29%			20.59%	73.53%	170
				Total	157	198			113	155	623
23	**Early**	z71	56.02	**Alaska**	85	36	15	26	7	6	
		z32	42.35		48.57%	20.57%	8.57%	14.86%	4%	3.43%	175
		z65	50.28	**Nass**	24	84	19	17	4	2	
		z2	21.68		16%	56%	12.67%	11.33%	2.67%	1.33%	150
		z4	14.72	**Skeena**	3	8	14	4	7	12	
		z1	8.74		6.25%	16.67%	29.17%	8.33%	14.58%	25%	48
				Stikine	3	1	1	11	6	1	
					13.04%	4.35%	4.35%	47.83%	26.09%	4.35%	23
				Tahltan	2	1	16	8	18	9	
					3.7%	1.85%	29.63%	14.81%	33.33%	16.67%	54
				Tuya	0	1	3	1	1	18	
					0%	4.17%	12.5%	4.17%	4.17%	75%	24
				Total	117	131	68	67	43	48	474
23	**Late**	z35	61.48	**Alaska**	85	36	23	31			
		z32	31.29		48.57%	20.57%	13.14%	17.71%			175
		z28	32.99	**Nass**	21	88	21	20			
		z71	27.11		14%	58.67%	14%	13.33%			150
		z4	12.18	**Skeena**	3	8	32	5			
		z66	16.16		6.25%	16.67%	66.67%	10.42%			48
		z43	5.84	**Stikine**	2	2	3	16			
					8.7%	8.7%	13.04%	69.57%			23
				Total	111	134	79	72			396