ADF&G TECHNICAL DATA REPORT NO. 211
(Limited Distribution)

STATE OF ALASKA
Steve Cowper, Governor

KAKWAN POINT TEST FISHERY AND STIKINE RIVER CANADIAN GILL NET PORT SAMPLING, 1985

By:
Brian L. Lynch
Nancy C. Ratner
William R. Bergmann
and
Randy L. Timothy

August 1987

ALASKA DEPARTMENT OF FISH AND GAME
P.O. Box 3-2000, Juneau, Alaska 99802

Don W. Collinsworth
Commissioner

ADF&G TECHNICAL DATA REPORTS

This series of reports is designed to facilitate prompt reporting of data from studies conducted by the Alaska Department of Fish and Game, especially studies which may be of direct and immediate interest to scientists of other agencies.

The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revision will be made via errata sheets. Major revisions will be made in the form of revised reports.

KAKWAN POINT TEST FISHERY

AND

STIKINE RIVER CANADIAN GILL NET PORT SAMPLING, 1985

By

Brian L. Lynch

Nancy C. Ratner

William R. Bergmann

and

Randy L. Timothy

Technical Data Report No. 211
Alaska Department of Fish and Game
Division of Commercial Fisheries
Petersburg, Alaska

August 1987

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDICES (Continued)

ABSTRACT

The ninth year of the Stikine River Kakwan Point index test fishery is reported. The 1985 Tahltan Lake sockeye salmon (*Oncorhynchus nerka*) escapement was the highest on record at 67,326, but the catch-per-unit-effort (CPUE) in the Kakwan Point test fishery for sockeye salmon (the target species) was below the average of past years. Based on scale pattern analysis, the total estimated sockeye return to the Stikine River was 135,639 fish. The stock composition of the escapement was 63.2% Tahltan Lake fish and 36.8% mainstem. The total Stikine River return, including the estimated District 6 and 8 commercial catch of Stikine-bound sockeye salmon was 180,073 fish. Egg diameter analysis yielded an inriver escapement estimate of 160,668 sockeye with a stock composition of 52.1% Tahltan Lake and 47.9% mainstem. The total Stikine River return was estimated at 205,102 sockeye salmon. The Kakwan Point test fishery was shown to be only a fair predictor of the inriver Tahltan Lake stock escapement. Age 1.3 sockeye dominated the age classes captured in the Canadian lower Stikine commercial gill net fishery at 83% of the catch; ages 0.3, 1.2, and 2.3 comprised 14.5% of the catch, and nine additional age classes made up the remaining 2.5% of the catch. The total Canadian Stikine River sockeye salmon harvest was 25,464, and the U.S. catch of Stikine-bound sockeye salmon was an estimated 44,434 fish.

KEY WORDS: Stikine River, sockeye salmon, *Oncorhynchus nerka*, Kakwan Point, test fishery, Canadian port sampling, scale pattern analysis.

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) Stikine River escapement indexing program was started in 1977 to help assess the inseason run strength of sockeye salmon (*Oncorhynchus nerka*) in the Stikine River. Since that time the project has been conducted annually. The fishing time in 1985 was increased by 26% over 1984 but for comparative purposes, the basic fishing operation, gear, location, and timing has not changed throughout the years.

The Kakwan Pt. test fishing information is used by the Commercial Fisheries Division management staff as an indicator of the relative abundance of the Tahltan Lake sockeye salmon. The test fishing sockeye salmon catch-per-unit-effort (CPUE) provides a tool for assessing the sockeye run timing into the Stikine River and out of the Districts 6 and 8 (Figure 1) gill net fisheries and is used as a guide for making weekly inseason adjustments of commercial gillnet fishery openings in Sumner and Clarence Straits, and Frederick Sound. Although the Kakwan Pt. test fishery may not be useful as a predictor of actual sockeye abundance, the fishery is a useful indicator of the relative abundance of Tahltan sockeye by week. The length of the commercial fishery openings are dependent upon the abundance, and susceptiblity to capture of Stikine-bound sockeye which must be managed according to provisions of the U.S/Canada Salmon Treaty (The Treaty). The Treaty sets the Alaskan catch at 65% of the total allowable catch and the Canadian inriver catch at 35% of the allowable catch or 10,000 sockeye, whichever is greater. The minimum Tahltan Lake escapement, as established by the Northern Treaty Panel, is 20,000 sockeye salmon.

Tagging was not included as part of the 1985 project for the first time since 1978. Low numbers of tags recovered in past years, due to logistics problems and monetary costs associated with increasing up-river tag collection efforts, were insufficient for adaquate statistical analysis and led to the abandonment of this portion of the project.

The post-season sockeye salmon return to the Stikine River was also estimated by the analysis of freshwater scale characteristics and egg diameters obtained from sockeye harvested in the Canadian lower Stikine commercial gill net fishery. Tahltan Lake and mainstem spawning escapements as well as total system escapement were estimated by these two techniques.

METHODS

Kakwan Point

The basic test fishing operation in 1985 was the same as during previous years except that total fishing time was increased by 26% (122 hours) over 1984. Test fishing was conducted at Kakwan Pt. (Figure 2) from statistical weeks 23 to 33 (6 June to 14 August). The net was fished 5 to 7 days (40-77 hours) per week, with the exception of weeks 23 and 33, when the net was fished for one 24-hour period each week (Appendix Table 1). A 24-hour fishing period was conducted at least once weekly, usually Monday to Tuesday. The remainder of the fishing time occurred during the daylight hours with the net usually being set each morning between 8:00 and 9:00 a.m. (Appendix Table

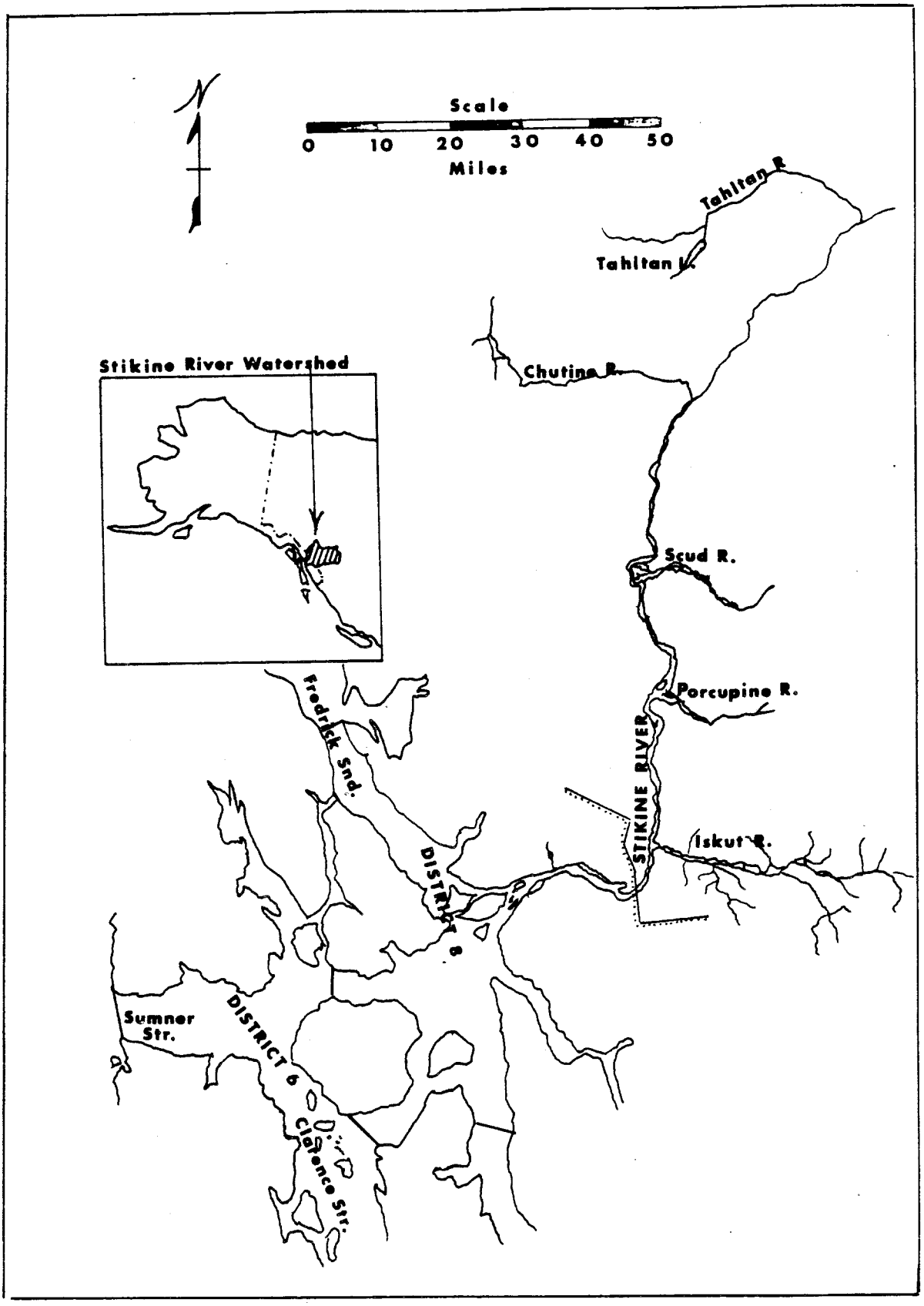

Figure 1. Stikine River from Tahltan Lake to the mouth, including the ADF&G commercial fishing districts 6 and 8.

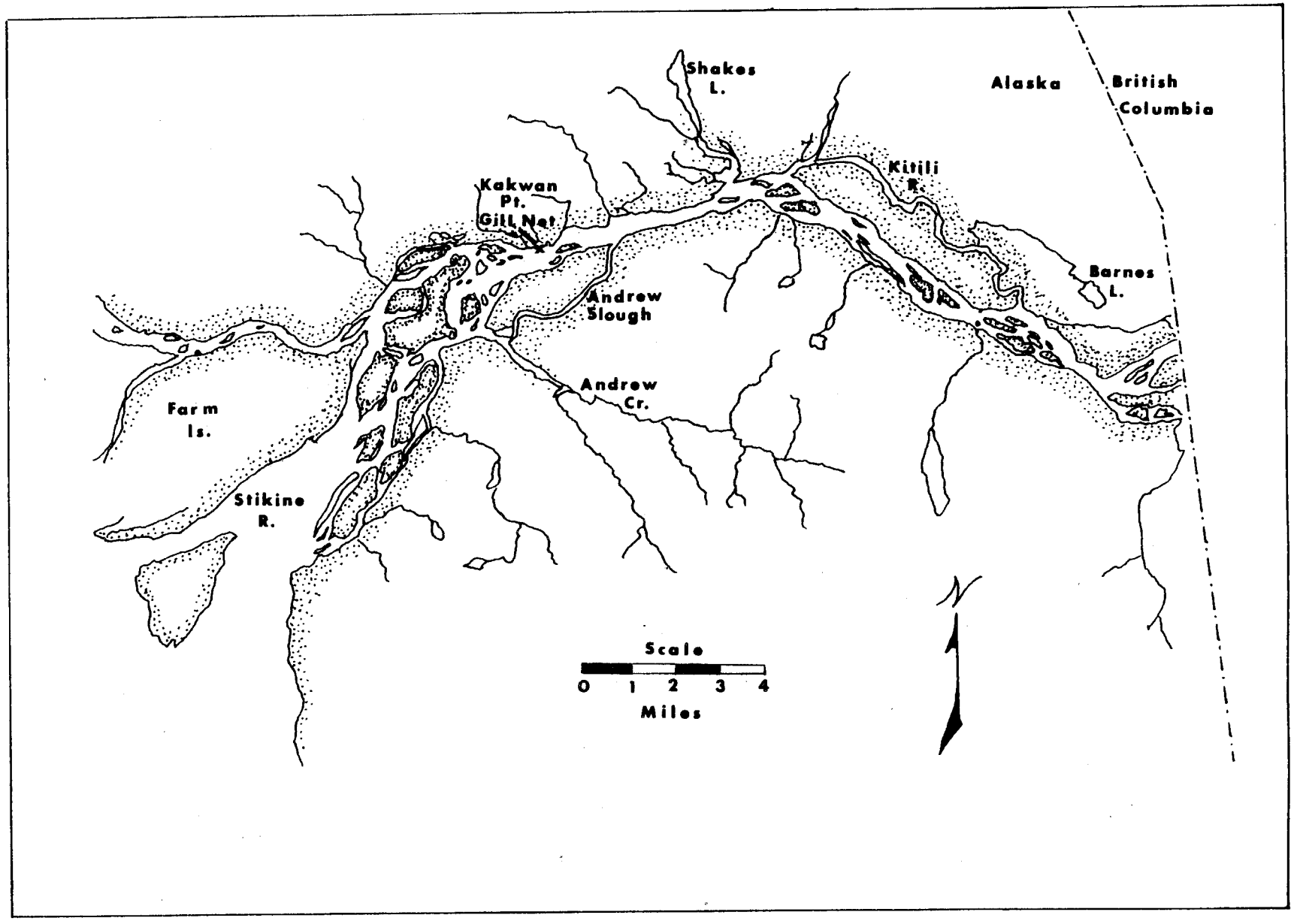

Figure 2. Stikine River showing the Kakwan Point test net site.

2). The 24-hour fishing period catch was used in 1985, as during past years, as the standard for calculating CPUE data. This test fishing period has been used as the standard because the limited availabilty of personnel allowed only enough time for one 24-hour continuous test fishing set to be made each week.

The gill net was 60 meshes deep, made of 136.5 mm (5 3/8 in) stretch mesh and approximately 15.25 m (50 ft) long. The net was attached to a boom log extended into the upper portion of a large back eddy located at Kakwan Pt. The only change in procedures from past years, other than the increase in fishing time, was that fish were placed in live boxes (coolers) and sampled after the net had been hauled in and reset. Water in the cooler was changed before hauling began and fresh water was added as needed. During large pink salmon (*O. gorbuscha*) catches the fish were sampled whenever the live boxes were full.

Data recorded for each captured fish included species, sex, mid-eye to fork length and whether the fish was dead or alive. All live fish were released back to the river (Appendix Table 2). During heavy pink salmon catches, the pink salmon were not measured, but all other data were recorded. One scale was taken from each sockeye and chum salmon (*O. keta*), and three each from chinook (*O. tshawytscha*), coho salmon (*O. kisutch*), and steelhead trout (*Salmo gairdneri*) from the 'preferred area' (INPFC 1963) located on the left side of the fish approximately two rows above the lateral line and on the diagonal row downward from the posterior insertion of the dorsal fin.

Released fish were not tagged as in previous years, instead, a hole was punched in the dorsal fin of each fish with a paper punch to distinguish recaptures. All recaptures were recorded but not added to the total catch per hour calculations.

All mortalities were cleaned, placed in an ice-filled cooler, and delivered to town at least once each week. The majority of fish were given to the senior citizen centers in Wrangell and Petersburg.

The test net was picked approximately every 2 hours and the time "set" and time "hauled" were recorded. Rarely more than a few minutes were necesssary to set the net. During the first half of the season, the time to haul the net averaged 10 to 15 minutes. Later in the season, large catches of chum and pink salmon sometimes increased the haul time to one hour or longer, with an average of approximately 30 minutes. During long net pulls "time out" was recorded when the net was 50% out. The majority of the fish were in the first half of the net so the last half was removed relatively quickly.

Linear regression analysis of the sockeye CPUE on the total Tahltan escapement for 1977 through 1984 was undertaken to examine the validity of the Kakwan Pt. test gill net as a reliable inseason indicator of the inriver abundance of Tahltan-bound sockeye salmon. The total Tahltan sockeye salmon inriver return, divided by 10,000, was regressed on the total Kakwan Point sockeye salmon CPUE during statistical weeks 23 through 29 (the normal period of migration of the Tahltan Lake stock). To test our hypothesis that the relationship between the Kakwan Pt. sockeye salmon test gill net CPUE and the total Tahltan-bound sockeye return was linear (is the resulting regression correlation coefficient, r, significantly different than 0) the following

equation was computed for n-2 (6) degrees of freedom at p = .05 (tabled t value of 2.45):

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$ (Steel & Torrie 1960)

Canadian Port Sampling

The Canadians operated an instream commercial gill net fishery (The Fishery) on the Canadian portion of the lower Stikine River during 1985 (Figure 3). Scales were collected from The Fishery at Great Glacier Salmon, a freezing plant owned cooperatively by member fishermen. The catch was sampled from the first opening, during statistical week 26, through statistical week 33 (24 June - 14 August), the last opening with a sockeye salmon catch sufficiently large to obtain a sample. The length of commercial fishery openings varied from 1 to 4 days. The weekly fishing periods began on Mondays at noon, except for week 30 when the opening occurred at noon, Wednesday.

The goal each week was to obtain scale samples from 500 sockeye salmon, all captured chinook salmon, and as many samples from chum and coho salmon as time permitted. A minimum of 500 sockeye salmon scale samples were taken during all weeks except weeks 26 and 27. The fishery was closed during week 27.

An average of seven gill nets (maximum of 10) were fished by members of Great Glacier Salmon Cooperative during most openings. There were usually three set nets were above the Iskut River, three set nets below the Iskut River, and one drift net in the slower current below the lowest set net at Boundary House at river-kilometer 26.7 (river-mile 23.0). During weeks 32 and part of week 33, the set net just above the confluence of the Iskut River was relocated to river-kilometer 16.1 (river-mile 10) on the Iskut River.

Samples were labeled with the general location of capture, if known. Locations were indicated as "above Iskut", "on Iskut", or "below Iskut". The fishermen claimed that the drift net below Boundary House was catching a higher proportion of fish than during past seasons. The drift net caught fish appeared to be smaller than fish captured in set nets. When possible, these samples were kept separate and labeled as "drift net fish below Iskut".

Scale Pattern Analysis

Post season escapement estimates for the two major races of Stikine River sockeye salmon, the Tahltan Lake stock and the mainstem stock, have been developed using an analysis of scale characteristics of the first year of freshwater growth. The 1985 analysis uses procedures presented by McCart (1982), and Lynch and Eggers (1985) (Scott McPherson, ADF&G Commercial Fisheries Division, Personal Communication; Glen Oliver, ADF&G Commercial Fisheries Division, Personal Communication). The scales collected at The Fishery were separated into those having greater than 10 freshwater circuli (Tahltan Lake stock), and those having 10 or fewer freshwater circuli (Mainstem stock) in the first year of growth. The proportions of the Tahltan-bound sockeye and mainstem sockeye were weighted by the proportion of

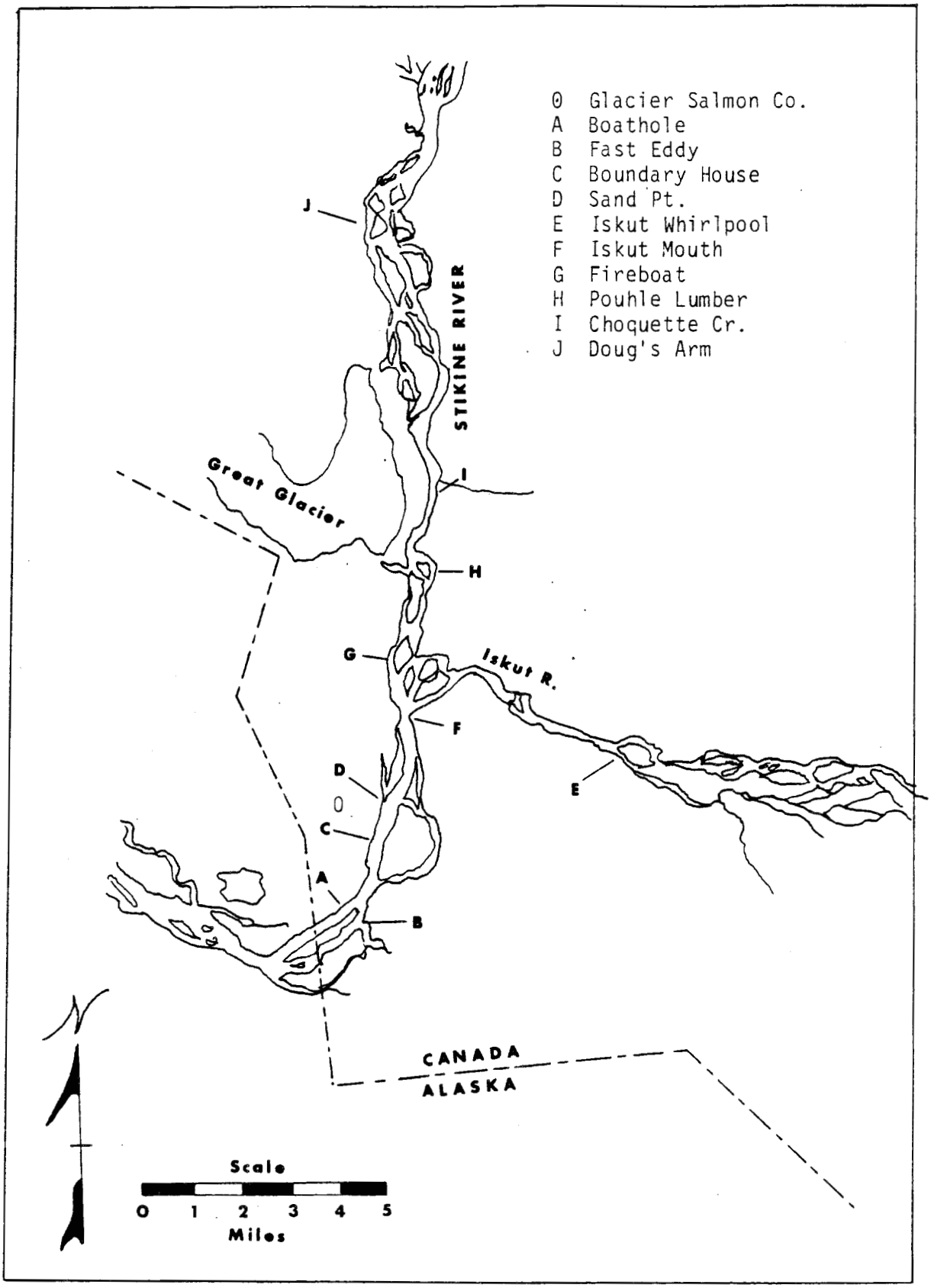

Figure 3. Location of the Canadian lower Stikine River commercial gill net fishery and landmarks.

the total seasonal CPUE harvested in The Fishery each week (Glen Oliver, ADF&G Commercial Fisheries Division, Personal Communication). The proportion of CPUE was multiplied by the proportion of each stock harvested each week to obtain an adjusted stock proportion. The adjusted proportions were added together to obtain the total estimated proportion of both stocks in the inriver sockeye escapement. The populations estimates were based on the Tahltan Lake to Mainstem stock catch ratio each in The Fishery (Scott McPherson, ADF&G Commercial Fisheries Division, Personal Communication).

The Districts 6 and 8 commercial gill net fisheries were also sampled and the catch apportioned to Stikine River stocks as well as Alaska Island and Nass/Skeena stocks. The stock apportionment developed for these fisheries were based on linear discriminate function (LDF) analysis of the characteristics freshwater scale circuli patterns. A detailed description of the LDF procedures used are described in Marshall et al. (1985).

Egg Diameter Analysis

Postseason escapement estimates have also been developed using egg diameters, and gonad weight of eggs from female sockeye salmon captured in The Fishery (Craig 1985; Lynch and Eggers 1985). The Tahltan Lake females have smaller eggs (2.0-3.5 mm) and less developed ovaries (1-3% of body weight) than the Mainstem females which have large eggs (3.5-6.2 mm) and more developed ovaries (5-16% of body weight) (Craig 1985). The weighting technique used was the same as for the scale pattern analysis.

A total of 234 female sockeye were sampled from The Fishery for egg diameters in 1985 (Appendix Table 3). Eggs were collected during each fishery opening and analyzed by methods similar to those used by Craig (1985), except that three sets of ten eggs were measured for mean egg diameter rather than one set.

Age Analysis

All salmon ages are presented in the European formula where the numbers preceeding the decimal refer to the number of freshwater annuli. Numbers following the decimal refer to the number of marine annuli. The total age is the sum of these two numbers plus one.

RESULTS

Kakwan Point

A total of 1,903 fish was captured during 584.99 hours of test fishing at Kakwan Pt. (Table 1). Species captured included sockeye, chinook, pink, chum, and coho salmon, Dolly Varden char (*Salvelinus malma*), and steelhead trout .

Sockeye Salmon:

The total catch of sockeye salmon in the test fishery was 431 fish. The peak weekly CPUE of 1.68 sockeye/hr occurred during statistical week 28 (July

Table 1. Kakwan Point test fishery salmon catches, 1985.

STAT WEEK	DATE	SOCKEYE			CHINOOK		CHUM		PINK			COHO		DOLLY VARDEN	STEELHEAD	TOTAL CATCH
		MALE	FEMALE	UNKNOWN 1/	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	UNKNOWN	MALE	FEMALE			
23	6/2-6/8				1											1
24	6/9-6/15				1									2		3
25	6/16-6/22	3	8		4	3	1							1		20
26	6/23-6/29	35	68	3	3		1							4		114
27	6/30-7/6	20	43		2									3		68
28	7/7-7/13	33	73	1	2		9	2						3	1	124
29	7/14-7/20	20	55		3	2	29	5	25	1	1			8		149
30	7/21-7/27	15	16		2		70	25	136	11	3		1	1		280
31	7/28-8/3	6	22		1		50	33	271	29						412
32	8/4-8/10	1	2	1			24	42	403	35	2	1			2	513
33	8/11-8/17	2	4				4	12	165	26		2	3	1		219
TOTALS		135	291	5	19	5	188	119	1,000	102	6	3	4	23	3	1,903
		31.3%	67.5%	1.2%	79.2%	20.8%	61.2%	38.8%	90.3%	9.2%	0.5%	42.9%	57.1%	100.0%	100.0%	

1/ Fish escaped prior to sex determination.

7-13) (Table 2). This corresponds closely with the peak timing of the Tahltan Lake stock migrations during 1983 and 1984 (Lynch & Edgington 1986; Lynch & Eggers 1985). No sockeye were captured early in the season during statistical weeks 23 and 24 (June 2-15).

The highest CPUE for a 24-hour test fishing period (1.21 sockeye/hr) occurred during statistical week 29 (Appendix Table 4). The occurrence of the peak 24-hour catch during this week was inconsistant with previous years (Figure 4). The average peak 24-hour test fishing period for prior years has been week 27, two weeks earlier than for the 1985 Tahltan migration.

The sockeye captured in the test net were primarily females. The sex ratio was 31.3% male, 67.5% female, and 1.2% undetermined (Table 1). The peak catch of both sexes occurred during statistical week 30 (Figure 5). This ratio is significantly different than the approximately 1:1 ratio found in The Fishery, 10 miles upriver (Appendix Table 5). The reason for this difference may be incorrect sexing of the fish. The sex of bright sockeye salmon, such as those caught at Kakwan Point, is difficult to determine without sacrificing the fish and examining the gonads. The fishing techniques, sites, and mesh sizes were similar for both test net and commercial fisheries, so the sex ratios should also have been similar.

A total of 329 sockeye salmon scale samples collected at Kakwan Pt. was suitable for aging. The age composition of the sockeye salmon was dominated by age 1.3 fish at 88.75% (Appendix Table 6). Females comprised 69.2% of this age class and 66.8% of the total sockeye salmon captured. Other ages collected were 0.3 (1.8%), 1.2 (4.3%), 2.2 (1.8%), and 2.3 (3.4%).

The mean lengths of sockeye salmon were determined for all age classes observed (Appendix Table 7). The mean lengths for females and males for the predominate 1.3 age class were 563.1 mm and 587.8 mm, respectively. The lengths for both sexes and all age classes ranged from 501.1 mm for age 1.2 males, to 587.8 mm for age 1.3 males.

Chinook Salmon:

A total of 24 chinook were captured during 1985. The peak catch of 7 fish occurred during statistical week 25 (June 16-22) (Table 1) and resulted in a CPUE of 0.09 chinook/hr. The peak 24-hour CPUE of 0.13 chinook/hr also occurred during week 25 (Appendix Table 8). The low test net catches of chinook salmon may be due to three factors: (1) a large portion of the chinook salmon migration may have occurred prior to the installation of the net on 2 June, (2) the large average size of the chinook salmon may have allowed the fish to "bounce off" the net and avoid capture, and/or (3) chinook salmon may be stronger swimmers than the other species and may have been swimming more in the main current.

The mean length of chinook salmon captured at Kakwan Pt. was 594.6 mm. The mean lengths of captured females was 780.0 mm while the mean length of males was 547.5 mm.

Due to the small chinook sample size obtained at Kakwan Pt. (24 fish) no age analysis was developed.

Table 2. Kakwan Point test fishery sockeye salmon catches, 1985.

STAT WEEK	WEEK ENDING	HOURS FISHED	SOCKEYE CAUGHT				SOCKEYE/HOUR
			MALE	FEMALE	UNKNOWN 1/	TOTAL	
23	6/8	23.66	0	0	0	0	0.00
24	6/15	41.00	0	0	0	0	0.00
25	6/22	77.25	3	8	0	11	0.14
26	6/29	76.16	35	68	3	106	1.39
27	7/6	76.92	20	43	0	63	0.82
28	7/13	63.66	33	73	1	107	1.68
29	7/20	60.80	20	55	0	75	1.23
30	7/27	47.00	15	16	0	31	0.66
31	8/3	48.20	6	22	0	28	0.58
32	8/10	46.99	1	2	1	4	0.09
33	8/17	24.25	2	4	0	6	0.25
TOTALS		585.89	135	291	5	431	
			31.3%	67.5%	1.2%		

1/ Fish escaped prior to sex determination.

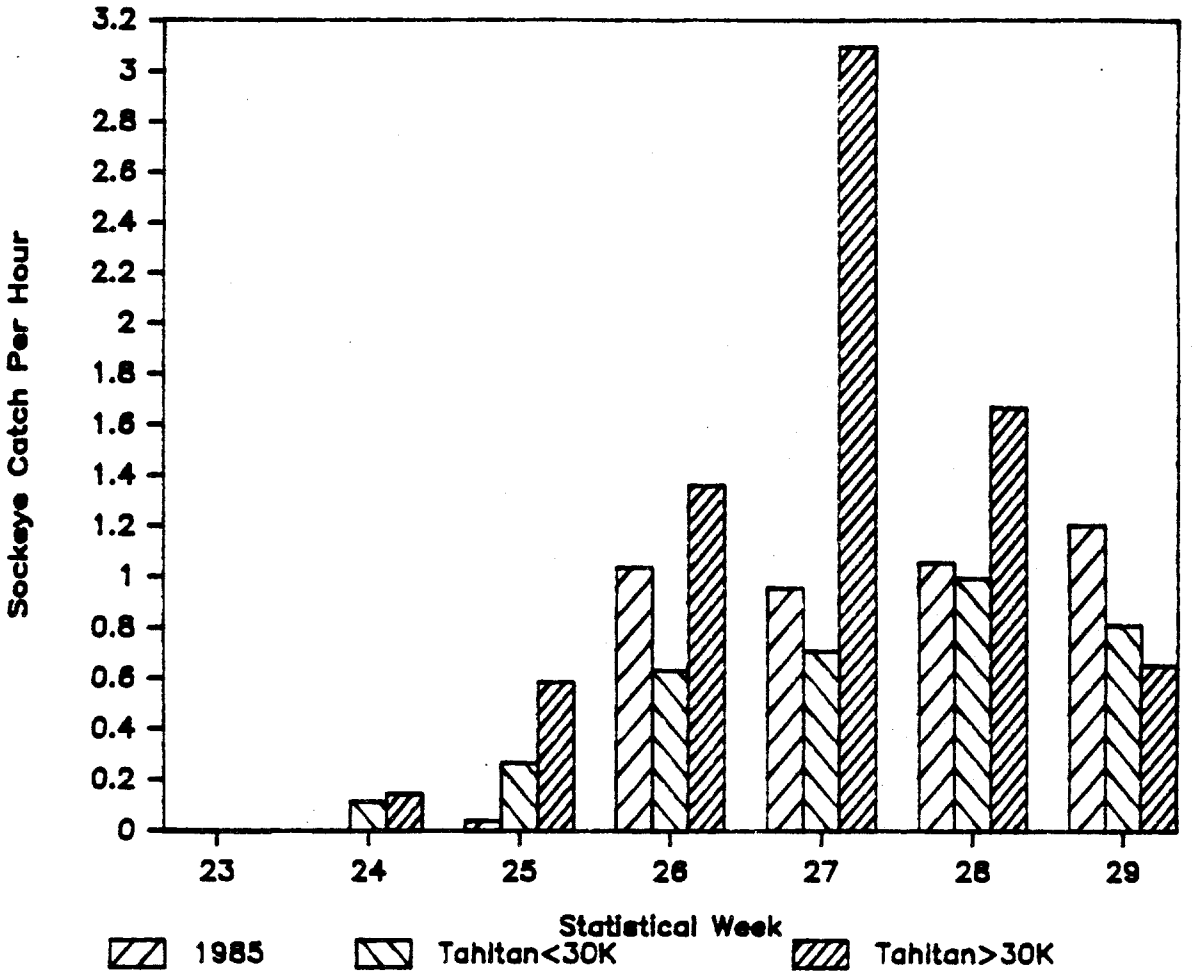

Figure 4. Kakwan Point sockeye salmon CPUE during 24-hour test fishing periods: Comparisons of 1985 and prior Tahltan escapements greater than and less than 30,000 fish.

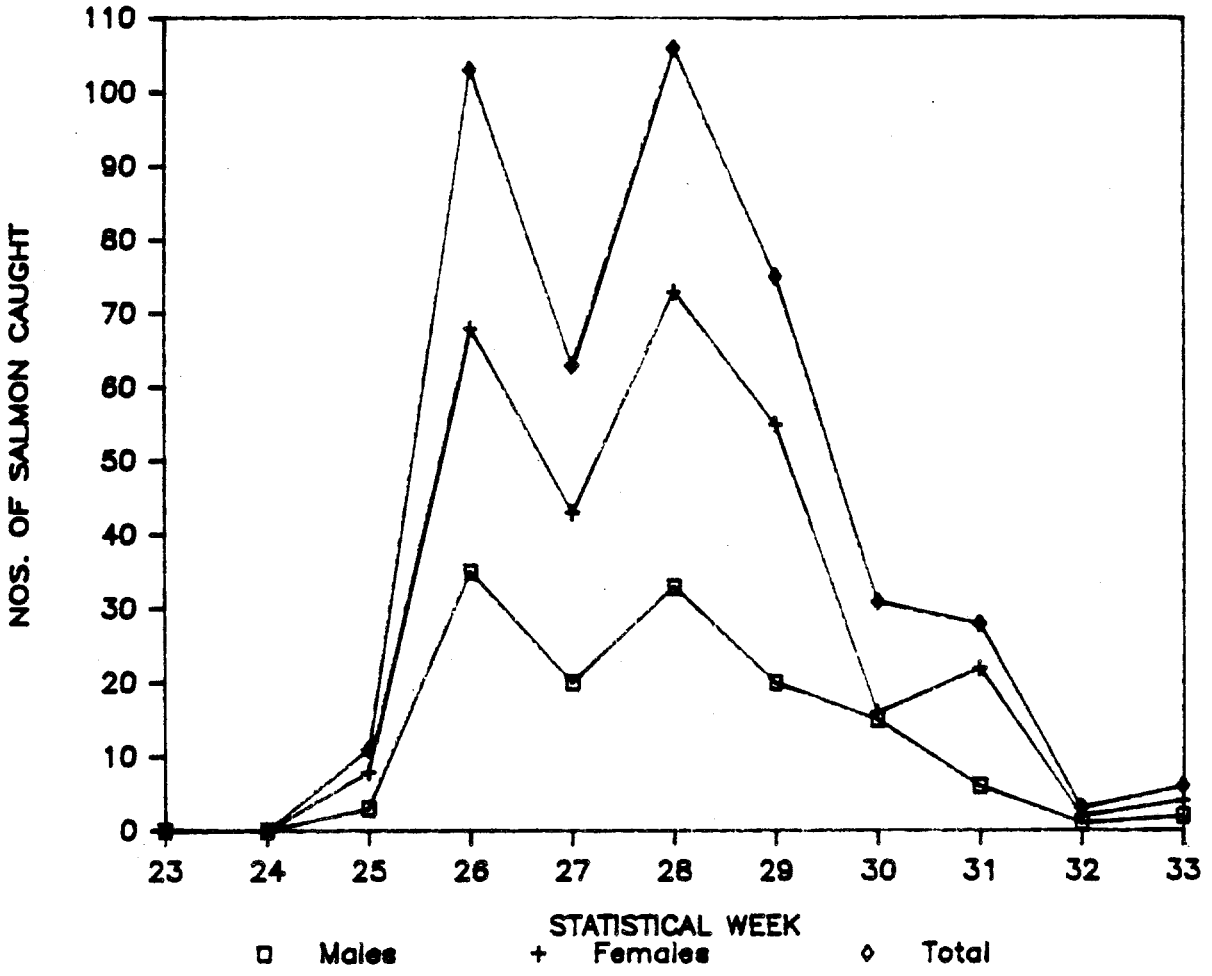

Figure 5. Kakwan Point sockeye salmon catches by sex, 1985.

Pink Salmon:

A total of 1,108 pink salmon were captured in the Kakwan Pt. test net (Table 1). No pink salmon were caught until statistical week 29 (July 14-20). The highest weekly catch of pink salmon at 440 fish (Table 1) occurred during statistical week 32 (August 4 - 10) at 9.4 pinks/hr. The 24-hour test set for week 33 (August 11 - 17) yielded the peak pink salmon CPUE of 7.9 (Appendix Table 9) which is inconsistant with the usual timing of the odd year average peak week CPUE during statistical week 31. However, the 1985 statistical week 31 CPUE was 4.9 pinks/hr. This indicates that the peak time for the 1985 pink salmon migration was not significantly different than for the usual odd year average of 5.09 pinks/hr.

The test net catch of pink salmon was dominated by males. The composition of the catch was 90.3% males, 9.2% females, and 0.5% undetermined (Table 1). This ratio was to be expected because the body shape of the males (a pronounced hump and kype) is more susceptible to capture in the 136.5 mm mesh net than the females with their more fusiform body shape.

The mean length of pink salmon captured at Kakwan Pt. was 474.8 mm. The mean length of females and males were 474.6 mm and 474.8 mm, respectively.

Chum Salmon:

A total of 307 chum salmon was captured in the test net during 1985 (Table 1). The peak total chum salmon catch of 95 fish during statistical week 30 (July 21 - 27) yielded a weekly CPUE of 2.02 chum/hr. The peak 24-hour set was made during statistical week 31 with a CPUE of 1.78 chum/hr. This peak time is consistant with the past 8-year average of 24-hour test sets (Appendix Table 10).

A total of 264 chum salmon scale samples collected at Kakwan Pt. was suitable for aging. The age composition of chum salmon was dominated by age 0.3 fish at 87.5% (Appendix Table 11). Males comprised 58.4% of this age class and 59.9% of the chum salmon captured. Other age classes represented in the sample included ages 0.2 (0.38%), and 0.4 (12.1%).

The mean lengths of chum salmon were determined for all age classes observed (Appendix Table 12). The mean lengths for females and males in the predominate age 0.3 age class were 599.7 mm and 651.1 mm, respectively. The range of lengths for both sexes and all age classes was 599.7 mm for age 0.3 females to 695 mm for one age 0.2 male.

Coho Salmon:

Seven coho salmon were caught during the sampling period (Table 1). Only the very beginning of the coho salmon migration was susceptible to capture. The peak of the coho salmon migration normally occurs near mid-September, well after the test fishing project had terminated (Appendix Table 13).

Dolly Varden Char and Steelhead Trout:

Only 23 Dolly Varden char and three steelhead trout were captured during the entire sampling period (Table 1). The majority of Dolly Varden were not

susceptible to capture in the 136.5 mm mesh net due to their small average size in the Stikine (less than 400 mm). The low catch of steelhead trout was probably a result of the peak of the migration (typically statistical weeks 35 and 36) occurring after the termination of test fishing operations.

Canadian Gill Net Port Sampling

The 1985 lower Stikine River commercial gill net harvest by species can be found in Appendix Table 14.

A total of 4,414 scales was collected from sockeye, chum, chinook, and coho salmon caught in The Fishery. These included 3,970 sockeye, 194 chinook, 127 chum, and 142 coho salmon scale samples. A total of 3,515 scales was of sufficient quality for accurate age determination.

Sockeye Salmon:

A total of 3,220 ageable sockeye salmon scales was collected from The Fishery during statistical weeks 26-33 (23 June-17 August). The age composition was comprised of thirteen age classes and was dominated by age 1.3 fish at 83.0% of the catch (Table 3). Females comprised 54% of this age class and 45% of the total sample (Appendix Table 15). Three other age classes made up an additional 14.5% of the catch, and included ages 0.3 (4.8%), 1.2 (5.7%), and 2.3 (4.0%).

Chinook Salmon:

Only 32 chinook salmon scales were ageable out of 194 total samples collected (Appendix Table 15). Age class 1.4 dominated the sample at 56.3%. Females made up 72.2% of this age class and 40.6% of the total sample. Males were equally represented in age classes 1.3 and 1.4 at 15.6%.

Chum Salmon:

A total of 121 chum salmon scales was ageable out of 127 samples collected. Two age classes, 0.3 and 0.4, were represented in The Fishery catch. Age 0.3 fish dominated the catch at 88.4% (107 fish). Males comprised 70.1% (75 fish) of this age class and 69.4% of the total sample. Male chum salmon were entangled in the gill nets at a higher rate than females due to the formation of large canine teeth and a pronounced kype during the spawning migration.

Coho Salmon:

A total of 142 coho salmon scales was ageable out of 142 scales collected. The dominate age class was age 1.1 and was comprised of 87.8% males (Appendix Table 17). Males also comprised 82.4% of the total sample. A high percentage of males would have been expected in the samples because the coho samples were collected only at the beginning of the coho migration during statistical weeks 31-33 (28 July-17 August) when males normally dominate the run (ADF&G unpublished data: Bob Zorich, ADF&G, F.R.E.D. Division, Personal Communication).

Table 3. Lower Stikine River commercial gill net fishery sockeye salmon age composition by statistical week, 1985.

STAT WEEK	PERCENT COMPOSITION AGE 0.2	0.3	0.4	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.2	3.3
26	0.0	3.6	0.0	0.0	0.7	92.1	0.0	0.0	0.0	3.6	0.0	0.0	0.0
27	Fishery Closed												
28	0.0	2.1	0.0	0.0	0.7	94.4	0.2	0.0	0.0	2.6	0.0	0.0	0.0
29	0.2	2.6	0.0	0.0	4.8	86.7	0.2	0.0	1.0	4.4	0.0	0.0	0.2
30	0.9	7.7	0.0	0.0	5.3	77.8	0.4	0.0	2.2	5.5	0.2	0.0	0.0
31	0.7	5.2	0.0	0.0	9.2	77.0	0.7	0.0	2.6	4.5	0.0	0.0	0.0
32	0.7	7.6	0.4	0.0	7.6	77.2	0.4	0.0	3.1	2.9	0.0	0.0	0.0
33	0.6	5.0	0.0	0.2	11.0	76.0	0.8	0.2	1.4	4.7	0.0	0.2	0.0

Population Estimates:

Kakwan Point Test Fishery:

Linear regression analysis based on the Tahltan-bound sockeye salmon inriver return (divided by 10,000) on the Kakwan Point sockeye CPUE (during statistical weeks 23 - 29) for the period 1977 - 1984 resulted in the equation

1) $y = 4.47x + 0.08$

with $r^2 = 0.60$ (Figure 6). The test of our hypothesis that the relationship between the two variables was linear gave a calculated t value of 2.98 which is greater than the tabled t value of 2.45 at $p = 0.05$. These results indicate that r was significantly different than 0 for this time period, and verifies that the test fishery CPUE is, at least, partially explained by the variation in the Tahltan run strength.

If 1985 is included in the regression analysis the resultant equation is

2) $y = 5.11x - 0.02$

with $r^2 = 0.43$. However, the test for linearity yielded a calculated t value of 2.12, less than the tabled t value. This indicates that Tahltan run strength alone does not adaquately explain the test fishery sockeye salmon CPUE during 1985.

Results of error calculations for the Kakwan Pt. test fishery for the period 1977 - 1985, using Eq. 1, show that the average relative error in predicting the total Tahltan sockeye run strength was 12.68% and ranged from 60.99% in 1980 to -54.1% in 1985 (Table 4). An error rate of this magnitude is comparable to other predictors currently in use by ADF&G (Bristol Bay sockeye), Oregon Dept. of Fish and Wildlife (Oregon Production Index), and Washingtion Dept. of Fisheries (Puget Sound chum) (U.S. General Accounting Office 1983).

Using Eq. 2 gave an average relative error of only 2.93% with a range of 78.2% in 1980 to -48.84% in 1985 (Appendix Table 18). However, since the test for linearity for Eq. 2 was insignificant we felt that it was inappropriate for use in error calculations.

Scale Pattern Analysis:

The analysis of freshwater circuli of scales collected at The Fishery indicates that the sockeye salmon stock composition in the Stikine River was 63.2% Tahltan and 36.8% mainstem (Table 5). Population estimates, weighted by gillnet CPUE, gave inriver escapement estimates of 85,654 Tahltan-bound sockeye (there were 67,326 sockeye in the actual Tahltan Lake escapement, as counted at the weir) and 52,188 mainstem spawning sockeye, for a total inriver escapement estimate of 137,661 sockeye. The total Stikine River sockeye salmon return, including an estimated 44,434 sockeye caught the Districts 6 and 8 gill net fishery, was estimated to be 182,095 total sockeye (Table 6). The upper Stikine Canadian commercial and subsistence catch records may be found in Appendix Tables 19, 20, and 21, respectively.

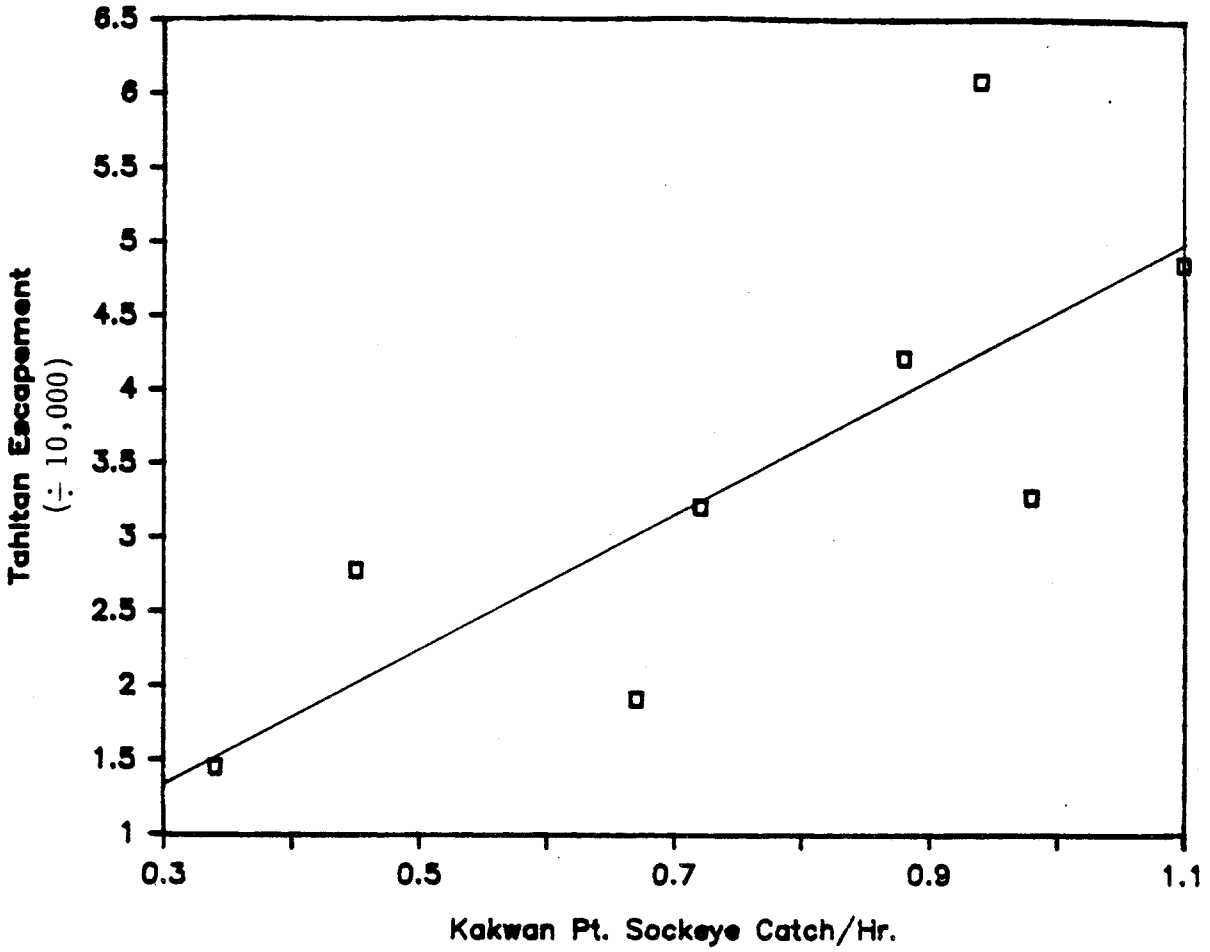

Figure 6. Relationship between the Tahltan escapement and the Kakwan Point sockeye salmon CPUE for statistical weeks 23-29 during the period 1977-1984.

Table 4. Predicted and actual Tahltan Lake sockeye salmon returns and errors for the period 1977-1985. Based on Kakwan Point CPUE data from 1977-1984, for statistical weeks 23-29.

Year	[A] CPUE (Sockeye/Hr)	[B] Total Tahltan Return (-10,000) 1/	[C] Predicted Return (-10,000) 2/	[D] Error [C-B]	Relative Error (Percent) [C-D]/[C]	Relative Error (Percent)
1977	1.1	4.86	5.00	0.14	2.82%	2.82%
1978	0.45	2.78	2.09	-0.69	-24.77%	24.77%
1979	0.34	1.45	1.60	0.15	10.33%	10.33%
1980	0.67	1.91	3.07	1.16	60.99%	60.99%
1981	0.94	6.09	4.28	-1.81	-29.69%	29.69%
1982	0.88	4.22	4.01	-0.21	-4.89%	4.89%
1983	0.72	3.21	3.30	0.09	2.75%	2.75%
1984	0.98	3.28	4.46	1.18	35.99%	35.99%
1985	0.86	8.55	3.92	-4.63	-54.10%	54.10%
Average	0.77	4.04	3.53	-0.51	-12.68%	12.68%

1/ Includes estimated Canadian inriver commercial and subsistence catches.

2/ Based on the regression formula [B] = 4.47 [A]+0.08.

Table 5. Estimate of the sockeye salmon stock composition to the Stikine River based on freshwater scale circuli count data collected from fish sampled from the lower Stikine Canadian commercial gill net fishery, 1985. The proportion of Tahltan and Mainstem fish are weighted by commercial CPUE data.

Stat Week	Number Sockeye Caught 1/	Effort (Boat Days)	CPUE (Fish per boat day)	Prop. CPUE	No. Tahltan Fish Sampled In Comm. GN	No. Mainstem Fish Sampled In Comm. GN	Proportion Tahltan Fish Each Period	Proportion Mainstem Fish Each Period	Adjusted Proportion of Tahltan Fish	Adjusted Proportion of Mainstem Fish
25	closed 2/		35.00	0.0385	198	23	0.8959	0.1041	0.0345	0.0040
26	608	9	67.56	0.0743	268	34	0.8874	0.1126	0.0660	0.0084
27	closed 2/	15	83.85	0.0923	392	45	0.8955	0.1045	0.0826	0.0096
28	2,103	21	100.14	0.1102	516	55	0.9037	0.0963	0.0996	0.0106
29	8,321	32	260.03	0.2861	394	111	0.7802	0.2198	0.2232	0.0629
30	2,071	14	147.93	0.1628	190	265	0.4176	0.5824	0.0680	0.0948
31	1,466	14	104.71	0.1152	123	300	0.2908	0.7092	0.0335	0.0817
32	1,031	14	73.64	0.0810	88	360	0.1964	0.8036	0.0159	0.0651
33-36	1,493	41.5	35.98	0.0396	107	409	0.2074	0.7926	0.0082	0.0314
Total	17,093	160.5	908.84	1.00	2,276	1,602			0.6315	0.3685

1/ Catch data from Canadian Dept. of Fisheries and Oceans, Whitehorse, 5 November 1985.

2/ Statistics are linearly interpolated from adjacent weeks data.

Table 6. Stikine River sockeye salmon return estimates based on scale pattern analysis, weighted by commercial gillnet CPUE, 1985.

	Tahltan Lake Stock	Mainstem Stocks	Total
Canadian Subsistence Catch 1/	6,558	(729)2/	6,558 (7,287)2/
Upper River Commercial Catch 1/	976	(108)2/	976 (1,084)2/
Lower River Commercial Catch	10,794	6,299	17,093
Tahltan Weir Count	67,326	NA	67,326
Upper River Mainstem Escapement Est.	NA	43,686	45,708
Total In-River Escapement Est.	85,654	49,985	135,639
Estimated Dist. 6 & 8 Catch 3/	27,882	16,552	44,434
Total Estimated Stikine Return	113,536	66,537	180,073

1/ Catch composition assumed to be 90% Tahltan, 10% mainstem.

2/ The upper river subsistence and commercial catches were included in the mainstem escapement estimate and is not added into the totals. The catch is given here for informational purposes only.

3/ The districts 6 and 8 catches are finalized through statistical week 30.

Egg Diameter Analysis:

The analysis of egg diameters from female sockeye collected at The Fishery gave a stock composition of 52.1% Tahltan and 47.9% mainstem (Table 7). Population estimates based on egg diameter analysis and weighted by gillnet CPUE gave an inriver escapement estimate of 83,772 Tahltan-bound sockeye and 76,896 mainstem spawning sockeye, for a total escapement of 160,668 sockeye. The total Stikine River return, including the Districts 6 and 8 estimated gillnet catch of 44,434 sockeye, was estimated to be 205,102 sockeye (Table 8).

DISCUSSION

The use of Kakwan Point test fishery to predict the size of the Tahltan inriver escapement may be misleading even though the average relative error was only 12.68%. The range of the errors for the period 1977-1984 was from -54.10% to 60.99%, a range of 115.09%. While the average error and the range of errors are comparable with other predictors used in Alaska and Washington (U.S. General Accounting Office 1983), this range of error reduces the reliability of Kakwan Point as a "hard" predictor by introducing a large uncertainty into predicting the magnitude of the Tahltan run.

The Kakwan Pt. test net does not appear to be an indicator of the mainstem sockeye stock run strength. Data from 1977-1985, for the period after statistical week 29, does not show any peak in CPUE that would indicate the presence of large numbers of sockeye of mainstem origin (Appendix Table 4). Scale pattern analyses from 1979-1985 and egg diameter analyses from 1983-1985 have demonstrated that large numbers of mainstem spawning sockeye exist outside of the Tahltan system and that the entrance timing into the Stikine River is approximately two weeks later than for the Tahltan stock (Lynch & Edgington 1986; Lynch & Eggers 1985; McCart 1982; Scott McPherson and Glen Oliver, ADF&G Commercial Fisheries Division Personal Communication). Scale and egg diameter analyses for 1985 also show two distinct stocks of sockeye as being present in the system. However, during 1985, the entry of the two races apparently occurred one week apart rather than two weeks apart (Figure 7).

Differences in the migration or swimming patterns between the Tahltan and mainstem stocks may explain the lack of increased sockeye catches at Kakwan Pt. during the mainstem migration. Deeper swimming depth and offshore migration may be factors that decrease catchability of the mainstem stocks. No appreciable size differences between the two races has been noted that would cause differential catchability.

Gill net saturation may also be a factor influencing the ability to capture mainstem sockeye. Increases in the catch of pink salmon in late July may reduce the efficiency of the nets to capture sockeye. This was indicated by the increase in fishing time (26%) over 1984 resulting in a 163% increase in total catch of all salmon species but only a 3% increase in total sockeye catch even though the total sockeye salmon escapement to the Stikine River was estimated to be twice the 1984 escapement.

Table 7. Estimate of the Stikine River sockeye salmon stock composition based on egg diameter data collected from fish sampled from the lower Stikine Canadian commercial gillnet fishery, 1985. The proportion of Tahltan and Mainstem fish are weighted by commercial CPUE data.

Stat Week	Number Sockeye Caught 1/	Effort (Boat Days)	CPUE (Fish per Boat Day)	Proportion of CPUE	Proportion of Large Eggs	Proportion of Small Eggs	Number of Mainstem Sockeye Caught	Number of Tahltan Sockeye Caught	Adjusted Proportion Mainstem Sockeye	Adjusted Proportion Tahltan Sockeye
25	closed 2/		35.00	0.0358	0.1	0.9			0.0036	0.0322
26	608	9	67.56	0.0691	0.194	0.806	118	490	0.0134	0.0557
27	closed 2/	15	90.40	0.0925	0.169	0.831	229	1127	0.0156	0.0769
28	2,103	21	100.14	0.1025	0.16	0.84	336	1767	0.0164	0.0861
29	8,321	32	260.03	0.2661	0.241	0.759	2005	6316	0.0641	0.2020
30	2,071	14	147.93	0.1514	0.772	0.228	1599	472	0.1169	0.0345
31	1,466	14	104.71	0.1072	0.807	0.193	1183	283	0.0865	0.0207
32	1,031	14	73.64	0.0754	0.914	0.086	942	89	0.0689	0.0065
33	1,230	21	58.57	0.0599	0.995	0.005	1224	6	0.0596	0.0003
34	109	6	18.17	0.0186	0.79	0.21	86	23	0.0147	0.0039
35	41	4	10.25	0.0105	0.86	0.14	35	6	0.0090	0.0015
36	113	10.5	10.76	0.0110	0.9	0.1	102	11	0.0099	0.0011
TOTALS	17,093	160.5	977.17	1.0000			7880	10589	0.4786	0.5214

1/ Catch data from Canadian Dept. of Fisheries and Oceans, Whitehorse, 5 November 1985.

2/ Statistics are linearly interpolated from adjacent weeks data.

Table 8. Stikine River sockeye salmon return estimates based on scale pattern analysis, weighted by commercial gillnet CPUE, 1985.

	Tahltan Lake Stock	Mainstem Stocks	Total
Canadian Subsistence Catch 1/	6,558	(729)2/	6,558 (7,287)2/
Upper River Commercial Catch 1/	976	(108)2/	976 (1,084)2/
Lower River Commercial Catch	10,794	6,299	17,093
Tahltan Weir Count	67,326	NA	67,326
Upper River Mainstem Escapement Est.	NA	43,686	45,708
Total In-River Escapement Est.	85,654	49,985	135,639
Estimated Dist. 6 & 8 Catch 3/	27,882	16,552	44,434
Total Estimated Stikine Return	113,536	66,537	180,073

1/ Catch composition assumed to be 90% Tahltan, 10% mainstem.

2/ The upper river subsistence and commercial catches were included in the mainstem escapement estimate and is not added into the totals. The catch is given here for informational purposes only.

3/ The districts 6 and 8 catches are finalized through statistical week 30.

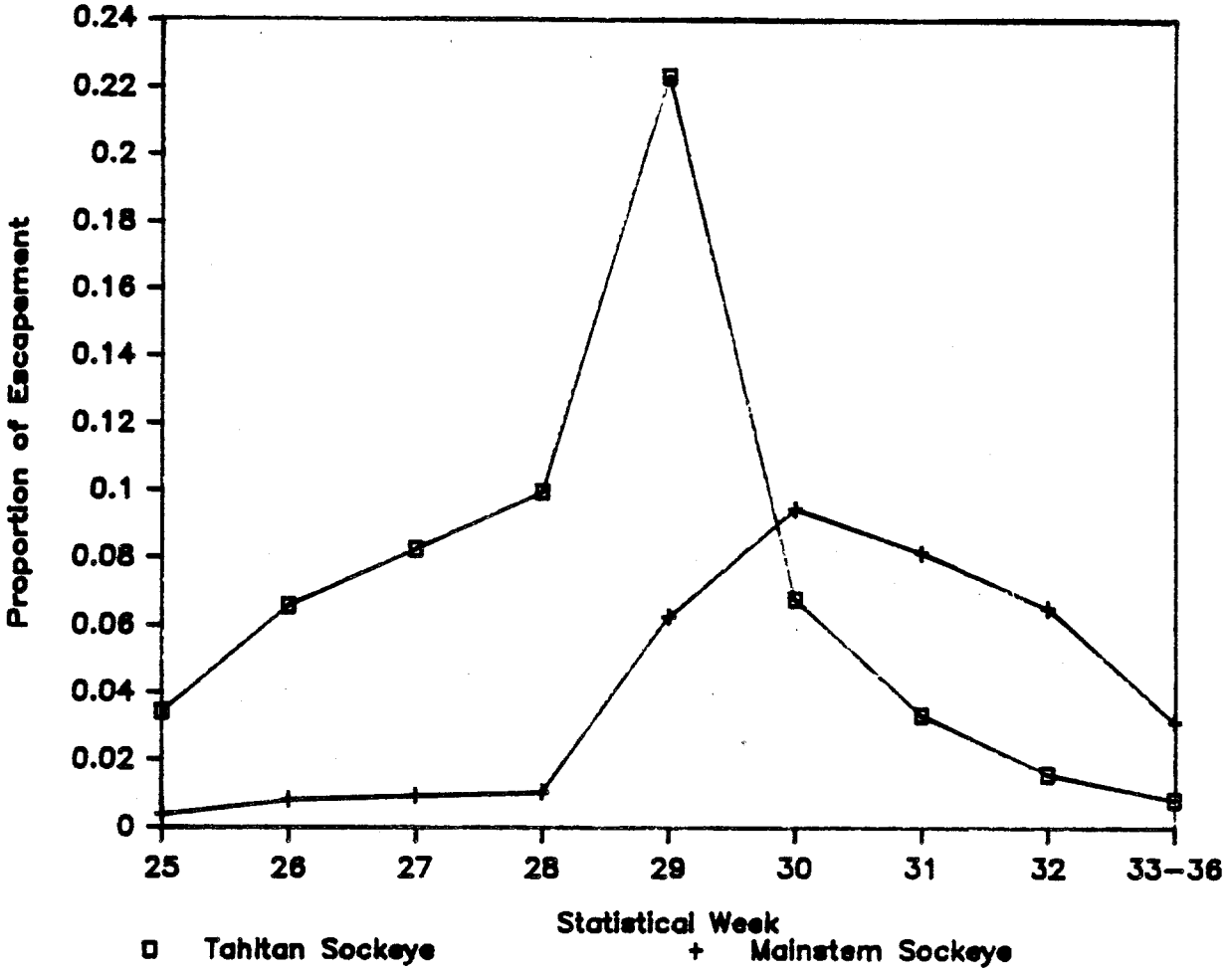

Figure 7. Sockeye salmon stock run timing into the lower Stikine River Canadian gill net fishery based on egg diameter and scale pattern analysis, 1985.

The analysis of freshwater scale characteristics appears to be much more reliable than the analysis of egg diameters for the determination of inriver sockeye stock proportions and population estimation. The commercial gillnet fishery catch of Stikine-bound sockeye in Districts 6 and 8 was comprised of 29.9% mainstem fish, while the inriver return was 36.8% mainstem fish when based on scale pattern analysis, a difference of 6.9%. When based on the analysis of egg diameters the mainstem fish comprised 52.1% of the total inriver sockeye return, which was 22.2% greater than the mainstem proportion in the offshore fisheries and 14.3% greater than the inriver proportion when based on scale pattern analysis.

The discrepancies between the scale pattern and egg diameter analyses may be a result of similarities in egg diameters between the two races near the end of the Tahltan migration. At this time the eggs of late arriving Tahltan fish are rapidly maturing and approaching the size of the eggs of the early arriving Mainstem fish. The similar egg sizes creates uncertainties in the stock apportionment of the two races based on egg diameters by reducing the ability to clearly discriminate between the two egg size groups. A lack of a bimodal distribution may then cause the population estimate of one group to be severely biased.

The egg diameter analysis, as with the Kakwan Point test fishery, may be used for a gross inseason estimator of sockeye abundance. However, postseason analysis must be undertaken to check the validity of the inseason analysis.

ACKNOWLEDGMENTS

We wish to thank the rest of the ADF&G Stikine field crew: Tom Rockne, Rhonda Simpson, and Kevin Jones for their efforts on the river.

We also want to thank Glen Oliver and Ben Van Alen of the Juneau Stock Biology Group for their assistance with the scale reading and the scale pattern analysis.

Thanks also to Jackie Tyson and Rexanne Eide for their clerical assistance and for keeping a semblance of order in the office, and to Gary Gunstrom for critical review of the manuscript.

LITERATURE CITED

Craig, P. C. 1985. Identification of sockeye salmon (*Oncorhynchus nerka*) stocks in the Stikine River based on egg size measurements. Canadian Journal of Fisheries and Aquatic Sciences, 42: 1696-1701.

GAO (U.S. General Accounting Office). 1983. The Oregon Production Index: A sound fishery management tool that can be improved. General Accounting Office report to the honorable Les AuCoin, U.S. House of Representatives, August 15, 1983, Washington D.C.

Lynch, B., and J. Edgington. 1986. Stikine River studies: Adult salmon tagging, population investigations, and side scan sonar operations, 1983. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 171, Juneau, Alaska.

Lynch, B., and D. M. Eggers. 1985. Stikine River salmon studies: side scan sonar operations, scale pattern, and egg diameter analysis, 1984. In Final report: 1984 salmon research conducted in Southeast Alaska by the Alaska Department of Fish and Game in conjunction with National Marine Fisheries Service Auke Bay Laboratory for joint U.S.-Canada interception studies, June, 1985, Alaska Department of Fish and Game, Juneau, Alaska.

Marshall, S., G. Oliver, D. Bernard, and S. McPherson, 1985. Accuracy of scale pattern analysis in separating major stock of sockeye salmon (*Oncorhynchus nerka*) from southern Southeastern Alaska and northern British Columbia. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet 230. Juneau, Alaska.

McCart, P. 1983. Fish populations associated with proposed hydro-electric dams on the Stikine and Iskut Rivers. Preliminary report by P. McCart Biological Consultants, Ltd. for B.C. Hydro and Power Authority, Vancouver, British Columbia.

Steel, G., and J. H. Torrie. 1960. Principles and Procedures of statistics. McGraw-Hill, New York, N.Y.

APPENDICES

Appendix Table 1. Kakwan Point fishing time, salmon catches, and CPUE by date, 1985.

DATE	HOURS FISHED	SOCKEYE CAUGHT	SOCKEYE/ HOUR	PINKS CAUGHT	PINKS/ HOUR	CHUM CAUGHT	CHUM/ HOUR	CHINOOK CAUGHT	CHINOOK/ HOUR	COHO CAUGHT	COHO/ HOUR	STEELHEAD CAUGHT	STEELHEAD HOUR	DOLLY VARDEN CAUGHT	DOLLY VARDEN/ HOUR
JUNE															
1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	23.66	0.00	0.00	0.00	0.00	0.00	0.00	1	0.04	0.00	0.00	0.00	0.00	0.00	0.00
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	8.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ERR	0.00	0.00	0.00	0.00	0.00	0.00
11	24.00	0.00	0.00	0.00	0.00	0.00	0.00	1	0.04	0.00	0.00	0.00	0.00	2	0.08
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	8.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	8.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	21.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	24.00	1	0.04	0.00	0.00	0.00	0.00	3	0.13	0.00	0.00	0.00	0.00	0.00	0.00
19	11.08	3	0.27	0.00	0.00	0.00	0.00	1.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
20	9.92	2	0.20	0.00	0.00	0.00	0.00	1	0.10	0.00	0.00	0.00	0.00	0.00	0.00
21	11.75	2	0.17	0.00	0.00	1	0.09	2	0.17	0.00	0.00	0.00	0.00	1	0.09
22	9.42	3	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	9.25	10	1.08	0.00	0.00	0.00	0.00	1	0.11	0.00	0.00	0.00	0.00	0.00	0.00
24	24.00	26	1.08	0.00	0.00	0.00	0.00	2	0.08	0.00	0.00	0.00	0.00	1	0.04
25	8.83	11	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3	0.34
26	9.33	15	1.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	10.42	22	2.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	3.08		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	11.25	22	1.96	0.00	0.00	1	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	10.17	17	1.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JULY															
1	24.00	23	0.96	0.00	0.00	0.00	0.00	1	0.04	0.00	0.00	0.00	0.00	1	0.04
2	25.67	14	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2	0.08
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	7.83	7	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	9.25	2	0.22	0.00	0.00	0.00	0.00	1	0.11	0.00	0.00	0.00	0.00	0.00	0.00
7	8.33	10	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1	0.12
8	7.33	10	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	23.58	25	1.06	0.00	0.00	2	0.08	2	0.08	0.00	0.00	0.00	0.00	0.00	0.00
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	8.17	19	2.33	0.00	0.00	1	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	8.00	33	4.13	0.00	0.00	4	0.50	0.00	0.00	0.00	0.00	1	0.13	1	0.13
13	8.25	10	1.21	0.00	0.00	4	0.48	0.00	0.00	0.00	0.00	0.00	0.00	1	0.12
14	8.25	14	1.70	0.00	0.00	1	0.12	1	0.12	0.00	0.00	0.00	0.00	1	0.12
15	4.17	4	0.96	1	0.24	3	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	23.08	28	1.21	11	0.48	14	0.61	3	0.13	0.00	0.00	0.00	0.00	2	0.09
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	6.92	13	1.88	7	1.01	7	1.01	0.00	0.00	0.00	0.00	0.00	0.00	2	0.29
19	8.92	14	1.57	6	0.67	6	0.67	0.00	0.00	0.00	0.00	0.00	0.00	2	0.22
20	8.50	2	0.24	2	0.24	3	0.35	1	0.12	0.00	0.00	0.00	0.00	1	0.12

-Continued-

Appendix Table 1. Kakwan Point fishing time, salmon catches, and CPUE by date, 1985 (continued).

DATE	HOURS FISHED	SOCKEYE CAUGHT	SOCKEYE/ HOUR	PINKS CAUGHT	PINKS/ HOUR	CHUM CAUGHT	CHUM/ HOUR	CHINOOK CAUGHT	CHINOOK/ HOUR	COHO CAUGHT	COHO/ HOUR	STEELHEAD CAUGHT	STEELHEAD HOUR	DOLLY VARDEN CAUGHT	DOLLY VARDEN/ HOUR
1	23.42	10	0.43	12	0.51	32	1.37	2	0.09	0.00	0.00	0.00	0.00	0.00	0.00
2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	7.50	10	1.33	37	4.93	21	2.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	8.33	6	0.72	44	5.28	19	2.28	0.00	0.00	1	0.12	0.00	0.00	0.00	0.00
5	7.75	5	0.65	57	7.35	23	2.97	0.00	0.00	0.00	0.00	0.00	0.00	1	0.13
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	24.17	18	0.74	120	4.96	43	1.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	7.67	7	0.91	53	6.91	9	1.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AUGUST															
1	9.42	3	0.32	56	5.94	14	1.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	7.00	0.00	0.00	72	10.29	17	2.43	1	0.14	0.00	0.00	0.00	0.00	0.00	0.00
3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	24.00	1	0.04	130	5.42	36	1.50	0.00	0.00	0.00	0.00	1	0.04	0.00	0.00
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	7.33	2	0.27	91	12.41	10	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	8.08	0.00	0.00	113	13.99	11	1.36	0.00	0.00	0.00	0.00	1.00	0.12	0.00	0.00
9	7.58	1	0.13	105	13.85	9	1.19	0.00	0.00	1	0.13	0.00	0.00	0.00	0.00
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	24.25	6	0.25	191	7.88	16	0.66	0.00	0.00	5	0.21	0.00	0.00	1	0.04
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTALS	584.99	431		1,108		307		24		7		3		25	

Appendix Table 2. Kakwan Point fishing time, and salmon catches by date and set, 1985.

DATE	TIME PERIOD SET	HAUL	DURATION	SALMON CAUGHT TOTAL	RELEASED	OTHER FISH
6/6	10:55	15:05	4:10	1K	1K	0
6/6	15:15	19:15	4:00	0	0	0
6/6	19:20	22:10	2:50	0	0	0
6/6	22:15	05:35	7:20	0	0	0
6/7	05:40	11:00	5:20	0	0	0
TOTAL				1K	1K	0
6/10	08:35	11:00	2:25	0	0	0
6/10	11:00	13:30	2:30	0	0	0
6/10	13:30	17:00	3:30	0	0	0
6/11	08:20	11:00	2:40	0	0	0
6/11	11:00	13:40	2:40	0	0	0
6/11	13:40	16:15	2:35	0	0	0
6/11	16:15	19:15	3:00	0	0	0
6/11	19:20	22:20	3:00	0	0	1DV(R)
6/11	22:25	05:15	6:50	1K	1K	1DV(R)
6/12	05:15	08:35	3:15	0	0	0
6/14	08:30	10:45	2:15	0	0	0
6/14	10:45	12:55	2:10	0	0	0
6/14	13:00	15:10	2:10	0	0	0
6/14	15:15	17:15	2:00	0	0	0
TOTAL				1K	1K	2DV
6/16	08:40	10:50	2:10	0	0	0
6/16	11:00	13:00	2:30	0	0	0
6/16	13:05	15:15	2:10	0	0	0
6/16	15:20	17:50	2:30	0	0	0
6/17	08:25	10:40	2:15	0	0	0
6/18	08:25	10:40	2:15	0	0	0
6/18	10:40	12:45	2:05	0	0	0
6/18	12:50	15:20	2:30	0	0	0
6/18	15:25	17:55	2:30	0	0	0
6/18	18:00	20:05	2:05	0	0	0
6/18	20:05	22:20	2:15	0	0	0
6/18	22:20	05:15	6:55	1S,3K	2K,1S	0
6/19	05:20	08:45	3:25	1K	0	0
6/19	08:50	11:00	3:20	0	0	0
6/19	11:15	15:45	4:30	3S	2S	0
6/19	15:50	19:05	3:15	0	0	0
6/20	08:05	10:05	2:00	1S	1S	0
6/20	10:10	13:00	2:50	0	0	0
6/20	13:05	16:30	3:25	1S	1S	0
6/20	16:30	19:10	2:40	1K	1K	0
6/21	08:25	11:25	3:00	1K	0	0
6/21	11:25	13:55	2:30	0	0	0
6/21	13:55	19:10	6:15	2S,1K,1C	2S,1K,1C	1DV(D)
6/22	08:25	11:20	2:55	0	0	0
6/22	11:20	14:10	2:50	0	0	0
6/22	14:10	17:50	3:40	3S	3S	0
TOTAL				11S,7K,1C	10S,2K,1C	1DV

S=Sockeye, K=Chinook, C=Chum, P=Pink, CO=Coho, DV=Dolly Varden, SH=Steelhead
D=Dead, R=Released

-Continued-

Appendix Table 2. Kakwan Point fishing time, and salmon catches by date and set, 1985 (continued).

DATE	TIME PERIOD SET	HAUL	DURATION	SALMON CAUGHT TOTAL	RELEASED	OTHER FISH
6/23	07:50	10:10	2:20	2S	2S	0
6/23	10:20	12:36	2:15	1S	0	0
6/23	12:40	14:50	2:10	3S	2S	0
6/23	15:00	17:30	2:30	4S,1K	4S	0
6/24	08:30	10:35	2:05	2S	1S	0
6/24	10:40	12:50	2:10	2S	1S	0
6/24	13:05	15:55	2:50	10S	7S	1DV(R)
6/24	16:05	19:05	3:00	3S	1S	0
6/24	19:05	22:15	3:10	2S	0	0
6/24	22:20	04:30	6:15	1S,2K	1S,2K	0
6/25	09:20	11:40	2:20	2S	2S	1DV(R)
6/25	11:50	13:50	2:00	3S	3S	0
6/25	14:00	16:15	2:10	4S	3S	1DV(R)
6/25	16:35	18:50	2:15	2S	2S	1DV(R)
6/26	09:10	12:10	3:00	1S	0	0
6/26	12:15	14:15	2:00	4S	4S	0
6/26	14:30	16:30	2:00	3S	2S	0
6/26	16:40	19:00	2:20	7S	5S	0
6/27	08:30	10:45	2:05	6S	6S	0
6/27	10:50	12:55	2:00	5S	5S	0
6/27	13:00	15:00	2:00	3S	3S	0
6/27	15:00	17:00	2:00	4S	3S	0
6/27	17:05	19:10	2:05	4S	2S	0
6/28	06:55	10:00	3:05	0	0	0
6/29	08:25	10:20	1:45	0	0	0
6/29	10:20	13:00	2:40	3S	1S	0
6/29	13:25	15:40	2:15	7S	6S	0
6/29	15:45	17:50	2:05	4S	3S	0
6/29	17:55	20:25	2:30	8S,1C	7S,1C	0
TOTAL				100S,3K,1C	76S,2K,1C	4DV
6/30	08:45	11:30	2:45	5S	3S	0
6/30	11:40	14:30	2:50	6S	3S	0
6/30	14:40	17:15	2:35	3S	3S	0
6/30	17:25	19:25	2:00	3S	2S	0
7/1	08:30	10:55	2:25	1S	1S	0
7/1	11:00	13:35	2:35	4S,1K	4S,1K	0
7/1	13:45	16:25	2:40	4S	3S	0
7/1	16:35	18:30	1:55	2S	2S	0
7/1	18:50	21:45	2:55	4S	3S	1DV(R)
7/1	21:50	04:10	6:20	2S	1S	0
7/2	04:15	08:00	3:45	3S	0	0
7/2	08:10	09:35	1:25	3S	3S	0
7/2	15:40	18:45	3:00	3S	3S	1DV(R)
7/2	18:50	21:20	2:20	3S	3S	1DV(D)
7/2	21:30	03:55	6:25	1S	0	0
7/3	04:00	06:55	2:55	1S	1S	0
7/3	07:00	09:45	2:50	0	0	0
7/3	10:00	12:50	2:50	2S	2S	0
7/3	13:00	16:10	3:10	3S	2S	0
7/3	16:20	18:30	2:10	1S	1S	0
7/4	08:50	11:10	2:20	1S	0	0
7/4	11:15	14:15	3:00	5S	3S	0
7/4	14:30	17:00	2:30	1S	1S	0
7/6	08:45	11:10	2:25	0	0	0
7/6	11:20	15:00	3:40	2S,1K	2S	0
7/6	15:10	18:20	3:10	0	0	0
TOTAL				63S,2K	46S,1K	3DV

S=Sockeye, K=Chinook, C=Chum, P=Pink, CO=Coho, DV=Dolly Varden, SH=Steelhead
D=Dead, R=Released

-Continued-

Appendix Table 2. Kakwan Point fishing time, and salmon catches by date and set, 1985 (continued).

DATE	TIME PERIOD SET	HAUL	DURATION	SALMON CAUGHT TOTAL	RELEASED	OTHER FISH
7/7	08:45	11:45	2:30	0	0	0
7/7	11:20	13:55	2:35	3S	3S	1DV(R)
7/7	14:00	17:15	3:15	7S	6S	0
7/8	08:30	11:00	2:30	3S	2S	0
7/8	11:05	13:10	2:05	1S	1S	0
7/8	13:30	16:15	2:45	6S	6S	0
7/9	08:30	10:50	2:20	4S	4S	0
7/9	10:55	13:05	2:10	2S	2S	0
7/9	13:10	15:30	2:20	2S,1K,1C	2S,1K,1C	0
7/9	15:45	17:55	2:10	3S	3S	0
7/9	18:05	22:10	4:05	5S,1C	3S,1C	0
7/9	22:15	08:45	10:30	9S,1K	2S,1K	0
7/11	11:30	13:40	2:10	7S,1C,1P	4S,1C,1P	0
7/11	13:50	15:50	2:00	5S	5S	0
7/11	16:00	18:00	2:00	4S	4S	0
7/11	18:10	20:10	2:00	2S	2S	0
7/12	09:30	11:30	2:00	9S	7S	1SH(R)
7/12	11:40	13:45	2:05	10S,1C	6S,1C	0
7/12	14:05	16:20	2:15	7S,1C	4S,1C	0
7/12	16:30	18:10	1:40	7S,2C	6S,1C	0
7/13	09:10	11:10	2:00	1S	0	0
7/13	11:15	13:15	2:00	2S,1C	2S,1C	0
7/13	13:20	15:25	2:05	4S,3C	4S,3C	0
7/13	15:40	17:50	2:10	3S	3S	1DV(R)
TOTAL				98S,2K,11C 1P	79S,2K,10C	2DV,1SH
7/14	09:10	11:15	2:05	5S	4S	0
7/14	11:20	13:20	2:00	3S,1C	2S,1C	0
7/14	13:25	15:25	2:00	4S	3S	0
7/14	15:30	17:40	2:10	1S,1K	1S,1K	1DV(R)
7/15	13:20	15:20	2:00	2S	1S	0
7/15	15:30	17:40	2:10	2S,3C,1P	2S,3C,1P	0
7/16	11:40	13:45	2:05	5S,2C,1P	5S,2C,1P	0
7/16	14:00	16:00	2:00	2S,1K,1C	2S,1K,1C	0
7/16	16:10	18:15	2:05	4S,1K,3C 1P	2S,1K,1C 1P	1DV(R) 0
7/16	18:45	22:00	3:15	2S,1K,2C	2S,1K,2C	0
7/16	22:30	04:20	5:50	5S,4C,2P	1S,3C,1P	1DV(D)
7/17	04:30	06:30	2:00	3S,1K,1C	2S,1C	0
7/17	06:45	08:40	1:55	1S,4P	3P	0
7/17	08:50	11:15	2:25	4S,1C,2P	3S,1C,2P	0
7/17	11:20	12:50	1:30	2S,1P	2S,1P	0
7/18	12:15	14:30	2:15	4S,1C,3P	3S,1C,3P	1DV(D)
7/18	14:40	17:10	2:30	6S,2C,3P	5S,2C,3P	1DV(D)
7/18	17:15	19:25	2:10	3S,4C,1P	1S,4C,1P	0
7/19	08:30	10:35	2:05	5S,1C	5S,1C	1DV(R)
7/19	10:45	13:10	2:25	2S,1C,5P	2S,1C,5P	0
7/19	13:20	15:25	2:05	1S,2C	1S,2C	1DV(R)
7/19	15:30	17:50	2:20	6S,2C,1P	3S,1C,1P	0
7/20	08:25	10:50	2:25	2S,2C,1P	2S,1C	0
7/20	10:55	12:30	1:35	0	0	1DV(D)
7/20	12:30	14:20	1:50	1K,1C,1P	1K,1P	0
7/20	14:30	17:10	2:40	0	0	0
TOTAL				74S,6K 30C,26P	54S,5K 20C,24P	8DV

S=Sockeye, K=Chinook, C=Chum, P=Pink, CO=Coho, DV=Dolly Varden, SH=Steelhead
D=Dead, R=Released

-Continued-

Appendix Table 2. Kakwan Point fishing time, and salmon catches by date and set, 1985 (continued).

DATE	TIME PERIOD SET	HAUL	DURATION	SALMON CAUGHT TOTAL	RELEASED	OTHER FISH
7/22	12:05	14:20	2:15	2C	2C	0
7/22	14:35	17:00	2:25	2S,5C,3P	1S,4C,1P	0
7/22	17:10	19:30	2:20	1S,1K,2C	1S,1K,2C	0
7/22	19:40	21:50	2:10	1S,5C,1P	1S,5C,1P	0
7/22	22:05	04:15	6:10	4S,2C,2P	3S,1C,1P	0
7/23	04:35	06:35	2:00	1S,1K,7C	1K,6C	0
7/23	06:50	08:40	1:50	1C,1P	1C,1P	0
7/23	08:50	10:55	2:05	3C,2P	3C,2P	0
7/23	11:05	13:15	2:10	1S,5C,3P	1S,5C,2P	0
7/24	08:45	11:10	2:25	2S,2C,12P	2S,2C,12P	0
7/24	11:20	13:25	2:05	5S,7C,13P	3S,6C,12P	0
7/24	14:05	17:05	3:00	3S,12C,12P	2S,12C,12P	0
7/25	09:55	14:35	4:45	4S,11C,24P	3S,9C,15P	0
7/25	15:25	19:00	3:35	1S,8C,20P	1S,7C,15P	0
				1CO	1CO	0
7/26	10:05	12:15	2:10	2S,7C,17P	1S,7C,14P	0
7/26	12:50	16:00	3:10	1S,6C,28P	5C,26P	0
7/26	16:45	19:10	2:25	2S,10C,12P	2S,7C,12P	1DV(R)
TOTAL				30S,2K,95C 140P,1CO	21S,2K,84C 126P	1DV
7/29	11:55	13:55	2:00	1S,2C,13P	1S,1C,9P	0
7/29	14:15	16:20	2:05	3C,16P	2C,15P	0
7/29	16:30	18:25	1:55	3S,6C,10P	1S,5C,10P	0
7/29	18:35	19:55	1:20	2S,3C,4P	1S,3C,3P	0
7/29	20:05	21:45	1:40	1S,5C,7P	1S,4C,6P	0
7/29	22:00	04:50	6:50	2S,9C,6P	1S,7C,2P	0
7/30	05:05	07:10	2:05	6S,3C,5P	5S,3C,5P	0
7/30	07:20	10:00	2:40	2S,4C,23P	2S,3C,19P	0
7/30	10:15	11:30	1:15	1C,11P	1C,11P	0
7/30	11:40	14:00	2:20	1S,2C,25P	2C,24P	0
7/31	08:25	10:15	1:50	3S,2C,12P	3S,2C,12P	0
7/31	10:25	12:15	1:50	1S,1C,8P	1S,1C,8P	0
7/31	12:25	14:15	1:50	2S,4C,20P	2S,2C,20P	0
7/31	14:40	16:15	2:10	1S,2C,13P	1S,2C,9P	0
8/1	08:30	10:45	2:15	2S,3C,15P	1S,3C,14P	0
8/1	10:45	13:05	2:20	3C,19P	3C,19P	0
8/1	13:10	16:00	2:50	6C,14P	6C,12P	0
8/1	16:00	18:00	2:00	1S,2C,8P	1S,2C,6P	0
8/2	08:30	11:00	2:30	3C,26P	2S,21P	0
8/2	11:10	13:20	2:10	1K,7C,23P	1K,5C,23P	0
8/2	13:40	16:00	2:20	7C,23P	7C,21P	0
TOTAL				28S,1K,78C 311P	23S,1K,64C 269P	0

S=Sockeye, K=Chinook, C=Chum, P=Pink, CO=Coho, DV=Dolly Varden, SH=Steelhead
D=Dead, R=Released

-Continued-

Appendix Table 2. Kakwan Point fishing time, and salmon catches by date and set, 1985 (continued).

DATE	TIME PERIOD SET	HAUL	DURATION	SALMON CAUGHT TOTAL	RELEASED	OTHER FISH
8/5	11:35	13:50	2:15	5C,17P	5C,17P	0
8/5	14:00	16:15	2:15	4C,16P	4C,16P	0
8/5	14:30	18:45	2:15	4C,16P	4C,14P	0
8/5	19:00	20:50	1:50	1S,4C,12P	1S,4C,11P	0
8/5	21:05	06:30	9:30	12C,22P	8C,14P	0
8/6	06:45	09:45	3:00	4C,25P	3C,22P	1SH(D)
8/6	10:05	12:20	2:15	3C,17P	3C,16P	0
8/6	12:35	13:15	:40	8P	8P	0
8/7	08:45	11:15	2:30	27P	27P	0
8/7	11:25	13:50	2:25	5C,36P	5C,34P	0
8/7	14:15	16:45	2:25	2S,5C,28P	1S,3C,26P	0
8/8	09:25	11:05	1:40	2C,21P	2C,20P	0
8/8	11:15	12:50	1:35	2C,26P	1C,25P	0
8/8	13:00	14:25	1:25	2C,23P	1C,23P	0
8/8	14:35	16:25	1:50	1C,29P	1C,29P	0
8/8	16:35	18:10	1:35	4C,14P	4C,14P	1SH(D)
8/9	09:10	10:45	1:35	1C,27P	1C,26P	0
8/9	10:55	12:35	1:40	1C,30P	1C,29P	0
8/9	12:50	14:25	1:35	4C,28P,100	3C,25P	0
8/9	14:45	16:10	1:25	1C,11P	1C,11P	0
8/9	16:20	17:40	1:20	1S,2C,9P	1S,2C,9P	0
TOTAL				4S,64C,442P 100	3S,56C,416P	2SH
8/13	11:05	12:45	1:40	1C,26P	1C,26P	0
8/13	12:55	14:25	1:30	2C,13P,100	2C,13P,100	0
8/13	14:35	16:45	1:50	2S,1C,19P 100	2S,1C,19P 100	0 0
8/13	16:50	18:40	1:50	1C,20P	1C,20P	1DV(R)
8/13	18:50	20:45	1:55	1S,2C,12P	1S,2C,12P	0
8/13	20:50	05:10	8:20	3S,7C,18P 100	1S,5C,17P	0 0
8/14	05:20	07:40	2:20	1C,20P,200	1C,17P,200	0
8/14	07:45	09:55	2:10	1C,31P	1C,27P	0
8/14	10:00	12:40	2:40	32P	27P	0
TOTAL				6S,16C,191P 500	4S,14C,178P 400	1DV

S=Sockeye, K=Chinook, C=Chum, P=Pink, CO=Coho, DV=Dolly Varden, SH=Steelhead
D=Dead, R=Released

Appendix Table 3. Number of females sampled for egg diameters in the lower Stikine Canadian commercial gill net fishery, by week, 1985.

Week Ending	Statistical Week	Number Sampled
14-Jun	24	4
21-Jun	25	8
28-Jun	26	16
05-Jul	27	32
12-Jul	28	22
19-Jul	29	54
26-Jul	30	32
02-Aug	31	22
09-Aug	32	16
16-Aug	33	13
23-Aug	34	4
30-Aug	35	2
06-Sep	36	0
13-Sep	37	3
20-Sep	38	5
27-Sep	39	1
Total		234

Appendix Table 4. Kakwan Point sockeye salmon CPUE, 1977-1985[1/].

STAT WEEK	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	1985
23	...	0	0	0	0	...	0	0	0.00	0
24	0.54	0.29	0.13	0.04	0.04	0	0	0.15	0.15	0
25	1.42	0.42	0.5	0.12	0.33	0.04	0.04	0.41	0.41	0.04
26	1.87	0.65	0.58	1.07	1.71	0.68	0.24	0.97	0.97	1.04
27	6.00	1.13	0.13	0.92	2.00	2.83	0.67	1.95	1.95	0.96
28	1.89	0.5	0.68	1.17	1.80	1.52	1.65	1.32	1.32	1.06
29	0.54	0.5	0.55	0.67	0.59	0.51	1.54	0.70	0.70	1.21
30	0.5	0.51	0.24	0.37	0.15	0.50	0.66	0.42	0.42	0.43
31	...	0.21	0.16	0.29	0.08	0.25	0.66	0.40	0.29	0.74
32	...	...	...	0.34	0.14	0.04	0.25	0.19	0.19	0.04
33	...	0.04	0.13	0.04	0.16	0.04	...	0.08	0.08	0.25
34	...	0.08	0.08	0	0.08	0	...	0.05	0.05	...
35	...	0	0.05	0.05	...	0.04	...	0.04	0.04	...
36	...	0	0	0	0	0	...	0	0	...
37	...	...	...	0	...	0	...	0	0	...
38	...	...	...	0	...	...	...	0	0	...
39	...	...	...	0	...	...	...	0	0	...
40	...	...	...	0	...	...	...	0	0	...

1/ CPUE = Average number of sockeye caught per hour during the 24-hour set each week.

Appendix Table 5. Lower Stikine River Canadian commercial gill net fishery sockeye salmon scale sampling, 1985.

STAT WEEK	WEEK ENDING	SOCKEYE SCALES COLLECTED MALE	FEMALE	TOTAL
26	6/29	143	229	372
27	7/6	FISHERY CLOSED		
28	7/13	345	340	685
29	7/20	304	299	603
30	7/27	300	260	560
31	8/3	239	290	529
32	8/10	271	309	580
33	8/17	280	380	640
TOTALS		1,862	2,107	3,969
		46.9%	53.1%	

Appendix Table 6. Kakwan Point sockeye salmon age composition, 1985.

	AGE					
	0.3	1.2	1.3	2.2	2.3	Total
Female	3	5	202	2	8	220
Percent	0.91%	1.52%	61.40%	0.61%	2.43%	66.87%
Male	3	9	90	4	3	109
Percent	0.91%	2.74%	27.35%	1.21%	0.92%	33.13%
Total Sockeye	6	14	292	6	11	329
Percent	1.82%	4.26%	88.75%	1.82%	3.35%	100.00%

Appendix Table 7. Kakwan Point sockeye salmon lengths by age class, 1985.

	MEAN LENGTH (mm) AGE				
	0.3	1.2	1.3	2.2	2.3
Female	540.0	518.0	563.1	502.5	558.8
Male	571.7	501.1	587.8	518.8	563.6

Appendix Table 8. Kakwan Point chinook salmon CPUE, 1977-1985[1/].

STAT WEEK	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	1985
23	...	0.12	0.04	0.09	0.21	...	0	0.04	0.08	0.04
24	0	0	0.04	0.08	0.37	0.04	0	0	0.07	0.04
25	0.06	0.08	0.04	0.33	0.08	0.13	0	0.15	0.11	0.13
26	0	0.17	0.13	0.04	0.17	0.21	0.10	0.10	0.12	0.08
27	0.67	0	0	0.04	0.04	0.04	0	0.15	0.12	0
28	0	0.29	0.15	0.04	0.04	0.14	0.24	0.07	0.12	0.08
29	0.21	0.12	0.33	0.08	0.04	0.18	0.04	0.08	0.12	0.13
30	0.21	...	0	0.19	0	0.41	0	0.08	0.11	0.09
31	...	0	0	0	0.08	0	0.13	0	0.03	0
32	...	0.21	...	0	0	0.04	0	0.08	0.02	0
33	...	0	0.04	0	0.08	0	...	...	0.02	0
34	...	0	0.04	0	0	0	...	...	0.01	...
35	...	...	0.05	0	...	0	...	...	0.01	...
36	...	...	0	0	0.04	0	...	...	0.01	...
37	...	...	...	0	...	0	...	...	0	...
38	...	...	...	0	...	...	...	...	0	...
39	...	...	...	0	...	...	...	...	0	...
40	...	...	...	0	...	...	...	...	0	...

1/ CPUE = Average number of sockeye salmon caught per hour during the 24-hour set each week.

Appendix Table 9. Kakwan Point pink salmon CPUE, 1977-1985[1/].

STAT WEEK	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	ODD YR. AVERAGE	EVEN YR. AVERAGE	1985
23	...	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0.67	0	0	0	0.04	0	0	0.03	0.09	0.18	0.01	0
28	0.65	0	0.29	0.04	0.27	0.24	0.12	0.02	0.20	0.33	0.08	0
29	0.33	0.54	4.49	0.04	0.32	0	0.21	0.18	0.76	1.34	0.19	0.48
30	2.25	0.64	16.00	0.11	0.70	0	0.66	0.33	2.59	4.90	0.27	0.51
31	...	0.17	10.71	0.25	3.02	0	1.54	0.49	2.31	5.09	0.23	4.96
32	...	...	...	1.49	0.19	0.78	0.44	0.83	0.75	0.32	1.03	5.42
33	...	0.43	0.79	0.17	1.15	0.85	...	...	0.68	0.97	0.48	7.88
34	...	0.17	0.25	0.25	0.29	0.96	...	...	0.38	0.27	0.61	...
35	...	0.13	0.05	0	...	0.21	...	...	0.10	0.05	0.11	...
36	...	0	0.06	0	0	0.05	...	...	0.02	0.03	0.02	...
37	...	...	...	0	...	0	...	...	0.00	...	0	...
38	...	...	...	0	...	...	...	...	0.00	...	0	...
39	...	...	...	0	...	...	...	...	0.00	...	0	...
40	...	...	...	0	...	...	...	...	0.00	...	0	...

1/ CPUE = Average number of sockeye salmon caught per hour during the 24-hour set each week.

Appendix Table 10. Kakwan Point chum salmon CPUE, 1977-1985[1/].

STAT WEEK	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	1985
23	...	0	0	0	0	...	0	0	0	...
24	0	0	0	0	0	0	0	0	0	...
25	0	0.04	0	0	0	0	0	0	0.01	...
26	0	0.09	0	0	0	0	0	0	0.01	...
27	0	0.25	0.08	0.08	0.08	0	0	0.21	0.09	...
28	0.22	1.04	0.34	0.37	0.63	0.10	0	0.26	0.37	0.08
29	0.25	0.83	1.44	0.67	1.04	0.46	0.13	0.78	0.70	0.61
30	0.79	1.28	1.65	0.89	2.30	1.14	0.38	1.31	1.22	1.37
31	...	0.62	0.97	1.00	4.13	1.08	0.88	1.20	1.24	1.78
32	...	...	...	2.63	0.23	1.26	0.84	0.58	1.11	1.50
33	...	0.13	0.08	0.37	0.04	0.31	...	...	0.21	0.66
34	...	0.13	0.08	0.42	0.25	0.29	...	...	0.13	...
35	...	0	0	0	...	0.13	...	...	0.03	...
36	...	0.04	0	0.04	0.04	0	...	...	0.02	...
37	...	...	...	0	...	0	...	...	0	...
38	...	...	...	0	...	...	...	...	0	...
39	...	...	...	0	...	...	...	...	0	...
40	...	...	...	0	...	...	...	...	0	...

1/ CPUE = Average number of sockeye salmon caught per hour during the 24-hour set each week.

Appendix Table 11. Kakwan Point chum salmon age composition, 1985.

	AGE			
	0.2	0.3	0.4	Total
Female	0	96	10	106
Percent	0.00%	36.36%	3.79%	40.15%
Male	1	135	22	158
Percent	0.38%	51.14%	8.33%	59.85%
Total Chum	1	231	32	264
Percent	0.38%	87.50%	12.12%	100.00%

Appendix Table 12. Kakwan Point chum salmon lengths by age class, 1985.

	MEAN LENGTH (mm)		
	AGE		
	0.2	0.3	0.4
Female	...	599.7	602.0
Male	695.0	651.1	689.5

Appendix Table 13. Kakwan Point coho salmon CPUE, 1977-1985[1/].

STAT WEEK	1977	1978	1979	1980	1981	1982	1983	1984	AVERAGE	1985
23	...	0	0	0	0	...	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0
30	0	0.04	0	0	0	0	0	0	0.01	0
31	...	0	0	0	0	0	0	0	0.00	0
32	...	...	...	0	0	0	0.05	0	0.01	0
33	...	0.17	0.21	0.04	0	0.27	...	...	0.14	0.21
34	...	0.54	0.08	0.25	0.25	0.37	...	...	0.30	...
35	...	0.97	0.59	0.3	...	0.72	...	...	0.65	...
36	...	0.79	0.74	0.72	0.58	0.14	...	...	0.59	...
37	...	...	...	0.48	...	0.51	...	...	0.50	...
38	...	...	...	0.70	...	...	...	...	0.70	...
39	...	...	...	0.58	...	...	...	...	0.58	...
40	...	...	...	0.32	...	...	...	...	0.32	...

1/ CPUE = Average number of sockeye salmon caught per hour during the 24-hour set each week.

Appendix Table 14. Lower Stikine Canadian commercial gill net catches, 1985.

Stat Week	Week Ending Date (Sat.)	Chinook Jacks	Chinook Adults	Sockeye	Coho	Pink	Chum	Steelhead	Days Fished	Boats	Boat Days
26	6/29	29	75	608	0	0	0	4	1	9	9
27	7/6	CLOSED									
28	7/13	19	78	2,103	0	0	8	3	3	7	21
29	7/20	35	74	8,321	0	24	23	6	4	8	32
30	7/27	7	17	2,071	1	293	37	5	2	7	14
31	8/3	0	6	1,466	6	113	48	12	2	7	14
32	8/10	0	5	1,031	38	769	71	21	2	7	14
33	8/17	0	0	1,230	277	1,065	136	76	3	7	21
34	8/24	0	1	109	119	46	39	12	2	3	6
35	8/31	0	0	41	241	8	62	36	2	2	4
36	9/7	0	0	113	1,490 1/	3	108	56	1.5	7	10.5
Totals		90	256	17,093	2,172	2,321	532	231	22.5	64	145.5

1/ Includes 404 coho jacks.

Appendix Table 15. Lower Stikine Canadian commercial gillnet fishery sockeye salmon age composition by sex, 1985.

	PERCENT COMPOSITION													
	AGE													
	0.2	0.3	0.4	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4 1/	3.2	3.3 1/	Total
Female	3	76	1	0	77	1,444	8	0	22	65	ND	0	ND	1,696
Percent	0.09%	2.37%	0.03%	0.00%	2.40%	45.01%	0.25%	0.00%	0.69%	2.03%	ND	0.0%	ND	52.87%
Male	11	77	0	1	105	1,222	5	1	25	64	ND	1	ND	1,512
Percent	0.34%	2.40%	0.00%	0.03%	3.27%	38.09%	0.16%	0.03%	0.78%	2.00%	ND	0.03%	ND	47.13%
Total Sockeye	14	153	1	1	183	2,674	13	1	47	129	1	1	2	3,220
Percent	0.4%	4.8%	0.03%	0.03%	5.7%	83.0%	0.4%	0.03%	1.5%	4.0%	0.03%	0.03%	0.1%	100%

1/ Sex data is not available for age classes 2.4 and 3.3

Appendix Table 16. Lower Stikine Canadian commercial gillnet fishery chinook salmon age composition by sex, 1985.

	PERCENT COMPOSITION				
	AGE				
	1.1	1.2	1.3	1.4	Total
Female	0	1	3	13	17
Percent	0.0%	3.1%	9.4%	40.6%	53.1%
Male	3	2	5	5	15
Percent	9.4%	6.3%	15.6%	15.6%	46.9%
Total Chinook	3	3	8	18	32
Percent	9.4%	9.4%	25.0%	56.3%	100.0%

Appendix Table 17. Lower Stikine Canadian commercial gillnet fishery coho salmon age composition by sex, 1985.

	PERCENT COMPOSITION			
	AGE			
	1.1	2.1	3.1	Total
Female	11	12	2	25
Percent	7.7%	8.5%	1.4%	17.6%
Male	79	35	3	117
Percent	55.6%	24.6%	2.1%	82.4%
Total Coho	90	47	5	142
Percent	63.4%	33.1%	3.5%	100.0%

Appendix Table 18. Predicted and actual Tahltan Lake sockeye salmon returns and errors for the period 1977-1985. Based on Kakwan Point CPUE data from 1977-1984, for statistical weeks 23-29.

Year	[A] CPUE (Sockeye/Hr)	[B] Total Tahltan Return (-10,000) 1/	[C] Predicted Return (-10,000) 2/	[D] Error [C-B]	Relative Error (Percent) [C-D]/[C]
1977	1.1	4.86	5.60	0.74	15.25%
1978	0.45	2.78	2.28	-0.50	-18.00%
1979	0.34	1.45	1.72	0.27	18.44%
1980	0.67	1.91	3.40	1.49	78.20%
1981	0.94	6.09	4.78	-1.31	-21.45%
1982	0.88	4.22	4.48	0.26	6.09%
1983	0.72	3.21	3.66	0.45	13.99%
1984	0.98	3.28	4.99	1.71	52.07%
1985	0.86	8.55	4.37	-4.18	-48.84%
Average	0.77	4.04	3.92	-0.12	-2.93%

1/ Includes estimated Canadian inriver commercial and subsistence catches.

2/ Based on the regression formula [B]=5.11[A]-.02.

Appendix Table 19. Upper Stikine Canadian commercial gillnet catches, 1985.

Stat. Week	Week Ending Date (Sat.)	Chinook Jacks	Chinook Adults	Sockeye	Coho	Pink	Chum	Steelhead	Days Fished	Number Fishermen
26	6/29	0	50	0	0	0	0	0	1	2
27	7/6	NO FISHING-HIGH WATER								
28	7/13	NO FISHING-HIGH WATER								
29	7/20	0	12	0	0	0	0	0	1	2
30	7/27	0	0	663	0	0	0	0	1	4
31	8/3	0	0	297	0	0	0	0	1	3
32	8/10	0	0	94	0	0	0	0	1	2
33	8/17	0	0	30	0	0	0	0	1	1
Totals		0	62	1,084	0	0	0	0	6	14

Appendix Table 20. Upper Stikine Canadian subsistence gillnet catches, 1985.

Stat Week	Week Ending Date (Sat.)	Chinook Jacks	Chinook Adults	Sockeye	Coho	Pink	Chum	Steelhead	Days Fished	Number Fishermen
24	6/15	3	54	0	0	0	0	0	7	2
25	6/22	14	119	4	0	0	0	0	7	3
26	6/29	22	118	11	0	0	0	0	7	4
27 1/	7/6	0	63	4	0	0	0	0	7	1
28 1/	7/13	1	8	9	0	0	0	0	7	1
29	7/20	6	250	882	0	0	0	0	7	8
30	7/27	9	101	3,150	0	0	0	0	7	12
31	8/3	9	45	1,970	0	2	3	0	7	11
32	8/10	30	33	1,065	3	23	0	2	7	6
33	8/17	0	2	141	0	7	0	1	7	2
34	8/24	0	0	48	0	1	0	6	7	1
35	8/31	0	0	3	0	1	0	0	7	1
Totals		94	793	7287	3	34	3	9	84	52

1/ Relatively little fishing effort due to high water.

Appendix Table 21. Tahltan Lake weir sockeye salmon counts, 1985.

Date	Daily Count	Cumulative Total	Percent of Total Count
19-Jul	2	2	0.003%
20-Jul	1	3	0.004%
21-Jul	2	5	0.007%
22-Jul	0	5	0.007%
23-Jul	0	5	0.007%
24-Jul	0	5	0.007%
25-Jul	0	5	0.007%
26-Jul	0	5	0.007%
27-Jul	4	9	0.013%
28-Jul	0	9	0.013%
29-Jul	5,649	5,658	8.404%
30-Jul	10,408	16,066	23.863%
31-Jul	5,022	21,088	31.322%
01-Aug	9,665	30,753	45.678%
02-Aug	7,602	38,355	56.969%
03-Aug	8,125	46,480	69.037%
04-Aug	6,271	52,751	78.352%
05-Aug	4,010	56,761	84.308%
06-Aug	2,446	59,207	87.941%
07-Aug	1,810	61,017	90.629%
08-Aug	1,161	62,178	92.354%
09-Aug	639	62,817	93.303%
10-Aug	316	63,133	93.772%
11-Aug	701	63,834	94.813%
12-Aug	815	64,649	96.024%
13-Aug	381	65,030	96.590%
14-Aug	96	65,126	96.732%
15-Aug	300	65,426	97.178%
16-Aug	257	65,683	97.560%
17-Aug	282	65,965	97.978%
18-Aug	208	66,173	98.287%
19-Aug	135	66,308	98.488%
20-Aug	89	66,397	98.620%
21-Aug	60	66,457	98.709%
22-Aug	77	66,534	98.824%
23-Aug	34	66,568	98.874%
24-Aug	13	66,581	98.893%
25-Aug	75	66,656	99.005%
26-Aug	18	66,674	99.032%
27-Aug	96	66,770	99.174%
28-Aug	159	66,929	99.410%
29-Aug	148	67,077	99.630%
30-Aug	21	67,098	99.661%
31-Aug	44	67,142	99.727%
01-Sep	33	67,175	99.776%
02-Sep	34	67,209	99.826%
03-Sep	34	67,243	99.877%
04-Sep	32	67,275	99.924%
05-Sep	51	67,326	100.000%

Because the Alaska Department of Fish and Game receives federal funding, all of its public programs and activities are operated free from discrimination on the basis of race, color, national origin, age, or handicap. Any person who believes he or she has been discriminated against should write to:

O.E.O.
U.S. Department of the Interior
Washington, D.C. 20240