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Alaska Department of Fish and Game
Division of Commercial Fisheries
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Stock Compositions of Sockeye Salmon Catches in the Southeast Alaska Districts 106 and 108 and in the Stikine River, 1988, Estimated With Scale Pattern Analysis

by

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and

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STOCK COMPOSITIONS OF SOCKEYE SALMON CATCHES IN SOUTHEAST ALASKA DISTRICTS 106 AND 108 AND IN THE STIKINE RIVER, 1988, ESTIMATED WITH SCALE PATTERN ANALYSIS

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ABSTRACT

Linear discriminant function analysis of scale patterns was used to estimate the 1988 sockeye salmon *Oncorynchus nerka* stock compositions in the commercial gillnet fisheries in Southeast Alaska Districts 106 and 108, in the Stikine River test fishery, and in the Canadian commercial fishery in the lower Stikine River. Stock contributions to the District 106 and 108 fisheries were estimated to be Alaska I 45,599, Alaska II 35,534, Nass/Skeena 9,832, Tahltan 2,035, and non-Tahltan Stikine 775 sockeye salmon. The catch per unit effort in District 106 was greatest in early to mid-July for the Alaska I, Alaska II, and Nass/Skeena stock groups and late June to early July for the Tahltan stock group. The catch of non-Tahltan Stikine fish was too small to be used to estimate migratory timing. The Canadian commercial and Indian food fishery catches were estimated to be 4,336 Tahltan and 10,955 non-Tahltan Stikine fish, and estimated escapements were 2,536 Tahltan and 15,789 non-Tahltan Stikine fish. The 1988 Stikine River sockeye run was estimated to be 38,044 fish. Tahltan stocks contributed more than 70% of the weekly Canadian commercial catch through July 2; non-Tahltan Stikine stocks contributed more than 80% of the weekly catch after July 17.

KEY WORDS: sockeye salmon, linear discriminant function analysis, stock composition, migratory timing, Stikine River

INTRODUCTION

Sockeye salmon *Oncorhynchus nerka* are harvested in marine net fisheries throughout Southeast Alaska and northern British Columbia (Figure 1). Drift gillnet fisheries in Alaskan commercial fishing Districts 106 and 108 harvest sockeye salmon of Alaskan origin, but also catch some sockeye salmon of transboundary Stikine River and of Canadian Nass and Skeena River origin. Interception of salmon originating in one country as the fish migrate through the territorial waters of another country has become a research and management concern since the implementation of the U.S./Canada Pacific Salmon Treaty. Cooperative international management of Stikine River sockeye salmon is mandated by this Treaty under Annex IV, Chapter 1. Knowledge and control of stock-specific harvest is, therefore, needed to fulfill requirements of and assess compliance with the harvest sharing guidelines outlined in the treaty.

Objectives

The purpose of this study is to determine the contributions of major sockeye stock groups to (1) gillnet fisheries in Alaskan Subdistricts 106-30 and 106-41, and District 108, (2) Canadian commercial fisheries in the Stikine River, and (3) the Stikine River test fishery. This project has been conducted annually using scale pattern analysis (SPA) to provide inseason weekly stock composition estimates of the catch from District 106 and 108 fisheries (Marshall et al. 1987). The project also provides postseason stock composition estimates for the District 106 and 108 fisheries which are used to assess compliance with the Treaty. An estimate of the total Stikine River sockeye run is derived from data analyzed in this study.

Study Area

Sockeye salmon harvested in the District 106 and 108 commercial fisheries originate from lakes and tributaries throughout Southeast Alaska, from the transboundary Stikine River, and from the Canadian Nass and Skeena Rivers (Figure 1). Tagging studies have shown that few stocks from other areas pass through District 106 (Hoffman et al. 1983, 1984). In those studies adult sockeye salmon were tagged in 1982 and 1983 in several Alaskan and Canadian fishing districts to determine migratory pathways and interception rates of various stocks. The majority of terminal area recoveries of fish tagged in District 106 occurred along the northeast coast of Prince of Wales Island and upper Behm Canal; some were recovered in Alaskan systems as far south as the U.S./Canada border and in the Stikine, Nass, and Skeena Rivers. There were few or no recoveries of fish tagged in District 101 or 104 in either the northern Prince of Wales Island lake systems or the Stikine River.

Numerous sockeye salmon producing lakes are scattered throughout the archipelago and mainland of Southeast Alaska. They range in size from small lakes of a few hectares to large systems greater than 500 hectares such as McDonald and Klawock Lakes and include multi-lake systems like the Sarkar and Galea-Sweetwater complexes (Figure 2). Sockeye salmon production is limited by the quantity and quality of spawning areas, the available rearing area, and other environmental conditions as well as the number of spawners. Sockeye productivity varies greatly, even among systems of roughly equivalent size (McGregor 1983; McGregor et al. 1984; McGregor and McPherson 1986; McPherson and McGregor 1986;

McPherson, McGregor, and Bergander 1988; McPherson, Mcgregor, and Olsen 1988). Typical small systems, such as Alecks and Kutlaku Lakes on Kuiu Island, produce estimated runs of a few thousand fish. Although the total run size is not known, escapements in two intermediate systems, which had enumeration weirs, Karta Lake on eastern Prince of Wales Island and Salmon Bay Lake on northeast Prince of Wales Island averaged 18,400 and 18,000 sockeye salmon, respectively (1982 to 1988 average, excluding 1984 when the weirs were not installed). The single largest producer of sockeye salmon in recent years in southern Southeast Alaska has been McDonald Lake in upper Behm Canal. Escapements to this system have ranged from 56,000 in 1983 to 175,000 in 1987 and averaged 113,500 from 1981 to 1988, excluding 1982 when the weir washed out.

The Stikine River (Figure 3) originates in British Columbia and flows through the Alaskan panhandle into Frederick Sound north of Wrangell. It is therefore a transboundary river, i.e., a river that flows through Canada and the U.S. Approximately 90% of the river system is inaccessible to anadromous fish because of natural barriers and velocity blocks. The majority of the accessible sockeye spawning habitat is located above the U.S./Canada border. The largest single contributor to the Stikine River sockeye run is Tahltan Lake. Sockeye escapements, enumerated at the Tahltan Lake weir, have ranged from 1,800 fish in 1963 to 67,300 fish in 1985 and averaged 19,900 fish (1959 to 1988 excluding 1962 when the weir installation date was unspecified and 1965 when a large slide hindered access into the lake; TTC 1990). The remainder of the Stikine River sockeye stocks, the non-Tahltan Stikine stock group, spawn in small lakes, sloughs, and side channels of the mainstem river and its tributaries, most of which are glacially occluded. Estimates of the non-Tahltan Stikine sockeye escapement have ranged from 13,400 in 1979 to 63,000 in 1985 and averaged 32,200 fish from 1979 to 1988. A Canadian Indian food fishery operating near Telegraph Creek has harvested a yearly average of 3,445 fish (1972 to 1988; TTC 1990). Canadian commercial fisheries have harvested an average of 628 sockeye salmon on the upper portion and 14,917 fish on the lower portion of the Stikine River from 1980 to 1988, excluding 1984 when both fisheries were closed.

The Nass and Skeena Rivers have also contributed substantial numbers of sockeye salmon, ranging from 9,000 to 111,000 fish since 1982, to the District 106 and 108 harvests. The Nass River originates in British Columbia and drains into Portland Canal just south of the U.S./Canada border. Estimated sockeye escapements to this system have averaged 218,800 from 1980 to 1988. The Skeena River also originates in British Columbia and drains into the ocean about 50 km south of the Nass River. Estimated sockeye escapements have averaged 1,186,800 from 1980 to 1988 (DFO 1986; NBTC 1988).

Stock Separation Studies

The United States and Canada initiated research programs in 1982 to assess the feasibility of various stock separation techniques for sockeye salmon stocks harvested by both countries. Several methods of stock separation have been used including the incidence of the parasite *Myxobolus neurobius*, differences in genotypes, adult tagging studies, and scale pattern analysis. Of these, scale pattern analysis has been used most extensively in Southeast Alaskan mixed stock commercial fisheries (Oliver et al. 1985; Oliver and Walls 1985; Oliver and Jensen 1986; Jensen and Frank 1988, 1989; Jensen et al. 1989).

Scale pattern analysis has generally proven successful because of significant and persistent differences in the freshwater and early marine growth among stocks originating in various Alaskan and Canadian systems. The original stock groupings used by ADF&G to estimate stock compositions in District 106 and 108 were the Alaska group, composed of samples taken from 22 to 28 Alaska escapements; the Nass/Skeena group composed of samples taken from inriver test fisheries on the Nass and Skeena Rivers; and the Stikine River group, composed of scale samples collected from the Canadian inriver commercial fishery. The stock groupings were expanded in 1983 by creating separate standards for the Tahltan Lake and for the non-Tahltan Stikine stock group, which was derived from mainstem river and side slough spawners and Chutine, Skud, and Iskut River spawners. Standards were further refined in 1986 to separate two distinct patterns: Alaska I, typified by Hugh Smith Lake and Luck Lake patterns, and Alaska II, typified by the McDonald Lake pattern.

METHODS

Numbers of Fish

Catch statistics for Districts 106 and 108 were obtained from ADF&G records of fishery sales receipts, i.e., *fish tickets*. Harvest statistics for the Canadian inriver fishery were provided by the Canadian Department of Fisheries and Oceans (DFO) by Sandy Johnston (DFO, Whitehorse, Yukon Territory, personal communication). Catches were reported by fishing period and were assigned to a statistical week beginning at 00:01 hours Sunday and ending the following Saturday 2400 hours. Weeks were sequentially numbered beginning with the first Sunday of the calendar year.

Collection and Preparation of Scale Samples

Scales were taken from the left side of the fish approximately three rows above the lateral line along a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin (INPFC 1963). This is the preferred area for aging and digitizing because scales of salmon fry develop there first. Scales were mounted on gum cards and impressions were made in cellulose acetate (Clutter and Whitesel 1956).

Employees of the ADF&G, Commercial Fisheries Division, sampled District 106 and 108 catches at fish processing plants in the communities of Petersburg and Wrangell, Alaska. Samplers recorded the sex of each fish sampled and collected one scale. The Canadian inriver commercial and test fishery catches were sampled by DFO employees who recorded the sex of each fish sampled and took five scales according to DFO sampling guidelines.

Similar procedures were used to sample escapements; three scales per fish were taken by ADF&G employees from fish sampled from 19 lake systems throughout southern and central Southeast Alaska.

Escapements sampled at enumeration weirs were collected throughout the run and other systems were sampled during a 2- to 3-day trip to the spawning grounds. Two scales per fish were collected by DFO personnel from samples from test fisheries at the mouths of the Nass and Skeena Rivers, and five scales per fish from the Tahltan Lake escapement. Samples were collected periodically throughout the run from all areas sampled by DFO personnel. Sex was determined by examination of external sexual maturation characteristics which include kype development, belly, vent, and jaw shapes; or, when possible, by examination of gonads. A study conducted by ADF&G to determine the accuracy of this method showed that an average of 94% of sockeye salmon sampled were sexed correctly. We believe that the accuracy of sexing fish captured inriver or on the spawning grounds is greater than for fish sampled from commercial catches because their secondary maturation characteristics are more pronounced.

We set the scale sampling goals for the District 106 and 108 harvests at 700 fish per statistical week; this enabled the proportion of each major age group in the catch during each fishing period to be estimated to within 5% of the true proportion 95% of the time (Thompson 1987). Sample goals were slightly higher than the minimum required number to account for a scale regeneration rate of approximately 20%, and to ensure that adequate numbers of scales from minor age classes were available each week for digitizing. Sampling goals were met for most fishing periods in the District 106 commercial fishery. Low catches and limited availability of fish in the District 108 fishery prevented us from achieving our desired sampled sizes in each fishing period for this district. Sample goals for Southeast Alaska sockeye salmon escapements were 520 fish per system with the exception of McDonald Lake, where the goal was 1,000 fish. ADF&G employees also collected 450 scales from non-Tahltan Stikine River spawning escapements. DFO collected scales from all sockeye salmon taken in the lower Stikine River test fishery and 350 scales per week from the lower river commercial catches. DFO sampled approximately 850 sockeye salmon throughout the season from fish passing through the Tahltan Lake enumeration weir and collected 1,000 to 1,500 from each test fishery operating in the lower reaches of the Nass and Skeena Rivers (Figure 1).

Age Composition

Fish ages were determined by visually examining scale impressions magnified 70X on a microfiche reader and were recorded in European notation. Criteria used to determine ages were similar to those of Moser (1968).

Scales from fish sampled on the spawning grounds occasionally exhibited resorption along the outer edges, making the determination of ocean age impossible without additional information. The relationship between fish length and marine age of sockeye salmon provided a valuable tool in determining marine ages. Fish length is highly correlated with marine age, and for a given age class, females are typically smaller than males (McPherson, et al. 1988). In cases where scale resorption was severe, sex-specific length frequency histograms were used to assist in determining the correct marine age. Little overlap in length frequency distributions by marine age generally occurred within stocks (ADF&G, Commercial Fisheries Division, Douglas, unpublished data). For this reason fish length was recorded for every sample taken from escapements.

Scale Digitizing

Scale images magnified 100X were projected onto a digitizing tablet using equipment similar to that described by Ryan and Christie (1976). Scale measurements were made and recorded with a microcomputer-controlled digitizing system using customized software.

Previous studies have established that an axis approximately perpendicular to the anterior edge of the unsculptured posterior field is best for consistently measuring sockeye scales (Clutter and Whitesel 1956; Narver 1963). This axis is approximately 20° dorsal or ventral from the anterior-posterior axis, and all circuli counts and scale measurements in the lacustrine and first-year marine zone were made along it. Marshall et al. (1984) established the separability of major stock groups in southern Southeast Alaska by measurements in three or four zones: (1) the first freshwater—the scale center to the last circulus of the first freshwater annulus, (2) the second freshwater—when present, the first circuli of the second year of freshwater growth to the end of the second freshwater annulus, (3) the plus growth—scale growth after the last freshwater annulus and before the first marine circulus (Moser 1968), and (4) the first-year marine growth—the first marine circulus to the end of the first marine annulus (Figure 4). A total of 74 variables including circuli counts, incremental distances, and ratios and/or combinations of the measured variables were calculated for scales with a single freshwater annular zone. For scales which had two freshwater annular zones 106 variables were calculated (Appendix A).

Developing Standards

In 1988 four major age classes—1.2, 1.3, 2.2, and 2.3—contributed 98% of the catch in District 106 and 89% of the catch in District 108. An additional 10% of the District 108 catch was composed of age-0. fish. Age-specific discriminant functions, where standards from a specific age class were used to classify catches of fish of the same age class, were used in the analysis to account for differences in age composition among stocks, remove potential bias due to differences in migratory timing of different age fish, and eliminate the effect of different environmental conditions on the scale patterns of different age fish. Standards were developed for each age class for the Alaska I, Alaska II, and Nass/Skeena groups and for age-1.2, -1.3, and -2.3 fish for the Tahltan group. Non-Tahltan Stikine standards were developed for age-1.2 and -1.3 fish only. The desired sample size for each age-specific standard was 200 fish per stock. Unpublished ADF&G studies showed that, over a wide range of classification accuracies, only a minimal decrease in the variance of stock composition estimates was achieved by enlarging sample sizes of standards above 200. We achieved this sample size goal for age-1.3 fish for all stock groups; however, for age-1.2, -2.2, and -2.3 fish we often did not have 200 samples (Appendix A.1–A.2).

Two standards, Alaska I and Alaska II, were developed to represent the Alaskan coastal stocks. Samples from 18 sockeye systems in central and southern Southeast Alaska were pooled to create the Alaska I standard. The number of samples included from each system was weighted by perceived run strength, geographic proximity of the system to District 106 and 108, and known migratory pathways. Although only samples from McDonald Lake were used to develop the Alaska II standard, classification studies have indicated that high portions of other Alaskan systems including Karta, Salmon Bay, and Naha Lakes

will classify as Alaska II. Standards for the Nass/Skeena stock group were developed with scales sampled from gillnet test fisheries near the mouths of each river, using scales chosen in proportion to migratory timing as indicated by test fishery CPUE. The Tahltan Lake standards were developed from scale samples collected throughout the migration of fish past the Tahltan Lake weir and weighted by fish abundance passing through the weir. Non-Tahltan Stikine standards were developed from samples collected from spawning grounds throughout the drainage.

Classification of Catches

Commercial catches were analyzed inseason using discriminant functions developed from the previous year's escapement standards for the same age class. Stock contributions for Subdistrict 106-30 and 106-41 and District 108 commercial catches were estimated from mid-June through mid-August and summaries were provided to managers within 48 h of the fishery closures. Three of the four major age groups —1.2, 1.3, and 2.3—were analyzed; the fourth, age-2.2, composed primarily of the Alaska I and Nass/Skeena stocks, was not digitized inseason due to time constraints. Stock compositions for the Canadian commercial catches in the Stikine River were also estimated inseason; however, due to logistical difficulties in receiving the data, there was a 3- to 5-day lag between fishery closures and catch analysis. Commercial catches which had occurred after the cessation of the inseason analysis and catches from the Stikine River test fishery were also classified postseasonally.

Stock contributions were estimated for each week to track temporal patterns; however, in some weeks catches were small and samples of the less common age groups were insufficient for classification unless they were pooled with the adjacent week's sample. The proportion of each stock in a week's catch sample was expanded to the week's catch by

$$C_{ijt} = C_t \cdot P_{it} \cdot S_{ijt} \ ,$$

where:
- C_{ijt} = estimated catch of fish of age i in group j in period t,
- C_t = total catch in period t,
- P_{it} = estimated proportions of fish of age i in the catch in period t, and
- S_{ijt} = proportion of fish of age i and estimated with LDF to be in group j in the catch in period t.

To estimate stock composition of the minor age groups not classified with LDF, we assumed that the proportion of the minor ages belonging to any given stock in a catch was equal to the proportion of all LDF-classified age classes of that stock in the catch, such that

$$C_{mjt} = C_t \cdot P_{mt} \cdot S_{ljt} \ ,$$

where:
- C_{mjt} = estimated catch of fish of minor age class m of group j in period t,
- P_{mt} = estimated proportion of fish of minor age group m in the catch in period t, and

S_{ijt} = proportion of fish estimated with LDF (all analyzed ages combined) to be in group j in the catch in period t.

Age-0. fish were absent or extremely rare in most stock groups, except for the non-Tahltan Stikine group. Because Stikine River stocks have historically composed 70% or more of the District 108 catch and the non-Tahltan Stikine group typically has a strong (>10%) age-0. component, all the age-0. fish in the District 108 catch were assumed to be of non-Tahltan Stikine origin.

The variances of the weekly and seasonal stock composition estimates were approximated with the Delta method (Seber 1982). The variance estimates are functions of (1) the accuracy of the age-specific functions used to classify the unknowns, (2) the sample size of each standard used to develop age-specific discriminant functions, (3) the proportions of each stock in the initial and in the adjusted stock composition estimates, (4) the age-specific stock composition sample sizes, (5) the age composition sample sizes, and (6) the catch size. However, the estimates are minimum estimates of variance because they do not include (1) any variance associated with the age classes not classified with LDF, (2) any variance for stocks contributing no fish during a given week, or (3) any estimates of aging errors or inaccuracies in catch reporting. Variances of proportions of stock contributions are calculated with formulae from Pella and Robertson (1979).

Estimation of the Stikine River Sockeye Run

The total inriver run of Tahltan fish was estimated by adding the Tahltan Lake weir count to the estimated number of Tahltan fish in the inriver catches. A drift and set gillnet test fishery operated by DFO and ADF&G personnel was located just above the U.S./Canada border (Figure 3). The CPUE of the drift gillnet test fishery was used to estimate migratory timing, and stock composition was estimated from the combined catches of the drift and set test nets. The magnitude of the inriver run of the non-Tahltan Stikine stock group was estimated by

$$R_{1\cdot} = \frac{R_{2\cdot} \times P'_{1\cdot}}{P'_{2\cdot}}$$

where: $R_{1\cdot}$ = run size of non-Tahltan Stikine fish past the Canadian inriver fishery,
$R_{2\cdot}$ = run size of Tahltan fish past the Canadian inriver fishery,
$P'_{1\cdot}$ = adjusted proportion of non-Tahltan Stikine fish in the season's test fishery catch, and
$P'_{2\cdot}$ = adjusted proportion of Tahltan fish in the season's test fishery catch note $P'_{2\cdot} = 1 - P'_{1\cdot}$.);

and:

$$P'_{jt} = P_{jt} \times \frac{C_t}{\sum_{t=1}^{N} C_t}$$

where: P'_{jt} = adjusted proportion of total sockeye run belonging to stock j and occurring in week t,

P_{jt} = proportion of stock j in week t from test fishery catch analysis,

C_t = CPUE from test fishery in week t, and

N = number of weeks in fishing season.

The test fishery effort was standardized to 60 drifts per week in all weeks and the catch extrapolated to that level.

Comparison of Inseason and Postseason Estimates

The differences between inseason and postseason weekly stock compositions were estimated. The actual numbers of fish in the sample that were classified to each group in the inseason analysis were compared to those in the postseason analysis. Data were set up in a standard contingency table format and tested with log likelihood ratio analysis, i.e., G statistic (Zar 1984).

RESULTS

The stock compositions of the sockeye salmon caught in Subdistricts 106-30 and 106-41, in District 108, and in the Stikine River were estimated from mid-June through late August for statistical weeks 26–35. Of the 93,775 sockeye salmon harvested in Districts 106 and 108, 49% were of Alaska I origin, 38% of Alaska II, 10% of Nass/Skeena, 2% of Tahltan, and 1% of non-Tahltan Stikine origin (Table 1). Of the Canadian lower Stikine River commercial catch of 12,766 sockeye salmon (TTC 1989), 16% were of Tahltan and 84% of non-Tahltan Stikine origin (Table 2). Mean classification accuracies ranged from 58% for a five-stock function to 98% for a two-stock function (Table 3; Appendix B). The total Stikine River sockeye run was estimated at 38,199 fish: 9,441 Tahltan and 28,758 non-Tahltan fish (Table 4). The inseason stock composition estimates differed significantly from the postseason estimates during most weeks in most fisheries (Table 5).

Subdistrict 106-30 Catches

A total of 35,192 sockeye salmon were harvested in Alaskan Subdistrict 106-30 drift gillnet fishery in 1988. An estimated 88.4% were of Alaska I and Alaska II origin, 9.5% of Nass/Skeena origin, and 2.1% of transboundary Stikine River origin (Appendix C.1). The Alaska I stock group composed greater than

65% of the catch during June and early July and remained more than 39% of the catch throughout the season. The Alaska II group dominated the catch from mid-July through early August. The Nass/Skeena stock group contributed <10% of the catch prior to early August after which it comprised 25% of the catch. Tahltan fish were not present after late July and no non-Tahltan Stikine fish were harvested.

The catch and catch per boat-day peaked for all stock groups except non-Tahltan Stikine during week 29 in mid-July (Appendix C.2). There was a second small peak in migratory timing for the Nass/Skeena stock group during the last weeks of the season.

Subdistrict 106-41 Catches

Of the 57,337 sockeye salmon harvested in the Subdistrict 106-41 drift gillnet fishery in 1988, 86.8% were of Alaska I and Alaska II origin, 6,246 of Nass/Skeena origin, and 1,135 of transboundary Stikine River origin (Appendix C.3). The peak harvests of Alaska I fish occurred in mid-July (week 29), Alaska II fish in mid- and late July (weeks 29 and 31), Nass/Skeena fish in mid-July (week 30), and Tahltan fish in late June (week 27). Non-Tahltan Stikine fish were harvested only in early August (week 32). The Alaska I group dominated the catch throughout the season and contributed more than 50% of the total through mid-July. The Alaska II group contributed more than 35% of the catch from mid-July through early August. The Nass/Skeena group was present in low to moderate abundance and composed 3% to 14% of the catch through early August, after which it contributed 44% of the catch. The Tahltan group was present in low numbers and composed <10% of the catch, through late July.

The catch per boat-day peaked for all stock groups except non-Tahltan Stikine during week 29 (Appendix C.4). As in Subdistrict 106-30, there was a second peak in the migratory timing of the Nass/Skeena stock group during the last weeks of the season.

District 108 Catches

Of the 1,246 sockeye salmon harvested in the District 108 drift gillnet fishery, 21.3% were of Alaska I and Alaska II origin, 3.9% of Nass/Skeena origin, and 74.9% of transboundary Stikine River origin (Appendix C.5). The non-Tahltan Stikine group dominated the catch and the Tahltan group was the second most abundant stock group.

The Tahltan stock group was relatively more abundant during the first two weeks of the season than during the last 2 weeks (Appendix C.6). However, the opposite held for the other four stock groups.

Test Fishery Catches

The estimated stock composition of the District 106 test fishery catch of 1,036 sockeye salmon was 86.9% Alaska I and Alaska II fish, 9.7% Nass/Skeena fish, and 3.3% transboundary Stikine River fish

(Appendix C.7). Of the 451 sockeye salmon caught in the District 108 test fishery, 20.2% were estimated to be of Alaska I and Alaska II origin, 4.9% of Nass/Skeena origin, and 74.9% of transboundary Stikine River origin (Appendix C.8).

1988 Stock Compositions Compared to Historical Data

The District 106 sockeye catch of 92,529 fish in 1988 was lower than in four years since 1982 and nearly identical to the harvest in 1984 (Appendix D.1). The catches were lowest relative to other years (1982 to 1987) during the first and last weeks of the season. The relative contribution of the Alaskan stocks, 87.4%, was the highest estimated since 1982 (Appendix D.2), but similar to that estimated in 1987, 82.7%. The estimated catches of transboundary Stikine fish were similar to the past two years with an estimated 1.8% in 1986, 1.7% in 1987, and 2.1% in 1988.

Sockeye catches in Subdistrict 106-30 were lower than in Subdistrict 106-41 as has been observed since 1985 (Appendix D.3). The stock-specific catches in Subdistrict 106-30 were similar to the 1985 to 1987 period; Alaska I and Alaska II stocks contributed the bulk of the catch during most of the season. A similar pattern was observed in Subdistrict 106-41. The numbers of Nass/Skeena fish were the lowest observed since 1985, particularly in the later part of the fishing season. The relative abundance of transboundary Stikine River fish in both subdistricts was similar to that in 1985 through 1987 (Appendix D.4). Tahltan fish contributed a small fraction of the weekly catch through mid-July and non-Tahltan Stikine fish sporadically contributed trace proportions of the catch through early August. The catches in 1985 were notably different than catches in ensuing years because of the relatively and numerically high abundance of the Nass/Skeena stock group.

The sockeye catch in District 108 was lower than that observed in 1986 or 1987 (Appendix D.5). The Alaska I stock was relatively more abundant and the transboundary Stikine River stocks relatively less abundant than was estimated for 1986 or 1987. A similar pattern was observed in the test fishery catches (Appendix D.6).

Stock Composition of Stikine River Catches

The Canadian commercial fishery on the Stikine River harvested 12,766 sockeye salmon (TTC 1989); of these an estimated 16.2% were of Tahltan and 83.8% of non-Tahltan origin (Appendix E.1). The Tahltan stock group dominated the catch during the first 2 weeks of the fishery but was only a minor component after mid-July. The migratory timing, expressed as the weekly proportion of CPUE, indicated that the abundance of the Tahltan stock peaked during week 28 and the non-Tahltan stock peaked during week 32 (Appendix E.2).

The Tahltan group contributed approximately one-third of the test fishery catch (Appendix E.3) of 1,246 sockeye salmon. The Tahltan migration timing peaked during weeks 27 through 29 and the non-Tahltan stock group during weeks 31 and 32 (Appendix E.4). Migratory timing and stock composition estimates

in this report differ from those in the TTC (1990) report because the TTC numbers are a weekly average of SPA analysis and egg-diameter analysis.

Stikine River Run Strength

The 1988 Stikine River sockeye run was estimated at 38,044 fish (Table 4). The stock compositions of test fishery catches weighted by CPUE and summed over all weeks indicated that the inriver sockeye run was composed of 20.9% Tahltan fish and 79.1% non-Tahltan fish (Appendix E.4). The total Canadian catch of Tahltan fish was 4,336, the test fishery catch was 408 fish, and the weir count for the Tahltan escapement was 2,536 (TTC 1989); the total Tahltan inriver run estimate was 7,280 fish. These numbers, entered into the run estimation formula, indicated an inriver run size of 27,582 fish for the non-Tahltan Stikine sockeye stocks. Catches from marine (372 fish) and inriver (1,246 fish) test fisheries are not included in the harvest-share agreement. The inriver run estimate differs from that in the TTC (1990) report due to the differences in stock composition estimates.

Comparison of Inseason and Postseason Estimates

The inseason stock composition estimates differed significantly from the postseason estimates for most weeks in most areas (Table 5; Appendix F). In District 106, the inseason estimates reflected the relative strengths of the five stock groups (Appendices F.1 and F.2). The major differences between the inseason and postseason estimates occurred with the Alaska I and Alaska II stock groups and usually represented a change of <10%. The inseason analysis correctly indicated that the Alaska stocks dominated the catches, that Nass/Skeena stocks were present at small to intermediate levels, and that transboundary Stikine River stocks were only present in relatively small numbers. The District 108 inseason analysis correctly indicated that the transboundary Stikine River stocks dominated the catches in all weeks (Appendix F.3). However, the inseason analysis consistently underestimated the Tahltan contribution. The contribution of Tahltan fish to the Canadian commercial fishery in the Stikine River was also consistently underestimated in the 1988 inseason analysis (Appendix F.4).

DISCUSSION

The District 106 sockeye catch of 92,529 was low compared to the 1985 to 1987 average catch of 182,400 fish but was similar to the 1964 to 1987 average catch of 91,500 fish. Catches of Alaska stocks were well within the range observed in recent years, although catches of Stikine River stocks were slightly below the 1982–1987 average. The major difference between the 1988 catch and other catches since 1982 was the lack of Nass/Skeena fish in the District 106 harvest. The estimated Nass/Skeena contribution of 9,784 sockeye salmon was the lowest estimated since SPA was initiated in 1982. The Nass escapement of 150,000 fish, compared to the 1980–1988 average of 220,000 fish, and the Skeena escapement of

1,400,000 fish, compared to the 1980–1988 average of 1,200,000 fish, did not indicate that those stocks were exceptionally weak. The low catches of Nass/Skeena fish in District 106 may indicate that south-migrating stocks made landfall further down the coast than was observed in recent years.

The weekly inseason stock composition estimates indicated that the Nass/Skeena stocks were relatively and numerically less abundant in District 106 catches than during 1982 to 1987. However, they composed an estimated 32.5% of the opening week's catch in District 108 in 1988. Nass/Skeena stocks were not present in the District 108 catch in week 26 in 1986. It had been assumed, based on presumed migratory routes, that Nass/Skeena fish would compose a much smaller fraction of the sockeye catch in District 108 than in District 106. Because Tahltan stocks are present in District 108 early in the season and the Tahltan and Nass/Skeena stocks tend to misclassify as each other, it seemed likely that the fish that classified to the Nass/Skeena group were really of Tahltan origin. A second analysis was run in which a four-stock linear discriminant function—Nass/Skeena omitted—was used to classify the District 108 catch. Results indicated that fish that had been classified as Nass/Skeena fish in a five-stock function were instead classified as Tahltan. A further test was made by classifying the Canadian commercial catch in the Stikine River with full five-stock discriminant functions. A substantial portion of the catch was classified to the Nass/Skeena group. We tentatively concluded that the week 26 catch component classified as Nass/Skeena stocks were actually of Tahltan origin. This large potential misclassification did not occur again during the inseason analysis; therefore, the inseason analysis was not adjusted. The postseason analysis confirmed that the Nass/Skeena stocks comprised <5% of the catch during the first 2 weeks of the District 108 fishery.

Although there were significant differences between the inseason and postseason stock composition estimates in most weeks in all fisheries, the inseason analysis correctly indicated relative abundances of the major stock groups. In Subdistrict 106-30 the differences between the inseason and postseason estimates were: Alaska stock group -4.1%; Nass/Skeena stock group -0.5%; and Stikine River stock group +0.8% (weeks 26 through 32). In Subdistrict 106-41 the differences between the inseason and postseason estimates were: Alaska stock group +2.6%; Nass/Skeena stock group -3.3%; and Stikine River stock group -1.6%. Differences in the inseason and postseason estimates in District 108 were greater than in District 106, possibly due to small sample sizes and the high relative abundance of composite stock groups.

The most diverse composite stock groups, Alaska I and non-Tahltan Stikine, have lower classification precision than do the less diverse stock groups. This is indicated by the relatively broad variances associated with the measured variables used to build the discriminant functions. The differences between the inseason and postseason analysis in District 108 were +11.5% for Alaska stocks, +5.2% for Nass/Skeena stocks, and -16.5% for Stikine River stocks. The contribution of Tahltan fish to the Canadian commercial catch was changed by +8.3% and the non-Tahltan contribution by -13.8% for weeks 27 through 31. The changes between inseason and postseason estimates do not sum to zero because age-2.2 fish were not included in the comparison.

Ideally we would be able to estimate composition of every individual stock present in the catches in the District 106 and 108 fisheries, but this is not possible with current technology. It would also be impossible to manage the fisheries for 20 or more individual stocks, most of which probably exhibit

similar migratory timing and routes. The current stock groupings are roughly based on geographical location. The estimated catches of each group combined with a manager' s estimate of area escapements yield a good, but generalized, view of the status of sockeye stocks in a region. The current analysis also allows us to reconstruct the Tahltan and non-Tahltan Stikine sockeye runs which is essential to cooperative international management of the Stikine River sockeye resource.

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Table 1. Estimated contributions of sockeye salmon stock groups to Alaskan District 106 and 108 drift gillnet fisheries, 1988.

Dates	Stock Group	Catch by District 106-30	106-41	108	Total	Percent
6/19-6/25 Week 26	Alaska I	430	1,394		1,824	81.0
	Alaska II	108	102		210	9.3
	Nass/Skeena	21	53		74	3.3
	Tahltan	1	144		145	6.4
	Stikine	0	0		0	0.0
	Total	560	1,693		2,253	
6/26-7/02 Week 27	Alaska I	2,258	4,061	44	6,363	70.2
	Alaska II	347	761	70	1,178	13.0
	Nass/Skeena	78	523	25	626	6.9
	Tahltan	77	411	121	609	6.7
	Stikine	0	0	288	288	3.2
	Total	2,760	5,756	548	9,064	
7/03-7/09 Week 28	Alaska I	2,003	3,899		5,902	67.1
	Alaska II	694	907		1,601	18.2
	Nass/Skeena	212	777		989	11.3
	Tahltan	0	296		296	3.4
	Stikine	0	0		0	0.0
	Total	2,909	5,879		8,788	
7/10-7/16 Week 29	Alaska I	3,913	7,522	84	11,519	45.2
	Alaska II	4,107	5,859	67	10,033	39.5
	Nass/Skeena	1,309	1,378	23	2,710	10.7
	Tahltan	467	163	101	731	2.9
	Stikine	0	0	423	423	1.7
	Total	9,796	14,922	698	25,416	
7/17-7/23 Week 30	Alaska I	3,113	4,020		7,133	39.2
	Alaska II	3,931	4,860		8,791	48.2
	Nass/Skeena	634	1,403		2,037	11.2
	Tahltan	197	57		254	1.4
	Stikine	0	0		0	0.0
	Total	7,875	10,340		18,215	
7/24-7/30 Week 31	Alaska I	1,330	3,289		4,619	38.4
	Alaska II	1,789	5,186		6,975	57.9
	Nass/Skeena	33	415		448	3.7
	Tahltan	0	0		0	0.0
	Stikine	0	0		0	0.0
	Total	3,152	8,890		12,042	
7/31-8/06 Week 32	Alaska I	2,161	3,723		5,884	47.5
	Alaska II	2,868	2,594		5,462	44.0
	Nass/Skeena	375	623		998	8.0
	Tahltan	0	0		0	0.0
	Stikine	0	64		64	0.5
	Total	5,404	7,004		12,408	
8/07-9/03 Wks 33-36	Alaska I	1,363	992		2,355	42.1
	Alaska II	677	607		1,284	23.0
	Nass/Skeena	696	1,254		1,950	34.9
	Tahltan	0	0		0	0.0
	Stikine	0	0		0	0.0
	Total	2,736	2,853		5,589	
Season Totals	Alaska I	16,571	28,900	128	45,599	48.6
	Alaska II	14,521	20,876	137	35,534	37.9
	Nass/Skeena	3,358	6,426	48	9,832	10.5
	Tahltan	742	1,071	222	2,035	2.2
	Stikine	0	64	711	775	0.8
	Total	35,192	57,337	1,246	93,775	

Table 2. Estimated contributions of sockeye salmon stock groups to test fishery and Canadian commercial catches in the Stikine River, 1988.

		Commercial Catch		Test Fishery	
Dates	Stock Group	Total	Percent	Total	Percent
6/19-6/25	Tahltan			26	78.8
Week 26	non-Tahltan			7	21.2
	Total			33	
6/26-7/02	Tahltan	301	76.8	105	72.9
Week 27	non-Tahltan	91	23.2	39	27.1
	Total	392	144		
7/03-7/09	Tahltan	389	68.5	108	52.9
Week 28	non-Tahltan	179	31.5	96	47.1
	Total	568	204		
7/10-7/16	Tahltan	220	42.4	108	38.6
Week 29	non-Tahltan	299	57.6	172	61.4
	Total	519	280		
7/17-7/23	Tahltan	585	27.1	27	19.4
Week 30	non-Tahltan	1,571	72.9	112	80.6
	Total	2,156	139		
7/24-7/30	Tahltan	264	9.7	18	12.5
Week 31	non-Tahltan	2,459	90.3	126	87.5
	Total	2,723	144		
7/31-8/06	Tahltan	142	3.5	10	6.7
Week 32	non-Tahltan	3,874	96.5	140	93.3
	Total	4,016	150		
8/07-8/13	Tahltan	122	7.3	6	7.1
Week 33	non-Tahltan	1,541	92.7	78	92.9
	Total	1,663	84		
8/14-9/10	Tahltan	41	5.6	0	0.0
Wks 34-37	non-Tahltan	688	94.4	68	100.0
	Total	729	68		
Season	Tahltan	2,064	16.2	408	32.7
Totals	non-Tahltan	10,702	83.8	838	67.3
	Total	12,766	1,246		

Table 3. Mean classification accuracies from linear discriminant function models used to classify sockeye salmon harvested in Alaskan Districts 106 and 108 and in the test and Canadian commercial fisheries in the Stikine River, 1988.

Stock Groups	Mean Classification Accuracy by Age			
	1.2	1.3	2.2	2.3
Alaska I vs Alaska II vs Nass/Skeena vs Tahltan vs Stikine	0.576	0.644		
Alaska I vs Alaska II vs Nass/Skeena vs Tahltan	0.673	0.745		0.723
Alaska I vs Alaska II vs Nass/Skeena vs Stikine	0.643	0.675		
Alaska I vs Alaska II vs Tahltan vs Stikine		0.682		
Alaska I vs Nass/Skeena vs Tahltan vs Stikine	0.658	0.700		
Alaska II vs Nass/Skeena vs Tahltan vs Stikine		0.707		
Alaska I vs Alaska II vs Nass/Skeena	0.762	0.820	0.645	0.740
Alaska I vs Alaska II vs Tahltan	0.762	0.823		0.811
Alaska I vs Alaska II vs Stikine	0.612	0.660		
Alaska I vs Nass/Skeena vs Tahltan	0.751			0.851
Alaska I vs Nass/Skeena vs Sitkine	0.749			
Nass/Skeena vs Tahltan vs Stikine	0.735	0.781		
Alaska I vs Alaska II	0.720	0.840	0.708	0.747
Alaska I vs Nass/Skeena	0.883			
Alaska I vs Tahltan		0.945		0.970
Alaska I vs Stikine	0.763			
Alaska II vs Nass/Skeena			0.800	
Alaska II vs Stikine		0.783		
Tahltan vs Stikine	0.898	0.904	0.832	0.977

Table 4. Catch and escapement of Stikine River sockeye salmon stocks, 1988.

Area	Tahltan	non-Tahltan	Total
U.S. Catch			
District 106-30	742	0	742
District 106-41	1,071	64	1,135
District 108	222	711	933
Total U.S. Catch	2,035	775	2,810
Test Fishery Catches			
District 106	34	0	34
District 108	59	279	338
	93	279	372
Total Marine Catch	2,128	1,054	3,182
Canadian Catch[a]			
Lower River Commercial	2,064	10,702	12,766
Upper River Commercial	313	35	348
Indian Food Fishery	1,959	218	2,177
Total Canadian Catch	4,336	10,955	15,291
Test Fishery Catch	408	838	1,246
Total Inriver Catch	4,744	11,793	16,537
Total Catch	6,872	12,847	19,719
Spawning Escapement[b]	2,536	15,789	18,325
Total Inriver Run	7,280	27,582	34,862
Total Run	9,408	28,636	38,044

[a] Total harvest numbers from DFO, Whitehorse, Yukon.
[b] Tahltan escapement from DFO, Whitehorse, Yukon.

Table 5. Log-likelihood (G) values for the comparison of weekly inseason and postseason stock composition estimates for sockeye salmon harvested in Alaskan Districts 106 and 108 and in the Canadian commercial fishery in the Stikine River, 1988.

Stat. Week	Dates	G	P	Reject Ho[a]
106-30 Critical Value = 9.488				
26	6/21-6/27	70.174	P < 0.001	yes
27	6/28-7/04	17.487	0.001 < P < 0.005	yes
28	7/05-7/11	5.231	0.100 < P < 0.250	no
29	7/12-7/18	20.227	P < 0.001	yes
30	7/19-7/25	157.004	P < 0.001	yes
31	7/26-8/01	67.421	P < 0.001	yes
32	8/02-8/08	37.610	P < 0.001	yes
Season Total		232.914	P < 0.001	yes
106-41 Critical Value = 9.488				
26	6/21-6/27	33.193	P < 0.001	yes
27	6/28-7/04	5.184	0.100 < P < 0.250	no
28	7/05-7/11	28.430	P < 0.001	yes
29	7/12-7/18	18.008	0.001 < P < 0.005	yes
30	7/19-7/25	45.944	P < 0.001	yes
31	7/26-8/01	16.088	0.001 < P < 0.005	yes
32	8/02-8/08	12.225	0.010 < P < 0.025	yes
Season Total		136.083	P < 0.001	yes
108 Critical Value = 9.488				
26	6/21-6/27	18.472	P < 0.001	yes
27	6/28-7/04	19.076	P < 0.001	yes
28	7/05-7/11	2.035	0.500 < P < 0.750	no
29	7/12-7/18	14.013	0.005 < P < 0.010	yes
Season Total		28.921	P < 0.001	yes
Stikine Critical Value = 3.841				
27	6/28-7/04	1.066	0.250 < P < 0.500	no
28	7/05-7/11	9.958	0.001 < P < 0.005	yes
29	7/12-7/18	4.102	0.025 < P < 0.050	yes
30	7/19-7/25	13.431	P < 0.001	yes
31	7/26-8/01	11.287	P < 0.001	yes
Season Total		31.116	P < 0.001	yes

[a] Ho: There are no differences between the inseason and postseason stock composition estimates.

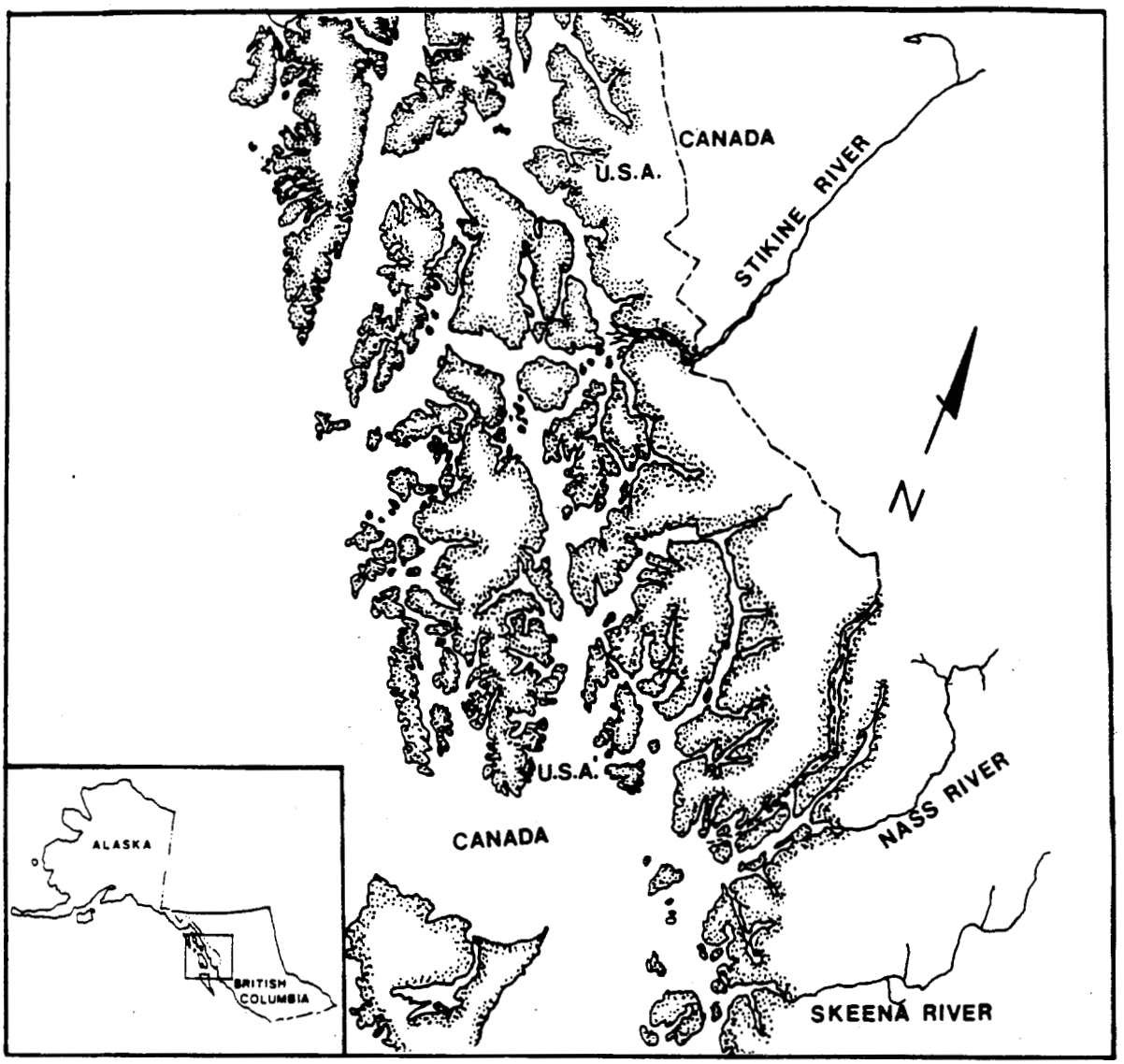

Figure 1. Southeast Alaska, northern British Columbia, and the transboundary Stikine River.

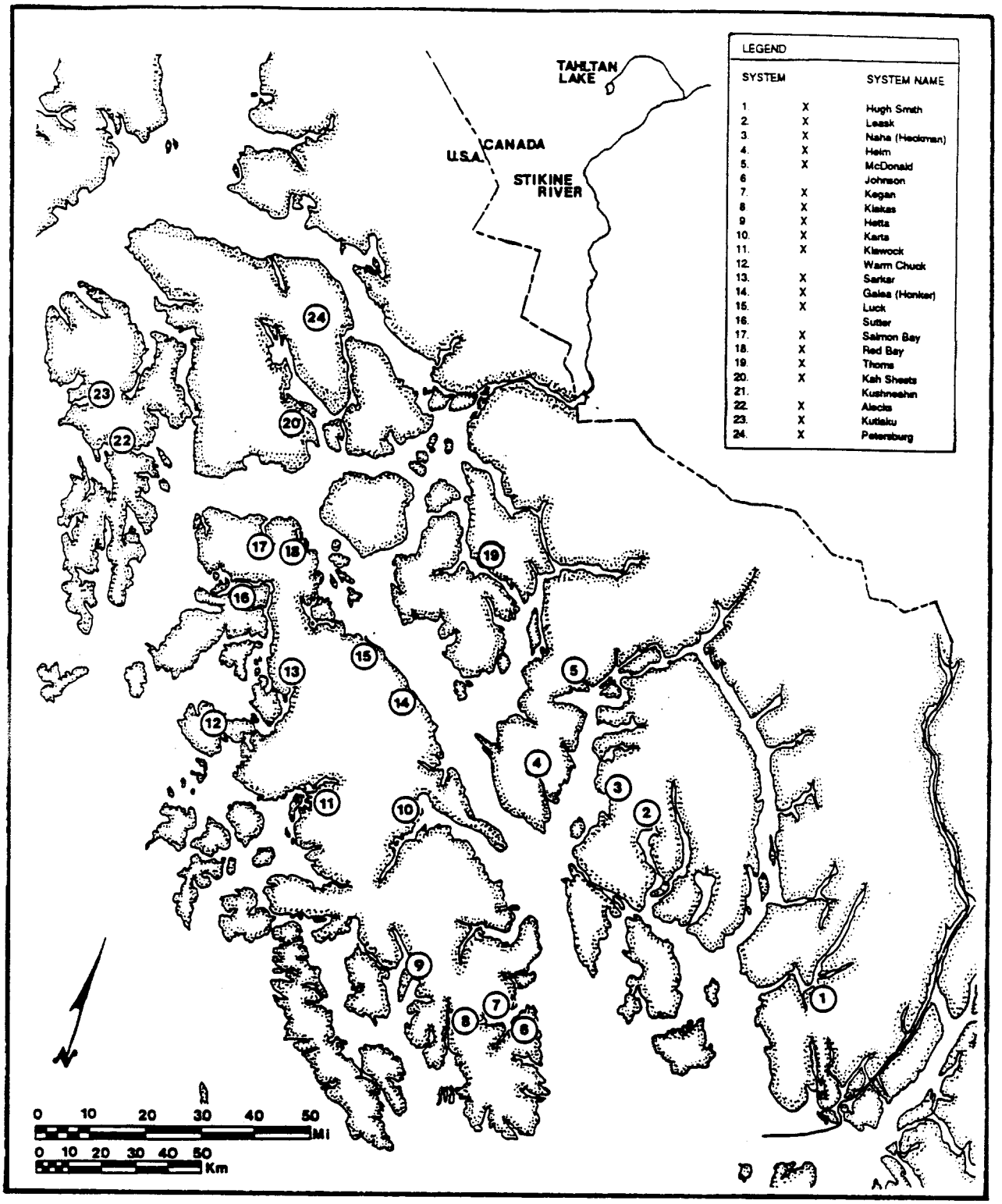

Figure 2. Major sockeye salmon systems of Southeast Alaska. Numbers identify lakes where scale samples have been collected and x indicates systems where scales were collected in 1988.

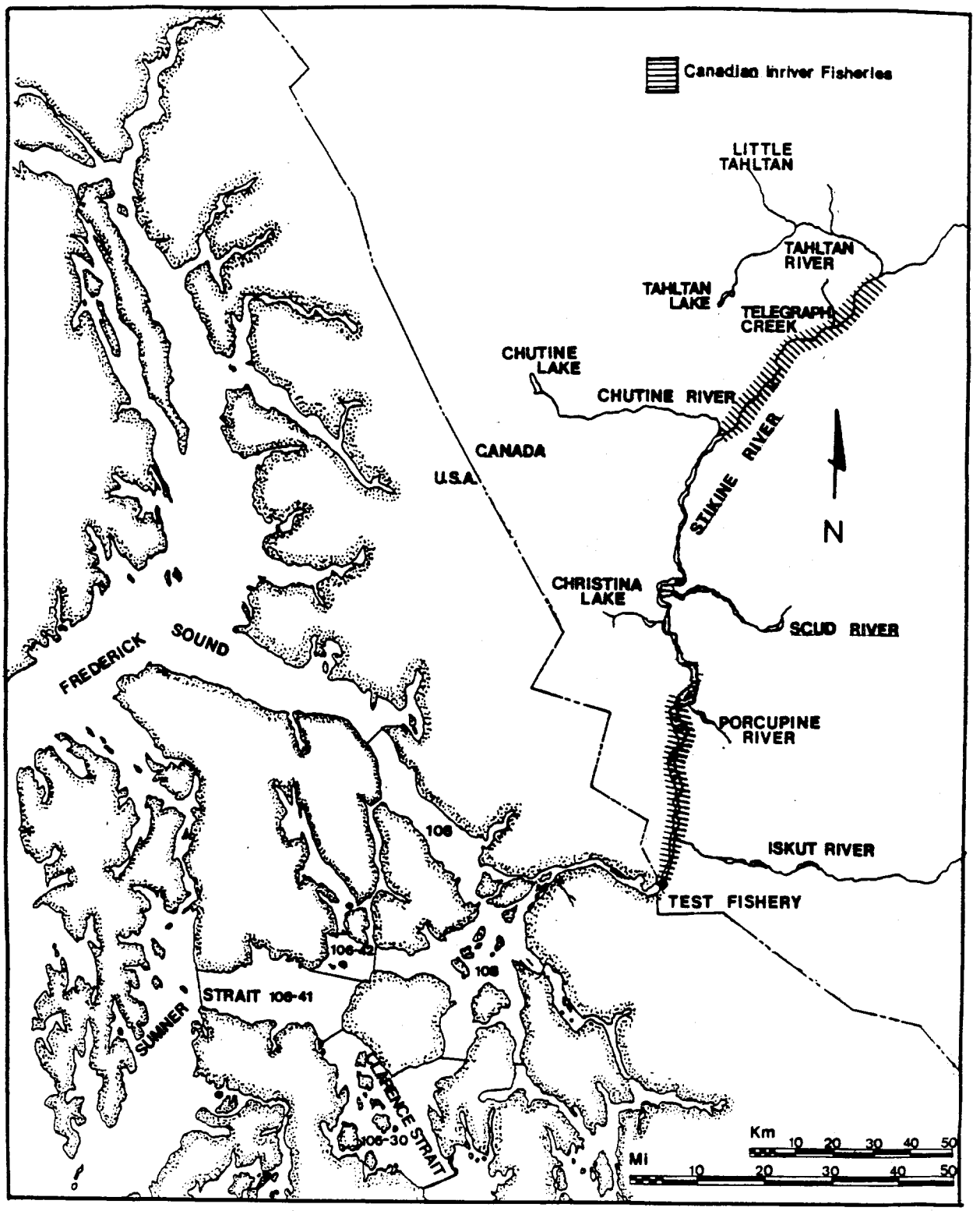

Figure 3. The transboundary Stikine River, major tributaries, and fishery areas.

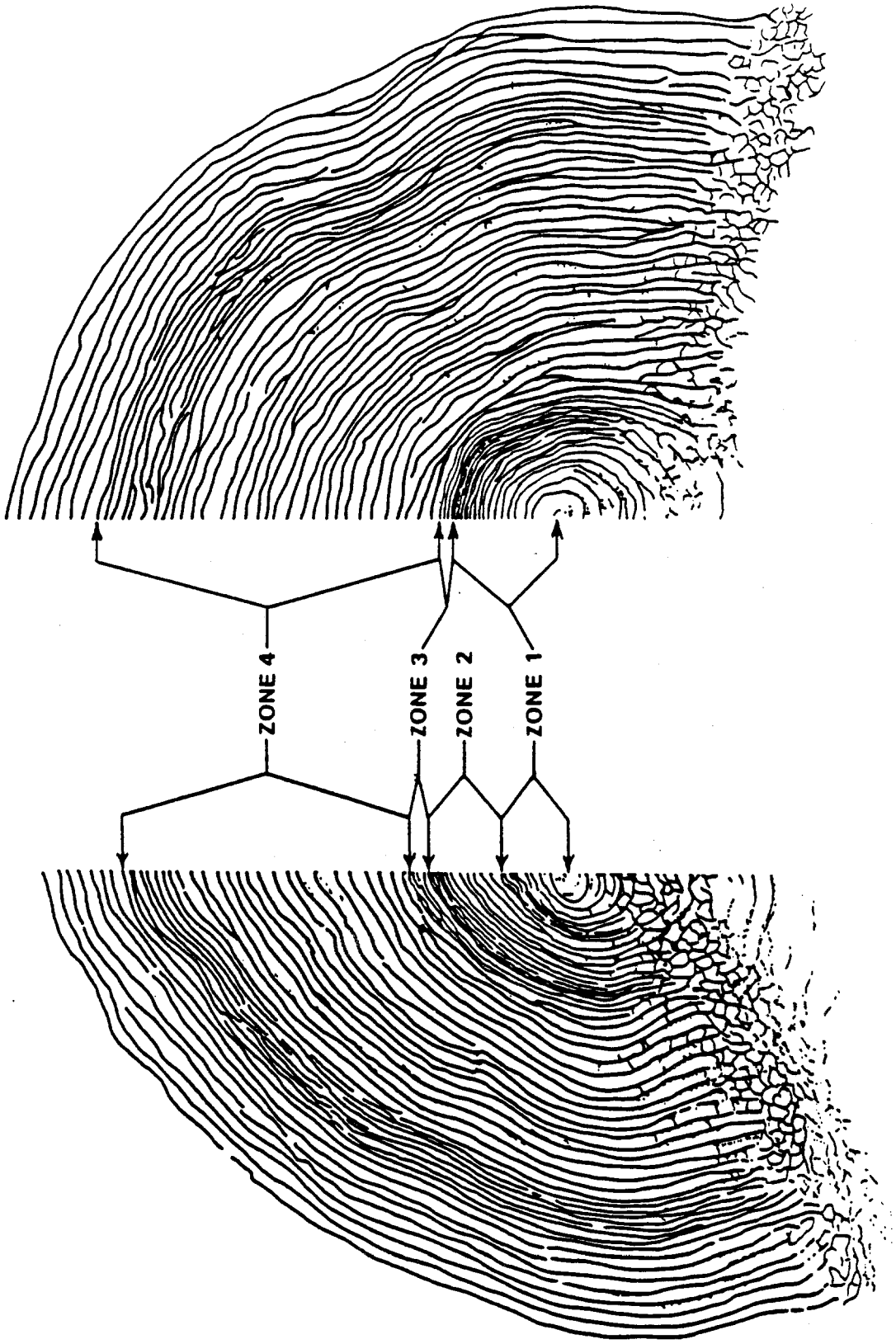

Figure 4. Typical scale for age-2. and -1. sockeye salmon with zones used for scale pattern analysis delineated.

APPENDIX

APPENDIX A: SAMPLE SIZES AND VARIABLE DEFINITIONS

Appendix A.1. Sample sizes from the inseason sockeye salmon stock composition analysis of commercial catches in Alaskan Districts 106 and 108 and the Canadian fishery on the Stikine River, 1988.

Stat. Week	Date	Sample Size by Age Group 1.2	1.3	2.2	2.3	0.	Total
106-30							
26	6/19-6/25	21	70	0	0	0	91
27	6/26-7/02	75	100	0	42	0	217
28	7/03-7/09	51	100	0	38	0	189
29	7/10-7/16	68	100	0	57	0	225
30	7/17-7/23	103	100	0	64	0	267
31	7/24-7/30	100	100	0	73	0	273
32	7/31-8/06	100	100	0	60	0	260
Totals		518	670	0	334	0	1522
106-41							
26	6/19-6/25	89	100	0	55	0	244
27	6/26-7/02	100	100	0	25	0	225
28	7/03-7/09	100	100	0	59	0	259
29	7/10-7/16	79	100	0	32	0	211
30	7/17-7/23	83	100	0	80	0	263
31	7/24-7/30	100	100	0	45	0	245
32	7/31-8/06	100	100	0	63	0	263
Totals		651	700	0	359	0	1710
108[a]							
26	6/19-6/25		36	0	0	4	40
27	6/26-7/02	34	76	0	0	12	122
28	7/03-7/09		13	0	0	5	18
29	7/10-7/16	37	100	0	0	28	165
Totals		71	225	0	0	49	345
Stikine, Canadian							
27	6/26-7/02	34	100	0	17	12	163
28	7/03-7/09	59	100	0	15	21	195
29	7/10-7/16	70	100	0	14	24	208
30	7/17-7/23	100	100	0	22	38	260
31	7/24-7/30	93	100	0	10	78	281
Totals		356	500	0	78	173	1107
Grand Total		1596	2095	0	771	222	4684

[a] The samples for some ages in some weeks were too small to analyze and were combined with adjacent weeks and weighted by relative catches.

Appendix A.2. Sample sizes from the postseason sockeye salmon stock composition analysis of commercial and test fishery catches in Alaskan Districts 106 and 108 and in test and Canadian commercial fisheries in the Stikine River, 1988.

Stat. Week	Date	Sample Size by Age Group[a] 1.2	1.3	2.2	2.3	0.	Total
106-30 Commercial							
26	6/19-6/25	97	100	73	42	0	312
27	6/26-7/02		100			0	100
28	7/03-7/09	51	100	43	43	0	237
29	7/10-7/16	68	100	72	72	0	312
30	7/17-7/23	103	100	59	59	0	321
31	7/24-7/30	100	100	77	77	0	354
32	7/31-8/06	100	100	65	65	0	330
33-34	8/07-8/20	119	106	98	98	0	421
Totals		638	806	487	456	0	2,387
106-41 Commercial							
26	6/19-6/25	97	100	36	56	0	289
27	6/26-7/02	100	100	59	25	0	284
28	7/03-7/09	100	100	72	59	0	331
29	7/10-7/16	100	100	51	40	0	291
30	7/17-7/23	93	100	35	80	0	308
31	7/24-7/30	100	100	62	45	0	307
32	7/31-8/06	100	100	56	63	0	319
33-34	8/07-8/20	126	116	63	47	0	352
Totals		816	816	434	415	0	2,481
108 Commercial							
26-27	6/19-7/02	34	125	14	22	16	211
28-29	7/03-7/16	42	100	14	22	33	211
Totals		76	225	28	44	49	422
108-40 -50/60 Test							
28-31	6/19-7/30	33	117	20	11	31	212
Totals		33	117	20	11	31	212
Stikine Commercial							
27	6/26-7/02	47	100	16	31	12	206
28	7/03-7/09	67	100	19	15	21	222
29	7/10-7/16	70	100		14	24	208
30	7/17-7/23	100	100	25	22	38	285
31	7/24-7/30	102	100	31	23	78	334
32	7/31-8/06	39	92	24		18	173
33	8/07-8/13	84	100	8	0	29	221
34	8/14-8/20	43	57	9	0	13	122
35	8/21-8/27	0	36	7	0	2	45
Totals		552	785	139	105	235	1816
Stikine Test							
26	6/19-6/25	0	16	10	27	3	56
27	6/26-7/02	17	74			21	112
28	7/03-7/09	35	103			56	194
29	7/10-7/16	60	102	19	21	84	286
30	7/17-7/23	27	54			37	118
31	7/24-7/30	30	79	13		45	167
32	7/31-8/06	24	66		13	39	142
33	8/07-8/13	32	33			34	99
34	8/14-8/20	0	22			12	34
Totals		225	549	42	61	331	1,208
Grand Total		2,340	3,298	1,150	1,092	646	8,526

[a] The samples for some ages in some weeks were too small to analyze and were combined with adjacent weeks and weighted by relative catches.

Appendix A.3. Scale variables used for age-1.2, -1.3, -2.2, and -2.3 sockeye salmon scale pattern analysis.

Variable Number	Description
	First Freshwater (FW) Annular Zone
1	Number of circuli in the zone
2	Distance across the zone
3	Distance: scale focus (C0) to the second circulus in zone (C2)
4	Distance: C0 to C4
5	Distance: C0 to C6
6	Distance: C0 to C8
7	Distance: C2 to C4
8	Distance: C2 to C6
9	Distance: C2 to C8
10	Distance: C4 to C6
11	Distance: C4 to C8
12	Distance: fourth from the last circulus of zone to end of zone
13	Distance: second from the last circulus of zone to end of zone
14	Distance: C2 to end of zone
15	Distance: C4 to end of zone
16	Relative Distance: (Variable #3)/(Variable #2)
17	Relative Distance: (Variable #4)/(Variable #2)
18	Relative Distance: (Variable #5)/(Variable #2)
19	Relative Distance: (Variable #6)/(Variable #2)
20	Relative Distance: (Variable #7)/(Variable #2)
21	Relative Distance: (Variable #8)/(Variable #2)
22	Relative Distance: (Variable #9)/(Variable #2)
23	Relative Distance: (Variable #10)/(Variable #2)
24	Relative Distance: (Variable #11)/(Variable #2)
25	Relative Distance: (Variable #12)/(Variable #2)
26	Relative Distance: (Variable #13)/(Variable #2)
27	Average Distance between circuli: (Variable #2)/(Variable #1)
28	Number of circuli in the first 3/4 of the zone
29	Maximum distance between two adjacent circuli in the zone
30	Relative Distance: (Variable #29)/(Variable #2)
	Second Freshwater (FW) Annular Zone
31	Number of circuli in the zone
32	Distance across the zone
33	Distance: end first annular zone (E1FW) to second circulus in zone
34	Distance: E1FW to C4
35	Distance: E1FW to C6
36	Distance: E1FW to C8
37	Distance: C2 to C4
38	Distance: C2 to C6
39	Distance: C2 to C8
40	Distance: C4 to C6
41	Distance: C4 to C8
42	Distance: fourth from the last circulus of zone to end of zone
43	Distance: second from the last circulus of zone to end of zone
44	Distance: C2 to end of zone
45	Distance: C4 to end of zone
46	Relative Distance: Variable #33/Variable #32
47	Relative Distance: Variable #34/Variable #32
48	Relative Distance: Variable #35/Variable #32
49	Relative Distance: Variable #36/Variable #32
50	Relative Distance: Variable #37/Variable #32
51	Relative Distance: Variable #38/Variable #32
52	Relative Distance: Variable #39/Variable #32
53	Relative Distance: Variable #40/Variable #32
54	Relative Distance: Variable #41/Variable #32
55	Relative Distance: Variable #42/Variable #32
56	Relative Distance: Variable #43/Variable #32
57	Average Distance between circuli: Variable 32/Variable 31
58	Number of circuli in first 3/4 of zone
59	Maximum distance between two adjacent circuli in the zone

-Continued-

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Variable Number	Description
	Freshwater Plus Growth (PG)
60	Relative Distance: Variable 59/Variable 32
61	Number of circuli in the zone
62	Distance across the zone
	Combined Freshwater Zones
63	Total number annular circuli, Variable 1 + Variable 31
64	Total distance across freshwater zones, Variable 2 + Variable 32
65	Total number of circuli in the combined zones, NC1FW+NC2FW+NCPG
66	Total distance across the combined zones, S1FW+S2FW+SPGZ
67	Relative Distance: (Variable #2)/(Variable #66)
	First Marine (C) Annular Zone
70	Number of circuli in the zone
71	Distance across the zone
72	Distance: end of FW (EFW) to the third circulus in zone (C3)
73	Distance: EFW to C6
74	Distance: EFW to C9
75	Distance: EFW to C12
76	Distance: EFW to C15
77	Distance: C3 to C6
78	Distance: C3 to C9
79	Distance: C3 to C12
80	Distance: C3 to C15
81	Distance: C6 to C9
82	Distance: C6 to C12
83	Distance: C6 to C15
84	Distance: C9 to C15
85	Distance: sixth from the last circulus of zone to end of zone
86	Distance: third from the last circulus of zone to end of zone
87	Distance: C3 to end of zone
88	Distance: C9 to end of zone
89	Distance: C15 to end of zone
90	Relative Distance: (Variable #72)/(Variable #71)
91	Relative Distance: (Variable #73)/(Variable #71)
92	Relative Distance: (Variable #74)/(Variable #71)
93	Relative Distance: (Variable #75)/(Variable #71)
94	Relative Distance: (Variable #76)/(Variable #71)
95	Relative Distance: (Variable #77)/(Variable #71)
96	Relative Distance: (Variable #78)/(Variable #71)
97	Relative Distance: (Variable #79)/(Variable #71)
98	Relative Distance: (Variable #80)/(Variable #71)
99	Relative Distance: (Variable #81)/(Variable #71)
100	Relative Distance: (Variable #82)/(Variable #71)
101	Relative Distance: (Variable #83)/(Variable #71)
102	Relative Distance: (Variable #84)/(Variable #71)
103	Relative Distance: (Variable #85)/(Variable #71)
104	Relative Distance: (Variable #86)/(Variable #71)
105	Relative Distance: (Variable #87)/(Variable #71)
106	Number of circuli in the first 1/2 of the zone
107	Maximum distance between two adjacent circuli in the zone
108	Relative Distance: (Variable #107)/(Variable #71)

APPENDIX B: CLASSIFICATION MATRICES

Appendix B.1. Classification matrices for linear discriminant functions used to classify age-1.2 sockeye salmon caught in Alaskan Districts 106 and 108 and the test and in the Stikine River, 1988.

Actual Group of Origin	Sample Size	Classified Group of Origin				
		Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine
5 Stock Model						
Ak. I	204	0.593	0.211	0.034	0.039	0.123
Ak. II	185	0.146	0.632	0.011	0.016	0.195
Nas/Ske	199	0.101	0.075	0.508	0.281	0.035
Tahltan	200	0.060	0.015	0.255	0.635	0.035
Stikine	72	0.167	0.222	0.042	0.056	0.514
Mean Proportion Correctly Classified						0.576
4 Stock Models						
Ak. I	204	0.613	0.309	0.039	0.039	
Ak. II	185	0.184	0.762	0.027	0.027	
Nas/Ske	199	0.101	0.055	0.613	0.231	
Tahltan	200	0.045	0.030	0.220	0.705	
Mean Proportion Correctly Classified						0.673
Ak. I	204	0.598	0.230	0.039		0.132
Ak. II	185	0.135	0.632	0.011		0.222
Nas/Ske	199	0.101	0.050	0.799		0.050
Stikine	72	0.181	0.222	0.056		0.542
Mean Proportion Correctly Classified						0.643
Ak. I	204	0.784		0.034	0.059	0.123
Nas/Ske	199	0.136		0.583	0.231	0.050
Tahltan	200	0.070		0.285	0.625	0.020
Stikine	72	0.250		0.028	0.083	0.639
Mean Proportion Correctly Classified						0.658
3 Stock Models						
Ak. I	204	0.662	0.284	0.054		
Ak. II	185	0.178	0.795	0.027		
Nas/Ske	199	0.111	0.060	0.829		
Mean Proportion Correctly Classified						0.762
Ak. I	204	0.623	0.314		0.064	
Ak. II	185	0.205	0.768		0.027	
Tahltan	200	0.070	0.035		0.895	
Mean Proportion Correctly Classified						0.762
Ak. I	204	0.588	0.225			0.186
Ak. II	185	0.135	0.638			0.227
Stikine	72	0.153	0.236			0.611
Mean Proportion Correctly Classified						0.612
Ak. I	204	0.843		0.083	0.074	
Nas/Ske	199	0.141		0.693	0.166	
Tahltan	200	0.045		0.240	0.715	
Mean Proportion Correctly Classified						0.751
Ak. I	204	0.770		0.074		0.157
Nas/Ske	199	0.126		0.784		0.090
Stikine	72	0.278		0.028		0.694
Mean Proportion Correctly Classified						0.749
Nas/Ske	199			0.719	0.221	0.060
Tahltan	200			0.245	0.735	0.020
Stikine	72			0.014	0.236	0.750
Mean Proportion Correctly Classified						0.735
2 Stock Models						
Ak. I	204	0.662	0.338			
Ak. II	185	0.222	0.778			
Mean Proportion Correctly Classified						0.720

Appendix B.1. (page 2 of 2)

Actual Group of Origin	Sample Size	Classified Group of Origin				
		Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine
Ak. I	204	0.912		0.088		
Nas/Ske	199	0.146		0.854		
Mean Proportion Correctly Classified						0.883
Ak. I	204	0.789				0.211
Stikine	72	0.264				0.736
Mean Proportion Correctly Classified						0.763
Tahltan	200				0.920	0.080
Stikine	72				0.125	0.875
Mean Proportion Correctly Classified						0.898

Appendix B.2. Classification matrices for linear discriminant functions used to classify age-1.3 sockeye salmon caught in Alaskan Districts 106 and 108 and the test and in the Stikine River, 1988.

Actual Group of Origin	Sample Size	Classified Group of Origin				
		Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine
5 Stock Models						
Ak. I	200	0.630	0.130	0.025	0.030	0.185
Ak. II	199	0.060	0.633	0.050	0.055	0.201
Nas/Ske	200	0.025	0.090	0.610	0.200	0.075
Tahltan	200	0.035	0.075	0.140	0.750	0.000
Stikine	198	0.152	0.111	0.089	0.056	0.596
Mean Proportion Correctly Classified						0.644
4 Stock Models						
Ak. I	200	0.755	0.175	0.035	0.035	
Ak. II	199	0.121	0.744	0.080	0.055	
Nas/Ske	200	0.045	0.085	0.700	0.170	
Tahltan	200	0.025	0.060	0.135	0.780	
Mean Proportion Correctly Classified						0.745
Ak. I	200	0.640	0.115	0.035		0.210
Ak. II	199	0.080	0.653	0.075		0.191
Nas/Ske	200	0.030	0.100	0.800		0.070
Stikine	198	0.167	0.126	0.101		0.606
Mean Proportion Correctly Classified						0.675
Ak. I	200	0.620	0.130		0.035	0.215
Ak. II	199	0.101	0.653		0.045	0.201
Tahltan	200	0.030	0.085		0.885	0.000
Stikine	198	0.167	0.187		0.076	0.571
Mean Proportion Correctly Classified						0.682
Ak. I	200	0.695		0.040	0.030	0.235
Nas/Ske	200	0.035		0.680	0.175	0.110
Tahltan	200	0.035		0.155	0.755	0.055
Stikine	198	0.167		0.106	0.056	0.672
Mean Proportion Correctly Classified						0.700
Ak. II	199		0.724	0.065	0.040	0.171
Nas/Ske	200		0.090	0.700	0.145	0.065
Tahltan	200		0.075	0.140	0.780	0.005
Stikine	198		0.207	0.091	0.076	0.626
Mean Proportion Correctly Classified						0.707
3 Stock Models						
Ak. I	200	0.775	0.185	0.040		
Ak. II	199	0.111	0.804	0.085		
Nas/Ske	200	0.040	0.080	0.880		
Mean Proportion Correctly Classified						0.820
Ak. I	200	0.765	0.175		0.060	
Ak. II	199	0.126	0.799		0.075	
Tahltan	200	0.035	0.060		0.905	
Mean Proportion Correctly Classified						0.823
Ak. I	200	0.650	0.150			0.200
Ak. II	199	0.090	0.709			0.201
Stikine	198	0.192	0.187			0.621
Mean Proportion Correctly Classified						0.660
Nas/Ske	200			0.755	0.145	0.100
Tahltan	200			0.175	0.785	0.040
Stikine	198			0.111	0.086	0.803
Mean Proportion Correctly Classified						0.781
2 Stock Models						
Ak. I	200	0.800	0.200			
Ak. II	199	0.121	0.879			
Mean Proportion Correctly Classified						0.840
Ak. I	200	0.930			0.070	
Tahltan	200	0.040			0.960	
Mean Proportion Correctly Classified						0.945
Ak. II	199		0.784			0.216
Stikine	198		0.217			0.783
Mean Proportion Correctly Classified						0.783
Tahltan	200				0.945	0.055
Stikine	198				0.136	0.864
Mean Proportion Correctly Classified						0.904

Appendix B.3. Classification matrices for linear discriminant functions used to classify age-2.2 sockeye salmon caught in Alaskan Districts 106 and 108 and in the Stikine River, 1988.

Actual Group of Origin	Sample Size	Classified Group of Origin				
		Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine
3 Stock Model						
Ak. I	180	0.544	0.311	0.144		
Ak. II	54	0.222	0.611	0.167		
Nas/Ske	140	0.150	0.071	0.779		
		Mean Proportion Correctly Classified				0.645
2 Stock Models						
Ak. I	180	0.694	0.306			
Ak. II	54	0.278	0.722			
		Mean Proportion Correctly Classified				0.708
Ak. II	54		0.778	0.222		
Nas/Ske	140		0.179	0.821		
		Mean Proportion Correctly Classified				0.800
Tahltan	21				0.810	0.190
Stikine	48				0.146	0.854
		Mean Proportion Correctly Classified				0.832

Appendix B.4. Classification matrices for linear discriminant functions used to classify age-2.3 sockeye salmon caught in Alaskan Districts 106 and 108 and in the Stikine River, 1988.

Actual Group of Origin	Sample Size	Classified Group of Origin				
		Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine
4 Stock Model						
Ak. I	168	0.720	0.208	0.042	0.030	
Ak. II	100	0.290	0.630	0.050	0.030	
Nas/Ske	91	0.055	0.066	0.758	0.121	
Tahltan	65	0.015	0.031	0.169	0.785	
		Mean Proportion Correctly Classified				0.723
3 Stock Models						
Ak. I	168	0.714	0.202	0.083		
Ak. II	100	0.260	0.670	0.070		
Nas/Ske	91	0.077	0.088	0.835		
		Mean Proportion Correctly Classified				0.740
Ak. I	168	0.750	0.226		0.024	
Ak. II	100	0.220	0.760		0.020	
Tahltan	65	0.015	0.062		0.923	
		Mean Proportion Correctly Classified				0.811
Ak. I	168	0.899		0.060	0.042	
Nas/Ske	91	0.099		0.791	0.110	
Tahltan	65	0.015		0.123	0.862	
		Mean Proportion Correctly Classified				0.851
2 Stock Models						
Ak. I	168	0.744	0.256			
Ak. II	100	0.250	0.750			
		Mean Proportion Correctly Classified				0.747
Ak. I	168	0.970			0.030	
Tahltan	65	0.031			0.969	
		Mean Proportion Correctly Classified				0.970
Tahltan	65				0.954	0.046
Stikine	27				0.000	1.000
		Mean Proportion Correctly Classified				0.977

APPENDIX C: CATCHES AND CATCH PER UNIT EFFORTS

Appendix C.1. Estimated contributions of sockeye salmon stocks originating in Alaska and Canada to the Alaskan Subdistrict 106-30 drift gillnet fishery, 1988.

		Catch By Age Class								90% C.I. [a]	
Dates	Group	1.2	1.3	2.2	2.3	Other	Total	Percent	Standard Error [a]	Lower	Upper
6/19-6/25	Ak. I	108	280	0	38	4	430	76.7	34.24	374	486
Week 26	Ak. II	0	38	69	0	1	108	19.3	34.39	51	165
	Nas/Ske	1	5	7	8	0	21	3.8	16.65	0	48
	Tahltan	0	0	0	1	0	1	0.2	2.54	0	5
	Stikine	0	0	0	0	0	0	0.0			
	Total	109	323	76	47	5	560				
6/26-7/02	Ak. I	536	1,515	0	182	25	2,258	81.8	86.72	2,115	2,401
Week 27	Ak. II	0	0	343	0	4	347	12.6	69.15	233	461
	Nas/Ske	4	0	33	40	1	78	2.8	67.89	0	190
	Tahltan	0	71	0	5	1	77	2.8	65.39	0	185
	Stikine	0	0	0	0	0	0	0.0			
	Total	540	1,586	376	227	31	2,760				
7/03-7/09	Ak. I	582	1,109	0	290	22	2,003	68.8	148.53	1,759	2,247
Week 28	Ak. II	0	129	413	145	7	694	23.9	153.39	442	946
	Nas/Ske	8	159	43	0	2	212	7.3	96.74	53	371
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	0	0	0	0	0	0.0			
	Total	590	1,397	456	435	31	2,909				
7/10-7/16	Ak. I	1,354	1,885	0	642	32	3,913	39.9	479.02	3,125	4,701
Week 29	Ak. II	0	2,498	957	619	33	4,107	41.9	542.47	3,215	4,999
	Nas/Ske	144	935	219	0	11	1,309	13.4	404.86	643	1,975
	Tahltan	0	419	0	44	4	467	4.8	290.60	0	945
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,498	5,737	1,176	1,305	80	9,796				
7/17-7/23	Ak. I	1,258	1,138	457	233	27	3,113	39.5	403.01	2,450	3,776
Week 30	Ak. II	0	2,842	368	687	34	3,931	49.9	455.71	3,181	4,681
	Nas/Ske	271	358	0	0	5	634	8.1	274.51	182	1,086
	Tahltan	0	195	0	0	2	197	2.5	202.87	0	531
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,529	4,533	825	920	68	7,875				
7/24-7/30	Ak. I	754	355	129	79	13	1,330	42.2	147.75	1,087	1,573
Week 31	Ak. II	0	1,326	199	245	19	1,789	56.8	158.00	1,529	2,049
	Nas/Ske	23	10	0	0	0	33	1.0	76.19	0	158
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	0	0	0	0	0	0.0			
	Total	777	1,691	328	324	32	3,152				
7/31-8/06	Ak. I	1,374	340	234	198	15	2,161	40.0	243.34	1,761	2,561
Week 32	Ak. II	0	2,192	344	312	20	2,868	53.1	250.18	2,456	3,280
	Nas/Ske	339	3	0	30	3	375	6.9	148.20	131	619
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,713	2,535	578	540	38	5,404				
8/07-9/03	Ak. I	741	287	200	121	14	1,363	49.9	126.50	1,155	1,571
Wks 33-36	Ak. II	0	295	287	88	7	677	24.7	130.14	463	891
	Nas/Ske	543	146	0	0	7	696	25.4	90.60	547	845
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,284	728	487	209	28	2,736				
	Ak. I	6,707	6,909	1,020	1,783	152	16,571	47.1	720.86	15,385	17,757
	Ak. II	0	9,320	2,980	2,096	125	14,521	41.3	793.44	13,216	15,826
Season	Nas/Ske	1,333	1,616	302	78	29	3,358	9.5	537.92	2,473	4,243
Totals	Tahltan	0	685	0	50	7	742	2.1	360.39	149	1,335
	Stikine	0	0	0	0	0	0	0.0			
	Total	8,040	18,530	4,302	4,007	313	35,192				

[a] The standard errors are minimum estimates since no estimates of the variance for stocks contributing 0 fish during a given week or for the 'other' age class are available. The 90% confidence intervals are affected in like manner.

Appendix C.2. Estimated CPUE and migratory timing of sockeye salmon stocks in the Alaskan Subdistrict 106-30 drift gillnet fishery, 1988.

CPUE

Stat Week	Days Open	Average Number Boats	Catch per Boat Day					
			Ak. I	Ak. II	Nas-Ske	Tahltan	Stikine	Total
26	2	9	24	6	1	0	0	31
27	2	30	38	6	1	1	0	46
28	2	31	32	11	3	0	0	47
29	3	31	42	44	14	5	0	105
30	2	55	28	36	6	2	0	72
31	2	41	16	22	0	0	0	38
32	2	40	27	36	5	0	0	68
33-36	4	41	8	4	4	0	0	17
Total			216	165	35	8	0	424

Migratory Timing

Stat Week	Proportion of Catch per Boat Day					
	Ak. I	Ak. II	Nas-Ske	Tahltan	Stikine	Total
26	0.11	0.04	0.03	0.01	0.00	0.07
27	0.17	0.04	0.04	0.16	0.00	0.11
28	0.15	0.07	0.10	0.00	0.00	0.11
29	0.20	0.27	0.40	0.62	0.00	0.25
30	0.13	0.22	0.16	0.22	0.00	0.17
31	0.08	0.13	0.01	0.00	0.00	0.09
32	0.13	0.22	0.13	0.00	0.00	0.16
33-36	0.04	0.03	0.12	0.00	0.00	0.04
Total	1.00	1.00	1.00	1.00	0.00	1.00

Appendix C.3. Estimated contributions of sockeye salmon stocks originating in Alaska and Canada to the Alaskan Subdistrict 106-41,42 drift gillnet fishery, 1988.

Dates	Group	Catch By Age Class					Total	Percent	Standard Error [a]	90% C.I.[a]	
		1.2	1.3	2.2	2.3	Other				Lower	Upper
6/19-6/25	Ak. I	284	901	50	149	10	1,394	82.4	98.1	1,233	1,555
Week 26	Ak. II	0	39	62	0	1	102	6.0	88.8	0	248
	Nas/Ske	3	37	2	11	0	53	3.1	55.0	0	144
	Tahltan	8	117	0	18	1	144	8.5	21.0	110	178
	Stikine	0	0	0	0	0	0	0.0			
	Total	295	1,094	114	178	12	1,693				
6/26-7/02	Ak. I	1,036	2,802	11	108	104	4,061	70.6	334.1	3,511	4,611
Week 27	Ak. II	0	260	380	101	20	761	13.2	309.2	252	1,270
	Nas/Ske	141	170	198	0	14	523	9.1	194.9	202	844
	Tahltan	0	375	0	25	11	411	7.1	19.0	380	442
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,177	3,607	589	234	149	5,756				
7/03-7/09	Ak. I	1,070	2,416	0	320	93	3,899	66.4	297.0	3,411	4,387
Week 28	Ak. II	0	90	589	206	22	907	15.4	273.2	458	1,356
	Nas/Ske	61	520	156	21	19	777	13.2	228.8	401	1,153
	Tahltan	39	183	0	67	7	296	5.0	18.7	265	327
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,170	3,209	745	614	141	5,879				
7/10-7/16	Ak. I	2,928	3,898	294	251	151	7,522	50.4	829.0	6,158	8,886
Week 29	Ak. II	0	3,996	961	783	119	5,859	39.3	880.9	4,410	7,308
	Nas/Ske	399	845	31	75	28	1,378	9.2	550.4	473	2,283
	Tahltan	0	160	0	0	3	163	1.1	40.3	97	229
	Stikine	0	0	0	0	0	0	0.0			
	Total	3,327	8,899	1,286	1,109	301	14,922				
7/17-7/23	Ak. I	1,291	1,587	498	549	95	4,020	38.9	544.0	3,125	4,915
Week 30	Ak. II	0	3,734	146	866	114	4,860	46.9	621.2	3,838	5,882
	Nas/Ske	398	921	0	51	33	1,403	13.6	418.8	714	2,092
	Tahltan	0	25	0	31	1	57	0.6	147.1	0	299
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,689	6,267	644	1,497	243	10,340				
7/24-7/30	Ak. I	1,367	1,306	0	568	48	3,289	37.0	455.2	2,540	4,038
Week 31	Ak. II	286	3,770	952	104	74	5,186	58.3	502.5	4,359	6,013
	Nas/Ske	334	41	6	28	6	415	4.7	260.4	0	843
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,987	5,117	958	700	128	8,890				
7/31-8/06	Ak. I	1,964	977	577	181	24	3,723	53.2	364.0	3,124	4,322
Week 32	Ak. II	0	1,877	115	585	17	2,594	37.0	353.3	2,013	3,175
	Nas/Ske	613	0	0	6	4	623	8.9	167.1	348	898
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	64	0	0	0	64	0.9	316.7	0	585
	Total	2,577	2,918	692	772	45	7,004				
8/07-8/27	Ak. I	521	264	51	150	6	992	34.8	134.0	772	1,212
Wks 33-35	Ak. II	0	258	248	97	4	607	21.3	102.7	438	776
	Nas/Ske	1,022	216	7	2	7	1,254	43.9	112.7	1,069	1,439
	Tahltan	0	0	0	0	0	0	0.0			
	Stikine	0	0	0	0	0	0	0.0			
	Total	1,543	738	306	249	17	2,853				
	Ak. I	10,461	14,151	1,481	2,276	531	28,900	50.4	1245.1	26,852	30,948
	Ak. II	286	14,024	3,453	2,742	371	20,876	36.4	1314.4	18,714	23,038
Season	Nas/Ske	2,971	2,750	400	194	111	6,426	11.2	824.7	5,069	7,783
Totals	Tahltan	47	860	0	141	23	1,071	1.9	156.3	814	1,328
	Stikine	0	64	0	0	0	64	0.1	316.7	0	585
	Total	13,765	31,849	5,334	5,353	1,036	57,337				

[a] The standard errors are minimum estimates since no estimates of the variance for stocks contributing 0 fish during a given week or for the 'other' age class are available. The 90% confidence intervals are affected in like manner.

Appendix C.4. Estimated CPUE and migratory timing of sockeye salmon stocks in the Alaskan Subdistrict 106-41,42 drift gillnet fishery, 1988.

CPUE

Stat Week	Days Open	Average Number Boats	Catch per Boat Day					
			Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine	Total
26	2	36	19	1	1	2	0	24
27	2	48	42	8	5	4	0	60
28	2	44	44	10	9	3	0	67
29	2	48	78	61	14	2	0	155
30	2	59	34	41	12	0	0	88
31	2	75	22	35	3	0	0	59
32	2	38	49	34	8	0	1	92
33-35	3	21	16	9	20	0	0	45
Total			305	200	72	12	1	589

Migratory Timing

Stat Week	Proportion of Catch per Boat Day					
	Ak. I	Ak. II	Nas/Ske	Tahltan	Stikine	Total
26	0.06	0.01	0.01	0.17	0.00	0.04
27	0.14	0.04	0.08	0.36	0.00	0.10
28	0.15	0.05	0.12	0.28	0.00	0.11
29	0.26	0.31	0.20	0.14	0.00	0.26
30	0.11	0.21	0.17	0.04	0.00	0.15
31	0.07	0.17	0.04	0.00	0.00	0.10
32	0.16	0.17	0.11	0.00	1.00	0.16
33-35	0.05	0.05	0.27	0.00	0.00	0.08
Total	1.00	1.00	1.00	1.00	1.00	1.00

Appendix C.5. Estimated contributions of sockeye salmon stocks originating in Alaska and Canada to the Alaskan District 108 drift gillnet fishery, 1988.

Dates	Group	Catch By Age Class						Total	Percent	Standard Error [a]	90% C.I. [a]	
		1.2	1.3	2.2	2.3	0.	Other				Lower	Upper
6/19-7/02	Ak. I	0	21	8	15	0	0	44	8.0	19.4	12	76
Wks 26-27	Ak. II	0	62	0	8	0	0	70	12.8	22.8	33	107
	Nas/Ske	22	2	1	0	0	0	25	4.6	24.4	0	65
	Tahltan	14	82	0	25	0	0	121	22.1	29.5	72	170
	Stikine	81	159	0	0	48	0	288	52.5	34.7		
	Total	117	326	9	48	48	0	548				
7/03-7/16	Ak. I	37	17	21	9	0	0	84	12.0	46.3	8	160
Wks 28-29	Ak. II	0	62	0	5	0	0	67	9.6	45.1	0	141
	Nas/Ske	13	8	2	0	0	0	23	3.3	36.7	0	83
	Tahltan	19	57	0	25	0	0	101	14.5	38.7	37	165
	Stikine	66	268	0	0	87	2	423	60.6	63.0		
	Total	135	412	23	39	87	2	698				
	Ak. I	37	38	29	24	0	0	128	10.3	44.5	55	201
	Ak. II	0	124	0	13	0	0	137	11.0	44.3	64	210
Season	Nas/Ske	35	10	3	0	0	0	48	3.9	40.4	0	114
Totals	Tahltan	33	139	0	50	0	0	222	17.8	44.2	149	295
	Stikine	147	427	0	0	135	2	711	57.0	65.5	603	819
	Total	252	738	32	87	135	2	1,246				

[a] The standard errors are minimum estimates since no estimates of the variance for stocks contributing 0 fish during a given week or for the 'other' age class are available. The 90% confidence intervals are affected in like manner.

Appendix C.6. Estimated CPUE and migratory timing of sockeye salmon stocks in the Alaskan District 108 drift gillnet fishery, 1988.

CPUE

Stat Week	Days Open	Average Number Boats	Catch per Boat Day					
			Ak. I	Ak. II	Nas-Ske	Tahltan	Stikine	Total
26-27	4	8	1	2	1	4	10	18
28-29	4	7	3	3	1	4	16	27
Total			5	5	2	8	26	45

Migratory Timing

Stat Week	Proportion of Catch per Boat Day					
	Ak. I	Ak. II	Nas-Ske	Tahltan	Stikine	Total
26-27	0.31	0.48	0.49	0.51	0.37	0.40
28-29	0.69	0.52	0.51	0.49	0.63	0.60
Total	1.00	1.00	1.00	1.00	1.00	1.00

Appendix C.7. Estimated contributions of sockeye salmon stocks originating in Alaska and Canada to the Alaskan Subdistrict 106-41,42 test fishery, 1988. The age and stock compositions of the commercial catches were applied to the weekly test fishery catches.

		Catch By Age Class						
Dates	Group	1.2	1.3	2.2	2.3	Other	Total	Percent
6/19-6/25	Ak. I	23	72	4	12	1	112	82.9
Week 26	Ak. II	0	3	5	0	0	8	5.9
	Nas/Ske	0	3	0	1	0	4	3.0
	Tahltan	1	9	0	1	0	11	8.1
	Stikine	0	0	0	0	0	0	0.0
	Total	24	87	9	14	1	135	
6/26-7/02	Ak. I	31	84	0	3	3	121	70.8
Week 27	Ak. II	0	8	11	3	1	23	13.5
	Nas/Ske	4	5	6	0	0	15	8.8
	Tahltan	0	11	0	1	0	12	7.0
	Stikine	0	0	0	0	0	0	0.0
	Total	35	108	17	7	4	171	
7/03-7/09	Ak. I	30	67	0	9	3	109	65.3
Week 28	Ak. II	0	3	17	6	1	27	16.2
	Nas/Ske	2	15	4	1	1	23	13.8
	Tahltan	1	5	0	2	0	8	4.8
	Stikine	0	0	0	0	0	0	0.0
	Total	33	90	21	18	5	167	
7/10-7/16	Ak. I	44	59	4	4	2	113	50.7
Week 29	Ak. II	0	60	14	12	2	88	39.5
	Nas/Ske	6	13	0	1	0	20	9.0
	Tahltan	0	2	0	0	0	2	0.9
	Stikine	0	0	0	0	0	0	0.0
	Total	50	134	18	17	4	223	
7/17-7/23	Ak. I	21	26	8	9	2	66	39.1
Week 30	Ak. II	0	60	2	14	2	78	46.2
	Nas/Ske	7	15	0	1	1	24	14.2
	Tahltan	0	0	0	1	0	1	0.6
	Stikine	0	0	0	0	0	0	0.0
	Total	28	101	10	25	5	169	
7/24-7/30	Ak. I	24	23	0	10	1	58	37.4
Week 31	Ak. II	5	65	17	2	1	90	58.1
	Nas/Ske	6	1	0	0	0	7	4.5
	Tahltan	0	0	0	0	0	0	0.0
	Stikine	0	0	0	0	0	0	0.0
	Total	35	89	17	12	2	155	
8/21-9/17	Ak. I	3	1	0	1	0	5	31.3
Wks 35-38[a]	Ak. II	0	1	1	1	0	3	18.8
	Nas/Ske	7	1	0	0	0	8	49.9
	Tahltan	0	0	0	0	0	0	0.0
	Stikine	0	0	0	0	0	0	0.0
	Total	10	3	1	2	0	16	
	Ak. I	176	332	16	48	12	584	56.3
	Ak. II	5	200	67	38	7	317	30.6
Season	Nas/Ske	32	53	10	4	2	101	9.7
Total	Tahltan	2	27	0	5	0	34	3.3
	Stikine	0	0	0	0	0	0	0.0
	Total	215	612	93	95	21	1,036	

[a] The catches in weeks 35-38 are from the Ambient Light Test Fishery in Subdistrict 106-30.

Appendix C.8. Estimated contributions of sockeye salmon stocks originating in Alaska and Canada to the Alaskan District 108 drift gillnet test fishery, 1988. Age and stock compositions were estimated from samples collected from the test fishery during weeks 28 through 31 when 85% of the catch occurred.

		Catch By Age Class							
Dates	Group	1.2	1.3	2.2	2.3	0.	Other	Total	Percent
6/12-7/30	Ak. I	23	0	15	12	0	0	50	11.1
Wks 25-31	Ak. II	0	16	22	3	0	0	41	9.1
	Nas/Ske	16	5	1	0	0	0	22	4.9
	Tahltan	15	22	0	22	0	0	59	13.1
	Stikine	11	203	0	0	63	2	279	61.8
	Total	65	246	38	37	63	2	451	

APPENDIX D: HISTORICAL CATCHES

Appendix D.1. Estimated contributions of sockeye salmon stock groups to Alaskan District 106 gillnet fisheries, 1982-1988. Sub-district 106-30 was open but 106-41 was not during weeks 25-28 in 1984, week 26 in 1985, and week 29 in 1986.

		Year and Date of Statistical Week 25						
Stat. Week	Stock Group	1982 13-19	1983 12-18	1984 17-23	1985 16-22	1986 15-21	1987 14-20	1988 12-18
25[a]	Alaska I	4,126	not	1,364	9,279	2,212	not	not
	Alaska II		open			27	open	open
	Nass/Skeena	2,897		201	1,477	351		
	Tahltan	[b]		112	1,444	0		
	Stikine	129		8	3	0		
	Total	7,152		1,685	12,203	2,590		
26	Alaska I	18,625	3,155	2,671	6,909	3,064	3,695	1,824
	Alaska II					60	931	210
	Nass/Skeena	11,806	1,587	562	1,789	503	322	74
	Tahltan		507	280	1,365	62	186	145
	Stikine	6,540	104	180	170	0	14	0
	Total	36,971	5,353	3,693	10,233	3,689	5,148	2,253
27	Alaska I	25,978	4,037	5,475	14,314	12,124	6,933	6,319
	Alaska II					610	2,042	1,108
	Nass/Skeena	13,240	1,647	1,078	6,003	3,050	1,354	601
	Tahltan		1,327	844	7,801	1,184	104	488
	Stikine	5,932	51	312	270	420	0	0
	Total	45,150	7,062	7,709	28,388	17,388	10,433	8,516
28	Alaska I	15,318	4,389	6,884	17,689	not	10,553	5,902
	Alaska II					open	3,588	1,601
	Nass/Skeena	12,197	913	2,563	13,132		5,767	989
	Tahltan		736	1,134	6,288		780	296
	Stikine	9,900	44	50	492		57	0
	Total	37,415	6,082	10,631	37,601		20,745	8,788
29	Alaska I	9,110	3,411	13,314	21,025	6,086	15,641	11,435
	Alaska II					1,115	3,209	9,966
	Nass/Skeena	4,108	250	3,135	15,424	424	2,664	2,687
	Tahltan		355	307	7,152	2	192	630
	Stikine	4,686	240	2,420	299	0	580	0
	Total	17,904	4,256	19,176	43,900	7,627	22,286	24,718
30	Alaska I	15,781	9,251	15,035	21,491	10,708	12,215	7,133
	Alaska II					6,645	9,937	8,791
	Nass/Skeena	10,975	1,451	6,937	24,173	4,039	2,190	2,037
	Tahltan		1,626	0	0	0	114	254
	Stikine	7,990	65	416	1,305	64	215	0
	Total	34,746	12,393	22,388	46,969	21,456	24,671	18,215
31[c]	Alaska I	5,249	4,599	8,388	19,507	12,959	7,425	4,619
	Alaska II					12,345	11,844	6,975
	Nass/Skeena	6,573	3,227	6,654	30,943	7,553	3,729	448
	Tahltan		136	0	0	712	0	0
	Stikine	2,458	0	401	0	16	0	0
	Total	14,280	7,962	15,443	50,450	33,585	22,998	12,042
32	Alaska I		883	4,042	7,891	9,296	6,380	5,884
	Alaska II					7,806	12,690	5,462
	Nass/Skeena		357	1,631	5,602	7,612	3,958	998
	Tahltan		129	0	0	0	0	0
	Stikine		36	97	46	105	0	64
	Total		1,405	5,770	13,539	24,819	23,028	12,408
33	Alaska I		1,561	1,812	5,287	5,397	3,662	2,355
	Alaska II					4,162	2,148	1,284
	Nass/Skeena		762	1,080	7,259	10,182	1,206	1,950
	Tahltan		133	0	0	121	0	0
	Stikine		74	120	182	0	102	0
	Total		2,530	3,012	12,728	19,862	7,118	5,589
34	Alaska I		790	1,382	3,560	3,293		
	Alaska II					2,425		
	Nass/Skeena		143	820	5,249	8,970		
	Tahltan		51	0	0	0		
	Stikine		2	80	247	1		
	Total		986	2,282	9,056	14,689		
Stat. Week	Stock Group	1982 13-19	1983 12-18	1984 17-23	1985 16-22	1986 15-21	1987 14-20	1988 12-18
35-40	Alaska I		595					
	Alaska II							
	Nass/Skeena		274					
	Tahltan		30					
	Stikine		16					
	Total		915					
	Alaska I	94,187	32,671	60,367	126,952	65,139	66,504	45,471
	Alaska II						46,389	35,397
Season	Nass/Skeena	61,796	10,611	24,661	111,051	42,684	21,190	9,784
Totals	Tahltan		5,030	2,677	24,050	2,081	1,376	1,813
	Stikine	37,635	632	4,084	3,014	606	968	64
	Total	193,618	48,944	91,789	265,067	145,705	136,427	92,529

[a] Ak. I and II groups were combined prior to 1986.
[b] Tahltan and Stikine (non-Tahltan) were not separated in the 1982 analysis.
[c] The last figures in each column include catch from that week through the end of the season.

Appendix D.2. Estimated contribution rates of sockeye salmon stock groups to Alaskan District 106 gillnet fisheries, 1982-1988. Sub-district 106-30 was open but 106-41 was not during weeks 25-28 in 1984, week 26 in 1985, and week 29 in 1986.

		Year and Date of Statistical Week 25						
Stat. Week	Stock Group	1982 13-19	1983 12-18	1984 17-23	1985 16-22	1986 15-21	1987 14-20	1988 12-18
25[a]	Alaska I	0.577	not	0.809	0.760	0.854	not	not
	Alaska II		open			0.010	open	open
	Nass/Skeena	0.405[b]		0.119	0.121	0.136		
	Tahltan			0.066	0.118	0.000		
	Stikine	0.018		0.005	0.000	0.000		
26	Alaska I	0.504	0.589	0.723	0.675	0.831	0.718	0.810
	Alaska II					0.016	0.181	0.093
	Nass/Skeena	0.319	0.296	0.152	0.175	0.136	0.063	0.033
	Tahltan		0.095	0.076	0.133	0.017	0.036	0.064
	Stikine	0.177	0.019	0.049	0.017	0.000	0.003	0.000
27	Alaska I	0.575	0.572	0.710	0.504	0.697	0.665	0.742
	Alaska II					0.035	0.196	0.130
	Nass/Skeena	0.293	0.233	0.140	0.211	0.175	0.130	0.071
	Tahltan		0.188	0.109	0.275	0.068	0.010	0.057
	Stikine	0.131	0.007	0.040	0.010	0.024	0.000	0.000
28	Alaska I	0.409	0.722	0.648	0.470	not	0.509	0.672
	Alaska II					open	0.173	0.182
	Nass/Skeena	0.326	0.150	0.241	0.349		0.278	0.113
	Tahltan		0.121	0.107	0.167		0.038	0.034
	Stikine	0.265	0.007	0.005	0.013		0.003	0.000
29	Alaska I	0.509	0.801	0.694	0.479	0.798	0.702	0.463
	Alaska II					0.146	0.144	0.403
	Nass/Skeena	0.229	0.059	0.163	0.351	0.056	0.120	0.109
	Tahltan		0.083	0.016	0.163	0.000	0.009	0.025
	Stikine	0.262	0.056	0.126	0.007	0.000	0.026	0.000
30	Alaska I	0.454	0.746	0.672	0.458	0.499	0.495	0.392
	Alaska II					0.310	0.403	0.483
	Nass/Skeena	0.316	0.117	0.310	0.515	0.188	0.089	0.112
	Tahltan		0.131	0.000	0.000	0.000	0.005	0.014
	Stikine	0.230	0.005	0.019	0.028	0.003	0.009	0.000
31[c]	Alaska I	0.368	0.578	0.543	0.387	0.386	0.323	0.384
	Alaska II					0.368	0.515	0.579
	Nass/Skeena	0.460	0.405	0.431	0.613	0.225	0.162	0.037
	Tahltan	0.000	0.017	0.000	0.000	0.021	0.000	0.000
	Stikine	0.172	0.000	0.026	0.000	0.000	0.000	0.000
32	Alaska I		0.628	0.701	0.583	0.375	0.277	0.474
	Alaska II					0.315	0.551	0.440
	Nass/Skeena		0.254	0.283	0.414	0.307	0.172	0.080
	Tahltan		0.092	0.000	0.000	0.000	0.000	0.000
	Stikine		0.026	0.017	0.003	0.004	0.000	0.005
33	Alaska I		0.617	0.602	0.415	0.272	0.514	0.421
	Alaska II					0.210	0.302	0.230
	Nass/Skeena		0.301	0.359	0.570	0.513	0.169	0.349
	Tahltan		0.053	0.000	0.000	0.006	0.000	0.000
	Stikine		0.029	0.040	0.014	0.000	0.014	0.000
34	Alaska I		0.801	0.606	0.393	0.224		
	Alaska II					0.165		
	Nass/Skeena		0.145	0.359	0.580	0.611		
	Tahltan		0.052	0.000	0.000	0.000		
	Stikine		0.002	0.035	0.027	0.000		
35-40	Alaska I		0.650					
	Alaska II							
	Nass/Skeena		0.299					
	Tahltan		0.033					
	Stikine		0.017					
Season Totals	Alaska I	0.486	0.668	0.658	0.479	0.447	0.487	0.491
	Alaska II						0.340	0.383
	Nass/Skeena	0.319	0.217	0.269	0.419	0.293	0.155	0.106
	Tahltan	0.000	0.103	0.029	0.091	0.014	0.010	0.020
	Stikine	0.194	0.013	0.044	0.011	0.004	0.007	0.001

[a] Ak. I and II groups were combined prior to 1986.
[b] Tahltan and Stikine (non-Tahltan) were not separated in the 1982 analysis.
[c] The last figures in each column include catch from that week through the end of the season.

Appendix D.3. Estimated contributions of sockeye salmon stock groups to Alaskan Subdistricts 106-30 and 106-41 & 42 gillnet fisheries, 1985-1988.

Stat. Week	Stock Group	106-30 Year and Date (Week 25) 1985 16-22	1986 15-21	1987 14-20	1988 12-18	106-41 Year and Date (Week 25) 1985 16-22	1986 15-21	1987 14-20	1988 12-18
25[a]	Alaska I	1,821	553	not	not	7,458	1,659	not	not
	Alaska II		27	open	open		0	open	open
	Nass/Skeena	285	64			1,192	287		
	Tahltan	451	0			993	0		
	Stikine	3	0			0	0		
	Total	2,560	644			9,643	1,946		
26	Alaska I	6,909	537	809	430	not	2,527	2,886	1,394
	Alaska II		46	312	108	open	14	619	102
	Nass/Skeena	1,789	59	33	21		444	289	53
	Tahltan	1,365	0	135	1		62	51	144
	Stikine	170	0	14	0		0	0	0
	Total	10,233	642	1,303	560		3,047	3,845	1,693
27	Alaska I	4,879	3,539	1,511	2,258	9,435	8,585	5,422	4,061
	Alaska II		74	1,046	347		536	996	761
	Nass/Skeena	2,099	673	358	78	3,904	2,377	996	523
	Tahltan	558	9	4	77	7,243	1,175	100	411
	Stikine	0	0	0	0	270	420	0	0
	Total	7,536	4,295	2,919	2,760	20,852	13,093	7,514	5,756
28	Alaska I	5,985	not	4,108	2,003	11,704	not	6,445	3,899
	Alaska II		open	637	694		open	2,951	907
	Nass/Skeena	5,165		805	212	7,967		4,962	777
	Tahltan	19		6	0	6,269		774	296
	Stikine	361		14	0	131		43	0
	Total	11,530		5,570	2,909	26,071		15,175	5,879
29	Alaska I	3,642	6,086	5,714	3,913	17,383	not	9,927	7,522
	Alaska II		1,115	1,120	4,107		open	2,089	5,859
	Nass/Skeena	4,067	424	1,035	1,309	11,357		1,629	1,378
	Tahltan	2,856	2	76	467	4,296		116	163
	Stikine	17	0	580	0	282		0	0
	Total	10,582	7,627	8,525	9,796	33,318		13,761	14,922
30	Alaska I	7,544	5,400	5,007	3,113	13,947	5,308	7,208	4,020
	Alaska II		2,092	4,486	3,931		4,553	5,451	4,860
	Nass/Skeena	11,215	1,295	1,147	634	12,958	2,744	1,043	1,403
	Tahltan	0	0	0	197	0	0	114	57
	Stikine	502	0	0	0	803	64	215	0
	Total	19,261	8,787	10,640	7,875	27,708	12,669	14,031	10,340
31	Alaska I	6,349	5,590	3,007	1,330	13,158	7,369	4,418	3,289
	Alaska II		5,756	7,276	1,789		6,589	4,568	5,186
	Nass/Skeena	10,626	2,993	2,483	33	20,317	4,560	1,246	415
	Tahltan	0	0	0	0	0	712	0	0
	Stikine	0	0	0	0	0	16	0	0
	Total	16,975	14,339	12,766	3,152	33,475	19,246	10,232	8,890
32	Alaska I	2,730	3,659	3,074	2,161	5,161	5,637	3,306	3,723
	Alaska II		3,350	7,196	2,868		4,456	5,494	2,594
	Nass/Skeena	1,109	2,931	1,683	375	4,493	4,681	2,275	623
	Tahltan	0	0	0	0	0	0	0	0
	Stikine	46	105	0	0	0	0	0	64
	Total	3,885	10,045	11,953	5,404	9,654	14,774	11,075	7,004
33[b]	Alaska I	2,640	2,042	1,858	1,363	2,647	3,355	1,804	992
	Alaska II		1,058	1,150	677		3,104	998	607
	Nass/Skeena	2,582	2,696	476	696	4,677	7,486	730	1,254
	Tahltan	0	0	0	0	0	121	0	0
	Stikine	72	0	102	0	110	0	0	0
	Total	5,294	5,796	3,586	2,736	7,434	14,066	3,532	2,853
34	Alaska I	1,890	1,732			1,207	1,095		
	Alaska II		1,219				926		
	Nass/Skeena	3,152	5,336			1,550	2,906		
	Tahltan	0	0			0	0		
	Stikine	81	0			115	0		
	Total	5,123	8,287			2,872	4,927		
35-40	Ak. I					463	466		
	Ak. II						280		
	Nas/Ske					547	728		
	Tahltan					0	0		
	Stikine					51	1		
	Total					1,061	1,475		
Season Totals	Alaska I	44,389	29,138	25,088	16,571	82,563	36,001	41,416	28,900
	Alaska II		14,737	23,223	14,521		20,458	23,166	20,876
	Nass/Skeena	42,089	16,471	8,020	3,358	68,962	26,213	13,170	6,426
	Tahltan	5,249	11	221	742	18,801	2,070	1,155	1,071
	Stikine	1,252	105	710	0	1,762	501	258	64
	Total	92,979	60,462	57,262	35,192	172,088	85,243	79,165	57,337

[a] Ak. I and Ak. II stocks were combined in 1985.
[b] The last figures in each column include catch from that week through the end of the season.

Appendix D.4. Estimated contribution rates of sockeye salmon stock groups to Alaskan Subdistricts 106-30 and 106-41&42 gillnet fisheries, 1985-1988.

Stat. Week	Stock Group	106-30 Year and Date (Week 25) 1985 16-22	1986 15-21	1987 14-20	1988 12-18	106-41 Year and Date (Week 25) 1985 16-22	1986 15-21	1987 14-20	1988 12-18
25[a]	Alaska I	0.711	0.859	not	not	0.773	0.853	not	not
	Alaska II		0.042	open	open		0.000	open	open
	Nass/Skeena	0.111	0.099			0.124	0.147		
	Tahltan	0.176	0.000			0.103	0.000		
	Stikine	0.001	0.000			0.000	0.000		
26	Alaska I	0.675	0.836	0.621	0.768	not	0.829	0.751	0.823
	Alaska II		0.072	0.239	0.193	open	0.005	0.161	0.060
	Nass/Skeena	0.175	0.092	0.025	0.038		0.146	0.075	0.031
	Tahltan	0.133	0.000	0.104	0.002		0.020	0.013	0.085
	Stikine	0.017	0.000	0.011	0.000		0.000	0.000	0.000
27	Alaska I	0.647	0.824	0.518	0.818	0.452	0.656	0.722	0.706
	Alaska II		0.017	0.358	0.126		0.041	0.133	0.132
	Nass/Skeena	0.279	0.157	0.123	0.028	0.187	0.182	0.133	0.091
	Tahltan	0.074	0.002	0.001	0.028	0.347	0.090	0.013	0.071
	Stikine	0.000	0.000	0.000	0.000	0.013	0.032	0.000	0.000
28	Alaska I	0.519	not	0.738	0.689	0.449	not	0.425	0.663
	Alaska II		open	0.114	0.239		open	0.194	0.154
	Nass/Skeena	0.448		0.145	0.073	0.306		0.327	0.132
	Tahltan	0.002		0.001	0.000	0.240		0.051	0.050
	Stikine	0.031		0.003	0.000	0.005		0.003	0.000
29	Alaska I	0.344	0.798	0.670	0.399	0.522	not	0.721	0.504
	Alaska II		0.146	0.131	0.419		open	0.152	0.393
	Nass/Skeena	0.384	0.056	0.121	0.134	0.341		0.118	0.092
	Tahltan	0.270	0.000	0.009	0.048	0.129		0.008	0.011
	Stikine	0.002	0.000	0.068	0.000	0.008		0.000	0.000
30	Alaska I	0.392	0.615	0.471	0.395	0.503	0.419	0.514	0.389
	Alaska II		0.238	0.422	0.499		0.359	0.388	0.470
	Nass/Skeena	0.582	0.147	0.108	0.081	0.468	0.217	0.074	0.136
	Tahltan	0.000	0.000	0.000	0.025	0.000	0.000	0.008	0.006
	Stikine	0.026	0.000	0.000	0.000	0.029	0.005	0.015	0.000
	Alaska I	0.374	0.390	0.236	0.422	0.393	0.383	0.432	0.370
31	Alaska II		0.401	0.570	0.568		0.342	0.446	0.583
	Nass/Skeena	0.626	0.209	0.195	0.010	0.607	0.237	0.122	0.047
	Tahltan	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000
	Stikine	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
	Alaska I	0.703	0.364	0.257	0.400	0.535	0.382	0.299	0.532
32	Alaska II		0.333	0.602	0.531		0.302	0.496	0.370
	Nass/Skeena	0.285	0.292	0.141	0.069	0.465	0.317	0.205	0.089
	Tahltan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Stikine	0.012	0.010	0.000	0.000	0.000	0.000	0.000	0.009
33	Alaska I	0.499	0.352	0.518	0.498	0.356	0.239	0.511	0.348
	Alaska II		0.183	0.321	0.247		0.221	0.283	0.213
	Nass/Skeena	0.488	0.465	0.133	0.254	0.629	0.532	0.207	0.440
	Tahltan	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000
	Stikine	0.014	0.000	0.028	0.000	0.015	0.000	0.000	0.000
34[b]	Alaska I	0.369	0.209			0.420	0.222		
	Alaska II		0.147				0.188		
	Nass/Skeena	0.615	0.644			0.540	0.590		
	Tahltan	0.000	0.000			0.000	0.000		
	Stikine	0.016	0.000			0.040	0.000		
35-40	Alaska I					0.436	0.316		
	Alaska II						0.190		
	Nass/Skeena					0.516	0.494		
	Tahltan					0.000	0.000		
	Stikine					0.048	0.001		
	Alaska I	0.477	0.482	0.438	0.471	0.480	0.422	0.523	0.504
	Alaska II		0.244	0.406	0.413		0.240	0.293	0.364
Season	Nass/Skeena	0.453	0.272	0.140	0.095	0.401	0.308	0.166	0.112
Totals	Tahltan	0.056	0.000	0.004	0.021	0.109	0.024	0.015	0.019
	Stikine	0.013	0.002	0.012	0.000	0.010	0.006	0.003	0.001

[a] Ak. I and Ak. II stocks were combined in 1985.
[b] The last figures in each column include catch from that week through the end of the season.

Appendix D.5. Estimated contributions of sockeye salmon stock groups to Alaskan District 108 drift gillnet fisheries, 1986-1988.

Stat. Week	Stock Group	Catch			Proportions		
		1986	1987	1988	1986	1987	1988
25	Alaska I	2			0.067		
	Alaska II	4			0.133		
	Nass/Skeena	1			0.033		
	Tahltan	5			0.167		
	Stikine	18			0.600		
	Total	30					
26	Alaska I	1		44[a]	0.071		0.080
	Alaska II	2		70	0.143		0.128
	Nass/Skeena	0		25	0.000		0.046
	Tahltan	3		121	0.214		0.221
	Stikine	8		288	0.571		0.526
	All Stikine River		160[b]			0.849	
	Non Stikine River		29			0.153	
	Total	14	189	548			
27	Alaska I						
	Alaska II						
	Nass/Skeena						
	Tahltan						
	Stikine						
	All Stikine River		219			0.894	
	Non Stikine River		26			0.106	
	Total		245				
28	Alaska I			84			0.120
	Alaska II			67			0.096
	Nass/Skeena			23			0.033
	Tahltan			101			0.145
	Stikine			423			0.606
	All Stikine River		684			0.901	
	Non Stikine River		75			0.099	
	Total		759	698			
29	Alaska I		37			0.087	
	Alaska II		14			0.033	
	Nass/Skeena		0			0.000	
	Tahltan		126			0.298	
	Stikine		122			0.288	
	Unknown		124[c]			0.293	
	Total		423				
30	Alaska I	130			0.065		
	Alaska II	298			0.148		
	Nass/Skeena	47			0.023		
	Tahltan	346			0.172		
	Stikine	1188			0.591		
	Total	2009					
31	Alaska I	20			0.029		
	Alaska II	65			0.095		
	Nass/Skeena	5			0.007		
	Tahltan	38			0.056		
	Stikine	555			0.813		
	Total	683					
32	Alaska I	13			0.016		
	Alaska II	173			0.219		
	Nass/Skeena	9			0.012		
	Tahltan	0			0.000		
	Stikine	593			0.753		
	Unknown		4[c]			1.000	
	Total	788	4				
33	Alaska I	7			0.016		
	Alaska II	99			0.220		
	Nass/Skeena	5			0.011		
	Tahltan	0			0.000		
	Stikine	340			0.754		
	Total	451					
34-39	Alaska I	3			0.014		
	Alaska II	46			0.217		
	Nass/Skeena	3			0.014		
	Tahltan	0			0.000		
	Stikine	160			0.755		
	Total	212					
Season Totals	Alaska I	176	37	128	0.050	0.023	0.103
	Alaska II	687	14	137	0.197	0.009	0.110
	Nas/Ske	70	0	48	0.020	0.000	0.039
	Tahltan	392	126	222	0.112	0.078	0.178
	Stikine	2862	122	711	0.819	0.075	0.571
	All Stikine River		1063			0.656	
	Unknown		258			0.159	
	Total	3494	1620	1,246			

[a] Catches in weeks 26 and 27 and in weeks 28 and 29 were combined in 1988.

[b] 1987 catch in weeks 26-28 estimated for total Stikine River fish (Tahltan and non-Tahltan Stikine) by averaging the weekly proportions of Stikine River fish in the commercial and test fishery catches in 1985 and 1986.

[c] The unknown group is comprised of age classes not digitized in week 29 and fish not sampled in weeks 34-39 in 1987.

Appendix D.6. Estimated contributions of sockeye salmon stock groups to Alaskan District 108 drift gillnet test fisheries, 1985, 1986, and 1988.

Stat. Week	Stock Group	Catch 1985	Catch 1986	Catch 1988	Proportions 1985	Proportions 1986	Proportions 1988
25	Alaska I	22[a]			0.198		
	Alaska II						
	Nass/Skeena	0			0.000		
	Tahltan	72			0.649		
	Stikine	17			0.153		
	Total	111					
26	Alaska I	15	14		0.134	0.124	
	Alaska II		0			0.000	
	Nass/Skeena	0	5		0.000	0.044	
	Tahltan	43	81		0.384	0.717	
	Stikine	54	13		0.482	0.115	
	Total	112	113				
27	Alaska I	10	16		0.036	0.123	
	Alaska II		0			0.000	
	Nass/Skeena	0	7		0.000	0.054	
	Tahltan	94	95		0.335	0.731	
	Stikine	177	12		0.630	0.092	
	Total	281	130				
28	Alaska I	0	7		0.000	0.056	
	Alaska II		12			0.095	
	Nass/Skeena	0	6		0.000	0.048	
	Tahltan	60	79		0.213	0.627	
	Stikine	222	22		0.787	0.175	
	Total	282	126				
29	Alaska I	17	16		0.078	0.076	
	Alaska II		13			0.062	
	Nass/Skeena	0	11		0.000	0.052	
	Tahltan	24	60		0.110	0.286	
	Stikine	178	110		0.813	0.524	
	Total	219	210				
30	Alaska I		0			0.000	
	Alaska II		10			0.132	
	Nass/Skeena		0			0.000	
	Tahltan		3			0.039	
	Stikine		63			0.829	
	Total		76				
	Alaska I	64	53	50	0.064	0.081	0.111
	Alaska II		35	41		0.053	0.091
Season	Nass/Skeena	0	29	22	0.000	0.044	0.049
Totals	Tahltan	293	318	59	0.292	0.485	0.131
	Stikine	648	220	279	0.645	0.336	0.618
	Total	1005	655	451			

[a] The Alaska I and Alaska II stock groups were combined in 1985.

APPENDIX E: STIKINE RIVER CATCHES

Appendix E.1. Estimated contribution of sockeye salmon stocks of Tahltan and non-Tahltan origin to the Canadian commercial fishery on the Stikine River, 1988.

Dates	Group	Catch by age class						Total[a]	Percent	Standard Error[b]	90% C.I.[b]	
		1.2	1.3	2.2	2.3	0.	Other				Lower	Upper
6/26-7/02	Tahltan	61	178	23	38	0	1	301	76.8	15.6	275	327
Week 27	non-Tahltan	14	49	0	11	17	0	91	23.2	15.1	66	116
	Total	75	227	23	49	17	1	392				
7/03-7/09	Tahltan	110	239	17	23	0	0	389	68.5	23.3	351	427
Week 28	non-Tahltan	38	86	12	4	39	0	179	31.5	22.6	142	216
	Total	148	325	29	27	39	0	568				
7/10-7/16	Tahltan	99	79	12	29	0	1	220	42.4	23.7	181	259
Week 29	non-Tahltan	67	163	8	6	54	1	299	57.6	23.8	260	338
	Total	166	242	20	35	54	2	519				
7/17-7/23	Tahltan	383	112	56	33	0	1	585	27.1	83.1	448	722
Week 30	non-Tahltan	369	852	89	82	175	4	1,571	72.9	85.1	1,431	1,711
	Total	752	964	145	115	175	5	2,156				
7/24-7/30	Tahltan	217	0	15	32	0	0	264	9.7	90.2	116	412
Week 31	non-Tahltan	509	1,493	109	47	297	4	2,459	90.3	94.5	2,304	2,614
	Total	726	1,493	124	79	297	4	2,723				
7/31-8/06	Tahltan	0	0	85	57	0	0	142	3.5	202.3	0	475
Week 32	non-Tahltan	1,021	2,230	124	82	417	0	3,874	96.5	220.9	3,511	4,237
	Total	1,021	2,230	209	139	417	0	4,016				
8/07-8/13	Tahltan	95	0	27	0	0	0	122	7.3	225.4	0	493
Week 33	non-Tahltan	457	831	38	36	173	6	1,541	92.7	227.1	1,167	1,915
	Total	552	831	65	36	173	6	1,663				
8/14-8/20	Tahltan	31	0	10	0	0	0	41	8.9	233.1	0	424
Week 34	non-Tahltan	128	217	15	11	47	3	421	91.1	233.3	37	805
	Total	159	217	25	11	47	3	462				
8/21-9/10	Tahltan	0	0	0	0	0	0	0	0.0	233.2	0	384
Wks 35-37	non-Tahltan	117	121	10	10	9	0	267	100.0	233.2	0	651
	Total	117	121	10	10	9	0	267				
Season	Tahltan	996	608	245	212	0	3	2,064	16.2	280.0	1,603	2,525
Totals	non-Tahltan	2,720	6,042	405	289	1,228	18	10,702	83.8	297.1	10,213	11,191
	Total	3,716	6,650	650	501	1,228	21	12,766				

[a] Weekly catch from the Canadian Department of Fisheries and Oceans, Whitehorse, Yukon.

[b] The standard errors are minimum estimates since no estimates of the variance for stocks contributing 0 fish to an age-group during a given week or for the "other" age class are available. The 90% confidence intervals are affected in like manner.

Appendix E.2. Estimated CPUE and migratory timing of the Tahltan and non-Tahltan sockeye salmon stock groups in the Canadian commercial fishery on the Stikine River, 1988. Weekly catch and effort data from the Canadian Department of Fisheries and Oceans, Whitehorse, Yukon.

Stat. Week	Fishing Effort	Days	Fishing Days	Catch per Fishing Day by Stock Group: Tahltan	non-Tahltan	Total
27	18	1.0	18	17	5	22
28	16	1.0	16	24	11	36
29	15	0.5	8	29	40	69
30	15	2.0	30	20	52	72
31	11	4.0	44	6	56	62
32	11	4.0	45	3	86	89
33	13	4.0	50	2	31	33
34	10	2.0	20	2	21	23
35-37	12	6.0	71	0	4	4
Totals				104	306	410

Migratory Timing Estimates

Stat. Week	Proportions: Tahltan	non-Tahltan	Migratory Timing - Catch Adjusted by Test Index: Index	Tahltan	non-Tahltan
27	0.768	0.232	0.010	0.008	0.002
28	0.685	0.315	0.063	0.043	0.020
29	0.424	0.576	0.061	0.026	0.035
30	0.271	0.729	0.120	0.033	0.088
31	0.097	0.903	0.096	0.009	0.087
32	0.035	0.965	0.267	0.009	0.257
33	0.073	0.927	0.230	0.017	0.213
34	0.089	0.911	0.120	0.011	0.110
35-37	0.000	1.000	0.031	0.000	0.031
Totals	2.442	6.558	1.000	0.156	0.844

Appendix E.3. Estimated contribution of sockeye salmon stocks of Tahltan and non-Tahltan origin to the Stikine River test fishery, 1988.

Dates	Group	Catch by age class						Total[a]	Percent	Standard Error[b]	90% C.I.[b]	
		1.2	1.3	2.2	2.3	0.	Other				Lower	Upper
6/19-6/25	Tahltan	0	20	1	5	0	0	26	78.8	3.2	21	31
Week 26	non-Tahltan	0	3	0	1	3	0	7	21.2	2.7	3	11
	Total	0	23	1	6	3	0	33				
6/26-7/02	Tahltan	15	72	2	15	0	1	105	72.9	7.7	92	118
Week 27	non-Tahltan	4	28	1	2	4	0	39	27.1	7.5	27	51
	Total	19	100	3	17	4	1	144				
7/03-7/09	Tahltan	33	63	4	8	0	0	108	52.9	10.3	91	125
Week 28	non-Tahltan	12	58	4	1	21	0	96	47.1	10.1	79	113
	Total	45	121	8	9	21	0	204				
7/10-7/16	Tahltan	46	45	5	12	0	0	108	38.6	12.4	88	128
Week 29	non-Tahltan	25	115	5	2	25	0	172	61.4	12.6	151	193
	Total	71	160	10	14	25	0	280				
7/17-7/23	Tahltan	11	0	7	9	0	0	27	19.4	8.7	13	41
Week 30	non-Tahltan	25	69	7	2	9	0	112	80.6	9.1	97	127
	Total	36	69	14	11	9	0	139				
7/24-7/30	Tahltan	16	0	2	0	0	0	18	12.5	11.3	0	37
Week 31	non-Tahltan	23	89	2	0	12	0	126	87.5	11.8	107	145
	Total	39	89	4	0	12	0	144				
7/31-8/06	Tahltan	2	0	3	5	0	0	10	6.7	16.2	0	37
Week 32	non-Tahltan	33	86	3	5	13	0	140	93.3	16.6	113	167
	Total	35	86	6	10	13	0	150				
8/07-8/13	Tahltan	2	0	3	1	0	0	6	7.1	18.5	0	36
Week 33	non-Tahltan	22	38	3	1	14	0	78	92.9	18.8	47	109
	Total	24	38	6	2	14	0	84				
8/14-8/27	Tahltan	0	0	0	0	0	0	0	0.0	20.6	0	34
Wks 34-35	non-Tahltan	22	39	0	5	2	0	68	100.0	20.6	34	102
	Total	22	39	0	5	2	0	68				
Season	Tahltan	125	200	27	55	0	1	408	32.7	29.4	360	456
Totals	non-Tahltan	166	525	25	19	103	0	838	67.3	30.1	789	887
	Total	291	725	52	74	103	1	1,246				

[a] Weekly catch from the Canadian Department of Fisheries and Oceans, Whitehorse, Yukon.

[b] The standard errors are minimum estimates since no estimates of the variance for stocks contributing 0 fish to an age-group during a given week or for the "other" age class are available. The 90% confidence intervals are affected in like manner.

Appendix E.4. Relative run strength and migratory timing of the Tahltan and non-Tahltan sockeye salmon stock groups in the Stikine River test fishery, 1988. Weekly catch and effort data from the Canadian Department of Fisheries and Oceans, Whitehorse, Yukon.

Stat. Week	Drifts	Catch[a]			Stock Group	
		Actual	Adjusted	Prop.	Tahltan	non-Tahltan
26	60	6	6	0.010	0.788	0.212
27	60	36	36	0.063	0.729	0.271
28	60	35	35	0.061	0.529	0.471
29	60	69	69	0.120	0.386	0.614
30	50	46	55	0.096	0.194	0.806
31	20	51	153	0.267	0.125	0.875
32	20	44	132	0.230	0.067	0.933
33	20	23	69	0.120	0.071	0.929
34	50	9	11	0.019	0.000	1.000
35	50	6	7	0.013	0.000	1.000
Totals		325	573	1.000		

Migratory Timing Estimates

Stat. Week	Proportion of Inriver Run		Migratory timing		
	Tahltan	non-Tahltan	Tahltan	non-Tahltan	Total
26	0.008	0.002	0.039	0.003	0.010
27	0.046	0.017	0.219	0.021	0.063
28	0.032	0.029	0.155	0.036	0.061
29	0.046	0.074	0.222	0.093	0.120
30	0.019	0.078	0.090	0.098	0.096
31	0.033	0.234	0.160	0.295	0.267
32	0.015	0.215	0.074	0.272	0.230
33	0.009	0.112	0.041	0.141	0.120
34	0.000	0.019	0.000	0.024	0.019
35	0.000	0.013	0.000	0.016	0.013
Totals	0.209	0.791	1.000	1.000	1.000

[a] Catch in statistical weeks 30-35 extrapolated to 60 drifts.

APPENDIX F: DIFFERENCES BETWEEN INSEASON VS POSTSEASON ESTIMATES

Appendix F.1. Differences between inseason and postseason stock composition estimates for the Alaskan Subdistrict 106-30 sockeye harvest, 1988. Age-2.2 fish were not analyzed inseason and are not included in this table.

Stat. Week	Stock Group	Inseason	Postseason	Change
6/19-6/25	Alaska I	64.5	76.1	11.6
Week 26	Alaska II	2.3	6.8	4.5
	Nass/Skeena	0.5	2.5	2.0
	Tahltan	11.6	0.2	-11.4
	Stikine	0.8	0.0	-0.8
6/26-7/02	Alaska I	71.9	80.9	9.0
Week 27	Alaska II	5.5	0.0	-5.5
	Nass/Skeena	4.7	1.6	-3.1
	Tahltan	0.7	2.8	2.1
	Stikine	0.1	0.0	-0.1
7/03-7/09	Alaska I	64.4	68.1	3.7
Week 28	Alaska II	11.6	9.4	-2.2
	Nass/Skeena	5.7	5.7	0.0
	Tahltan	0.7	0.0	-0.7
	Stikine	0.9	0.0	-0.9
7/10-7/16	Alaska I	48.8	39.6	-9.2
Week 29	Alaska II	22.3	31.8	9.5
	Nass/Skeena	15.8	11.0	-4.8
	Tahltan	0.2	4.7	4.5
	Stikine	0.0	0.0	0.0
7/17-7/23	Alaska I	42.2	33.4	-8.8
Week 30	Alaska II	31.0	44.8	13.8
	Nass/Skeena	14.5	8.0	-6.5
	Tahltan	0.1	2.5	2.4
	Stikine	0.9	0.0	-0.9
7/24-7/30	Alaska I	40.7	37.7	-3.0
Week 31	Alaska II	35.2	49.8	14.6
	Nass/Skeena	13.3	1.0	-12.3
	Tahltan	0.0	0.0	0.0
	Stikine	0.0	0.0	0.0
7/31-8/06	Alaska I	40.2	35.4	-4.8
Week 32	Alaska II	28.8	46.3	17.5
	Nass/Skeena	17.1	6.9	-10.2
	Tahltan	0.0	0.0	0.0
	Stikine	0.0	0.0	0.0
	Alaska I	59.7	43.9	-15.8
Fishery	Alaska II	22.3	34.0	11.7
Totals	Nass/Skeena	7.9	7.2	-0.7
	Tahltan	0.0	2.3	2.3
	Stikine	1.5	0.0	-1.5

Appendix F.2. Differences between inseason and postseason stock composition estimates for the Alaskan Subdistrict 106-41 sockeye harvest, 1988. Age-2.2 fish were not analyzed inseason and are not included in this table.

Stat. Week	Stock Group	Inseason	Postseason	Change
6/19-6/25	Alaska I	72.6	78.8	6.2
Week 26	Alaska II	9.6	2.3	-7.3
	Nass/Skeena	7.4	3.0	-4.4
	Tahltan	1.0	8.4	7.4
	Stikine	0.0	0.0	0.0
6/26-7/02	Alaska I	63.2	68.6	5.4
Week 27	Alaska II	12.0	6.3	-5.7
	Nass/Skeena	4.9	5.4	0.5
	Tahltan	7.1	6.9	-0.2
	Stikine	0.0	0.0	0.0
7/03-7/09	Alaska I	51.6	64.7	13.1
Week 28	Alaska II	6.7	5.0	-1.7
	Nass/Skeena	13.5	10.2	-3.3
	Tahltan	5.8	4.9	-0.9
	Stikine	6.3	0.0	-6.3
7/10-7/16	Alaska I	61.3	47.4	-13.9
Week 29	Alaska II	17.5	32.0	14.5
	Nass/Skeena	10.7	8.8	-1.9
	Tahltan	0.0	1.1	1.1
	Stikine	1.0	0.0	-1.0
7/17-7/23	Alaska I	49.3	33.1	-16.2
Week 30	Alaska II	22.6	44.5	21.9
	Nass/Skeena	12.5	13.2	0.7
	Tahltan	0.2	0.5	0.3
	Stikine	5.2	0.0	-5.2
7/24-7/30	Alaska I	45.5	36.5	-9.0
Week 31	Alaska II	31.9	46.8	14.9
	Nass/Skeena	9.7	4.5	-5.2
	Tahltan	0.0	0.0	0.0
	Stikine	0.4	0.0	-0.4
7/31-8/06	Alaska I	44.4	44.6	0.2
Week 32	Alaska II	27.2	35.2	8.0
	Nass/Skeena	17.3	8.8	-8.5
	Tahltan	0.0	0.0	0.0
	Stikine	0.0	0.9	0.9
	Alaska I	57.5	47.6	-9.9
Fishery	Alaska II	18.1	30.6	12.5
Totals	Nass/Skeena	11.9	8.6	-3.3
	Tahltan	1.4	1.9	0.5
	Stikine	2.2	0.1	-2.1

Appendix F.3. Differences between inseason and postseason stock composition estimates for the Alaskan District 108 sockeye harvest, 1988. Age-2.2 fish were not analyzed inseason and are not included in this table.

Stat. Week	Stock Group	Inseason	Postseason	Change
6/19-6/25	Alaska I	0.1	15.5	15.4
Week 26	Alaska II	0.0	1.7	1.7
	Nass/Skeena	32.3	2.8	-29.5
	Tahltan	23.4	32.1	8.7
	Stikine	44.2	47.8	3.7
6/26-7/02	Alaska I	14.8	4.9	-9.9
Week 27	Alaska II	30.7	17.0	-13.7
	Nass/Skeena	9.2	5.3	-3.9
	Tahltan	13.6	18.4	4.7
	Stikine	31.6	54.4	22.8
7/03-7/09	Alaska I	8.3	8.2	-0.1
Week 28	Alaska II	17.2	15.8	-1.3
	Nass/Skeena	7.3	2.6	-4.7
	Tahltan	0.0	15.8	15.8
	Stikine	67.2	57.5	-9.7
7/10-7/16	Alaska I	21.5	14.4	-7.1
Week 29	Alaska II	8.8	4.4	-4.3
	Nass/Skeena	4.6	4.0	-0.6
	Tahltan	2.4	11.0	8.6
	Stikine	62.7	66.1	3.4
	Alaska I	15.7	11.2	-4.4
Fishery	Alaska II	15.9	9.0	-6.9
Totals	Nass/Skeena	9.6	4.4	-5.2
	Tahltan	8.7	16.4	7.7
	Stikine	50.1	58.9	8.8

Appendix F.4. Differences between the inseason and postseason stock composition estimates for the Canadian sockeye salmon harvest in the Stikine River, 1988. Age-2.2 fish were not analyzed inseason and are not included in this table.

Stat. Week	Stock Group	Inseason	Postseason	Change
6/26-7/02	Tahltan	66.8	70.7	3.9
Week 27	Stikine	27.4	23.2	-4.2
7/03-7/09	Tahltan	48.8	65.5	16.7
Week 28	Stikine	43.4	29.4	-14.0
7/10-7/16	Tahltan	29.9	39.9	10.0
Week 29	Stikine	65.4	55.9	-9.5
7/17-7/23	Tahltan	12.6	24.5	11.9
Week 30	Stikine	79.3	68.6	-10.7
7/24-7/30	Tahltan	2.5	9.1	6.6
Week 31	Stikine	91.7	86.2	-5.5
Fishery	Tahltan	17.4	25.7	8.3
Totals	Stikine	82.6	68.8	-13.8

Appendix F.5. Log-likelihood (G) values for a comparison of weekly inseason and postseason stock composition estimates for the Alaskan Subdistrict 106-30 drift gillnet sockeye harvest, 1988.

Date and Week	Estimate	Stock Grouping						
		Ak. I	Ak. II	Nass/Ske	Tahltan	Stikine	Total	G
6/21-6/27	In	205	31	7	2	1	245	
Week 26	Post	137	69	1	33	4	244	
	Total	342	99	8	34	5	489	70.174
6/28-7/04	In	68	18	3	1	4	95	
Week 27	Post	46	36	11	1	1	95	
	Total	114	54	14	2	5	190	17.487
7/05-7/11	In	178	25	15	1	1	219	
Week 28	Post	161	28	27	1	2	219	
	Total	339	53	42	2	3	439	5.231
7/12-7/18	In	202	46	39	1	3	291	
Week 29	Post	193	41	33	4	22	293	
	Total	395	87	73	5	25	584	20.227
7/19-7/25	In	244	18	20	1	19	303	
Week 30	Post	134	136	33	1	1	304	
	Total	378	154	53	2	20	607	157.004
7/26-8/01	In	166	124	43	1	1	336	
Week 31	Post	65	202	62	1	1	331	
	Total	231	326	106	2	2	667	67.421
8/02-8/08	In	135	150	15	1	1	302	
Week 32	Post	67	197	35	1	1	301	
	Total	202	347	50	2	2	603	37.610
	In	1174	439	156	0	29	1798	
Totals[a]	Post	738	802	231	8	22	1801	
	Total	1912	1241	386	8	51	3598	232.914

[a] Totals are for weighted weekly samples and thus are not direct sums of weekly samples.

Appendix F.6. Log-likelihood (G) values for a comparison of weekly inseason and postseason stock composition estimates for Alaskan the Subdistrict 106-41 drift gillnet sockeye harvest, 1988.

Date and Week	Estimate	Stock Grouping					Total	G
		Ak. I	Ak. II	Nass/Ske	Tahltan	Stikine		
6/21-6/27	In	178	24	19	3	1	226	
Week 26	Post	229	8	10	25	1	272	
	Total	407	32	29	29	2	499	33.193
6/28-7/04	In	143	28	12	17	1	201	
Week 27	Post	196	19	16	21	1	253	
	Total	339	47	28	38	2	454	5.184
7/05-7/11	In	135	18	36	16	17	222	
Week 28	Post	215	18	35	17	1	286	
	Total	350	36	71	33	18	508	28.430
7/12-7/18	In	130	38	24	1	3	196	
Week 29	Post	139	94	27	4	1	265	
	Total	269	132	50	5	4	461	18.008
7/19-7/25	In	131	60	34	2	15	241	
Week 30	Post	103	138	42	3	1	287	
	Total	234	198	76	4	16	528	45.944
7/26-8/01	In	112	79	25	1	2	219	
Week 31	Post	113	145	15	1	1	274	
	Total	225	224	40	2	3	494	16.088
8/02-8/08	In	118	73	46	1	1	239	
Week 32	Post	143	113	29	1	4	290	
	Total	261	186	76	2	5	529	12.225
	In	983	309	204	25	38	1560	
Totals[a]	Post	1014	652	183	41	3	1893	
	Total	1997	962	387	66	41	3452	136.083

[a] Totals are for weighted weekly samples and thus are not direct sums of weekly samples.

Appendix F.7. Log-likelihood (G) values for a comparison of weekly inseason and postseason stock composition estimates for the Alaskan District 108 drift gillnet sockeye harvest, 1988.

Date and Week	Estimate	Stock Grouping						
		Ak. I	Ak. II	Nass/Ske	Tahltan	Stikine	Total	G
6/21-6/27	In	1	1	14	10	19	45	
Week 26	Post	10	2	3	19	28	62	
	Total	11	3	17	29	47	107	18.472
6/28-7/04	In	19	38	12	18	40	127	
Week 27	Post	8	24	8	25	73	138	
	Total	27	62	20	43	113	265	19.076
7/05-7/11	In	2	4	2	1	14	23	
Week 28	Post	3	5	2	5	17	32	
	Total	5	9	4	6	31	55	2.035
7/12-7/18	In	36	16	9	5	104	170	
Week 29	Post	29	10	9	22	127	197	
	Total	65	26	18	27	231	367	14.013
	In	54	55	33	30	173	345	
Totals[a]	Post	46	37	18	67	241	409	
	Total	100	92	51	97	414	754	28.921

[a] Totals are for weighted weekly samples and thus are not direct sums of weekly samples.

Appendix F.8. Log-likelihood (G) values for a comparison of weekly inseason and postseason stock composition estimates for the Canadian commercial sockeye salmon harvest in the Stikine River, 1988.

Date and Week	Estimate	Stock Grouping			G
		Tahltan	non-Tahltan	Total	
6/28-7/04	Inseason	108	45	154	
Week 27	Postseason	146	47	193	
	Total	254	92	347	1.066
7/05-7/11	Inseason	96	84	180	
Week 28	Postseason	145	66	211	
	Total	241	150	390	9.958
7/12-7/18	Inseason	63	136	198	
Week 29	Postseason	82	117	199	
	Total	145	252	397	4.102
7/19-7/25	Inseason	32	207	239	
Week 30	Postseason	70	195	265	
	Total	103	402	504	13.431
7/26-8/01	Inseason	8	257	265	
Week 31	Postseason	30	288	318	
	Total	38	545	583	11.287
	Inseason	193	914	1107	
Totals[a]	Postseason	322	863	1185	
	Total	515	1777	2292	31.116

[a] Totals are for weighted weekly samples and thus are not the direct sums of weekly samples.