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ORIGINS OF CHINOOK SALMON IN THE AREA OF THE JAPANESE MOTHERSHIP SALMON FISHERY

by

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ABSTRACT

Record 1980 Japanese mothership fishery catches of chinook salmon (704,000) intensified concern about the impact of high seas interceptions on U.S. origin fish. The goals of this study were to update and refine estimates of the stock origins of mothership chinook catches in Bering Sea (MS-BS) and North Pacific Ocean (MS-PAC) fishery areas and to assess the impact of high seas fishing on Alaskan salmon stocks. Because annual chinook catches by the Japanese landbased driftnet (LBDN) fishery since 1979 (except 1980) have exceeded mothership catches, stock origins of chinook in the LBDN area were also determined.

Linear discriminant analysis of scale pattern data was used to determine the stock origins of immature ages 1.2 and 1.3 chinook sampled on the high seas (40°-62°N, 160°E-175°W) in 1975-81. Samples were classified to region (Asia, western Alaska, central Alaska, southeast Alaska/British Columbia) and, if western Alaska was the predominant stock, to western Alaska "river" (Yukon, Kuskokwim, Bristol Bay) of origin. Stock compositions of the 1975-81 catches were used to estimate the interceptions by the mothership and landbased fisheries (1964-83), and high seas catches of western Alaska chinook were apportioned to the year of inshore run (1965-83). The scale samples and stock composition and interception estimates for "western Alaska" and "Yukon" included Canadian Yukon stocks.

Immature age 1.2 fish comprised the majority of chinook in the 1975-81 mothership and LBDN catches, and immature age 1.3 fish were the next most abundant group. Western Alaska was the predominant stock of both age classes in the MS-BS area and an important secondary stock in the MS-PAC and LBDN areas. In terms of relative abundance, Yukon appears to be the overwhelmingly predominant western Alaska stock in the MS-BS, followed in order of abundance by Kuskokwim and Bristol Bay. Central Alaska was the predominant stock of both age classes in the MS-PAC and LBDN areas, and was present in lower abundances in the MS-BS. Asia was an important secondary stock for both age classes in all fishery areas. Abundances of southeast Alaska/British Columbia chinook, though higher in the North Pacific Ocean, were low compared to other stock groups in all fishery areas. These results are corroborated by tag recovery information.

Stock composition and interception estimates were compared to estimates from previous studies. Estimates of stock composition for the MS-BS and interceptions of western Alaskan chinook salmon by the mothership fishery were similar to prior estimates. Estimates of the interceptions of Asian chinook by the mothership fishery averaged less than one-half of the previous estimates. Estimates of interceptions of central Alaskan chinook were not calculated by previous studies, but our results indicate that in recent years they have contributed almost as many fish to the mothership fishery as have western Alaska stocks. Previous studies have apportioned all LBDN catches to Asia, but our results show that central Alaska has often contributed the majority of chinook salmon to the LBDN fishery.

Exploitation rates were used to evaluate the impact of high seas fishing on Alaskan chinook salmon stocks. A lack of run size estimates prevented calculation of high seas exploitation rates for central Alaska chinook stocks, but we believe they are probably substantial. High seas interceptions since 1978 may be as high as 10% of the stocks originating in southeast Alaska and British Columbia. We estimate that the high seas fisheries caught an average of 26% of the western Alaska runs during the period 1965-1977 and 14% since 1978. Reduction in high seas catches in the MS-BS (sub-areas 8 and 10) might benefit coastal chinook fisheries in western Alaska, but would probably result in increased catches of Bristol Bay sockeye and central Alaskan chinook in the MS-PAC (sub-area 5) if effort were simply shifted to that area. The lack of reliable estimates of age composition and run size for most major chinook stocks severely limited our ability to assess the impact of high seas interceptions on U.S.-origin fish.

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Great assistance was provided by the many agencies (and, of course, their personnel) that directly or indirectly provided voluminous chinook scale samples, associated biological data, and information on various chinook salmon runs. These are the Japan Fisheries Agency, the U.S.S.R's Pacific Scientific Research Institute of Fisheries and Oceanography (TINRO), several branch offices of the Sport Fish and Commercial Fisheries Divisions of the Alaska Department of Fish and Game, the Department of Fisheries and Oceans (Canada), the Washington Department of Fisheries, the Quinault Indian Nation, Quileute Fisheries (Quileute Indian Tribe), the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Oregon Department of Fish and Wildlife, and the California Department of Fish and Game.

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I. INTRODUCTION

The United States has been concerned for many years about the level of high seas interceptions of U.S.-origin chinook salmon, particularly by the Japanese mothership salmon fishery in the central Bering Sea. This concern was greatly intensified following the record 1980 mothership catch of nearly 704,000 chinook salmon (previous maximum was 554,000 in 1969; 1952-79 mean annual catch is 170,000). According to Major (1982), the 1980 mothership catch represented a potential yield loss to western Alaskan and Canadian Yukon fishermen of 5,700 mt. Major's result is based in part on provisional estimates of the proportion of western Alaskan chinook present in the mothership area, which were derived in a scale pattern analysis of 1966-72 samples (Major et al. 1977b). High seas interceptions of North American chinook salmon are of concern because the chinook resource is important to the economy of western Alaska (Meacham 1980) and because interceptions can be large despite full compliance with current regulations of high seas fishing established by the 1978 renegotiation of the International Convention for the High Seas Fisheries of the North Pacific Ocean (INPFC)[1/]. The 1980 mothership catch of chinook in part prompted the Alaska Department of Fish and Game (ADF&G) to fund the Fisheries Research Institute (FRI) to apply scale pattern recognition techniques in a three-year study to update information on the continental origins of chinook salmon in the mothership fishery area. The National Marine Fisheries Service (NMFS) also contributed funding to the project when the INPFC's Sub-Committee on Salmon assigned as its first Special Panel Topic the origins of chinook salmon in the Bering Sea.

Since 1978 a considerable part of high seas salmonid research has been directed to determination of continental origins of all species of salmonids in the area of the Japanese landbased driftnet (LBDN) salmon fishery (south of 46°N), pursuant to Article III.1.(d) of the revised Protocol amending the International Convention for the High Seas Fisheries of the North Pacific Ocean. FRI's contribution to this research program, funded by the National Marine Fisheries Service, has included high seas tagging in 1980 and 1982, and scale pattern studies to determine origins of sockeye, coho, and chinook salmon in the LBDN area. The scale pattern study of chinook salmon was carried out as an extension of the study of chinook in the mothership fishery area. Certain work in the combined studies, including collection and processing of scales representing inshore areas, was also supported by the North Pacific Fishery Management Council through a study to determine origins of chinook caught incidentally by foreign trawl fisheries operating in the U.S. Fishery Conservation Zone (FCZ) off Alaska. This

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[1/]The International Convention for the High Seas Fisheries of the North Pacific Ocean is the formal name of the treaty between the United States, Japan and Canada, and the International North Pacific Fisheries Commission (INPFC) is the organization created to carry out much of the work mandated by the treaty.

report presents the findings of the combined studies of chinook origins in the areas of the Japanese mothership and LBDN fisheries.

The objectives of this study were to 1) provide a historical review of the Japanese mothership fishery; 2) compile, summarize, and review available information regarding the origins and biology of chinook salmon caught by the Japanese mothership salmon fishery; 3) collect information and scale samples necessary to estimate the stock contribution of chinook salmon harvested by this fishery; 4) establish a method for scale measurement and data management; 5) identify gaps in chinook salmon scale sampling and provide recommendations for improved coverage; 6) compile coastwide chinook salmon data; 7) estimate the mixing proportions of contributing stocks in the fishery during the years 1975-81; 9) estimate stock contribution rates to the Japanese mothership fishery.

II. DESCRIPTION OF THE JAPANESE MOTHERSHIP SALMON FISHERY

Nineteen fifty-two was the first post-World War II year of operations of the Japanese mothership salmon fishery. The fishery expanded rapidly, soon becoming one of the world's largest salmon fisheries. Several authors have described this early fishery, including Manzer et al. (1965), Fukuhara (1971), Fredin and Worlund (1974), and Fredin et al. (1977), and much of this description came from those reports.

The fishing zone changed almost yearly between 1952 and 1958, and included part of the Okhotsk Sea during 1955-1958 (see Fig. 2 in Manzer et al. 1965). The eastern boundary, 175°W (175°20'W south of Atka Island), was constant and was set by the INPFC. Until 1978, the other boundaries were mostly set by the Japan-Soviet Fishery Commission. The mothership fishing area was constant between 1959-1976 (Fig. 1), although in 1973-1976, some areas within the general area were assigned shortened seasons and restrictions of the total fishing effort (see Fig. 4-4 in Fredin et al. 1977). Before the 1977 season, the new Soviet 200-mile zone was closed to fishing and in 1978, large areas outside of that zone were closed through the Japan-Soviet Fishery Commission. Also in 1978, the INPFC treaty was renegotiated to be made compatible with the newly implemented U.S. Fishery Conservation and Management Act (P.L. 94-265), and several time/area restrictions both inside and outside the new U.S. 200-mile zone and a complete closure of the area east of 175°E and south of 56°N resulted. In 1979, the U.S.S.R. placed a fishing period restriction on the area between 170°E and 175°E and between the U.S. 200-mile zone and 46°N, to create the complex pattern of times and areas of operation under two international agreements depicted in Fig. 1. This pattern has remained unchanged through the 1984 fishing season.

Various schemes of spatial and temporal stratification exist for purposes of regulation and statistical reporting of the fishery. The industry itself divided the total area into 169 blocks (mean size about 14,250 km^2, 110 km north to south and 130 km east to west). On a daily basis, only catcher boats assigned to a particular mothership were permitted to fish in a specified block plus one-half of an adjacent block. Official statistics for the fishery reported to the INPFC by the Japan Fisheries Agency (JFA) were according to 5°-longitude region and month in 1952-53, 2°-latitude x 5°longitude area and month in 1954-59, 2° x 5° area and 10-day period in 1960-77, and 1° x 1° area and 10-day period in 1978 - present. Statistics for 1952-59 were reported subsequently by 2° x 5° area and 10-day period, and were published in Manzer et al. (1965). We used the early statistics in Manzer et al. (1965) for this report, although totals are slightly different from those in the official statistics published in the INPFC Statistical Yearbooks. For purposes of statistical analysis, Fredin and Worlund (1974) divided the mothership fishery area into 10 sub-areas (Fig. 1), which roughly correspond to 5°-longitude bands on either side of the Aleutian Island chain.

Since 1955, the fishery has used nylon gillnets, and monofilament nylon quickly became the standard web material after its introduction in the early 1970's. Until 1978, each catcher boat could fish 15 km (+ 10% allowance) of net daily east of 170°25'E and south of a line connecting 47°N, 165°E and 48°N, 170°25'E. In that region, up to 60% of each net's length could be of 121 mm stretched mesh with the rest being 130 mm mesh. In other parts of the mothership area, a catcher boat could fish a maximum of 12 km (+ 10% allowance) of net, with mesh sizes 121 mm in 40% of the net and 130 mm in 60% of the net. In the period 1978 - present, the gear restrictions have been uniform throughout the fishery area: maximum length of a set is 15 km, minimum distance between two nets is 8 km in any direction at the time setting is completed, and mesh sizes are not less than 120 mm in 40% of the net and not less than 130 mm in 60% of the net (Japan Fisheries Agency, 1981). Fishing effort is usually measured in "tans" of gillnet, a tan being approximately 50 m.

Historically, the motherships ranged from 8,000-14,000 tons and were powered by 5000-7600 hp engines. Each had a crew of 300-350. Salmon were both canned and frozen aboard the mothership and the finished products were shipped to Japan by tending transport vessels. Each mothership was accompanied by about 30-40 catcher boats, some of which (2-6) acted as scout boats. Catcher boats were 75-100 tons and were powered by 270-450 hp engines. There were about 20 crewmen per boat. Presently, each mothership is accompanied by 43 catcher boats, two of which act as scouts. Prior to 1978, fishing in the Bering Sea generally lasted from mid-June to late July, whereas fishing in the North Pacific commenced in mid-May and continued into late July or August in some early years. Presently, the mothership fishery operates only in June and July, and fishing in the Bering Sea usually does not begin until late June.

The sizes of the mothership fleet and the average effort and catch by species are listed in Table 1. Chum, pink, and sockeye salmon rank one, two, and three in numbers caught, whereas chinook salmon catches rank a distant fifth and equal only about two percent of the chum salmon catch. The catch of chinook salmon and effort by year in sub-areas 5, 8, and 10 (the main areas presently fished) and the catch and effort in the total mothership area (excluding the Okhotsk Sea) are shown in Table 2.

Maturing and immature sockeye salmon of Bristol Bay origin were greatly protected by the restrictions on high seas fishing that were gained through the INPFC renegotiation; however, the potential for intercepting Alaskan and Canadian Yukon chinook salmon remained high. The total catches of sockeye since renegotiation have been comparable to those a few years before 1978, but the estimated catches of Bristol Bay sockeye in 1978-1980 have been the lowest since 1959. Conversely, the chinook catch by the mothership fishery, while somewhat lower than historical levels in 1978 and 1979, was by far the largest in history during 1980 (Table 2). The exceptional 1980 catch was due largely to increased stock abundance in the Bering Sea and North Pacific (see CPUE columns in Table 2), but some targeting on chinook salmon because of the elevated abundance may also have occurred. In the years since the 1978 renegotiation, the chinook catch has continued to come mostly from areas where western Alaskan and Canadian Yukon stocks are thought to occur in high relative abundance.

With the closure of much of the historic mothership fishery area in 1977 and 1978, there has been a large increase in the effort in sub-area 5. Chinook salmon catches in that sub-area have increased since 1978 although the abundance (CPUE) is not as high there as in sub-areas 7 and 9 nor in the Bering Sea (Fig. 2). The generally lower chinook CPUE since 1978 in sub-areas 8 and 10 (except for 1980) may have been caused by changes in the distribution of fishing effort (particularly decreased effort in area E7558) because the abundance of the western Alaskan coastal runs has increased since 1978 and one would expect the CPUE in the Bering Sea to be at least as high as the values in the 1960s. However, it is also possible that the distribution and thus the availability of western Alaskan stocks may have changed since 1977 along with the change to a warmer climate than existed during the 1960's. We will examine the past and present impact of high seas fishing on western Alaskan chinook salmon stocks at the conclusion of this report.

III. CURRENT STATUS OF KNOWLEDGE ON ORIGINS OF CHINOOK SALMON IN THE AREA OF JAPANESE HIGH SEAS SALMON FISHERIES

Information collected through the early 1970's on origins and distribution of chinook salmon in offshore waters was summarized by Major et al. (1978). Information collected since then has come from recovery of disc and coded-wire tags (Japan Fisheries Agency 1981; Dahlberg 1982; Wertheimer and Dahlberg 1983; A. Wertheimer, NMFS, personal communication; and C. P. Meacham, ADF&G, personal communication), from scale pattern analysis (Knudsen et al. 1983; Myers 1983), and from preliminary genetic (electrophoretic) studies (Utter 1978; Utter et al. 1979).

A. Information from Tagging

There have been only 14 coastal recoveries of chinook salmon tagged on the high seas west of 155°W in 1956-83 (Fig. 3). One of these was released near the Japanese coastal area of recovery, and is not shown on the figure. Nine of the 13 significant recoveries were made in western Alaska (Yukon River, Kuskokwim River area, and Bristol Bay area) from releases in the central and western Bering Sea. The four recoveries resulting from releases in a fairly restricted area just south of the central Aleutian Islands (INPFC areas 8050 and W7548) have been made in East Kamchatka, western Alaska, Yakutat area of southeast Alaska, and the upper Columbia River system. The recovery near Yakutat (No. 11 in Fig. 3) was made by an offshore troll fishery vessel. As most chinook in the Fairweather troll grounds are from non-local areas, it is impossible to ascertain the origin of the fish. This limited number of recoveries suggests that chinook in the Bering Sea are predominantly of western Alaska origin, while the origins of chinook in the North Pacific Ocean are more diverse.

One notable recovery from ADF&G inshore tagging experiments provides evidence of chinook migration between inland waters of southeast Alaska and the southeastern Bering Sea. The fish was tagged 25 July 1979 near False Point on the southeast side of Admiralty Island, and was recovered 20 February 1980 by a U.S. trawler about 12 nm northeast of Cape Sarichef near the western end of the Alaska Peninsula (C. P. Meacham, ADF&G, personal communication). The origin of the fish is not known, however.

In 1980 the INPFC member nations agreed to monitor high seas research catches and incidental salmonid catches by groundfish vessels in the U.S. Fishery Conservation Zone (FCZ) for salmonids missing the adipose fin, an indicator of the possible presence of a coded-wire tag (INPFC 1981). The vast majority of releases of coded-wire tagged chinook are from hatcheries south and east of the Alaska Peninsula. Since the monitoring began, there have been 29 recoveries of coded-wire tagged chinook salmon by U.S. observers on foreign groundfish vessels operating in waters west of 155°W (Table 3). There have been no recoveries of coded-wire tagged chinook from the mothership fishery itself, despite the fact that U.S. observers have examined 3,837, 11,818, and 6,615 chinook in the mothership catches from the U.S. FCZ for missing adipose fins in 1981, 1982 and 1983, respectively. Nine of the 29 recoveries from incidental trawl catches were reported by Dahlberg (1982) and Wertheimer and Dahlberg (1983), and 20 were reported after Wertheimer and Dahlberg (1983) through 20 July 1984 (A. Wertheimer, NMFS, personal communication). Six of the recoveries were made in the southeastern Bering Sea; three of the fish were from Oregon, two were from southeast Alaska, and one was from central Alaska. The 23 recoveries made south of the Alaska Peninsula resulted from releases in central Alaska (2), southeast Alaska (9), British Columbia (8), and Oregon (4). Most of the coded-wire tag recoveries were from fish caught near the continental shelf break in late fall or early winter, while the fish externally tagged were caught and released in epipelagic waters in May to August.

B. Information from Scale Pattern Analysis

Prior to initiation of FRI studies, there has only been one attempt to apply scale pattern recognition techniques to determine origins of chinook salmon in offshore waters (Major et al. 1975; 1977a; and 1977b), although there have been a number of applications of the general technique to inshore situations (Koo and Isarankura 1967; Bohn and Jensen 1971; Kissner 1973; and Wilcock and McBride 1983). The research by Major and associates employed linear discriminant analysis to determine the origins of immature chinook salmon distributed in the Japanese mothership fishery area in 1966-72. The investigators established only two categories in their analysis, Asia and western Alaska (including the Canadian Yukon). The western Alaska standard sample consisted of scales collected in the Yukon, Kuskokwim, Kanektok, Togiak, and Nushagak Rivers. The Asian standard sample was composed of scales collected from maturing fish during Japanese mothership and research vessel operations in waters west of 170°E (i.e., an area adjacent to Kamchatka) in June and July, when maturing North American fish would likely be well east of 170°E. The authors used a discriminant function based on only the 1968 standards to classify the 1966-72 high seas samples, since the 1968 standards provided the highest classificatory accuracy. Both standards and high seas samples were pooled over age class and brood year. The 2-category analysis was done for all high seas samples, including those from areas where fish of non-Asian and non-western Alaskan origin are known to occur. Kamchatka River samples (1965-69) were made available late in the study, and the 1968 function was used to classify them as a test of the appropriateness of the function. The classification of known-Asian fish was accurate, averaging 85% (range 76-90% for each year).

The 1966-72 high seas samples were classified by the 1968 function according to strata of sub-area (after Fredin and Worlund 1974) and month, and the results for immature fish only are summarized in this report in Fig. 4 (a few erroneous values in Major et al. 1977b were corrected by R. L. Major, NMFS, personal communication). The results showed a predominance of western Alaska fish in the central Bering Sea and a general increase of the estimates for western Alaska eastward from sub-area 6 to sub-area 10. The results for the North Pacific Ocean indicated lower composition of western Alaska fish in the population, yet there was still a general eastward increase in the estimates for western Alaska.

Chinook scale pattern studies by FRI have included a preliminary analysis of samples of age 1.2 and 1.3 immature chinook scales collected in the mothership and LBDN areas in 1980 (Knudsen et al. 1983), and an analysis of origins of chinook caught incidentally by the foreign groundfish fishery in the southeastern Bering Sea and northwestern Gulf of Alaska in 1978, 1979, and 1981 (Myers 1983). Knudsen et al. (1983) applied Cook's (1982) method, and employed five regional categories in initial analyses, 1) Asia, 2) western Alaska, 3) central Alaska, 4) southeast Alaska and British Columbia, and 5) Washington, Oregon, and California. Stock composition estimates for Washington-Oregon-California (for immature age 1.2 fish) were all low and not statistically significant throughout the study area northwest of 40°N, 175°W. The western Alaska stock-group was found to predominate in the Bering Sea, and estimates for the group generally increased eastward. A wider diversity of stock composition was indicated for the region south of the Aleutian Islands. Asian fish predominated in the population of age 1.2 chinook south of the Aleutians, followed closely by western Alaska and southeast Alaska/British Columbia stock-groups. The incidence of Asian fish in the population of age 1.3 fish south of the Aleutians was lower, and western Alaska and southeast Alaska/British Columbia fish were the two most abundant components.

Myers' (1983) study also employed Cook's (1982 and 1983) technique, used the above-mentioned five categories, and included a separate series of analyses which broke the western Alaska stock-group into three major "river" categories (viz., Yukon, Kuskokwim, and Bristol Bay) when the regional analysis indicated western Alaska to be the predominant group. Generally, western Alaska was often found to be the predominant stock-group in the Bering Sea east of 180° (INPFC Areas 1 and 2), and the predominant "river" groups there were Yukon and Bristol Bay. Significant incidences of central Alaska, southeast Alaska/British Columbia, and Asian fish were also indicated for some strata. Sample availability permitted little inference about stock origins of incidentally caught chinook in the northwestern Gulf of Alaska.

C. Other Studies

Major et al. (1978) made some inference about the continental origins of chinook salmon in the area of the mothership fishery by examining the distribution of fish of various maturity stages. However, their analysis was useful mainly in monitoring the distribution of maturing Asian fish in the western part of the study area, and did not provide information useful in assessing the relative abundances of Asian and North American fish throughout the study area.

Genetic studies employing electrophoresis were initiated to determine continental origins of chinook and chum salmon in the mothership fishery area (Utter 1978; Utter et al. 1979). However, due to the lack of genetic information for Asian stocks, they have not contributed substantial information.

IV. METHODS

Our general method of determining the stock composition of the high seas population was discriminant analysis of scale pattern data. Fish from a particular area grow in a characteristic manner determined by genetic and local environmental influences, and their growth is reflected in the pattern of circulus formation on the scale. Application of discriminant analysis entails obtaining standard scale samples to represent the major stock-complexes likely to populate the high seas area of interest, establishing discriminant rules based on differences in scale growth patterns between the standards, classifying high seas (= unknown) samples by the discriminant rules, and finally using the classification results to estimate stock composition of the population.

A. Methods of Scale Ageing and Measurement

1. Sample Preparation

Most scale samples were in the form of acetate impressions obtained from fisheries agencies, so that no further sample preparation was necessary. However, The U.S.S.R's Pacific Scientific Research Institute of Fisheries and Oceanography (TINRO) provided FRI with original scale samples of adult returns to the Kamchatka River in 1977, and the Kamchatka and Bolshaya rivers in 1980, 1982, and 1983. The scales were sorted under a binocular microscope, two non-regenerated scales that were closest in appearance to INPFC-preferred area scales (INPFC 1958) were selected for each fish, and an acetate impression was made for reading.

2. Ageing

Although most of the scale samples were already aged by the agencies that provided them, all inshore and high seas samples were re-aged by FRI scale analysts to ensure consistency in age composition data. Acetate impressions were examined under a microfiche reader to determine both freshwater and ocean age. Freshwater circuli were identified as those circuli closest to the center of the scale with a thickness and spacing considerably less than that of circuli closer to the outer edge of the scale (ocean circuli). Annuli were identified by a decrease in spacing and thickness of circuli and by breakage, interbraiding, and "cutting-over" of circuli. Age was designated by the European method (Koo 1962).

We found the most difficult part of chinook scale ageing was the determination of freshwater age. Although freshwater age determinations were complicated by the presence of regenerated and non-preferred area scales in the samples, the main problem was a lack of consistent criteria, both in the literature and from our own experience, for identification of age 0. chinook originating from over a large geographic area. We attempted to develop our own criteria in part by examining some scales of known-age fish, as other means of age validation were beyond the scope of this study. However, these scales were primarily from coded-wire tagged chinook of hatchery origin from southeast Alaska to California, and therefore were not representative of the majority of the stocks included in our standards.

The difficulties of identifying age 0. chinook salmon by their scale patterns have been noted since the earliest investigations (Gilbert 1912). Rich's (1920) careful and detailed examinations of the scales of juvenile chinook salmon collected in the Columbia and Sacramento rivers led him to conclude that the scales of adult fish which emigrated to the ocean as fry (age 0.) in the fall cannot be distinguished by the appearance of the freshwater portion of the scale from yearlings (age 1.) which emigrated in the spring. No subsequent scientific investigations have disproved this conclusion, and scales of this type in the inshore and Japanese fishery samples were, no doubt, incorrectly aged as 1.'s by our methods.

The most reliable criterion that we had to identify age 0. chinook was the absence of a freshwater annulus. Chinook fry that emigrate to the ocean early in the spring of their first year are easily distinguished by the lack of a freshwater annulus or any check in the central portion of the scale resembling a freshwater annulus. Scales of this type in the inshore and Japanese fishery samples would have always been correctly aged as 0.'s by our methods.

Wild chinook fry which rear in fresh or brackish water prior to ocean emigration in their first spring or summer and age 0. chinook of hatchery origin often have "checks" or zones of closely spaced circuli in the first year of growth that resemble freshwater annuli. To distinguish these patterns from age 1. chinook, we used several criteria that involved a subjective comparison of zone sizes and spacing and thickness of circuli. Scales were identified as age 0.'s if: 1) the size of the first ocean zone was considerably smaller than the size of the second ocean zone; 2) spacing and thickness of circuli in the first ocean zone was considerably less than in the second ocean zone (after Koo and Isarankura 1967); 3) spacing and thickness of circuli in the portion of the scale closest to the focus were similar to spacing and thickness of circuli in the first ocean zone; and 4) spacing and thickness of first ocean summer circuli were similar to spacing and thickness of first ocean winter circuli (i.e., no distinct first ocean annulus).

Although FRI scale analysts were as consistent as possible in the use of these criteria to identify age 0. chinook, an examination of coded-wire tagged chinook scale samples of known age provided by the Washington Department of Fisheries (WDF) and the Department of Fisheries and Oceans Canada (DFO) showed that no single character or set of characters always resulted in an accurate freshwater age determination. A consistent bias in all FRI age determinations was that in cases where the analyst was not sure whether the scale was age 0. or 1., the scale was assigned a freshwater age of one. We decided that this was the best approach since our analysis was restricted to freshwater age 1. chinook and we did not wish to exclude from the data age 1. freshwater patterns difficult to interpret.

Because we had no samples of known age 2. chinook from which to develop ageing criteria, an additional problem was that of distinguishing fish with a freshwater annulus followed by extensive freshwater (plus) or estuarine growth and a check at ocean emigration from fish with a full second year of freshwater growth. As was the case for distinguishing ages 0. and 1. chinook, if the FRI analyst was not sure whether the scale was age 1. or 2., the scale was assigned a freshwater age of one, and additional freshwater growth after the annulus was assumed to be "plus" growth.

3. Scale Selection

We attempted to include only INPFC-preferred area (INPFC 1958) scales in the standard and high seas samples. Criteria for identification of preferred area scales were developed by examination of the appearance of scales taken from various, known areas of the body of chinook salmon. Scales from the preferred area were large, rounded, and symmetrical. Their sculptured (anterior) and unsculptured (posterior) fields had a relatively straight boundary, they had comparatively few complete circuli around the focus, and ocean circuli near the outer edge of the scale did not extend into the posterior field. When selecting scales from the TINRO smear samples, we chose two scales from each fish which best met the above criteria for preferred area scales. We also noticed numerous scales in the high seas samples, especially in those collected on board the motherships, which apparently were not taken from the INPFC-preferred area, and these were not included in the analysis.

Just prior to measurement, the scales selected for inclusion in the standard or unknown samples were re-examined to confirm our initial age determination. If there was disagreement, the problem was either resolved or the scale was not measured. When sample sizes permitted, we did not include a scale in a standard sample if the original agency's and our age determinations differed.

4. Measurement

We measured scales with a micro-computer based digitizing system developed at FRI in 1979 for INPFC-related research (Harris et al. 1980). Acetate impressions of the scales were rear-projected onto the digitizing surface at 104x, and the scales were aligned on a standard measurement axis. The measurement axis bisected the focus and was the perpendicular to the boundary of the sculptured and unsculptured fields of the scale (Fig. 5).

As requested by ADF&G, the following life history zones, illustrated in Fig. 5, were measured:

Zone 1: center of focus through last circulus in the freshwater annulus.

Zone 2: first circulus in freshwater plus growth zone through last freshwater circulus.

Zone 3: first ocean circulus through last circulus in the first ocean annulus.

The outer edge of each circulus in these three zones was digitized (meeting the criteria of Tanaka, Shepard and Bilton 1969), and a FORTRAN program was used to calculate the linear distance between each circulus to the nearest .001 in. These measurements, along with sample identifiers and biological data, were transmitted to the University of Washington's CDC Cyber computer for analysis and permanent storage on magnetic tape. Raw data formats and codes are described in detail in Rogers et al. (1982).

5. Data Reformatting and Scale Characters

Raw data were transformed into several basic scale characters and reformatted for convenient analysis. These scale characters included the radius of the focus, the total sizes and numbers of circuli in the three defined zones, and the distances between every third circulus in Zone 1 and the combined Zones 2 and 3. From these basic scale characters, 60 scale characters (Table 4) were calculated for use in the scale pattern analyses.

B. Definition of the Study Area, Period, and Population

We restricted our study area to 40-62°N, 160°E-175°W (Fig. 6). High seas catches of chinook salmon in the study area include all mothership fishery catches and a weighted average of 83.7% of the LBDN fishery catches in the period 1972-83. All of the LBDN catches outside the study area were made west of 160°E. Spatial stratification of the study area was according to the following three levels: (1) regions, which correspond to the LBDN fishery, the mothership fishery in the North Pacific Ocean (MS-PAC), and the mothership fishery in the Bering Sea (MS-BS); (2) 5°-longitude sub-areas (the sub-areas in the mothership fishery area are virtually the same as defined by Fredin and Worlund [1974]; we defined sub-areas 11-15 for the LBDN fishery area); and (3) 2°-latitude x 5°-longitude INPFC statistical areas.

The study period was chosen to be June and July for the mothership area and May through July for the LBDN area, 1975-81. Study of chinook in the mothership area in May was not deemed necessary since May catches comprised a weighted average of only 2.6% of the annual mothership catch in 1972-77, and the fishery has not operated in May after 1977. The 7-year period 1975-81 was chosen because (1) it includes an entire "cycle" of high seas abundance (Ito and Takagi 1981); (2) it includes the years 1980 and 1981 when the large 1976 year-class passed through the fishery; and (3) scale sampling in key (particularly Alaskan) inshore areas has improved markedly in recent years, providing the possibility for comprehensive and representative standard samples. Temporal stratification in the analysis was by month and 10-day period.

We restricted the scale pattern analysis to ages 1.2 and 1.3 immature fish, as age composition information available at the beginning of the study (Major et al. 1978; Ito and Takagi 1981) suggested that age .2 and .3 immatures comprised the great majority of the high seas samples, and our initial ageing work showed that freshwater age 1. fish greatly predominated.

C. Construction of Standard Samples

1. Definition of Categories

Two schemes were employed to establish categories for the discriminant analysis. By the first scheme we established four major regional categories (abbreviations in parentheses will be used in tables): (1) Kamchatka (Asia), which produces the great majority of Asian chinook salmon; (2) western Alaska (West), which includes Canadian Yukon River chinook stocks; (3) central Alaska (Cent); and (4) southeast Alaska and British Columbia (SEBC). In our pilot study of 1980 samples (Knudsen et al. 1983), we found virtually no indication that age 1.2 immature fish from Washington-Oregon-California occur to a significant degree in the study area, and therefore we did not establish a category for the region south of British Columbia in the overall analysis. The four categories mentioned account for the great majority of age 1. chinook production in the Pacific rim, and they correspond roughly to different environmental regimes in which the juvenile fish exist before intermingling on the high seas.

Considering the results of tagging experiments and previous scale pattern studies, we anticipated that at least for the Bering Sea region the present analysis would show the western Alaska stock-complex to predominate in the population. For this reason we used a second scheme to establish categories that broke the western Alaska complex into subregions or "rivers", to be used with the other regional categories in a second series of analysis. The three western Alaska "river" categories are (1) Yukon River (Yuk), which includes the Canadian portion of the population, (2) Kuskokwim district (Kusk), which includes the Kuskokwim and Kanektok Rivers and Goodnews Bay, and (3) Bristol Bay (Bris), which includes the Nushagak and Togiak Rivers (scales were not obtained for other chinook-producing systems in Bristol Bay).

2. Brood-year Standards

We considered two approaches to construct the necessary standard samples; i.e., brood-year standards (as used by Knudsen et al. 1983) or pooled-year standards. Brood-year standards represent the same year-class as membered by the high seas samples being classified. Pooled-year standards would include scales from a number of successive brood-years. The brood-year standards would theoretically be the most representative and appropriate, but a considerable amount of effort is required to construct them. We performed a series of analyses of variance of scale data from inshore samples to examine the degree of variability attributable to brood year (as well as to other factors) and to determine which approach was warranted.

The analyses of variance were with respect to four factors: region, brood year, ocean age group, and sex. Data were drawn from the factor levels summarized in Table 5. Ocean ages were grouped into two levels, age .3 and age .4+ (i.e., age .4 and .5). The brood years available from the North American areas were 1974-76, but for Asia sample sizes dictated the inclusion of levels 1973-75.

Two series of ANOVAs were done, since the data available did not permit a totally crossed design. Series I included all four levels of region but only two levels of brood year (1974-75) which were totally crossed. Series II included only the three North American regions, but all three levels of brood year. For each ANOVA series, a separate analysis was done for each of the 19 scale characters employed by Knudsen et al. (1983). In all ANOVAs region, age group, and sex were considered fixed effects and brood year was considered to be a random effect. Because cell sample sizes were greatly unequal, the method of unweighted cell means was used (Winer 1971).

Results of these ANOVAs are presented in Table 6 (for series I) and Table 7 (for series II). In both series, region and brood year were in most cases highly significant factors, whereas significant F-values were infrequently obtained for ocean age group and sex. We conclude that the general method used by Knudsen et al. (1983) to construct standard samples is most appropriate, since the large variability due to brood year is controlled for by stratification. Because ocean age group was not a significant factor for most of the analyses, there might not be need to weight the brood-year standards by age. Nevertheless, we chose to continue the procedure as it should make the standard samples most representative of the total spawning population from each brood year. Sex was also a minor contribution to total variability, and we decided not to stratify the analysis further by sex or to consider sex as an additional weighting factor.

3. Run Size Indices, Inshore Age Compositions, and Weighting of Standard Samples

A total of 14 different brood-year standards (Table 8) for each regional and river category was needed to classify immature ages 1.2 and 1.3 chinook in the 1975-81 high seas samples. (In Table 8 and in all subsequent Tables and Appendix Tables that reference brood year in conjunction with the abbreviations for standard categories, a letter "A" following the brood year indicates a standard used to classify age 1.2 fish sampled 4 years later, and a "B" indicates a standard for classifying age 1.3 fish 5 years later.) The brood-year standards were constructed to represent the various ages at which fish in the high seas samples mature, in proportion to their relative abundance in successive runs. We also weighted the various represented stocks within the regional or "river" categories according to best estimates of relative abundance. Although published age composition information exists for a number of the major stocks, we used our own age composition data (based on the entire sub-samples provided by numerous agencies) to maintain consistency with age determinations of the high seas samples. Because scale sampling is usually done from commercial or other catches by selective gear, the age compositions calculated represent the entire runs with various degrees of bias.

The general procedure for weighting the standard samples is as follows, although sample availability for some categories necessitated departure from the strategy. Run strength indices (Table 9) and estimated age compositions (Tables 10 to 13) were used to determine a total return for each age class and for each stock and year. These were added within category and brood year to obtain a total brood-year return, and the proportion of the total brood-year return represented by each age class and stock was computed. This proportion was then multiplied by the total desired sample size (200 scales) to determine the number of scales needed from each age class and stock. When this number slightly exceeded the number of scales available, the deficiency was made up by substituting scales from other age classes from the same stock and brood year. Final sample sizes of less than 200 occurred for some standards because (1) sample availability did not permit a size of 200, so the weighting was based on a smaller yet maximum sample size that permitted proportional representation of constituent stocks; and/or (2) after constructing the standards we considered a few scales to be aberrant and deleted them.

D. High Seas Scale Samples and Associated Biological Data

The Japan Fisheries Agency (JFA) was requested, through the INPFC, to provide scale impressions and associated biological data for all chinook salmon sampled during research vessel and mothership operations in the study area in May through July south of 48°N and in June and July north of 48°N, 1975-81. All samples were aged by JFA biologists, and their determinations were coded on the data sheets. Maturity determinations, based on criteria listed by Ito and Takagi (1981), were also coded on the sheets. All scales were re-aged by FRI biologists, and the FRI age determinations were coded on the biological data provided by JFA. High seas samples for 1981 also included scales collected by U.S. observers on the salmon motherships in the U.S. FCZ (mainly in areas E7048, E7050, and E7052). Biological data accompanying those samples did not include maturity determinations, but the great majority of the fish sampled by the observers would have been immature.

The age and maturity composition of the high seas chinook catches must be estimated in order to apply the stratified results of the present scale analysis and then to estimate the regional stock composition of the catches. Records in the biological data representing fish caught by commercial-type gillnet were tallied according to age (FRI determination) and maturity group by month/sub-area strata, and the resulting vectors of proportions were multiplied by the reported commercial catches in the same strata. The freshwater and/or ocean age could not be determined for many fish of known maturity stage. As we wished to use as much of the biological information as possible, we used the following hierarchical procedure to estimate age/maturity composition. For each month/sub-area stratum, the numbers of known maturing and immature fish were added to give the total effective sample size, and the proportions in each maturity category were calculated. Within each maturity group, proportions in each ocean age group were calculated (fish older than .4 were pooled with .4 fish; fish of indeterminable ocean age were ignored), and these proportions were multiplied by the proportion for the maturity category. A similar hierarchical procedure was used to obtain the proportions by freshwater age group within the immature age .2 and .3 categories. The resulting vector of proportions was applied to the commercial catch in a stratum only if the effective sample size was at least 25 fish. The sample sizes for strata representing the LBDN area were generally less than 25, and therefore the vectors used for sub-areas 11-15 were based on fish sampled south of 50°N.

E. Statistical Methodology

1. Discriminant Technique

Previous FRI scale pattern analyses of sockeye and coho origins and Knudsen's et al. (1983) preliminary analysis of chinook origins have all employed a non-parametric discriminant technique developed by Cook (1982). For the present analysis we chose to use linear discriminant analysis, as applied by commercial software (program BMDP7M; see Brown et al. 1983), for the following reasons: (1) ADF&G routinely uses linear discriminant analysis and urged our use of the technique for consistency; (2) the BMDP package program includes character selection; (3) the BMDP program is considerably less expensive to execute than the series of programs that apply Cook's technique; and (4) the two techniques, using the same test data, scale characters, and a priori probabilities, yielded classification matrices with column vectors that were not significantly different.

2. Parameter Estimation

The methods of point and variance estimation are the same as used in our previous studies (Cook 1982), except that the variance estimator of Pella and Robertson (1979) was used even in 2-category analyses. We developed estimates for all strata represented by at least 25 fish of an age/maturity group. Although our main interpretation is based on strata of sub-area and month, we also made estimates for finer strata, including INPFC 2^{o} x 5^{o} statistical area, and also 10-day period crossed with each spatial level.

3. Method of Collapsed Analysis and of Selecting "River" Analyses

The matrix correction procedure used to obtain point estimates can result in negative estimates for one or more categories, indicating that such categories are not present in the population. The estimates for the remaining categories must be revised to sum to 1.0 and thus be reasonable. Cook (1983) suggested an algorithm for constraining estimates obtained in the full N-way analysis, to accommodate such situations. However, we chose to continue the earlier method of collapsing and repeating the analysis to include only the categories indicated to be present. This approach is expensive in personnel and computer time, but it has intuitive appeal, and it allows use of different sets of scale characters that best separate the remaining categories.

In all cases in which western Alaska was found, after any collapsing, to be the predominant regional stock, we did an analysis employing the western Alaska "river" standards plus any remaining regional standards. For instance, if a regional analysis collapsed to western and central Alaska and Asia, western Alaska having the highest estimate, a 5-way "river" analysis was then done, employing standards for Yukon, Kuskokwim, Bristol Bay, central Alaska, and Asia.

4. Data Checking and Scale Character Selection

A considerable amount of screening and checking was done to ensure quality of data. As mentioned earlier, raw data (in ADF&G format) were transformed into basic scale characters and reformatted for convenient analysis. Distances between every third circulus in the three defined zones were calculated. Scales having a (magnified) distance of over 1.0 inch for any circulus triplet were excluded from the analysis, as such wide triplets were often due to broken or otherwise aberrant circuli. Scales with fewer than five circuli in the first year were also excluded, as they were suspected to be incorrectly aged, regenerated, or possibly non-preferred. The data were screened by a computer program that identified all scales with values for basic characters outside of allowable ranges, and such scales were re-examined. After the standard samples were constructed, basic statistics were calculated for some of the scale characters used in the analysis. Scales with a value outside of four standard deviations on either side of the mean for these characters were re-examined, and were excluded if ageing or measurement errors were found. Lastly, all type C scales (i.e., those judged non-preferred) were excluded from the analysis.

The format requested by ADF&G included delineation and measurement of zone 2 (i.e., "plus growth" between the freshwater annulus and the first true ocean circulus). However, scale readers were not confident about the accuracy or consistency of identifying freshwater plus growth. For this reason, characters that involved zone 2 or zone 3 separately were not included in the analysis. We also did not include scale character 38 (Table 4), the radius of the focus, since differences among stocks for this character might be related to differences in the quality of the scale collections provided by the various agencies.

Character selection was done by the BMDP program according to a stepwise procedure employing 4.0 as the F-value for variable entry. We modified the procedure by considering also classificatory accuracy. This required two runs of the program for each analysis, the first run employing only the standard samples. The BMDP program outputs a "jack-knifed" (i.e., "leaving-one-out") classification matrix at each step of variable entry. Sometimes as additional variables are entered, overall classificatory accuracy decreases. In such cases we specified in the final run inclusion of only those variables which had resulted in the highest overall classificatory accuracy. In cases where the highest accuracy was attained by two or more different sets of characters, we chose the character set that provided the highest accuracy for the stock with the greatest misclassification error rate.

V. RESULTS

A. Age Determination of the 1975-81 High Seas Samples

1. Comparison of JFA and FRI Age Determinations

FRI age determinations are generally similar to those of JFA. Table 14 shows the compositions, determined by FRI and JFA analysts, of the samples of chinook caught by commercial-type gillnet in May-July, south of 62°N and between 160°E and 175°W. Both agencies showed age .2 fish to predominate in the samples of maturing fish. The mean composition of age .2 maturing fish (in the fraction of the total samples that could be aged) was 11.0% according to JFA and 13.1% according to FRI. Both agencies also showed age 1.2 fish to predominate greatly in the samples of immature fish (1975-81 mean percent composition is 72.1% according to JFA and 69.2% according to FRI). The largest absolute difference in estimated percent age composition occurred in the 1980 samples in which the percent composition of the predominant age 1.2 immature group differed between the two agencies by 5.2% (this absolute deviation represents a 6.6% "error" from the JFA figure). FRI analysts were in general more conservative in age reading, as they considered a much larger number of fish to have regenerated freshwater or ocean portions of the scale.

2. Age/maturity Composition of the 1975-81 Mothership and Land-based Driftnet Catches

Estimates of age/maturity composition of the mothership and LBDN catches are presented in Appendix Tables A1-A7 and B1-B7, respectively. Biological data were sufficient to permit estimates for the majority of the annual catches of both fisheries. The mean percentage of unallocated catches (those in strata represented by fewer than 25 fish in the biological data) is 1.9% for the mothership fishery and 17.0% for the LBDN fishery.

The compilation in Appendix Tables A1-A7 supports Major's et al. (1978) and Ito and Takagi's (1981) conclusions that the great majority of the mothership fishery's chinook catches consists of immature fish. The 1975-81 unweighted mean percentage of immature fish in the catch is 94.1% (range 89.0% in 1977 to 98.2% in 1980). Most of the maturing fish (mean 82.0%) are caught in June. Ocean age .2 fish predominated in the catches, comprising unweighted averages of 74.5% and 91.5% of the catches of maturing and immature fish, respectively. Immature age 1.2 fish made up the great majority (mean 84.9%, range 75.6% to 88.5%) of the total annual catch. Immature age 1.3 fish comprised the second most abundant group, accounting for an average of 7.0% of the annual catch. Freshwater age composition was examined only for age .2 and .3 immature fish. Within these two ocean age groups, the mean percent compositions of age 0. , 1., and 2. fish were 0.6%, 98.5%, and 0.9%, respectively.

Care must be taken when assessing the age/maturity composition of the LBDN catches (Appendix Tables B1-B7) as in some (especially later) years a considerable fraction of the annual catch could not be allocated because of insufficient biological data. The percent composition of immature fish in the LBDN catches (mean 97.6%) appears to be higher than in the mothership catches. This estimate is to some extent biased upwards because cases of insufficient biological data precluding estimates most often occurred for May and June, when maturing fish are most available. As in the mothership fishery catches, ages 1.2 and 1.3 immature fish comprised the majority of the LBDN catches (1975-81 mean percent compositions of the two groups are 78.3% and 15.6%, respectively).

B. Differences in Scale Patterns Between Regions

In Appendix Figures 1-7 the means, standard deviations, and ranges are plotted for four basic scale characters (size of zones 1 and 2+3 and number of circuli in zones 1 and 2+3), for each brood-year regional standard sample used to classify age 1.2 fish. Although these four characters were not used in every separate analysis, they are useful in providing an overview of the salient differences in scale patterns between the regional categories. Asian fish consistently had the smallest zone 1 and zones 2+3 of the scale. In all brood years but 1977, southeast Alaska/British Columbia fish had the largest mean size of zone 1. Western Alaska fish, on the other hand, consistently had the largest mean size of the zones 2+3. The mean sizes of zones 1 and 2+3 of central Alaska fish were intermediate between those for Asia and southeast Alaska/British Columbia, and tended to be closer to the latter for size of zones 2+3. Southeast Alaska/British Columbia fish also had the greatest mean number of circuli in zone 1.

Scale characters (listed in Table 4) selected most often by the stepwise algorithm of program BMDP7M in the regional analyses were those pertaining to early growth in the first ocean year (characters 34 and, to a lesser extent, 35 and 36) and to spacing of circuli over the first ocean year (character 21) and over the freshwater and first ocean years combined (character 9). Other characters frequently used in the regional analyses included scale size to the end of the first ocean annulus (character 6), total circulus count to the end of the first ocean annulus (character 7), and the proportion of the size of second year growth to the total size of the scale through zone 3 (character 11). Circulus spacing in the freshwater year (character 17) and proportion of scale size deposited in circulus triplets early in the first ocean year (characters 25, 26, and 27) were often used in analyses discriminating between western Alaska "river" stocks.

C. Classification of Standard Samples

The results of classifying the standards for all regional and western Alaskan "river" stock combinations used in the scale pattern analysis are presented for each age class and brood-year analysis in

Appendix Tables C1-C7 and D1-D7. Overall classification accuracies (calculated as the unweighted mean of the accuracies on the diagonal of the classification matrices) and the selected scale characters (listed in the order that they were entered into the linear function) are shown at the top of each matrix.

In the 4-way regional analyses classification accuracies for Asian, western Alaska, and southeast Alaska/British Columbia standards averaged over 70%. Correct classification of central Alaskan scales was lower, averaging 60%. Scales from Asian fish tended to misclassify most strongly towards western and central Alaska, those from western Alaska towards central Alaska and Asia, and those from southeast Alaska/British Columbia towards central Alaska. Scales from central Alaskan fish misclassified towards all other regions, errors being slightly higher towards southeast Alaska/British Columbia.

In the 6-way "river" analyses western Alaska river stocks misclassified primarily to each other. Accuracies for Yukon and Bristol Bay standards averaged 60%, and both stocks misclassified mostly to Kuskokwim. Kuskokwim classification accuracies averaged 48%, and misclassified mostly as Yukon and Bristol Bay.

D. Point Estimates of Stock Composition and Confidence Intervals

The mixing proportion estimates and associated 90% confidence intervals obtained by classifying the 1975-81 high seas samples are presented separately for the regional or western Alaska "river" analyses, age classes, and years in Appendix Tables E1 through H5. In these Appendix Tables, an estimate of "0" indicates that the stock is not present, and an estimate of "0.0" is a positive estimate less than 0.05.

Tables 15 to 18 summarize the point estimates by providing a tally of the number of estimates which indicate presence, absence, and predominance of the regional or "river" stocks, and the number of statistically significant estimates for the stocks. The term "significant" refers to a point estimate having a 90% confidence interval that does not include zero, and "predominant" refers to the stock having the highest mixing proportion estimate.

The following discussion is based primarily on the estimates obtained for the month/sub-area strata, because they are generally represented by adequate samples yet are sufficiently detailed to indicate spatial and perhaps temporal trends in stock composition. The month/sub-area estimates (from the regional analyses) are illustrated in Figs. 7 to 14.

VI. DISCUSSION

A. Mothership Bering Sea Region (MS-BS)

Western Alaska (including the Canadian Yukon) was the predominant regional stock of immature ages 1.2 and 1.3 chinook salmon in most MS-BS sub-areas (Figs. 8 and 12). Estimated proportions of western Alaskan chinook usually increased from west to east, and were often highest in sub-area 10. The proportions of immature age 1.2 chinook of western Alaskan origin in the MS-BS increased from June to July in 1975, but decreased in 1976 and 1977. No June month/sub-area estimates were obtained for the Bering Sea after 1977, but the 1978 estimates for the entire MS-BS region also indicated a decrease in proportion of western Alaskan fish from June to July. In July 1980 proportions of immature age 1.2 western Alaskan chinook in sub-areas 8 and 10, where unusually large mothership catches occurred (Appendix Table A6), were 89% and 91%, respectively, and the proportion of immature age 1.3 western Alaskan chinook in sub-area 8 was 87% (Figs. 8 and 12). With the exception of sub-area 10 in 1975, these were the highest estimates for western Alaskan chinook in sub-areas 8 and 10 from 1975 to 1981.

Except for July 1980, Yukon was always the predominant western Alaskan stock of immature ages 1.2 and 1.3 chinook in MS-BS sub-areas 4, 6, and 8 from 1975-81 (Figs. 8 and 12). In sub-area 10, considerable year-to-year variability occurred in the proportions of Yukon, Kuskokwim, and Bristol Bay chinook. For immature age 1.2 fish in sub-area 10, Yukon predominated in 1975, 1978, and 1981; Kuskokwim was the dominant stock in 1976, 1979, and 1980; and Bristol Bay accounted for the highest proportion of western Alaskan chinook in 1977. Less information is available for immature age 1.3 fish in sub-area 10, but Yukon predominated in June 1977 and July 1981, and Kuskokwim was dominant in July 1977. High estimates for Kuskokwim in sub-areas 6 (49%) and 10 (60%) for immature age 1.2 chinook and in sub-area 8 (88%) for immature age 1.3 chinook in July 1980 (Appendix Tables G6 and H4) indicate that this stock was more prevalent in 1980 catches than in other years.

Asia, the next most abundant stock-group in MS-BS samples, was the predominant regional stock of immature age 1.2 chinook in only three month/sub-area strata (Fig. 7), and was the predominant stock (74.3%) of immature age 1.3 chinook in the entire MS-BS region only in June 1976 (Appendix Table F2). In general, spatial and temporal trends in the proportions of Asian chinook in MS-BS aub-areas were the opposite of those found for western Alaska.

Central Alaska was never a predominant stock in any of the MS-BS sub-areas for either age/maturity class. However, this stock was detected in more than half of the month/sub-area strata (Figs. 9 and 13), which indicates at least a low abundance of this stock in the MS-BS. Because of their low relative abundance, spatial or temporal trends in stock proportions of central Alaskan chinook in the MS-BS were not evident.

Immature age 1.2 chinook of southeast Alaskan/British Columbian origin were found in less than half of the month/sub-area strata (Fig. 10), indicating a low abundance of this stock group in the MS-BS area. Our results also indicate that immature age 1.3 chinook of southeast Alaskan/British Columbian origin are present only in very low relative abundance in the MS-BS (Fig. 14).

B. Mothership North Pacific Region (MS-PAC)

Mixing proportion estimates indicate a broader mixture of stocks in the MS-PAC than in the MS-BS. In addition, there is often a dramatic shift in the predominant stock of immature age 1.2 chinook from western Alaska in the MS-BS region to central Alaska in the MS-PAC region. There also appears to be more divergence in stock composition between the two ocean age classes in the MS-PAC, and so the results for each age class are discussed separately.

Central Alaska, predominating in approximately three-quarters of the month/sub-area strata from 1975-81, was the dominant regional stock of immature age 1.2 chinook in the MS-PAC (Fig. 9). In June 1975-77, proportions of immature age 1.2 central Alaskan chinook were higher in sub-area 7 than in adjacent sub-areas. However, in July there appears to be a westward shift in their distribution, higher estimates occurring for sub-areas 1, 3, and 5 (Fig. 9). Central Alaska accounted for 65% of the age 1.2 chinook in sub-area 5 in July 1980, where unusually large mothership catches occurred (Fig. 9, Appendix Table A6). Except for July 1975, this was the highest estimate for central Alaskan chinook in sub-area 5 from 1975-81.

Western Alaska, the next most abundant stock-group in the MS-PAC region, was the predominant regional stock of immature age 1.2 chinook in only seven month/sub-area strata. Yukon was the predominant western Alaskan stock in all of these strata except for sub-area 9 in July 1979, where the highest estimate was for Kuskokwim (Fig. 8). Immature age 1.2 chinook of western Alaskan origin were particularly abundant in July 1978, when they predominated in all MS-PAC sub-areas but sub-area 5. Similar to central Alaska, western Alaskan chinook were also present in higher proportions in sub-area 7 than in adjacent sub-areas in June of 1975 and 1977. However, there were no discernable spatial trends in the proportions of western Alaskan chinook in the MS-PAC in July. Proportions of immature age 1.2 western Alaskan chinook often decreased from June to July in the MS-PAC (Fig. 8).

Immature age 1.2 chinook of Asian origin were present in over three-quarters of the month/sub-area strata, but Asia was the predominant stock in only four strata (Fig. 7). In contrast to central Alaska, July estimates for Asia tend to increase from west to east, some of the highest significant estimates occurring in sub-areas 7 and 9.

Southeast Alaska/British Columbia chinook were present in just over half of the month/sub-area strata, but were never predominant (Fig. 10). These results suggest a low abundance of immature age 1.2 chinook of this stock in the MS-PAC.

For immature age 1.3 chinook, all regional and river stocks except southeast Alaska/British Columbia predominated in at least one month/sub-area stratum in the MS-PAC, indicating a diverse mixture of stocks in this fishery area (Figs. 11-14). Southeast Alaska/British Columbia chinook were either not present or were present in low relative abundance.

C. Landbased Driftnet Region (LBDN)

A paucity of samples permitted only eight month/sub-area estimates for immature ages 1.2 and 1.3 chinook in the LBDN (Figs. 7-14). Central Alaska was the predominant stock in seven strata and Asia in one, and central Alaska was the only stock present in all strata. Estimates for immature age 1.2 chinook of western Alaskan origin were as high as 32% in sub-area 11 and 26% in sub-area 14 in June (Fig. 8). Again, estimates for southeast Alaska/British Columbia indicate that this stock-group was in low relative abundance (Figs. 10 and 14). No western Alaska "river" analyses were done for the LBDN region since the western Alaska regional stock was never found to predominate.

D. Comparison With Previous Chinook Scale Pattern Analyses

Significant differences in methods and study period obviate a direct, detailed comparison of the present results with those of Major et al. (1977b). However, a broad comparison of results can be made by examining the averages of mixing proportion estimates for month/sub-area strata from the two studies (Table 19).

Both studies found that chinook in the MS-BS, particularly in sub-areas 8 and 10, were predominantly of western Alaskan origin. However, our estimates for western Alaska in sub-area 6 in June and sub-area 4 in July averaged considerably higher than Major's et al. estimates (Table 19). Both studies also showed, in general, a decrease in proportions of Asian chinook and an increase in the proportions of western Alaskan chinook from west to east in the MS-BS.

Results from the two studies for the MS-PAC are quite dissimilar. Average estimates for both Asian and western Alaskan chinook in sub-areas 1, 3, 5, 7, and 9 are usually much lower in our study than in Major's et al. This is due, primarily, to the classification of an often large proportion of the MS-PAC scale samples to the central Alaska category in the present study. Major's et al. (1977b) study did not include standards for regions other than Asia and western Alaska.

We also compared Knudsen's et al. (1983) results for 1980 with the present results. Estimates for MS-BS sub-areas were similar for both studies, but estimates for the MS-PAC, particularly for sub-area 5, were quite different. In general, for both age classes estimates for central Alaska were considerably higher and estimates for age 1.2 Asian chinook and age 1.3 southeast Alaska/British Columbia chinook were lower in the present study than in Knudsen's et al. (1983) study.

Differences in methods between the two studies make it difficult to determine the exact cause of these changes in the estimates for the MS-PAC. We suspect that the high estimates for age 1.3 southeast Alaska/British Columbia chinook in Knudsen's et al. study may be related to the selection in that study of the radius of the focus as the best character for distinguishing between central Alaska and southeast Alaska/British Columbia chinook in the 4-way analysis. This scale character was not used in the present study for the reason discussed in Methods, Section E.4. Changes in the predominant stock of age 1.2 chinook in sub-area 5 from Asia to central Alaska may be related to Knudsen's et al. (1983) use of more suspected non-preferred scales in both the Asia standard and high seas unknowns, than used in the present study. Myers (1983) and Walker and Davis (1983) reported that non-preferred area scales in the standards or unknowns can cause directional biases in mixing porportion estimates.

We think that the methods of the present study represent a considerable improvement over earlier techniques used by Major et al. (1977b) and Knudsen et al. (1983). Major's et al. (1977b) study was limited by several problems which to a large extent were overcome by the present study:

1) The North American standard included only western Alaskan and Canadian Yukon scales, yet it was used to classify fish in areas where other North American stocks are known to occur.

2) The North American standard was not constructed by weighting component stocks according to best estimates of abundance, and both standards and unknowns were pooled over age class and brood year.

3) The Asian standard consisted of maturing chinook sampled on the high seas west of 170°E, which may have included some North American fish.

4) The classification of 1966-72 high seas samples was considered provisional, in part because it was based on standards collected only in 1968.

Knudsen's et al. (1983) study was also limited by several problems that were eliminated or ameliorated by the present study:

1) Suspected non-preferred body area scales were included in both the standards and unknowns.

2) Questionable scale characters involving the radius of the focus and the plus growth zone (zone 2) were used.

3) The Asian standards did not include 1982 scale samples from the Kamchatka and Bolshaya rivers.

4) The Asian and central Alaskan standards were not weighted to reflect the relative abundances of the component stocks.

E. Comparison With Information From Tagging

Tag recovery information for the Bering Sea indicates the predominance of western Alaskan chinook, but also the presence of other North American stocks. Information for the North Pacific Ocean suggests a broader mixture of stocks from all major chinook production areas (Fig. 3 and Table 3). These same general conclusions can be drawn from the results of the present scale pattern analysis. Unfortunately, high seas tag releases of chinook are too sporadic and the number of recoveries is far too small to warrant quantitative use of the tagging data. Coded-wire tag releases are regionally disproportionate, and represent, primarily, hatchery stocks from southeast Alaska, British Columbia, Washington, Oregon, and California. The lack of coded-wire tag recoveries from the mothership fishery, in light of the examination of 22,270 chinook for missing adipose fins in 1981-83, would suggest a low relative abundance of these southern stocks in the U.S. FCZ west of 175°E.

Tag recoveries demonstrate the presence of Washington-Oregon-California chinook in waters west of 155°W in both the Bering Sea and North Pacific Ocean. However, we chose not to include a standard for stocks originating south of the Fraser River in part because age 0. is the predominant freshwater age class of these southern stocks (Table 8 in Knudsen et al., 1983). Previous studies have shown that age 1. chinook from Washington, Oregon, and California are not present in these western waters in proportions detectable with current scale pattern analysis techniques (Knudsen et al. 1983; Myers 1983).

VII. ESTIMATES OF INTERCEPTIONS BY HIGH SEAS FISHERIES

A. Methods

Estimates of the annual catches of immature chinook salmon by region of origin for the mothership fishery were made by multiplying the catches by sub-area, month, year, and age (.2 and .3) by the corresponding mixing proportion estimates (age 1.2 for all .2 and age 1.3 for all .3) and then summing these for the total annual catch by region of origin (Table 20). When mixing proportion estimates were missing for the years 1975-1981, then the average (over years) composition for the corresponding age, sub-area and month was used. The annual catches of matures and the unallocated fish were prorated to the region of origin by the regional composition of the immature fish.

Unweighted average compositions were calculated for the years 1975-1977 and 1978-1981 for the Bering Sea (even-numbered sub-areas) and North Pacific (odd-numbered sub-areas). These stock compositions (Table 21) were then used to estimate the interceptions by the mothership fishery for the years prior to 1975 (1975-77 compositions) and after 1981 (1978-81 compositions) by multiplying the average proportions and the corresponding total annual chinook salmon catch in the Bering Sea and North Pacific.

The annual catches of chinook salmon by the landbased fleet have exceeded those by the mothership fleet since 1977 (except for 1980) and we felt it was important to allocate those catches to the region of origin to evaluate fully the potential impact of the high seas interceptions. Unfortunately, we had few direct estimates for the landbased area and the sample sizes were small (30-60); therefore, we decided to apply the North Pacific mothership compositions to the annual landbased catches. The scale analysis for the landbased driftnet fishery area indicated a preponderance of central Alaskan fish (about 70%) and nearly equal proportions of Asian and western Alaskan stocks, which was similar to the average composition in the North Pacific area of the mothership fishery. Catch statistics for the landbased fishery used in this report are from Fredin (1980), as official statistics for early years are in terms of weight only. The statistics for 1964-71 include relatively small catches by the landbased longline fishery, which operated in the same general waters as the LBDN fishery. Catches by the entire landbased fishery are considered, although the scale pattern analysis pertained only to the area east of 160°E, which accounts for the great majority of the total chinook catch.

The final step in our evaluation of the impact of high seas fishing on Alaskan salmon stocks was to estimate the annual runs (catch + escapement) to western Alaska and the annual age compositions of the runs. Annual estimates of the escapements of chinook salmon were available for the Nushagak and Togiak Districts of Bristol Bay from aerial surveys conducted by ADF&G. These estimates were added to the commercial catches and estimated (by ADF&G) subsistence catches to estimate the annual runs. Only commercial catches were available for the other districts of Bristol Bay and the north side of the Alaska Peninsula. The annual runs for the other districts were estimated by dividing the catch by the rate of exploitation in the Nushagak district, which on the average was 0.54. The Nushagak runs accounted for 72% of the total estimated Bristol Bay runs (1965-1983). Estimated runs to the Yukon and Kuskokwim regions for 1975-1983 were provided by ADF&G (1976-83 estimates are in Table 9 in this report). For earlier years the Yukon runs were estimated by dividing the catch by an average rate of exploitation of 0.65, whereas the Kuskokwim region runs were estimated by dividing the catches by 0.45 (1970-1974) and by 0.40 (1965-1969). A commercial fishery was not developed in the Kuskokwim region until the 1960s and the low annual variation in the catches suggested that the fishery was managed conservatively, i.e., on almost a quota basis (McBride and Wilcock 1983), thus we used relatively low rates of exploitation to estimate the runs.

The high seas catches were mostly of immature age 1.2 chinook salmon that if not caught would have returned over the next 3 years at ages 1.3, 1.4 and 1.5. Age compositions from the western Alaska commercial fisheries (Table 11) were applied to the annual estimated runs to estimate the runs by age group and then the returns by brood year. Maturity schedules for the inshore returns of age 1.3 and older fish were then constructed and applied to the estimated high seas catches of western Alaska chinook to apportion the catches to the year of inshore run. A weighted (by run size) average maturity schedule for the three western Alaskan regions was used for apportioning the 1975-1980 high seas catches, whereas the maturity schedules for the Nushagak were used for other years.

There are obviously several sources of error in these methods of estimating annual abundance, e.g., estimates of escapements were often estimated from the catch and the age composition of the escapement was assumed to be the same as the catch; however, the estimates are probably the best available at present.

B. Results

Prior to our work, high seas catches had been reported to be from either Asian (mostly Kamchatka) or North American (entirely western Alaska) stocks by Fredin (1980) and Dahlberg (1980 and 1981). Our estimates of the interceptions of western Alaska chinook salmon by the mothership fishery were similar to prior estimates, e.g., our estimates of the average catch of western Alaska chinook was 164,000 (1964-1980) whereas the prior estimates averaged 179,000 (Table 22); however, our estimates of the interceptions of Asian stocks averaged less than one-half of the prior estimates. Central Alaskan stocks have apparently contributed almost as many chinook salmon to the mothership fishery as have western Alaskan stocks in recent years. They have apparently contributed the majority of the chinook salmon to the landbased fishery. Earlier estimates had assigned all landbased catches to Asian stocks.

The extent of the contribution of central Alaskan chinook salmon to the high seas fisheries was an unexpected result because the commercial catches in central Alaska are so much lower than the catches in western Alaska and Asia (Table 23). The estimates of the high seas catches of central Alaskan chinook salmon were over four times greater than the inshore commercial catches during 1964-1977 and over two times greater during the period of reduced high seas fishing in 1978-1983. Annual estimates of total chinook salmon abundance (catch plus escapement) in central Alaska are, unfortunately, not available. Commercial fishing for chinook salmon is greatly restricted in Cook Inlet which is the major production area in the region, so the catches undoubtedly underestimate the relative abundance. Without reasonable estimates of total stock abundance it is not possible to estimate the high seas exploitation rate of central Alaskan stocks, but our results would suggest a substantial level of exploitation.

Estimates of the high seas catches of chinook salmon originating in southeast Alaska/British Columbia were negligible until 1978 and although they have increased in recent years (because a higher proportion of the catch has come from the North Pacific) the interceptions are still low compared to the commercial catches. However the high seas interceptions since 1978 may be as much as 10% of the stock originating in southeast Alaska/British Columbia, as the catch in that area, which comes mainly from the large troll fishery, includes a high proportion of chinook salmon originating from southern stocks (Washington-California).

The Nushagak, Kuskokwim and Yukon Rivers combined probably produce more chinook salmon than the rest of the Alaskan rivers combined. Total stock abundance in Kamchatka is unknown, but from the size of the rivers there compared to those in western Alaska, it seems likely that the western Alaskan chinook salmon stocks are more than twice as abundant. So it would be expected that the western Alaskan stocks would contribute most heavily to the high seas fisheries, particularly in the Bering Sea.

Estimates of the annual inshore runs (commercial and subsistence catches plus escapement estimates) to western Alaska, the apportioned (to year of return) high seas catches (interceptions), and the annual combined runs (inshore runs plus high seas catches) for 1965-1983 are given in Table 24. We estimate that during the period 1965-1977 the high seas fisheries caught an average of 26% of the combined runs (42% was domestic catch and 32% was escapement), but since 1978 they have taken an average of 14% (23% of the 1982 run and 11-15% of the other runs). No significant linear correlation was evident between the high seas catches and the inshore runs. Small catches were associated with above average runs but large catches were associated with both small and large runs. The increase in the western Alaskan chinook salmon runs beginning in 1978 coincided with an increase in the abundance of all species of salmon in western and central Alaska and does not appear to be attributable solely to a reduction in high seas catches. However, if there were no high seas catches, the inshore catches since 1978 might have been increased by 19%, assuming that the inshore rate of exploitation was unchanged (inshore rate of exploitation has actually decreased slightly with increasing run size during 1975-1983) and that high seas drop-out mortalities equalled natural mortalities.

The impact of the high seas fisheries on the individual stocks within western Alaska is difficult to determine aside from the fact that the estimates of the inshore stock abundances are rather imprecise. Our estimates of the (weighted mean) river stock composition in the mothership fishery from scale pattern analysis indicated that the Yukon stock made up about 46% of the western Alaska component during 1975-1977 and 64% during 1978-1981. In contrast the Bristol Bay (predominantly Nushagak) stock made up only 26% of the western Alaska component during 1975-1977 and only 9% during 1978-1981. However, judging by the estimates of the inshore runs, one would expect the Bristol Bay stock to be the most abundant western Alaskan stock in the mothership fishery. This may indicate differences in high seas distribution of western Alaskan stocks or inaccurate estimates of their inshore runs.

Escapement-return statistics for the Nushagak River stock were calculated from catch, escapement and catch age-composition data provided by ADF&G (Table 25). There was some correlation between the returns of total ages 5-7 and the CPUE (primarily age 4) in sub-areas 8 and 10 through the 1970 brood year (r = .58); however, after the 1970 brood year, when the relative production (R/E) increased and high seas catches decreased, the correlation between CPUE and returns disappeared. There is little evidence that the high seas fishery has had a significant impact on the Nushagak chinook salmon returns from the brood years since 1971, with the possible exception of the returns from the 1976 brood. The high seas CPUE was very high but the returns were relatively low. However, a lower return might be expected from the 1976 brood year because the escapement was so large. Returns to date from the 1978 brood year, with a similar large escapement, have been relatively poor.

A reduction in high seas catches of chinook salmon in the Bering Sea (sub-areas 8 and 10), although of some benefit to the coastal fisheries in western Alaska, would require a substantial reduction in the catches of chum and pink salmon. In July, sub-areas 8 and 10 have historically contained the highest relative abundance and provided the largest catches of chum salmon to the mothership fishery (Tables 26 and 27). In recent years, chum salmon catches (as well as the catches of other species) have been higher in sub-area 5 than in the Bering Sea, but the CPUE for chum salmon in sub-area 5 is considerably lower. In contrast, the CPUE for sockeye salmon (many of which are of Bristol Bay origin) is much higher in sub-area 5 than in the Bering Sea. Thus a simple shift in fishing effort from the Bering Sea to sub-area 5 may not be of benefit to western Alaska fishermen. Such a shift would probably increase the high seas catches of Bristol Bay sockeye and central Alaska chinook salmon.

VIII. OVERALL SUMMARY AND CONCLUSIONS

1. Previous information from tagging studies (Fig. 3 and Table 3) and scale pattern analyses of 1966-72 Japanese mothership and research vessel samples (Major et al. 1977b) indicate that chinook salmon caught in the central and western Bering Sea are primarily of western Alaskan origin.

2. Tag recoveries suggest a more diverse mixture of regional chinook salmon stocks in the North Pacific Ocean west of 155°W (East Kamchatka, western Alaska, central Alaska, British Columbia, Idaho, and coastal Oregon). However, previous scale pattern analyses classified high seas unknowns to only two regional categories: Asia and western Alaska.

3. The present study was an attempt to update and refine estimates of the incidence of various major regional stocks of chinook salmon in the area of the Japanese mothership and landbased driftnet (LBDN) salmon fisheries. The study entailed linear discriminant analysis of growth patterns of scales from ages 1.2 and 1.3 immature chinook salmon sampled in the area 40°-62°N, 160°E-175°W in 1975-81. The analysis employed inshore standard samples representing the regional stocks Asia, western Alaska (including the Canadian Yukon), central Alaska, and southeast Alaska/British Columbia, and western Alaskan "river" stocks Yukon, Kuskokwim and Bristol Bay. Analyses employing the three western Alaska "river" standards were done when western Alaska was found to be the predominant regional stock group in a time/area stratum.

4. Age and maturity composition of the 1975-81 high seas commercial catches was estimated by applying age/maturity compositions determined from the available high seas samples to the reported catches, by sub-area/month strata. Immature age 1.2 fish comprised the main age/maturity group in the 1975-81 mothership (mean 84.9%) and LBDN (mean 78.3%) chinook catches, and immature age 1.3 fish made up the second most abundant group (Appendix Tables A1-A7 and B1-B7). The majority (mean 82.0%) of the mothership catch of maturing chinook salmon is made in June.

5. Descriptive statistics of four basic scale characters showed some consistent differences in scale patterns among the four regional chinook stocks (Appendix Figs. 1-7). For all brood years the scales of Asian fish always had the smallest mean size of zone 1 (1st year: freshwater growth) and zones 2+3 (2nd year: freshwater "plus" growth, if present, and 1st year of ocean growth), southeast Alaska/British Columbia usually had the largest mean size and number of circuli in zone 1, western Alaska consistently had the largest zones 2+3. Measurements for central Alaska scales were intermediate between those for Asia and southeast Alaska/British Columbia.

6. Classification accuracies achieved in the discriminant analyses (Appendix Tables C1-C7 and D1-D7) were highest for the Asian, western Alaska, and southeast Alaska/British Columbia standards (average over 70% in the 4-way regional analyses) and were lower for the central Alaska standards (average 60% in the 4-way regional analyses). Central Alaska misclassified towards all other regions, and errors were often highest towards southeast Alaska/British Columbia.

7. In the "river" analyses the western Alaska stocks misclassified primarily to each other (Appendix Tables C1-C7 and D1-D7). Classification accuracies were highest for Yukon and Bristol Bay (average 60% in the 6-way analyses) and were much lower for Kuskokwim (average 48% in the 6-way analyses).

8. Western Alaska was the predominant regional stock of immature ages 1.2 and 1.3 chinook in the central and western Bering Sea (Figs. 8 and 12), and Asia was the next most abundant regional stock group (Figs. 7 and 11). Stock composition estimates for Asia and western Alaska in the Bering Sea appear to be inversely related (i.e., when estimates for western Alaska were high, estimates for Asia were low and vice versa).

9. Spatial and temporal trends in the proportions of immature age 1.2 western Alaskan and Asian chinook in the Bering Sea were also opposite (Figs. 7 and 8). In general, proportions of western Alaskan chinook increased from west to east and decreased from June to July. Conversely, proportions of Asian chinook usually increased from east to west and from June to July.

10. In terms of relative abundance, Yukon appears to be the overwhelmingly predominant western Alaska stock in the Bering Sea, followed by Kuskokwim, and, lastly, Bristol Bay (Figs. 8 and 12). Considerable year-to-year variability in the proportions of Yukon, Kuskokwim, and Bristol Bay chinook was found to occur in sub-area 10.

11. Central Alaskan chinook also appear to be present in the Bering Sea, although they are usually less abundant than Asian chinook (Figs. 7, 9, 11, and 13); and southeast Alaska/British Columbia chinook were detected only in very low relative abundances (Figs. 10 and 14).

12. Stock composition estimates indicate a broader mixture of stocks and more diversity of stock composition between the two ocean age classes in the North Pacific Ocean than in the Bering Sea (Figs. 7-14).

13. The most unexpected result of our scale pattern analysis was the predominance of immature age 1.2 chinook of central Alaskan origin

in the North Pacific Ocean. Central Alaskan chinook predominated in both the North Pacific mothership and LBDN fishery areas in a majority of the month/sub-area strata (Fig. 9).

14. The next most abundant stock groups of immature age 1.2 chinook in the North Pacific Ocean were western Alaska and Asia. The southeast Alaska/British Columbia group, though more abundant than in the Bering Sea, was still usually detected only in very low relative abundance.

15. Another unforseen result was that in the North Pacific mothership fishery area in July, proportions of immature age 1.2 Asian fish tend to increase from west to east and proportions of central Alaskan chinook tend to increase from east to west (Figs. 7 and 9). There appears to be a westward shift from June to July in the distribution of immature age 1.2 central Alaskan chinook in this area.

16. For immature age 1.3 chinook, the predominance of all regional stocks except southeast Alaska/British Columbia in at least one month/sub-area stratum the North Pacific mothership area indicates a diverse mixture of stocks of this maturity/age group (Figs. 11-14).

17. Central Alaska followed by Asia were the predominant stock groups of immature ages 1.2 and 1.3 chinook in the LBDN; western Alaska was also present; and southeast Alaska/British Columbia was, again, only present in very low relative abundance (Figs. 7 to 14). However, the paucity of samples from this fishery area make it difficult to draw any firm conclusions about stock origins of chinook in the LBDN.

18. The overall pattern of the stock composition estimates shows decreasing abundance of western Alaskan fish southward from the Bering Sea to the LBDN area, and a reverse trend for fish of central Alaskan origin. Asian chinook are an important secondary stock in all fishery areas. Chinook of southeast Alaskan/British Columbia origin are usually present only in low relative abundances.

19. The results of our scale pattern analysis for the Bering Sea mothership area compare well with the results of previous scale pattern studies (Major et al. 1977b; Knudsen et al. 1983). However, our results for the North Pacific mothership area are quite different. We attribute these differences primarily to variations in procedures, and we believe that the methods used in the present study are the best application of scale pattern techniques to high seas chinook samples to date. Our results are generally corroborated by tag recovery information.

20. Previous studies (Fredin 1980; Dahlberg 1980 and 1981) apportioned high seas catches to only two categories: Asia (mostly Kamchatka) or North American (entirely western Alaska), and assigned all landbased driftnet catches to Asian stocks.

21. Our estimates of the interceptions of western Alaskan chinook salmon by the mothership fishery were similar to prior estimates. However, our estimates of the interceptions of Asian chinook salmon by the mothership fishery averaged less than one-half of the prior estimates (Table 22).

22. Our estimates of the interceptions of central Alaska chinook salmon indicate that in recent years they have contributed almost as many fish to the mothership fishery as have western Alaska stocks. In addition, central Alaska has apparently often contributed the majority of chinook salmon to the landbased fishery (Table 22).

23. Our estimates of the high seas catches of central Alaska chinook salmon were over four times greater than the inshore commercial catches during 1964-77 and over two times greater during the period of reduced high seas fishing in 1978-83 (Table 23). Because reliable estimates of total chinook salmon abundance (catch plus escapement) in central Alaska are not available, we were not able to estimate the high seas exploitation rate of central Alaskan stocks. Commercial catches probably underestimate the abundance of central Alaskan chinook relative to Asian and western Alaskan chinook stocks. We believe, however, that the level of high seas exploitation of central Alaskan chinook stocks is probably substantial.

24. High seas interceptions of freshwater age 1. southeast Alaska/British Columbia chinook were negligible until 1978, but (due to increased fishing effort in the North Pacific) they have increased in recent years (Table 23). Commercial catches overestimate the relative abundance of southeast Alaska/British Columbia stocks since they include many troll-caught fish of non-local origin. We suspect that high seas interceptions since 1978 may be as much as 10% of the stock originating in southeast Alaska and British Columbia.

25. During the period 1965-1977 the high seas fisheries caught an average of 26% of the combined western Alaska runs (i.e., Yukon, Kuskokwim and Bristol Bay runs and estimated high seas catch); and since 1978 they have taken an average of 14% (Table 24). No significant linear correlation was evident between the high seas catches and the inshore runs to western Alaska. However, if there were no high seas catches, the inshore catches since 1978 might have been increased by 19%, if the inshore rate of exploitation

were unchanged and if non-catch fishing mortality about equals natural ocean mortality of age 1.2 and older fish.

26. Although a reduction in high seas catches of chinook salmon in the Bering Sea (sub-areas 8 and 10) would be of some benefit to the coastal fisheries in western Alaska, closure of these areas would likely mean a substantial reduction in high seas catches of chum and pink salmon (Table 26). A shift of high seas fishing effort from the Bering Sea to the North Pacific (sub-area 5) would probably result in increased catches of Bristol Bay sockeye and central Alaskan chinook.

27. We believe that scale pattern analysis is the best technique presently available to determine regional stock composition of chinook salmon in offshore waters. While we chose what seemed to be the most appropriate applications of the technique given the limitations we faced, there is nevertheless considerable room for improving the overall methodology and information base required for interpretation and application of the results:

a) There is need for improvement in the quality and quantity of the scale samples themselves. Ideally, fisheries agencies should collect scale samples that represent all major sub-stocks in the catches and escapements of major chinook salmon runs. There is also need for world-wide standardization of scale sampling techniques, particularly so that all scales are taken from the same body area of the fish.

b) Additional work should be done on various technical aspects such as interpretation of scale growth patterns, identification of preferred (body) zone scales, determination of the effects of using non-preferred area scales in such analyses, and the effects of scale character selection on the results of discriminant analyses. These subjects are being addressed in on-going research at FRI.

c) The method of constructing standard samples could have a considerable effect on the results of discriminant analysis, yet it has not been thoroughly examined in any recent applications to our knowledge. Some of the estimates of relative abundance of component stocks in our standard categories were known to be of questionable reliability, and perhaps resulted in inappropriate weighting factors. For instance, our western Alaska standard heavily weighted Nushagak River, yet the Yukon and/or Kuskokwim runs could be considerably larger than the run size indices available. The possible biases and misclassification errors attributable to use of standards that weight component stocks differently than actual relative abundances could be the subject of a large simulation study.

d) The quality of data on inshore run size and age composition should be greatly improved, to permit a thorough and unequivocal assessment of the effects of the high seas fishery on various regional stocks. Our interpretations of the effect of the mothership and landbased fisheries on western Alaskan chinook runs was necessarily based on rough estimates of run size for several major stocks (i.e., all but Nushagak) and readily applicable age composition data were available only for highly selective gillnet catches. We had no basis for deriving even rough estimates of run size for Asia and central Alaska. It is virtually impossible to assess definitively the impact of an intercepting fishery on a particular stock unless detailed data are available on size and age composition of all major components of catch and escapement.

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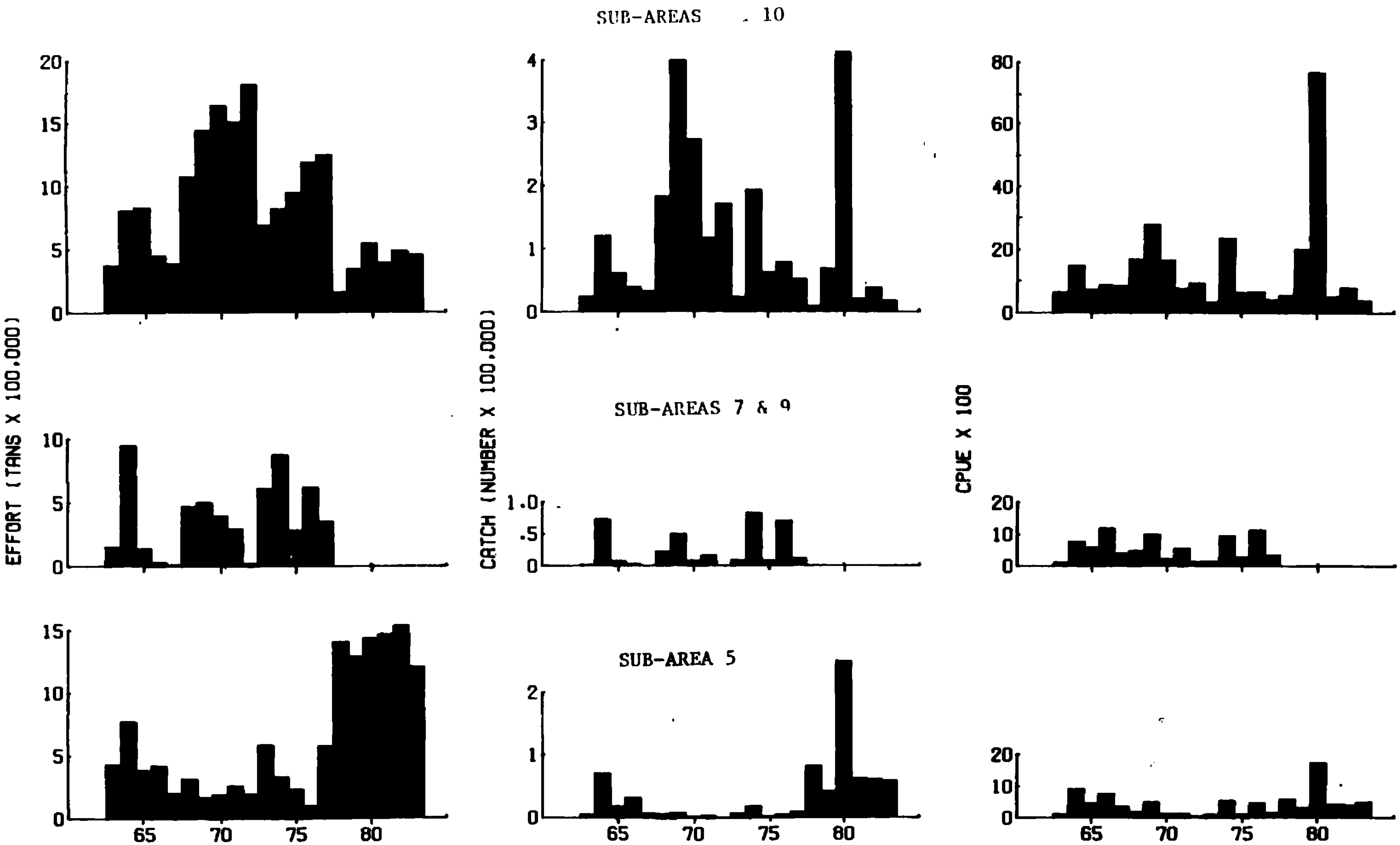


Fig. 2. Fishing effort, catch and catch-per-unit-of-effort (CPUE) of chinook salmon for the Japanese mothership salmon fishery during June 21 - July 31, 1963-83, by sub-areas.

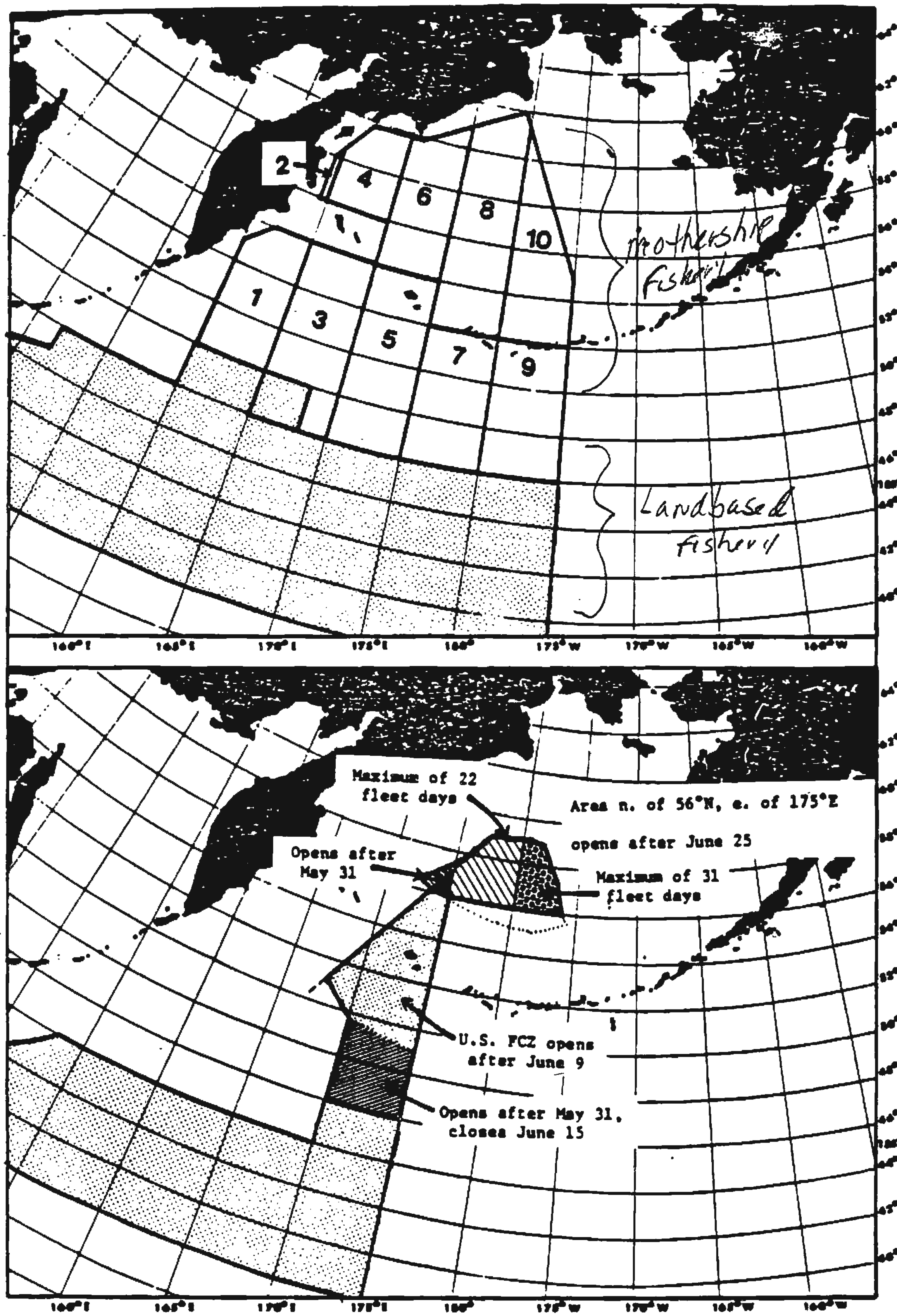


Fig. 1. Areas fished by the Japanese mothership and landbased driftnet fisheries in 1959-76 (upper panel) and 1978-present (lower panel). The landbased driftnet area is the lightly stippled area mostly south of 46°N. The early mothership area shows the statistical sub-areas delineated by Fredin and Worlund (1974), and the recent mothership area shows the time/area restrictions under the Japan-Soviet Fisheries Commission and the INPFC.

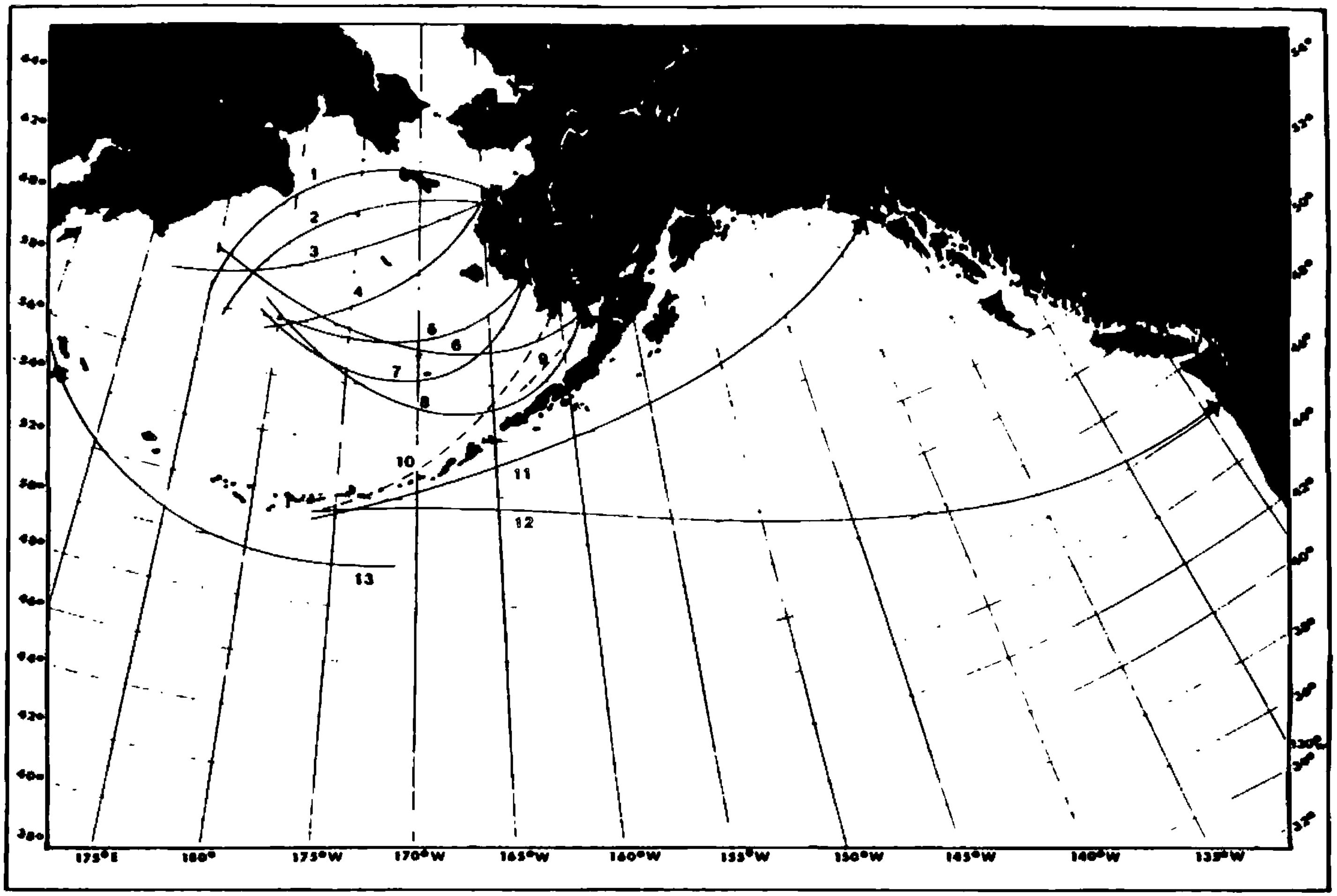


Fig. 3. Coastal tag recoveries of chinook salmon released in the Bering Sea and North Pacific Ocean (W of 155°W) 1956 to 1982. Dashed lines indicate maturing fish, solid lines denote immature fish at the time of release. Recovery details are as follows: individual recovery number, indicated by the arrows on this figure, (n); month and day of release (m/d:); ocean age at release and recovery, if known (release age - recovery age). (1) 7/18: no ages; (2) 7/04: .2-.3; (3) 7/18: .3-.5; (4) 6/18: no ages; (5) 7/30: .2-.4; (6) 7/19: .2-.4; (7) 6/19: .2-.4; (8) 6/20: .3-?; (9) 6/24: .3-.3; (10) 6/09: .3-.3; (11) 7/19: .2-.3; (12) 8/11: no ages; (13) 8/11: .2-.3; fish recovered in Kamchatka River.

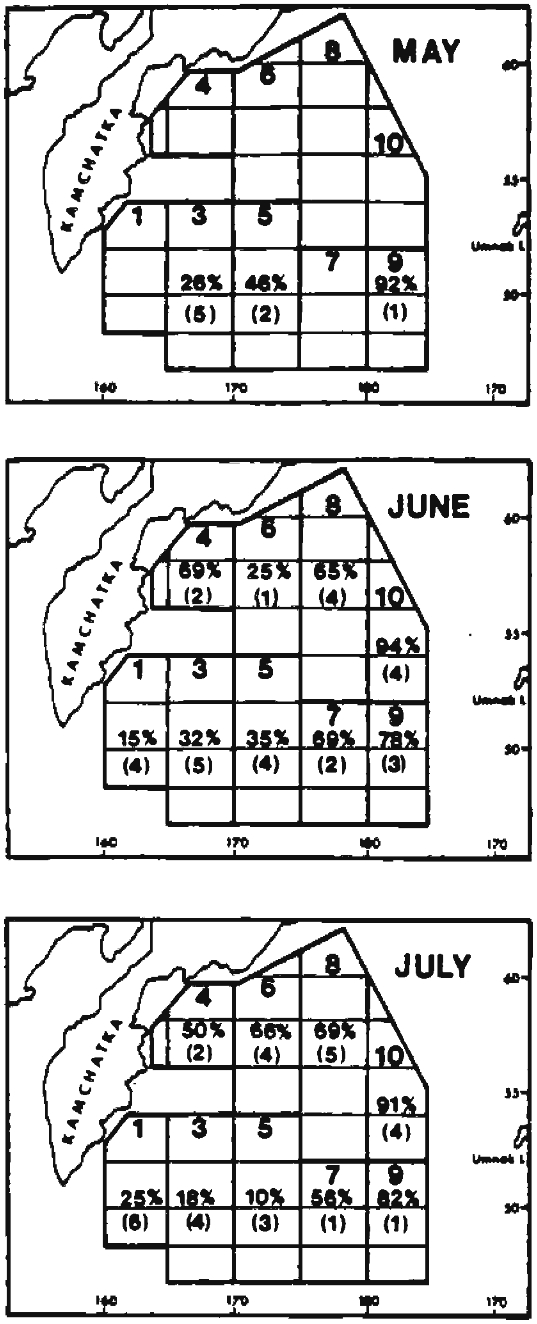


Fig. 4. Summarized results of Major's et al. (1977b) chinook scale pattern study. Percent figures are mean (corrected) estimates of proportion of western Alaska chinook in the population. Large bold-faced numbers indicate the sub-area, and the numbers in parentheses indicate the number of estimates (i.e., years in the period 1966-1972) forming the mean.

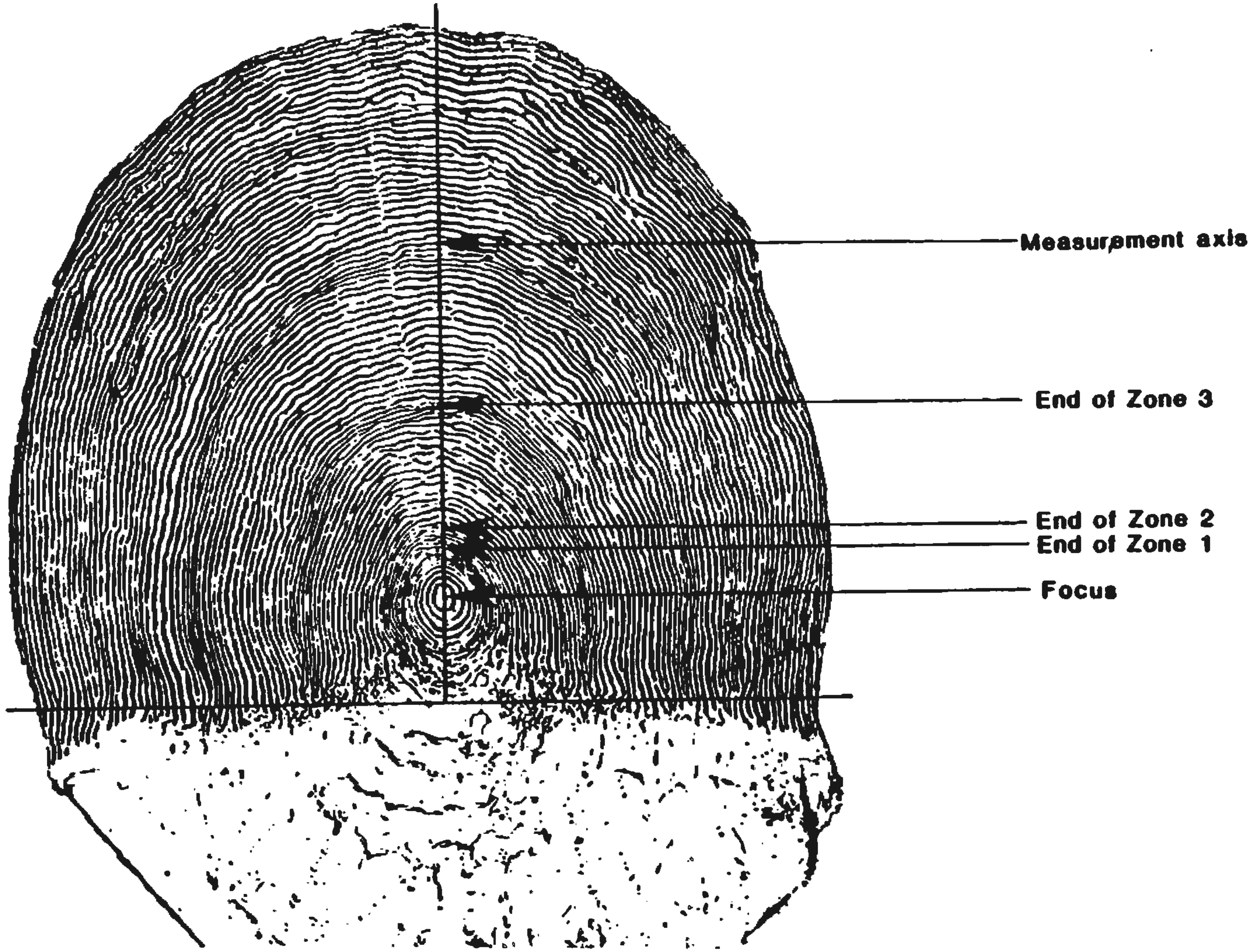


Fig. 5. Age 1.4 chinook salmon scale from the Kamchatka River, U.S.S.R. (6/16/80) showing the measurement axis and life history zones measured for the scale pattern analysis. Measurement axis = perpendicular to sculptured field; Zone 1 = distance from center of focus to outer edge of last circulus in freshwater annulus; Zone 2 = distance from outer edge of last circulus in freshwater annulus to outer edge of last freshwater circulus; Zone 3 = distance from the outer edge of the last freshwater circulus to the outer edge of the last circulus in the first ocean annulus.

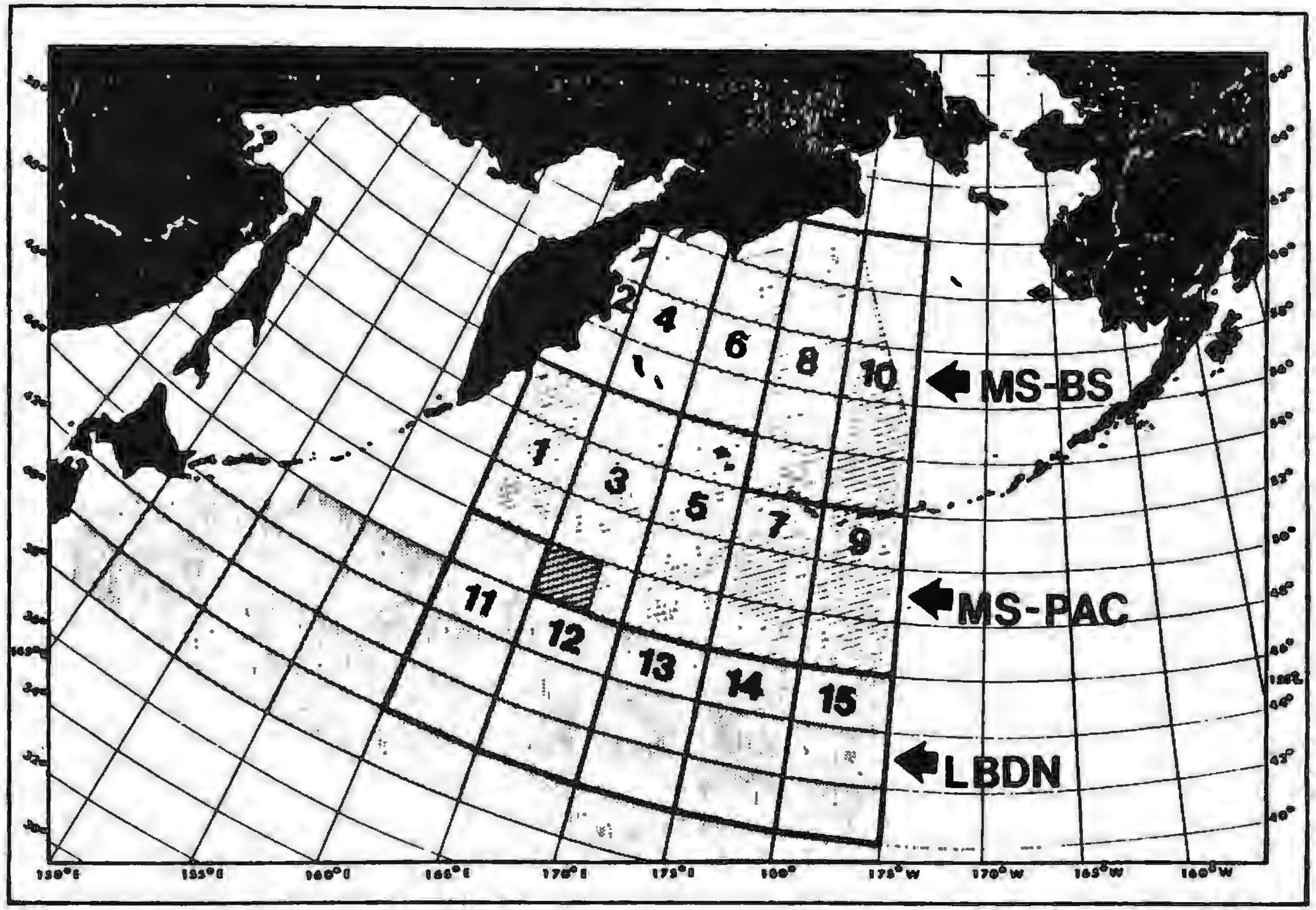


Fig. 6. Bold lines mark the study area for chinook scale analysis, stratified into three regions (MS-BS = mothership fishery in Bering Sea; MS-PAC = mothership fishery in North Pacific; LBDN = landbased driftnet fishery), 15 5°-longitude sub-areas, and INPFC 2°-latitude x 5°-longitude statistical areas. INPFC statistical areas are coded such that the first 2 digits code the west-boundary longitude and the second 2 digits code the south-boundary latitude (e.g., area E7050 has 170°E, 50°N at the SW corner).

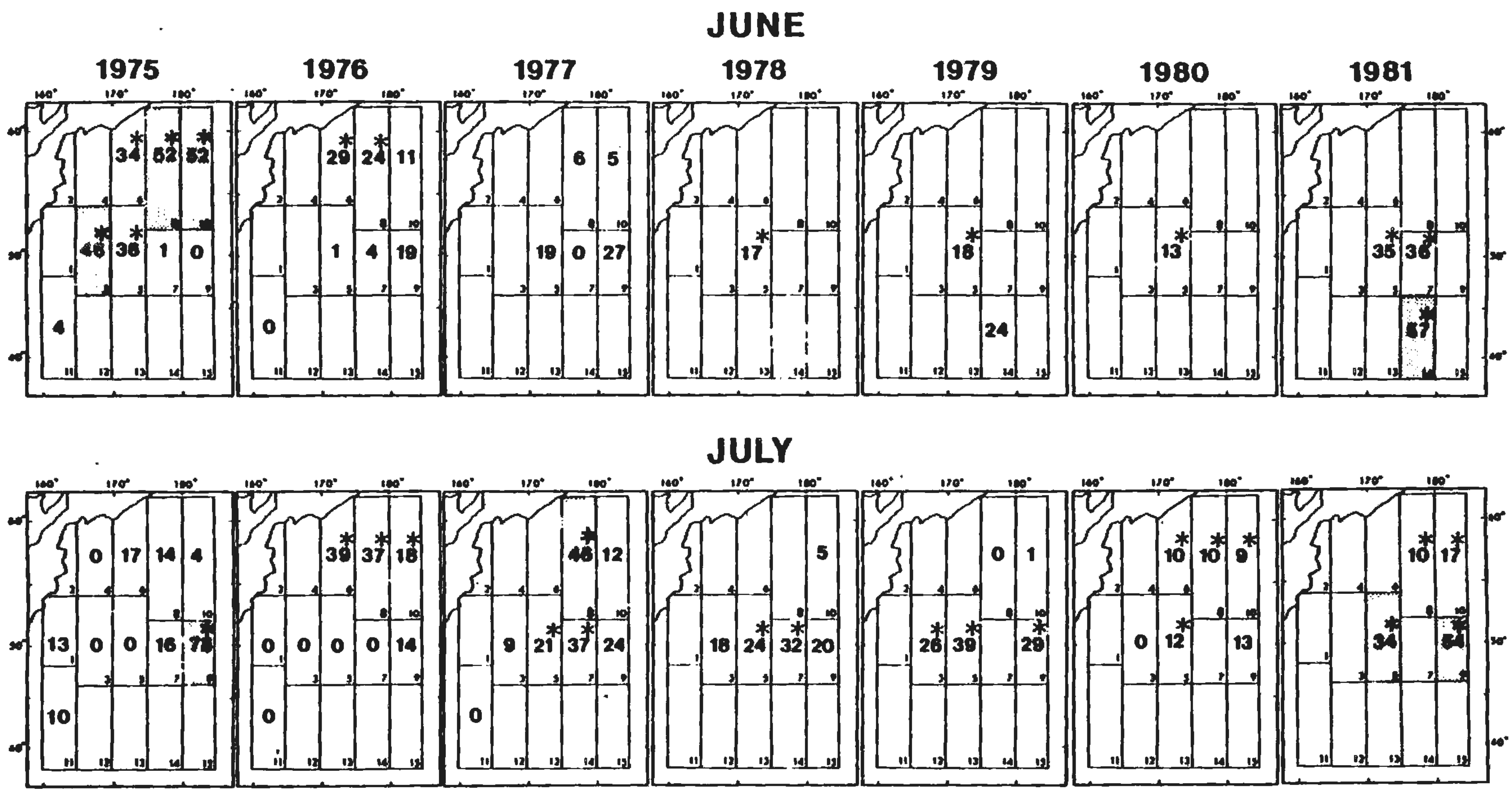


Fig. 7. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.2 chinook salmon of Asian origin. Shading indicates strata where Asia was the predominant regional stock. * = statistically significant estimate ($\alpha = 0.10$).

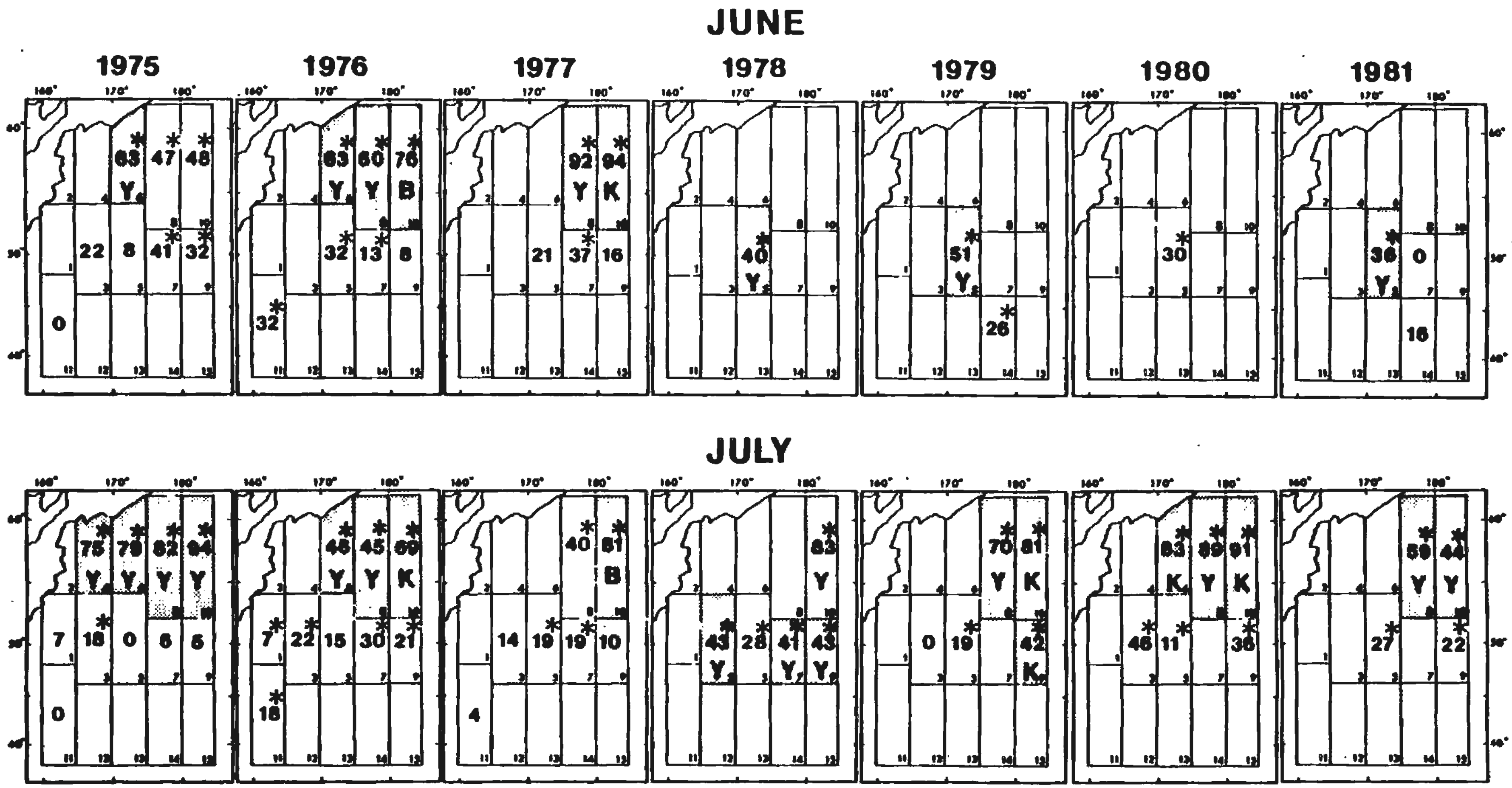


Fig. 8. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.2 chinook salmon of western Alaskan origin. Shading indicates strata where western Alaska was the predominant regional stock. Letters within the shaded areas indicate the predominant western Alaskan stock: Y = Yukon, K = Kuskokwim, B = Bristol Bay. * = statistically significant estimate ($\alpha = 0.10$).

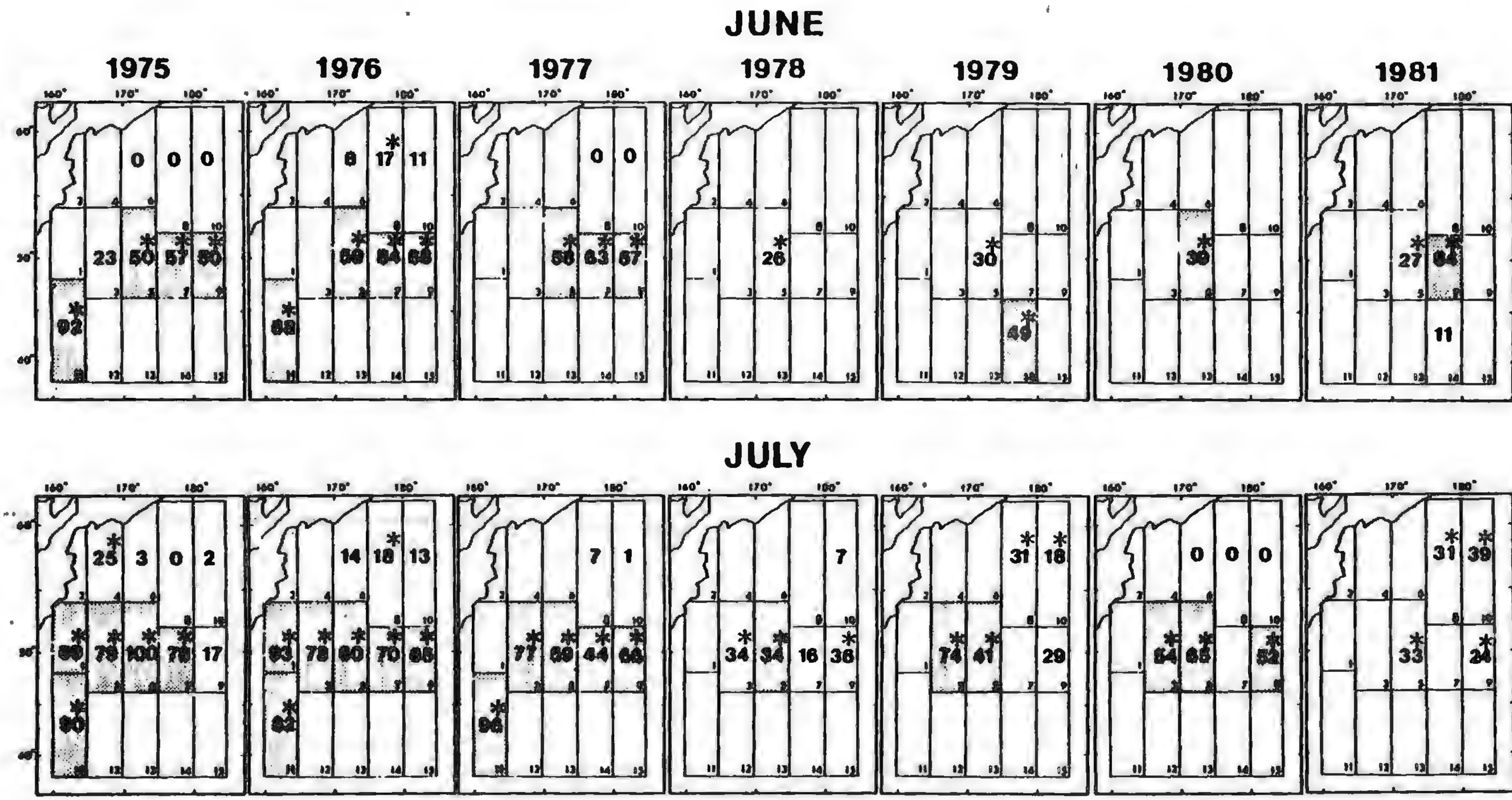


Fig. 9. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.2 chinook salmon of central Alaskan origin. Shading indicates strata where central Alaska was the predominant regional stock. * = statistically significant estimate ($\alpha = 0.10$).

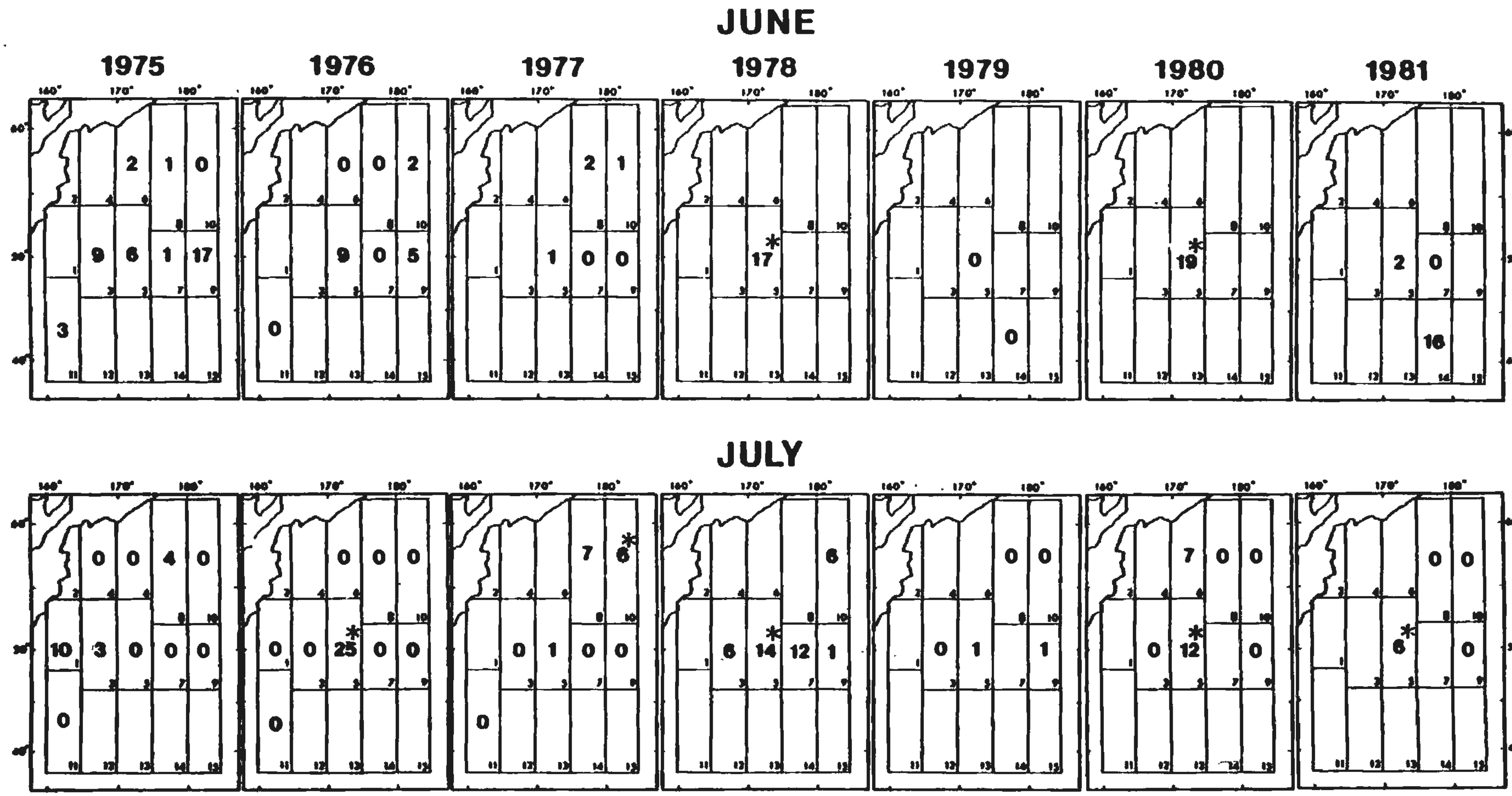


Fig. 10. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.2 chinook salmon of southeastern Alaskan and British Columbian origin. * = statistically significant estimate (α = 0.10).

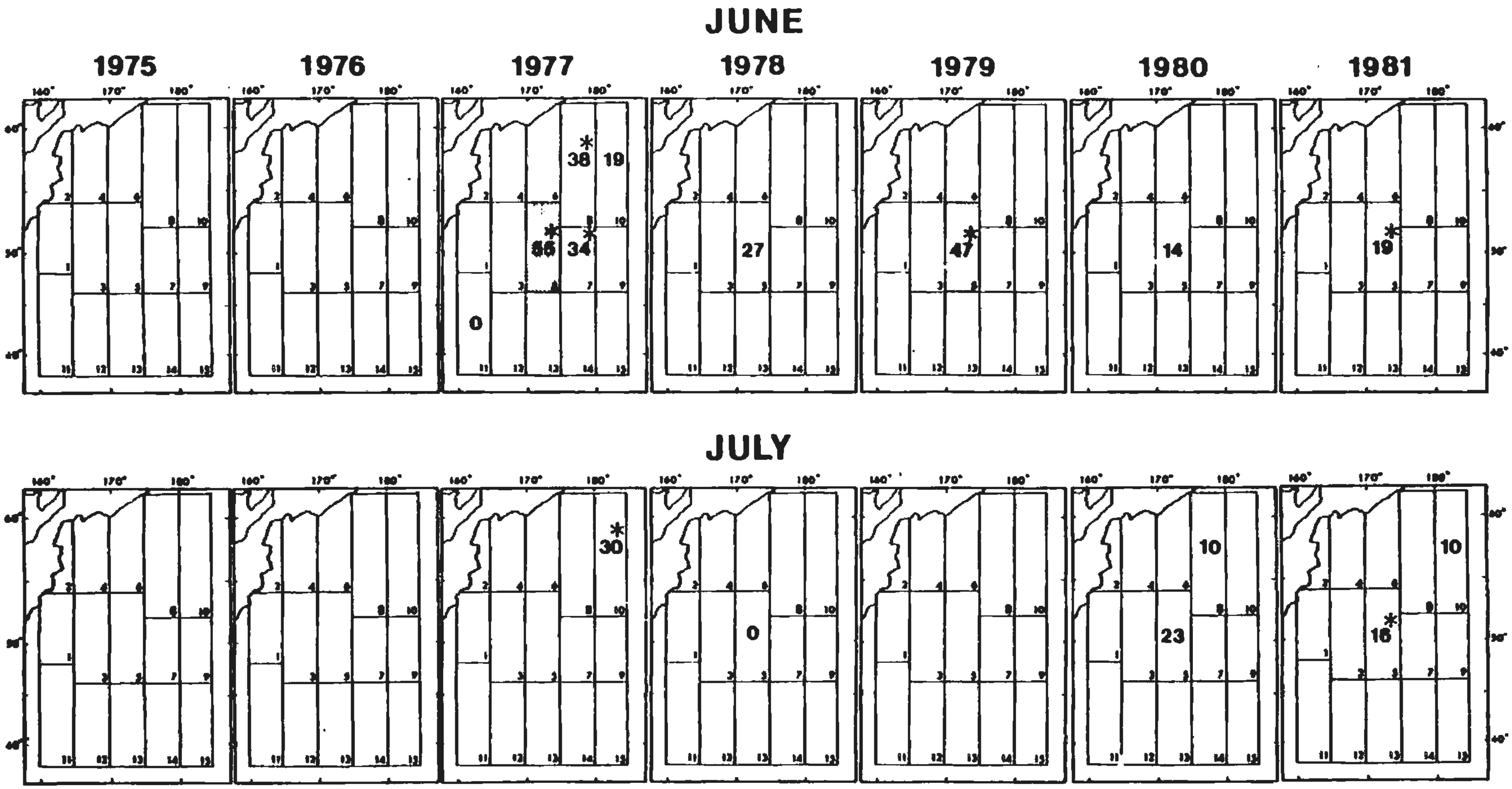


Fig. 11. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.3 chinook salmon of Asian origin. Shading indicates strata where Asia was the predominant regional stock. * = statistically significant estimate (α = 0.10).

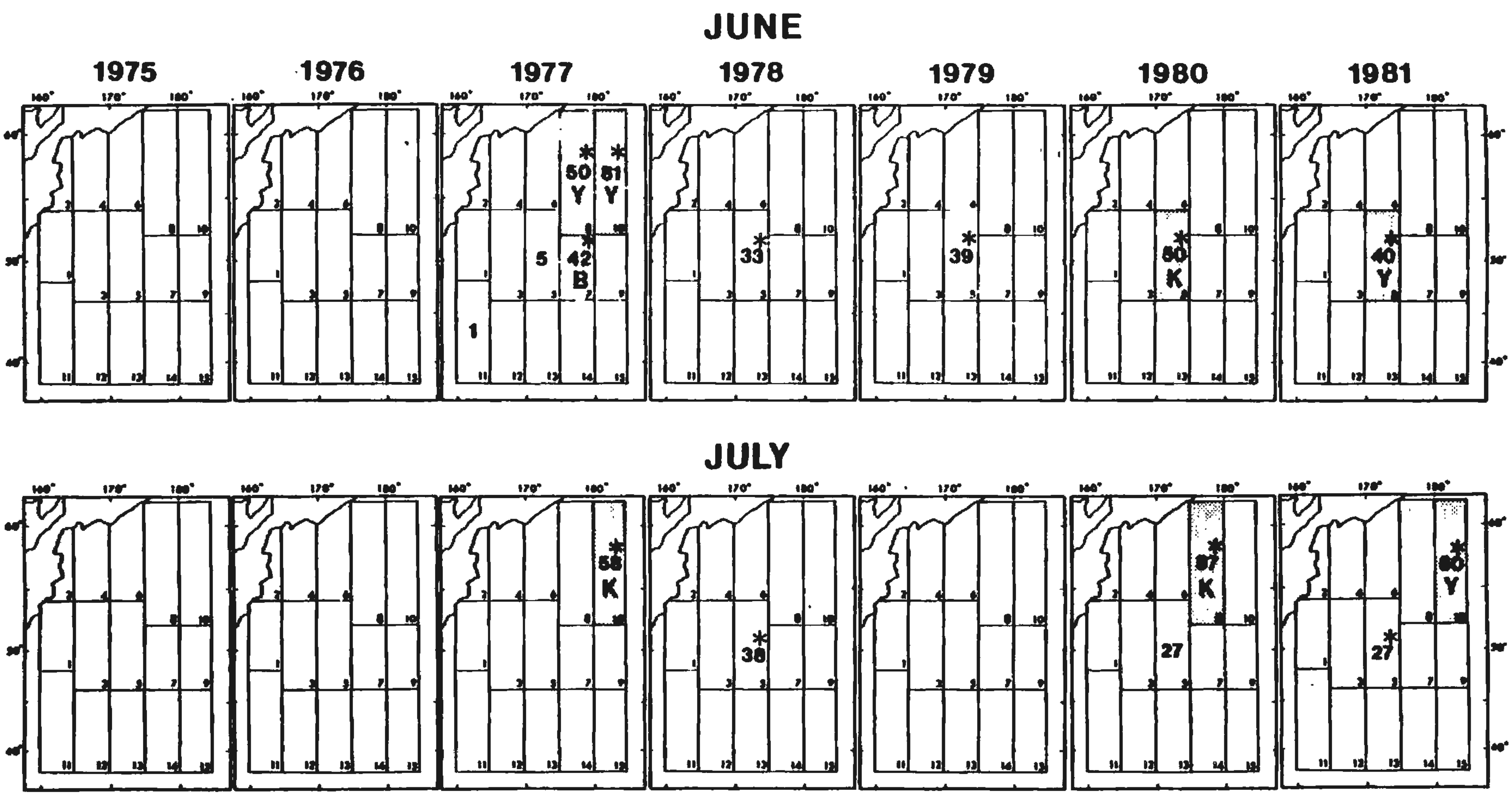


Fig. 12. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.3 chinook salmon of western Alaskan origin. Shading indicates strata where western Alaska was the predominant regional stock. Letters within the shaded areas indicate the predominant western Alaskan stock: Y = Yukon, K = Kuskokwim, B = Bristol Bay. * = statistically significant estimate ($\alpha = 0.10$).

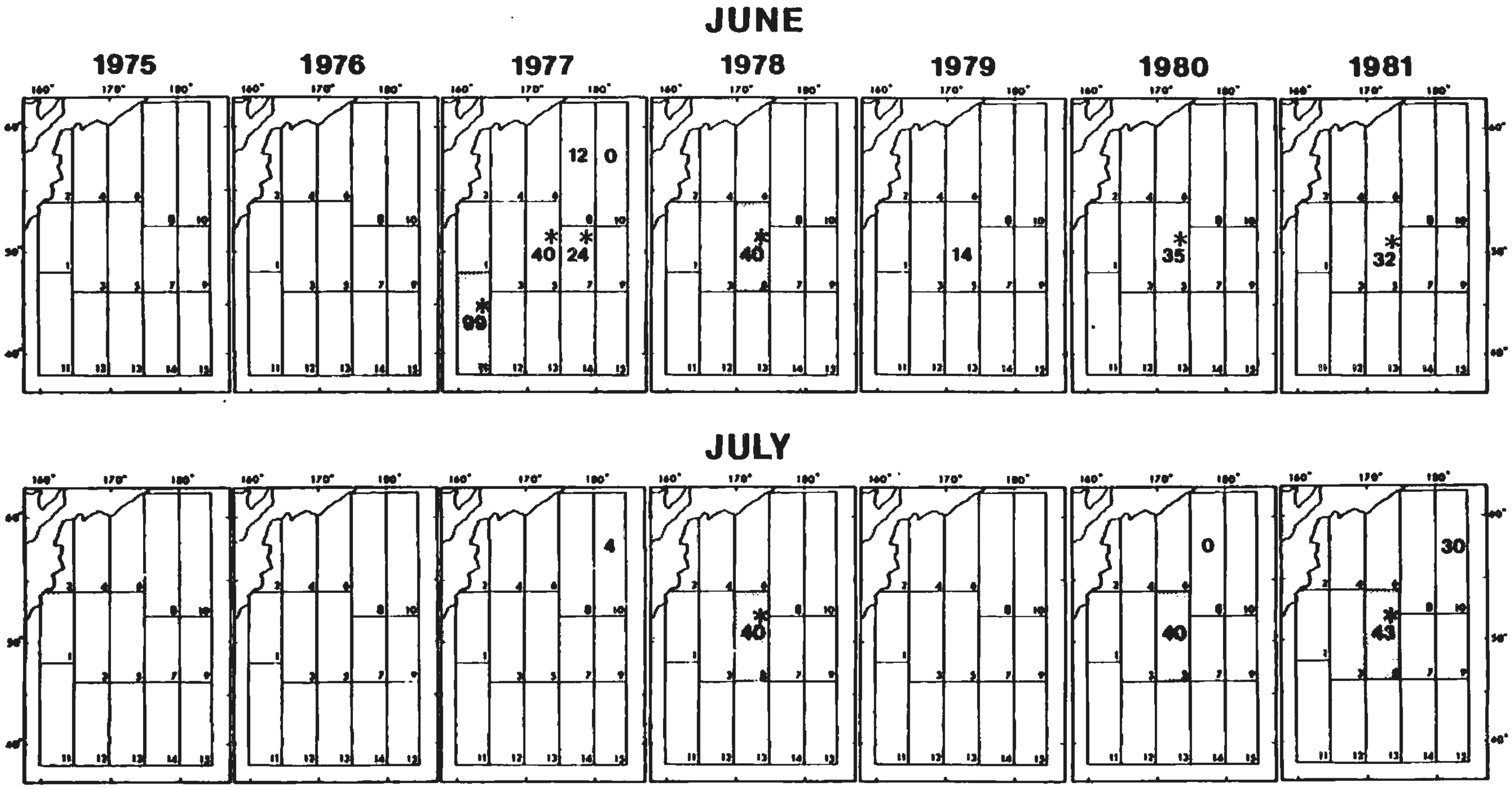


Fig. 13. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.3 chinook salmon of central Alaskan origin. Shading indicates strata where central Alaska was the predominant regional stock. * = statistically significant estimate (α = 0.10).

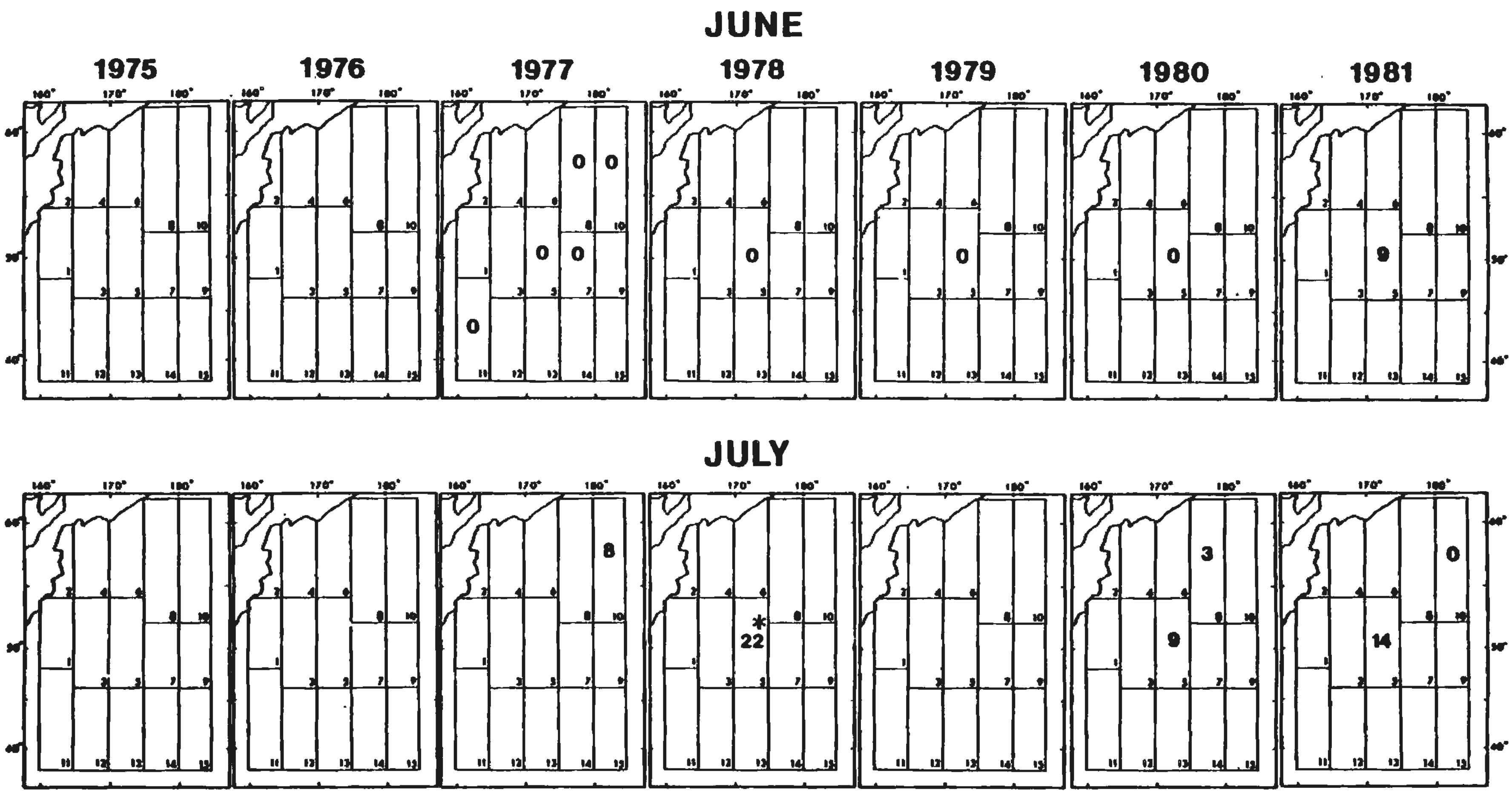


Fig. 14. Mixing proportion estimates (%) by sub-area and month (1975-81) for immature age 1.3 chinook salmon of southeastern Alaskan and British Columbian origin. * = statistically significant estimate ($\alpha = 0.10$).

Table 1. Fleet size, fishing effort (millions of tans), and salmon catches (millions of fish) by the Japanese mothership salmon fishery, 1952-1983.

Years	Number of			Catch					
	Mother-ships	Catcher boats[1]	Effort[2]	Sockeye	Chum	Pink	Coho	Chinook	Total
1952	3	57	.47	.7	.6	.7	+	+	2.1
53	3	105	1.27	1.6	2.7	3.1	.3	+	7.7
54	7	205	2.49	3.8	9.4	5.8	1.4	.07	20.5
55	14	406	6.99	12.2	18.6	16.5	3.2	.07	50.5
1956-60 mean	15	459	7.63	12.7	13.4	13.4	2.0	.09	41.5
1961-65 mean	11	379	6.08	10.3	6.6	3.6	1.7	.17	22.4
1966-70 mean	11	369	5.72	6.9	8.2	4.6	.6	.34	20.6
1971-75 mean	10	339	5.73	2.8	9.6	9.3	.7	.22	22.5
1976	10	332	5.81	2.3	10.4	7.2	.8	.28	21.0
77	6	245	3.98	1.5	6.0	9.1	.1	.09	16.8
78	4	172	2.72	1.9	3.8	1.9	.6	.10	8.3
79	4	172	2.80	2.2	3.3	3.4	.3	.13	9.3
80	4	172	3.16	2.4	3.1	.6	.7	.70	7.4
81	4	172	2.90	2.2	2.5	4.1	.6	.09	9.6
82	4	172	2.94	1.7	3.2	1.7	1.2	.11	7.9
83	4	172	2.95	1.7	3.1	4.3	.3	.09	9.4

[1]Number of catcher vessels include scout vessels.
[2]Excluding effort in the Okhotsk Sea in 1955-1958.

Table 2. Catches of chinook salmon (in thousands of fish), effort (millions of tans) and CPUE in areas 5 (June-July) plus 8 and 10 (6/21-7/31) and for the total mothership fishery, 1952-83.

	Areas 5 + 8 + 10			All areas		
Year	Catch	Effort	CPUE x 100	Catch	Effort	CPUE x 100
1952	+	.1	+	1	.5	.2
53	0	.4	0	3	1.3	.2
54	2	.6	.3	57	2.5	2.3
55	2	1.0	.2	43	7.0	.6
56	65	4.8	1.4	117	9.3	1.3
57	13	1.7	.8	17	6.6	.3
58	2	1.1	.2	37	8.6	.4
59	13	2.0	.7	63	7.1	.9
60	117	1.8	6.6	180	6.5	2.8
61	4	1.1	.4	31	5.0	.6
62	30	1.0	3.1	122	5.9	2.1
63	33	1.3	2.5	88	6.0	1.5
64	198	2.2	9.0	410	7.5	5.4
65	85	1.7	4.9	184	6.1	3.0
66	101	2.2	4.6	208	5.2	4.0
67	54	1.9	2.9	127	5.2	2.4
68	295	2.9	10.3	362	5.9	6.1
69	419	2.3	17.9	554	6.2	8.9
70	279	2.2	12.5	437	6.0	7.2
71	151	3.0	5.0	206	5.8	3.5
72	177	2.7	6.6	260	5.9	4.4
73	35	2.2	1.6	119	5.9	2.0
74	239	2.2	11.1	361	5.4	6.6
75	32	2.1	1.5	162	5.6	2.9
76	90	2.0	4.4	285	5.8	4.9
77	68	2.6	2.6	93	4.0	2.3
78	103	2.5	4.1	105	2.7	3.9
79	125	2.7	4.6	126	2.8	4.5
80	696	2.9	24.0	704	3.1	22.7
81	88	2.9	3.0	88	2.9	3.0
82	104	2.8	3.7	107	2.9	3.7
83	81	2.7	3.0	87	2.8	3.1

Table 3. Recoveries of coded-wire tagged chinook salmon by U.S. observers on foreign or joint-venture groundfish vessels in waters west of 155°W, 1981 to July 1984. Records are sorted by source of information and by region of recovery.

Region of recovery	Release information[1]			Recovery information				
	Tag code	Date[2]	Location[3]	Date	Latitude	West Longitude	Total age[4]	Fork length
A. Recoveries in Dahlberg (1982)								
N. Pacific								
	04-20-12	5/80	Ship Cr. (Cook Inlet: 247-50)	11/81	55-00	158-12	2	410 mm
	02-20-00	7/79	Babine R., British Columbia	6/82	53-05	167-11	4	615
Bering Sea								
	07-22-43	9/80	Elk R., Oregon	5/82	54-21	165-45	3	520
B. Recoveries in Wertheimer and Dahlberg (1983)								
N. Pacific								
	04-20-34	3/81	Crooked Cr. (Cook Inlet: 244-30)	10/82	54-37	158-44	2	470
	07-22-39	10/80	Salmon R., Oregon	11/82	54-56	157-26	3	600
	07-25-05	8/81	Salmon R., Oregon	11/82	54-43	158-09	2	520
	02-18-41	5/81	Little Nitinat R., British Columbia	3/83	56-51	155-55	3	--
	02-20-01	5/80	Kitimat R., British Columbia	2/83	57-37	155-12	4	800
Bering Sea								
	04-20-34	3/81	Crooked Cr. (Cook Inlet: 244-30)	11/82	55-26	167-58	2	505
C. Recoveries reported after Wertheimer and Dahlberg (1983)								
N. Pacific								
	04-20-40	5/81	Deer Mtn. (SE Alaska: 101-47)	1/84	56-58	155-23	5	820
	02-23-05	6/82	Sooke R., south Vancouver Island	2/84	57-36	155-13	3	490
	02-21-59	5/82	Chilliwack R., southern B.C.	2/84	57-11	155-46	3	660
	04-21-21	5/82	Deer Mtn. (SE Alaska: 101-47)	2/84	57-33	155-18	4	560
	04-22-02	5/82	Crystal Lake (SE Alaska: 106-44)	3/84	57-13	155-40	4	560
	07-27-18	3/83	McKenzie R., Oregon	2/84	57-33	155-18	3	540
	04-21-21	5/82	Deer Mtn. (SE Alaska: 101-47)	3/84	57-58	155-54	4	541

Table 3. Recoveries of coded-wire tagged chinook salmon by U.S. observers on foreign or joint-venture groundfish vessels in waters west of 155°W, 1981 to July 1984. Records are sorted by source of information and by region of recovery - cont'd.

Region of recovery	Release information[1]			Recovery information				
	Tag code	Date[2]	Location[3]	Date	Latitude	West Longitude	Total age[4]	Fork length
C. Recoveries reported after Wertheimer and Dahlberg (1983) - cont'd.								
N. Pacific - cont'd.								
	04-21-21	5/82	Deer Mtn. (SE Alaska: 101-47)	2/84	57-11	155-20	4	472
	04-21-21	5/82	Deer Mtn. (SE Alaska: 101-47)	3/84	56-46	155-36	4	600
	02-22-03	6/82	Conuma R., west Vancouver Island	2/84	57-36	155-21	3	500
	02-16-61	5/81	Robertson Cr., east Vancouver Is.	2/84	57-21	155-36	4	620
	04-20-42	5/81	Crystal Lk. (SE Alaska: 106-44)	3/84	56-46	155-36	5	720
	04-21-21	5/82	Deer Mtn. (SE Alaska: 101-47)	2/84	57-21	155-36	4	630
	02-21-59	5/82	Chilliwack R., southern B.C.	3/84	56-41	155-41	3	600
	07-20-54	3/82	McKenzie R., Oregon	2/84	57-40	155-14	4	600
	04-40-05	5/82	Whitman Lk. (SE Alaska: 101-45)	2/84	54-06	157-54	4	730
Bering Sea								
	04-17-26	9/80	Stikine R. (SE Alaska: 108-40)	2/84	54-40	165-21	5	680
	07-24-20	3/82	Willamette R., Oregon	4/84	54-50	165-12	4	650
	03-17-16	5/81	Little Port Walter (SE Alaska: 109-10)	4/84	54-51	165-26	5	690
	60-33-42	11/80	Yaquina Bay, Oregon	11/83	54-39	166-13	4	790

[1]Release information is from Johnson (1984).

[2]Month and year of last releases of fish bearing tags with code.

[3]Region and ADF&G management district and sub-district codes are indicated in parentheses for Alaskan release areas.

[4]Year of recovery minus brood year.

Table 4. Sixty scale characters calculated for use in the scale pattern analyses.

Character No.	Description[a]
1	Size Zone 1
2	Size Zone 2
3	Size Zone 3
4	Size Zone 1 + size Zone 2
5	Size Zone 2 + size Zone 3
6	Size Zone 1 + size Zone 2 + size Zone 3
7	No. circuli Zone 1 + no. circuli Zone 2 + no. circuli Zone 3
8	Size zone 2/(size Zone 1 + size Zone 2 + size Zone 3)
9	(Size Zone 1 + size Zone 2 + size Zone 3)/(no. circuli Zone 1 + no. circuli Zone 2 + no. circuli Zone 3)
10	(Size Zone 1 + size Zone 2)/(size Zone 1 + size Zone 2 + size Zone 3)
11	(Size Zone 2 + size Zone 3)/(size Zone 1 + size Zone 2 + size Zone 3)
12	No. circuli Zone 1
13	No. circuli Zone 2
14	No. circuli Zone 3
15	No. circuli Zone 1 + no. circuli Zone 2
16	No. circuli Zone 2 + no. circuli Zone 3
17	Size Zone 1/no. circuli Zone 1
18	Size Zone 2/no. circuli Zone 2
19	Size Zone 3/no. circuli Zone 3
20	(Size Zone 1 + size Zone 2)/(no. circuli Zone 1 + no. circuli Zone 2)
21	(Size Zone 2 + size Zone 3)/(no. circuli Zone 2 + no. circuli Zone 3)
22	Distance C1 to C3 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
23	Distance C4 to C6 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
24	Distance C7 to C9 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
25	Distance C10 to C12 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
26	Distance C13 to C15 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
27	Distance C16 to C18 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
28	Distance C19 to C21 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
29	Distance C22 to C24 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
30	Distance C25 to C27 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
31	Distance C28 to C30 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
32	Distance C31 to C33 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
33	Distance C34 to C36 in Zones 2+3/(size Zone 1 + size Zone 2 + size Zone 3)
34	Distance C1 to C9 in Zones 2+3 (= character Nos. 49 + 50 + 51)
35	Distance C10 to C18 in Zones 2+3 (= character Nos. 52 + 53 + 54)
36	Distance C19 to C27 in Zones 2+3 (= character Nos. 55 + 56 + 57)
37	Distance C28 to C36 in Zones 2+3 (= character Nos. 58 + 59 + 60)
38	Radius of focus
39	Distance C2 - C4 in Zone 1
40	Distance C5 - C7 in Zone 1

Table 4. Sixty scale characters calculated for use in the scale pattern analyses - continued.

Character No.	Description[a]
41	Distance C8 - C10 in Zone 1
42	Distance C11 - C13 in Zone 1
43	Distance C14 - C16 in Zone 1
44	Distance C2 - C4 in Zone 1/(size Zone 1 + size Zone 2 + size Zone 3)
45	Distance C5 - C7 in Zone 1/(size Zone 1 + size Zone 2 + size Zone 3)
46	Distance C8 - C10 in Zone 1/(size Zone 1 + size Zone 2 + size Zone 3)
47	Distance C11 - C13 in Zone 1/(size Zone 1 + size Zone 2 + size Zone 3)
48	Distance C14 - C16 in Zone 1/(size Zone 1 + size Zone 2 + size Zone 3)
49	Distance C1 to C3 in Zones 2+3
50	Distance C4 to C6 in Zones 2+3
51	Distance C7 to C9 in Zones 2+3
52	Distance C10 to C12 in Zones 2+3
53	Distance C13 to C15 in Zones 2+3
54	Distance C16 to C18 in Zones 2+3
55	Distance C19 to C21 in Zones 2+3
56	Distance C22 to C24 in Zones 2+3
57	Distance C25 to C27 in Zones 2+3
58	Distance C28 to C30 in Zones 2+3
59	Distance C31 to C33 in Zones 2+3
60	Distance C34 to C36 in Zones 2+3

[a]Zone 1: The area of the scale from the center of the focus to the outer edge of the last circulus in the freshwater annulus.

Zone 2: The area of the scale from the outer edge of the last circulus in the freshwater annulus to the outer edge of the last freshwater circulus.

Zone 3: The area of the scale from the outer edge of the last freshwater circulus to the outer edge of the last circulus in the first ocean annulus.

Cn: The n^{th} circulus from the focus of the scale.

Table 5. Sample sizes of digitized scales in various strata of region, brood year, ocean age, and sex, which were used in ANOVAs to assess variability due to the four factors.

Region	Brood year	Ocean age .3 Male	Ocean age .3 Female	Ocean age .4+ Male	Ocean age .4+ Female
Asia	1973	76	31	59	99
	1974	107	41	67	117
	1975	52	29	39	66
Western Alaska	1974	145	18	75	138
	1975	160	78	202	382
	1976	165	72	160	192
Central Alaska	1974	54	43	31	38
	1975	20	32	80	57
	1976	50	42	52	51
S.E. Alaska/ B.C.	1974	6	9	28	28
	1975	45	56	85	91
	1976	53	82	27	50

Table 6. Results of ANOVA series I (4 regions x 2 brood years x 2 ages x 2 sexes). Tabulated values are the probabilities of the resulting F-value.

Character no.[1]	Region	Brood year	Ocean age	Sex
3	.0133	.0000	.5055	.1735
5	.0118	.0000	.1927	.1289
6	.0102	.0000	.2977	.1164
7	.0056	.0000	.0993	.3503
9	.0157	.0770	.6125	.4205
11	.1794	.2398	.5050	.2298
12	.0348	.0000	.6372	.7492
14	.0116	.0000	.7232	.3860
16	.0120	.0000	.0023	.0595
18	.3470	.0602	.7646	.3774
19	.0034	.9212	.0008	.1791
26	.0046	.0000	.1801	.5361
27	.0121	.0000	.1605	.4063
31	.0059	.0000	.8474	.9126
36	.0000	.0089	.2492	.0950
38	.2212	.0000	.4994	.3402
56	.0001	.1322	.1894	.1322
57	.0022	.0001	.5558	.3065
58	.0124	.0000	.6824	.6071
No. of significant F values (α =.05):	16	14	2	0

[1]See Table 4.

Table 7. Results of ANOVA series II (3 regions x 3 brood years x 2 ages x 2 sexes). Tabulated values are the probabilities of the resulting F-values.

Character no.[1]	Region	Brood year	Ocean age	Sex
3	.0218	.0000	.3678	.0876
5	.0208	.0000	.2289	.1051
6	.0150	.0000	.3677	.0507
7	.0268	.0000	.1382	.1323
9	.0020	.8444	.9964	.1104
11	.4807	.0000	.4334	.4457
12	.1383	.0000	.8363	.5206
14	.0449	.0000	.3477	.2707
16	.2653	.0000	.0933	.2954
18	.0209	.0000	.9234	.8741
19	.0007	.9826	.5935	.0452
26	.0374	.0000	.5212	.8218
27	.0372	.0000	.0736	.7279
31	.0478	.0000	.9783	.5561
36	.0000	.0003	.7616	.0815
38	.3173	.0000	.9972	.3022
56	.0000	.0344	.8035	.0101
57	.0021	.0000	.9661	.2139
58	.0274	.0000	.6191	.2432
No. of significant F values (α =.05):	15	17	0	2

[1]See Table 4.

Table 8. Brood-year standards needed to classify immature ages 1.2 and 1.3 chinook salmon in the 1975-81 high seas samples.

Brood-year standard	Age classes included in brood-year standard		High seas sample classified by brood-year standard	
	Age class	Return year	Age class	Year
1970	1.4	1976	1.3	1975
	1.5	1977		
1971A	1.3	1976	1.2	1975
	1.4	1977		
	1.5	1978		
1971B	1.4	1977	1.3	1976
	1.5	1978		
1972A	1.3	1977	1.2	1976
	1.4	1978		
	1.5	1979		
1972B	1.4	1978	1.3	1977
	1.5	1979		
1973A	1.3	1978	1.2	1977
	1.4	1979		
	1.5	1980		
1973B	1.4	1979	1.3	1978
	1.5	1980		
1974A	1.3	1979	1.2	1978
	1.4	1980		
	1.5	1981		
1974B	1.4	1980	1.3	1979
	1.5	1981		
1975A	1.3	1980	1.2	1979
	1.4	1981		
	1.5	1982		
1975B	1.4	1981	1.3	1980
	1.5	1982		
1976A	1.3	1981	1.2	1980
	1.4	1982		
	1.5	1983		
1976B	1.4	1982	1.3	1981
	1.5	1983		
1977	1.3	1982	1.2	1981
	1.4	1983		

Table 9. Chinook salmon run size indices, 1976-83, used in the construction of brood-year standard samples for a) Asia, b) western Alaska, c) central Alaska, and d) southeast Alaska and British Columbia. Indices are in thousands of fish; lack of decimal indicates original data were rounded to thousands.

Stock	1976	1977	1978	1979	1980	1981	1982	1983
a) Asian chinook salmon commercial catch statistics[1]								
Kamchatka River	172	259	302	248	117	140	163	199
Bolshaya River	24	23	12	32	9	17	15	20
b) Western Alaska chinook salmon total run size estimates								
Yukon River[2]	146	193	247	294	380	410	223	258.3
Kuskokwim River[2]	117	142	157	180	173	215	199	133.5
Kanektok River[2]	19.5	27.0	25.0	19.0	18.5	43.0	32.5	73.4
Goodnews Bay	7.0	7.0	9.2	6.7	4.7	14.3	13.0	29.6
Nuskagak River[3]	167.6	155.3	255.0	261.2	217.7	356.5	359.3	303.3
Togiak River[3]	44.2	55.6	97.3	50.2	25.4	51.7	57.4	61.1
c) Central Alaska chinook salmon commercial, subsistence and sport catches								
Cooper River[4]	35.1	25.6	33.2	25.4	13.1	25.0	54.0	59.4
Cook Inlet[5]	27.7	38.0	42.3	43.3	32.1	37.4	50.4	46.0
d) Southeast Alaska/British Columbia chinook salmon terminal and in-river commercial, subsistence and sport catches, and escapement estimates								
Alsek River[6]	2.7	6.5	7.3	9.5	5.6	4.1	4.7	4.0
Taku River[6]	10.1	12.9	5.5	7.1	15.2	17.2	8.5	3.3
Stikine River[6]	5.5	6.8	5.6	11.0	19.3	28.0	25.0	6.5
Nass River[7]	17.9	31.7	43.0	23.7	22.3	20.8	18.9	17.2
Skeena River[7]	23.0	51.7	38.2	38.9	41.9	55.0	42.6	36.4
Bella Coola River[7]	32.9	36.8	27.8	21.5	12.2	9.1	14.8	10.4
Fraser River[8]	154.4	201.9	155.9	136.7	111.1	84.9	124.7	82.1

Table 9. - Continued.

Sources of data and statistics:

[1]Catches are for East and West Kamchatka (Ito 1983), the great majority of which are from Kamchatka and Bolshaya River runs, respectively. 1983 value is mean of 1975-82 catches as 1983 USSR statistics are not yet available.

[2]Based on harvest, an escapement index, and a supposed probable exploitation rate (R. Regnart, ADF&G, pers. comm.). 1983 value from W. Arvey, ADF&G (pers. comm.).

[3]ADF&G (1982a, b; 1983); S. Behnke, ADF&G (pers. comm.); W. Bucher, ADF&G (pers. comm.); McBride and Wilcock (1983); and J. Wright, ADF&G (pers. comm.).

[4]ADF&G (1982c); McBride and Wilcock (1983); M. Merritt, ADF&G (pers. comm.); Mills (1982); K. Roberson, ADF&G (pers. comm.); and F. Williams, ADF&G (pers. comm.).

[5]ADF&G (1982b, c); S. Hammerstrom, ADF&G (pers. comm.); McBride and Wilcock (1983); P. Ruesch, ADF&G (pers. comm.).

[6]ADF&G (1981); Cook (1981); DFO Canada (1979-82); P. Etherton, DFO (pers. comm.); Holland et al. (1983); D. Ingledue, ADF&G (pers. comm.); P. Kissner, ADF&G (pers. comm.); Kissner (1983); D. McBride, ADF&G (pers. comm.); and D. Reid, DFO (pers. comm.).

[7]P. Starr, DFO (pers. comm.).

[8]DFO Canada (1981); Fraser et al. (1982); and P. Starr, DFO (pers. comm.).

Table 10. Estimated age compositions for Asian chinook salmon stocks represented in FRI scale collection, based on FRI age determinations and on sub-samples of scales which could be completely aged.

Stock	Year	Total no. readable	Percent composition of readable scales 0.2	0.3	0.4	1.2	1.3	1.4	1.5	Other
Kamchatka R.	1976	177	0	0	0	5	79	15	0	1
	1977	195	0	0	0	2	55	35	0	8
	1978	187	0	1	0	11	39	42	2	6
	1979	137	0	0	0	4	59	32	1	4
	1980	184	0	2	1	17	33	39	5	3
	1981	171	1	1	0	2	77	19	1	0
	1982	368	0	0	0	17	58	20	0	5
	1983	196	0	0	0	9	58	20	1	13
Bolshaya R.	1976	186	0	0	0	29	32	34	2	3
	1977[1]	-	0	1	1	7	35	51	4	1
	1978	146	0	4	1	3	24	60	7	1
	1979	187	0	0	0	2	38	57	1	2
	1980	178	1	0	3	10	14	69	3	1
	1981	178	0	1	2	1	46	43	9	0
	1982	115	0	1	1	1	17	74	6	0
	1983	200	0	0	0	0	51	45	3	1

[1]1977 samples were not available for Bolshaya River. Unweighted means were used, based on 1975-76, 1978-83 data (1975 values not tabulated).

Table 11. Estimated age compositions for western Alaska chinook salmon stocks represented in FRI scale collection, based on FRI age determinations and on sub-samples of scales which could be completely aged.

Stock	Year	Total no. readable	Percent composition of readable scales							
			0.2	0.3	0.4	1.2	1.3	1.4	1.5	Other
Yukon River	1976	509	0	0	0	4	40	53	3	0
(Emmonak fishery)	1977	384	0	0	0	0	20	77	3	0
	1978	459	0	0	0	12	8	72	6	2
	1979	879	0	0	0	29	34	28	8	0
	1980	794	0	0	0	6	49	41	2	2
	1981	794	0	0	0	7	20	71	2	0
	1982	1064	0	0	0	9	23	50	10	7
	1983	867	0	0	0	4	19	65	7	5
Kuskokwim River[1]	1976	230	0	0	0	7	27	65	0	1
	1977	105	0	0	0	1	38	51	8	2
	1978	446	0	0	0	8	13	68	8	3
	1979	214	0	0	0	60	17	16	6	2
	1980	68	0	0	0	10	63	19	7	0
	1981	669	0	0	0	10	32	57	1	0
	1982	407	0	1	1	12	19	59	6	2
	1983	244	0	1	0	12	15	60	10	2
Kanektok River[2]	1976	118	0	0	0	41	30	25	2	2
(Quinhagak)	1977	203	0	0	0	4	42	52	2	0
	1978	155	0	0	0	3	5	83	8	1
	1981	312	0	0	0	60	18	20	1	1
	1982	209	0	1	0	9	59	24	3	3
Goodnews Bay[2]	1977	22	0	0	0	0	41	50	9	0
	1978	17	0	0	0	0	12	82	0	6
	1981	124	0	0	0	57	17	26	0	0
	1982	64	0	2	0	9	64	20	2	3
Togiak River	1976	208	0	0	0	42	33	24	0	0
	1977	278	0	0	1	8	55	34	1	1
	1978	300	0	0	0	2	6	80	2	11
	1979	273	0	0	0	41	8	34	17	0
	1980	21	0	0	0	19	48	24	5	5
	1981	127	0	0	0	40	23	35	1	2
	1982	217	0	0	1	11	56	23	3	6
	1983	89	0	0	0	24	8	60	7	2

Table 11. Estimated age compositions for western Alaska chinook salmon stocks represented in FRI scale collection, based on FRI age determinations and on sub-samples of scales which could be completely aged - cont'd.

Stock	Year	Total no. readable	Percent composition of readable scales							
			0.2	0.3	0.4	1.2	1.3	1.4	1.5	Other
Nushagak River	1976	349	0	0	0	3	36	58	2	1
	1977	414	0	0	0	2	34	60	3	1
	1978	301	0	0	0	15	31	43	8	4
	1979	431	0	0	0	42	12	41	4	1
	1980	349	0	1	1	2	66	21	5	3
	1981	654	0	0	0	25	33	41	1	0
	1982	501	0	0	1	4	47	42	4	2
	1983	136	0	0	0	0	5	84	7	4

[1]1976 includes Kwegooyuk samples only; 1977 and 1983 include Bethel samples only; 1978 and 1981 include Kwegooyuk and Bethel samples; 1979-80 include Kogrukluk samples only; 1983 includes Kwegooyuk, Bethel and Aniak sonar station samples.

[2]Samples were not available for 1979-80 and 1983, and for Goodnews Bay only, for 1976. Catches-at-age for these years were exluded from weighting procedure as Kanektok and Goodnews Bay have relatively minor contribution to the western Alaska and Kuskokwim standards.

Table 12. Estimated age compositions for central Alaska chinook salmon stocks represented in FRI scale collection, based on FRI age determinations and sub-samples of scales which could be completely aged.

Stock	Year	Total no. readable	Percent composition of readable scales							
			0.2	0.3	0.4	1.2	1.3	1.4	1.5	Other
Cook Inlet[1]	1976	749	0	0	0	21	25	36	1	17[2]
	1977	848	0	0	0	30	37	28	2	3
	1978	738	2	0	0	33	27	36	0	2
	1979	486	0	0	0	7	37	50	5	1
	1980	588	0	1	2	16	27	45	5	4
	1981	1215	0	0	0	18	40	35	2	5
	1982	749	0	0	0	29	37	31	1	2
	1983	400	1	0	0	24	29	42	3	1
Copper River	1976	128	0	0	0	2	23	73	0	2
	1977	138	0	0	0	6	58	34	0	2
	1978	113	0	0	0	10	39	48	0	4
	1979	93	0	0	0	0	46	53	1	0
	1980[3]	219	-	0	0	1	28	55	1	15
	1981	153	0	0	0	5	44	44	0	6
	1982	1399	0	0	0	6	52	23	0	18[4]
	1983	194	0	0	0	4	65	31	0	1

[1]Cook Inlet age compositions are from combined fishery samples, except for 1982 which samples are from Tyonek fishery only.

[2]Mostly age .1 fish.

[3]No samples available; age composition taken from Table 21 of McBride and Wilcock (1983). Age 0.2 fish pooled with "other," which consisted mainly of age 2.3 and 2.4 fish.

[4]Mostly age 2.3 and 2.4 fish.

Table 13. Estimated age compositions of southeast Alaska and British Columbia chinook salmon stocks represented in FRI scale collection, based on FRI age determinations and sub-samples of scales which could be completely aged.

Stock	Year	Total no. readable	Percent composition of readable scales							
			0.2	0.3	0.4	1.2	1.3	1.4	1.5	Other
Alsek River[1]	1976	129	0	0	0	9	40	46	0	6
	1977	170	0	0	0	11	47	39	0	3
	1978	42	0	0	0	2	64	26	0	7
	1979	50	0	6	2	2	50	38	0	2
	1980	53	0	0	2	8	30	60	0	0
	1981	63	0	0	3	14	41	37	0	5
	1982	178	1	0	1	16	39	42	1	2
	1983	88	0	0	0	5	65	27	0	2
Taku River[2]	1976	126	0	0	0	30	38	25	1	6
	1977	462	0	0	0	26	26	31	1	16
	1978	1002	0	0	0	40	9	20	1	30
	1979	820	0	0	0	47	20	5	0	28
	1980	897	0	0	0	25	29	25	0	21
	1981	919	0	0	0	23	30	36	0	11
	1982	1027	0	0	0	12	20	46	2	21
	1983	198	1	0	0	59	4	16	0	20
Stikine River[3]	1976	435	0	0	1	29	16	42	8	4
	1977	96	0	0	0	0	42	49	6	3
	1979	35	6	8	2	26	49	9	0	2
	1980	143	0	2	1	19	38	34	1	4
	1981	613	0	3	2	4	29	58	1	3
	1982	435	0	0	0	5	15	76	2	2
	1983	345	0	0	0	30	19	42	7	2
Nass River[4]	1977	27	0	0	0	26	52	22	0	0
	1978	39	0	3	0	31	44	18	0	5
	1979	71	0	3	0	21	49	25	0	1
	1980	138	1	1	0	19	69	7	0	2
	1981	95	1	3	2	12	42	36	0	4
	1982	105	0	0	0	26	60	14	0	0
	1983	19	0	0	0	32	42	26	0	0
Skeena River	1976	138	0	2	1	11	39	46	1	0
	1977	182	1	1	0	18	48	28	1	3
	1978	129	0	0	0	27	40	26	0	6
	1979	156	0	0	0	26	46	26	0	3
	1980	122	1	0	1	11	70	15	2	1
	1981	129	1	0	0	13	39	47	0	0
	1982	121	0	0	1	21	49	28	2	0
	1983	264	0	0	0	29	41	27	1	2

Table 13. Estimated age compositions of southeast Alaska and British Columbia chinook salmon stocks represented in FRI scale collection, based on FRI age determinations and sub-samples of scales which could be completely aged - cont'd.

Stock	Year	Total no. readable	Percent composition of readable scales 0.2	0.3	0.4	1.2	1.3	1.4	1.5	Other
Bella Coola River	1976	23	4	0	0	30	44	17	0	4
	1977	102	4	6	4	30	27	26	0	3
	1978	141	3	6	5	18	57	10	1	1
	1979	59	2	7	12	37	14	27	2	0
	1980	95	2	8	2	11	64	11	0	2
	1981	122	2	13	11	8	45	21	0	1
	1982	208	1	4	7	20	42	23	0	2
	1983	111	2	5	10	13	40	22	0	10
Fraser River[5]	1976	-	8	25	3	18	41	4	0	1
	1977	378	16	21	1	31	27	3	0	1
	1978	398	6	39	7	10	32	4	0	2
	1979	385	2	18	4	11	58	6	0	1
	1980	346	8	20	8	10	48	4	0	2
	1981	356	11	31	3	18	33	4	0	0
	1982	777	8	29	2	21	37	3	0	1
	1983	1117	4	19	3	6	63	4	0	1

[1]1976-78 compositions include Klukshu and Alsek samples; 1979-81 and 1983 include Klukshu only, and 1982 includes Klukshu, Alsek, East River, and Dry Bay samples.

[2]1976-78 compositions include Nakina samples only; 1978-80 include Taku B.C. and Taku Alaska samples; 1981 includes Taku B.C., Taku Alaska, and Nahlin; 1982 includes Nahlin and Nakina; and 1983 includes Taku weir, Taku gillnet, Nahlin and Tseta Cr. samples. Fish in "other" age groups include primarily age .1 fish.

[3]1976, 1981-83 compositions include Stikine B.C., Little Tahltan and Andrews Cr. samples, and 1976 includes also Stikine Alaska and 1983 includes also Tahltan samples. 1977 includes Little Tahltan, Andrews Cr., and Stikine Alaska; no samples are available for 1978; 1979 includes Stikine B.C. and Little Tahltan; 1980 includes only Stikine B.C. samples.

[4]1976 samples were not available.

[5]1976 composition is mean of 1975, 1977-83 (1975 values not tabulated).

Table 14. Comparison of Japan Fisheries Agency (JFA) and Fisheries Research Institute (FRI) age determinations of chinook salmon scales, in 1975-81.[1] Age codes are: "T." = total within ocean age group; "X." = regenerated scale or otherwise indeterminable freshwater age; "Other" = unknown maturity, other age groups; ".X" = regenerated scale or otherwise indeterminable ocean age. Percentages are based on subtotal falling into the 13 age/maturity groups indicated. Maturity determinations were made by JFA.

		No.	Maturing						Immature												
Year	Agency	%	T.1	T.2	T.3	T.4	T.5	.X	T.1	0.2	1.2	2.2	X.2	0.3	1.3	2.3	X.3	T.4+	.X	Other	Total
1975	JFA	No.	89	322	82	43	2	48	125	33	2525	23	940	4	205	2	86	3	356	103	4991
		%	2.57	9.31	2.37	1.24	0.06	-	3.62	0.95	73.02	0.67	-	0.12	5.93	0.06	-	0.09	-	-	
	FRI	No.	82	303	80	44	5	72	106	3	1953	12	1395	0	177	4	124	4	524	103	4991
		%	2.96	10.93	2.89	1.59	0.18	-	3.82	0.11	70.43	0.43	-	0.00	6.38	0.14	-	0.14	-	-	
1976	JFA	No.	12	303	105	48	2	24	24	6	2995	46	978	1	376	0	86	6	312	5	5329
		%	0.31	7.72	2.68	1.22	0.05	-	0.61	0.15	76.33	1.17	-	0.03	9.58	0.00	-	0.15	-	-	
	FRI	No.	14	295	105	42	2	36	22	6	2205	32	1519	5	279	1	161	6	594	5	5329
		%	0.46	9.79	3.48	1.39	0.07	-	0.73	0.20	73.16	1.06	-	0.17	9.26	0.03	-	0.20	-	-	
1977	JFA	No.	39	539	130	95	0	101	22	0	1933	9	655	1	471	1	116	6	477	9	4604
		%	1.20	16.61	4.01	2.93	0.00	-	0.68	0.00	59.55	0.28	-	0.03	14.51	0.03	-	0.19	-	-	
	FRI	No.	42	518	122	91	0	131	22	7	1470	9	1052	2	387	0	196	7	539	9	4604
		%	1.57	19.35	4.56	3.40	0.00	-	0.82	0.26	54.91	0.34	-	0.08	14.46	0.00	-	0.26	-	-	
1978	JFA	No.	9	342	97	20	0	42	37	0	2150	13	925	0	264	5	92	4	358	7	4365
		%	0.31	11.63	3.30	0.68	0.00	-	1.26	0.00	73.10	0.44	-	0.00	8.98	0.17	-	0.14	-	-	
	FRI	No.	10	349	85	23	0	43	42	2	1905	8	1182	1	209	1	120	5	373	7	4365
		%	0.38	13.22	3.22	0.87	0.00	-	1.59	0.08	72.16	0.30	-	0.04	7.92	0.04	-	0.19	-	-	
1979	JFA	No.	7	280	70	17	0	49	23	0	1488	9	484	0	218	0	51	3	312	5	3016
		%	0.33	13.24	3.31	0.80	0.00	-	1.09	0.00	70.36	0.43	-	0.00	10.31	0.00	-	0.14	-	-	
	FRI	No.	9	286	62	17	0	49	25	1	1229	9	737	0	164	0	87	3	333	5	3016
		%	0.50	15.85	3.44	0.94	0.00	-	1.39	0.06	68.09	0.50	-	0.00	9.09	0.00	-	0.17	-	-	
1980	JFA	No.	4	379	66	9	0	43	11	0	2833	16	1208	0	303	0	100	1	455	1	5429
		%	0.11	10.46	1.82	0.25	0.00	-	0.30	0.00	78.22	0.44	-	0.00	8.37	0.00	-	0.03	-	-	
	FRI	No.	6	375	66	10	0	44	12	56	2149	34	1772	11	219	0	175	4	494	2	5429
		%	0.20	12.75	2.24	0.34	0.00	-	0.41	1.90	73.05	1.16	-	0.37	7.44	0.00	-	0.14	-	-	
1981	JFA	No.	9	174	53	16	0	16	14	0	1535	37	638	0	229	0	81	1	277	0	3080
		%	0.05	8.41	2.56	0.77	0.00	-	0.68	0.00	74.23	1.79	-	0.00	11.07	0.00	-	0.05	-	-	
	FRI	No.	10	173	50	17	0	18	14	2	1316	35	834	1	200	0	118	1	291	0	3080
		%	0.55	9.51	2.75	0.94	0.00	-	0.77	0.11	72.35	1.92	-	0.06	11.00	0.00	-	0.06	-	-	

[1]Data base includes all scales collected from fish sampled by commercial-type gillnet in May to July south of 62°N, 160°E-175°W, and sent to FRI by JFA in accordance with scale request (see text).

Table 15. Summary of mixing proportion estimates obtained in 1975-81 scale analysis of immature age 1.2 chinook salmon, by region-of-origin. For each level of temporal and spatial stratification, the table shows the number of estimates made and, for each stock, the number of estimates indicating presence (Pres), absence (Abs), and predominance (Dom) of the stock, and the number of statistically significant estimates (Sig).

Stratum	Total no. estimates	Regional stock and number of estimates															
		Asia				Western Alaska				Central Alaska				Southeast Alaska/BC			
		Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig
A) Mothership - Bering Sea Region																	
10-day/INPFC area	42	31	11	6	12	42	0	36	41	27	15	1	8	17	25	0	0
Month/INPFC area	36	28	8	3	13	36	0	33	36	25	11	0	6	14	22	0	0
10-day/sub-area	39	34	5	2	15	39	0	35	38	26	13	2	9	15	24	0	0
Month/sub-area	25	23	2	3	14	25	0	22	25	18	7	0	7	11	14	0	1
10-day/region	27	25	2	1	11	27	0	25	27	20	7	1	8	15	12	0	0
Month/region	11	10	1	0	7	11	0	11	11	7	4	0	4	6	5	0	1
Sub-total	180	151	29	15	72	180	0	162	178	123	57	4	42	78	102	0	2
B) Mothership - North Pacific Region																	
10-day/INPFC area	66	50	16	14	27	55	11	10	33	66	0	43	54	37	29	0	8
Month/INPFC area	59	42	17	10	25	53	6	10	33	59	0	39	51	32	27	1	7
10-day/sub-area	62	45	17	9	26	55	7	11	36	62	0	42	50	32	30	0	12
Month/sub-area	41	32	9	4	18	38	3	7	27	41	0	30	37	23	18	0	6
10-day/region	40	34	6	5	21	40	0	9	31	40	0	26	32	24	16	0	10
Month/region	14	12	2	2	11	14	0	2	13	14	0	10	14	8	6	0	4
Sub-total	282	215	67	45	128	255	27	48	173	282	0	190	238	156	126	1	47
C) LBDN Region																	
10-day/INPFC area	5	3	2	1	1	5	0	0	0	5	0	4	4	1	4	0	0
Month/INPFC area	6	3	3	1	1	5	1	0	3	6	0	5	5	1	5	0	0
10-day/sub-area	6	3	3	1	1	6	0	0	1	6	0	5	5	1	5	0	0
Month/sub-area	7	4	3	1	1	6	1	0	3	7	0	6	6	2	5	0	0
10-day/region	9	7	2	1	1	8	1	0	1	9	0	8	8	3	6	0	0
Month/region	13	8	5	2	3	11	2	0	6	13	0	11	12	4	9	0	0
Sub-total	46	28	18	7	8	41	5	0	14	46	0	39	40	12	34	0	0
Total Study Area	508	394	114	67	208	476	32	210	365	451	57	233	320	246	262	1	49

Table 16. Summary of mixing proportion estimates in 1975-81 scale analysis of immature age 1.2 chinook salmon, by western Alaskan "river"-of-origin. For each level of temporal and spatial stratification, the table shows the number of estimates made and, for each stock, the number of estimates indicating presence (Pres), absence (Abs), and predominance (Dom) of the stock, and the number of statistically significant estimates (Sig).

Stratum	Total no. estimates	Western Alaskan "river" stock and number of estimates											
		Yukon				Kuskokwim				Bristol Bay			
		Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig
A) Mothership - Bering Sea Region													
10-day/INPFC area	35	33	2	24	24	26	9	6	8	25	10	5	8
Month/INPFC area	33	33	0	21	20	24	9	7	5	26	7	4	6
10-day/sub-area	35	34	1	23	23	23	12	4	7	25	10	7	8
Month/sub-area	22	22	0	15	16	15	7	5	8	17	5	2	5
10-day/region	25	24	1	20	20	19	6	3	7	18	7	1	5
Month/region	11	11	0	9	10	9	2	1	3	10	1	1	4
Sub-total	161	157	4	112	113	116	45	26	38	121	40	20	36
B) Mothership - North Pacific Region													
10-day/INPFC area	11	10	1	6	8	8	3	3	1	3	8	0	1
Month/INPFC area	10	9	1	6	8	6	4	1	1	3	7	1	0
10-day/sub-area	11	10	1	8	8	8	3	2	1	1	10	0	0
Month/sub-area	7	6	1	6	5	6	1	1	2	1	6	0	0
10-day/region	8	8	0	7	7	6	2	0	0	2	6	0	0
Month/region	2	2	0	2	2	2	0	0	1	0	2	0	0
Sub-total	49	45	4	35	38	36	13	7	6	10	39	1	1
Total Study Area	210	202	8	147	151	152	58	33	44	131	79	21	37

Table 17. Summary of mixing proportion estimates obtained in 1975-81 scale analysis of immature age 1.3 chinook salmon, by region-of-origin. For each level of temporal and spatial stratification, the table shows the number of estimates made and, for each stock, the number of estimates indicating presence (Pres), absence (Abs), and predominance (Dom) of the stock, and the number of statistically significant estimates (Sig).

Stratum	Total no. estimates	Regional stock and number of estimates															
		Asia				Western Alaska				Central Alaska				Southeast Alaska/BC			
		Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig
A) Mothership - Bering Sea Region																	
10-day/INPFC area	0																
Month/INPFC area	2	2	0	0	1	2	0	2	2	2	0	0	0	1	1	0	0
10-day/sub-area	1	1	0	0	0	1	0	1	1	1	0	0	0	1	0	0	0
Month/sub-area	5	5	0	0	2	5	0	5	5	3	2	0	0	3	2	0	0
10-day/region	3	3	0	0	1	3	0	3	3	2	1	0	0	2	1	0	0
Month/region	6	6	0	1	3	6	0	5	6	3	3	0	1	2	4	0	0
Sub-total	17	17	0	1	7	17	0	16	17	11	6	0	1	9	8	0	0
B) Mothership - North Pacific Region																	
10-day/INPFC area	3	2	1	0	1	3	0	2	3	3	0	1	1	3	0	0	1
Month/INPFC area	8	7	1	2	4	8	0	3	5	8	0	3	3	5	3	0	0
10-day/sub-area	9	7	2	1	4	9	0	4	9	8	1	3	5	3	6	1	1
Month/sub-area	9	8	1	2	5	9	0	3	7	9	0	4	7	3	6	0	1
10-day/region	11	10	1	2	6	11	0	4	9	10	1	4	7	3	8	1	1
Month/region	12	11	1	6	8	11	1	3	8	10	2	3	7	8	4	0	1
Sub-total	52	45	7	13	28	51	1	19	41	48	4	18	30	25	27	2	5
C) LBDN Region																	
10-day/INPFC area	0																
Month/INPFC area	1	0	1	0	0	0	1	0	0	1	0	1	1	0	1	0	0
10-day/sub-area	0																
Month/sub-area	1	0	1	0	0	1	0	0	0	1	0	1	1	0	1	0	0
10-day/region	1	0	1	0	0	1	0	0	0	1	0	1	1	0	1	0	0
Month/region	1	0	1	0	0	1	0	0	0	1	0	1	1	0	1	0	0
Sub-total	4	0	4	0	0	3	1	0	0	4	0	4	4	0	4	0	0
Total Study Area	73	62	11	14	35	71	2	35	58	63	10	22	35	34	39	2	5

Table 18. Summary of mixing proportion estimates in 1975-81 scale analysis of immature age 1.3 chinook salmon, by western Alaskan "river"-of-origin. For each level of temporal and spatial stratification, the table shows the number of estimates made and, for each stock, the number of estimates indicating presence (Pres), absence (Abs), and predominance (Dom) of the stock, and the number of statistically significant estimates (Sig).

Stratum	Total no. estimates	Western Alaskan "river" stock and number of estimates											
		Yukon				Kuskokwim				Bristol Bay			
		Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig	Pres	Abs	Dom	Sig
A) Mothership - Bering Sea Region													
10-day/INPFC area	0												
Month/INPFC area	2	2	0	1	1	1	1	1	0	0	2	0	0
10-day/sub-area	1	1	0	0	0	1	0	1	1	0	1	0	0
Month/sub-area	5	5	0	3	2	4	1	2	2	1	4	0	0
10-day/region	3	3	0	2	2	2	1	1	1	1	2	0	0
Month/region	5	5	0	2	2	3	2	2	3	1	4	1	0
Sub-total	16	16	0	8	7	11	5	7	7	3	13	1	0
B) Mothership - North Pacific Region													
10-day/INPFC area	2	2	0	2	2	0	2	0	0	0	2	0	0
Month/INPFC area	3	3	0	2	2	1	2	1	1	0	3	0	0
10-day/sub-area	4	4	0	2	2	2	2	1	1	1	3	0	0
Month/sub-area	3	3	0	1	1	2	1	1	1	1	2	0	0
10-day/region	3	3	0	2	2	1	2	1	1	0	3	0	0
Month/region	4	4	0	1	2	3	1	1	1	2	2	0	0
Sub-total	19	19	0	10	11	9	10	5	5	4	15	0	0
Total Study Area	35	35	0	18	18	20	15	12	12	7	28	1	0

Table 19. Mean regional stock proportion estimates (%) for chinook salmon in the mothership fishery area, obtained by Major et al. (1977b) and in the present (FRI) study. Values are averaged over the number of month/sub-area estimates obtained in the 1966-72 and 1975-81 studies, and the range of values for each stratum is shown in parentheses. A dash indicates that no estimate was made; neither study resulted in estimates for sub-area 2. "N/A" indicates that the regional category was not included in the Major et al. (1977b) study.

				Average mixing proportion estimates (%)			
Month	Sub-area	Investigator	No. estimates	Asia	Western Alaska	Central Alaska	Southeast Alaska/ British Columbia
June	1	Major et al.[1]	4	85(75-97)	15(3-25)	--	--
		FRI[2]	0	--	--	--	--
		FRI[3]	0	--	--	--	--
"	3	Major et al.[1]	5	68(58-87)	32(13-42)	--	--
		FRI[2]	1	46	22	23	9
		FRI[3]	0	--	--	--	--
"	5	Major et al.[1]	4	65(46-74)	35(26-54)	--	--
		FRI[2]	7	20(1-36)	31(8-51)	41(26-59)	8(0-19)
		FRI[3]	5	32(14-55)	33(5-50)	32(14-40)	2(0- 9)
"	7	Major et al.[1]	2	31(23-38)	69(62-77)	--	--
		FRI[2]	4	10(0-36)	23(0-41)	67(57-83)	0(0- 1)
		FRI[3]	1	34	42	24	0
"	9	Major et al.[1]	3	22(16-30)	78(70-84)	--	--
		FRI[2]	3	15(0-27)	19(8-32)	58(50-68)	8(0-17)
		FRI[3]	0	--	--	--	--
"	4	Major et al.[1]	2	31(14-47)	69(53-86)	--	--
		FRI[2]	0	--	--	--	--
		FRI[3]	0	--	--	--	--
"	6	Major et al.[1]	1	75	25	--	--
		FRI[2]	2	32(29-34)	63(63)	4(0- 8)	1(0- 2)
		FRI[3]	0	--	--	--	--

Table 19. Continued.

Month	Sub-area	Investigator	No. estimates	Average mixing proportion estimates (%) Asia	Western Alaska	Central Alaska	Southeast Alaska/ British Columbia
June	8	Major et al.[1]	4	35(4-54)	65(46-96)	--	--
		FRI[2]	3	27(6-52)	66(47-92)	6(0-17)	1(0- 2)
		FRI[3]	1	38	50	12	0
"	10	Major et al.[1]	4	6(0-13)	94(87-100)	--	--
		FRI[2]	3	23(5-53)	73(48-94)	4(0-11)	1(0- 2)
		FRI[3]	1	19	81	0	0
July	1	Major et al.[1]	6	75(52-89)	25(11-48)	--	--
		FRI[2]	1	0	7	93	0
		FRI[3]	0	--	--	--	--
"	3	Major et al.[1]	4	82(74-89)	18(11-26)	--	--
		FRI[2]	6	9(0-26)	24(0-46)	66(34-79)	1(0- 6)
		FRI[3]	0	--	--	--	--
"	5	Major et al.[1]	3	90(80-97)	10(3-20)	--	--
		FRI[2]	7	19(0-39)	17(0-28)	56(33-100)	8(0-25)
		FRI[3]	3	13(0-23)	31(27-38)	41(40-43)	15(9-22)
"	7	Major et al.[1]	1	44	56	--	--
		FRI[2]	4	21(0-37)	24(6-41)	52(16-78)	3(0-12)
		FRI[3]	0	--	--	--	--
"	9	Major et al.[1]	1	18	82	--	--
		FRI[2]	7	33(13-78)	26(5-43)	41(17-66)	0(0- 1)
		FRI[3]	0	--	--	--	--
"	4	Major et al.[1]	2	50(37-63)	50(37-63)	--	--
		FRI[2]	1	0	75	25	0
		FRI[3]	0	--	--	--	--

Table 19. Continued.

Month	Sub-area	Investigator	No. estimated	Average mixing proportion estimates (%) Asia	Western Alaska	Central Alaska	Southeast Alaska/ British Columbia
July	6	Major et al.[1]	4	34(6-74)	66(26-94)	--	--
		FRI[2]	3	22(10-39)	70(46-83)	6(0-15)	2(0- 7)
		FRI[3]	0	--	--	--	--
"	8	Major et al.[1]	5	31(0-58)	69(42-100)	--	--
		FRI[2]	6	19(0-46)	64(40-89)	15(0-31)	2(0- 7)
		FRI[3]	1	10	87	0	3
"	10	Major et al.[1]	4	9(0-35)	91(65-100)	--	--
		FRI[2]	7	9(1-18)	78(44-94)	11(0-39)	2(0- 6)
		FRI[3]	2	20(10-30)	59(58-60)	17(4-30)	4(0- 8)

[1]Mixing proportion estimates are average corrected estimates 1966-1972, for all ocean age groups of immature chinook. Asia estimates were calculated by subtracting the corrected western Alaska estimate from one. Some erroneous values in Major et al. (1977b) were corrected by Major (pers. comm., October 1983).

[2]Mixing proportion estimates are average estimates, 1975-1981, for immature age 1.2 chinook.

[3]Mixing proportion estimates are average estimates 1975-1981, for immature age 1.3 chinook.

Table 20. Estimates of the mothership fishery catches (in thousands of fish) of immature chinook salmon by region of origin.

Year	Sub-area	Region of Origin: Asia	West	Cent	SEBC	Total immatures	Total matures	Unallo-cated
1975	2	-	-	-	-	+	+	
	4	0	12	4	0	16	+	
	6	6	25	1	+	32	+	
	8	3	11	0	1	15	+	
	10	4	44	1	0	49	1	
	1	1	+	3	1	5	1	
	3	1	1	2	+	4	1	
	5	2	+	5	+	7	1	
	7	1	2	9	+	12	3	
	9	+	2	3	1	6	+	
	Total	18	97	28	3	147	8	7
1976	2	1	1	+	0	2	+	
	4	0	12	4	0	16	2	
	6	8	11	3	0	22	1	
	8	7	12	4	0	23	+	
	10	10	42	6	+	58	1	
	1	+	3	33	+	36	1	
	3	3	5	13	+	21	4	
	5	+	1	5	1	7	1	
	7	1	15	36	0	52	3	
	9	8	6	11	1	26	1	
	Total	38	108	115	2	263	14	8
1977	6	+	2	+	+	2	0	
	8	5	6	1	1	13	+	
	10	5	34	+	+	39	+	
	3	+	1	2	0	3	1	
	5	3	2	6	+	11	5	
	7	3	3	6	0	12	3	
	9	1	+	1	0	2	+	
	Total	17	48	16	1	82	10	1
1978	6	1	1	+	+	2	+	
	8	1	5	+	+	6	+	
	10	+	2	+	+	2	+	
	3	+	1	1	+	2	+	
	5	19	25	28	12	84	7	
	Total	21	33	30	12	96	7	2

Table 20. Estimate of the mothership fishery catches (in thousands of fish) of immature chinook salmon by region of origin - cont'd.

Year	Sub-area	Region of Origin Asia	West	Cent	SEBC	Total immatures	Total matures	Unallo-cated
1979	6	1	2	+	+	3	+	
	8	+	25	10	0	35	+	
	10	+	26	6	0	32	+	
	3	+	+	+	+	+	+	
	5	16	13	17	+	46	8	
	Total	17	66	33	+	117	9	+
1980	6	2	11	+	1	14	+	
	8	22	174	1	+	197	1	
	10	21	197	+	+	218	+	
	3	+	3	5	+	8	+	
	5	31	33	157	33	253	11	
	Total	76	418	163	34	690	12	2
1981	6	+	+	+	+	+	+	
	8	1	7	3	+	11	+	
	10	2	4	3	0	9	0	
	3	+	+	+	+	+	+	
	5	20	18	21	3	62	4	
	Total	23	29	27	4	83	4	1

+ = Less than 500 fish.

Table 21. Average regional stock compositions in the mothership fishery for the Bering Sea and North Pacific areas, 1975-77 and 1978-81.

	Average composition (%)			
	1975-77		1978-81	
Region of origin	Bering Sea	N. Pacific	Bering Sea	N. Pacific
Asia	17	16	12	25
Western Alaska	75	19	75	25
Central Alaska	7	62	13	42
SE Alaska-British Columbia	1	3	0	8

Table 24. Estimates of the inshore and combined (inshore run plus high seas catch) runs of chinook salmon to western Alaska, 1965-1983 (thousands of fish).

Year	Western Alaska coastal runs: Bristol Bay	Kuskokwim region	Yukon region	Total run	Total catch	Apportioned high seas catch	Combined run
1965	235	140	170	545	309	165	710
66	158	200	210	568	277	121	689
67	215	230	170	615	363	137	752
68	222	180	230	632	314	133	765
69	200	240	190	630	352	165	795
70	239	270	160	669	468	346	1015
71	192	200	150	542	349	363	905
72	121	200	200	521	287	280	801
73	110	180	170	460	251	170	630
74	155	120	160	435	237	221	656
75	135	101	120	356	204	174	530
76	235	144	146	525	335	178	703
77	245	176	193	614	381	130	744
78	416	191	247	854	446	148	1002
79	374	206	294	874	510	105	979
80	334	197	380	911	459	122	1033
81	491	272	410	1173	618	192	1365
82	524	245	223	992	611	298	1290
83	465	237	258	960	571	117	1077
84	(282)*	-	-	-	-	75	-

*Preliminary estimate based on recent information provided by ADF&G.

Table 25. Escapement-return statistics for the Nushagak chinook salmon stock (numbers in thousands of fish).

Brood year	Catch	Escape.	Inshore return by age 4	5	6	7	Total	R/E	High seas fishing WA catch[3]	CPUE[4]
1958	87	75[1]	8	13	57	13	91	1.2	99	--
59	54	47	42	39	71	1	153	3.3	66	7
60	81	70	104	61	43	8	216	3.1	219	15
61	65	55	22	35	72	14	143	2.6	126	9
62	65	55	23	47	75	7	152	2.8	130	9
63	50	43	38	52	58	3	151	3.5	93	8
64	112	95	14	26	35	1	76	.8	262	17
65	90	77	32	88	79	4	203	2.6	384	31
66	62	40	18	30	39	7	94	2.4	465	16
67	100	65	7	18	46	25	96	1.5	159	8
68	85	70	14	18	67	8	107	1.5	209	9
69	88	35	1	16	31	4	52	1.5	87	4
70	94	50	2	57	74	6	139	2.8	244	28
71	87	30	3	55	92	20	170	5.7	134	8
72	50	25	35	53	130	13	231	9.2	155	6
73	37	35	4	79	111	13	207	5.9	83	4
74	40	70	26	44	53	4	127	1.8	86	6
75	29	70	91	144	129	14	378	5.4	109	20
76	68	100	7	111	162	24	304	3.0	464	77
77	90	65	113	164	260	18	555	8.5	77	5
78	125	130	19	19	65	--	--	--	85	8
79	164	95	3	66	--	--	--	--	74	4
80	76	141	2	--	--	--	--	--	--	--
81	207	150	--	--	--	--	--	--	--	--
82	212	147	--	--	--	--	--	--	--	--
83	144	162	--	--	--	--	--	--	--	--
84[2]	66	85	--	--	--	--	--	--	--	--

[1]Escapements for 1958-1965 were estimated from the catch and an average rate of exploitation (.54).

[2]Preliminary data from W. Bucher (ADF&G).

[3]High seas catch of western Alaska fish, estimated in present study.

[4]Average of July CPUE in sub-areas 8 and 10 in brood year +4.

Table 26. Average annual catches (in thousands) of the mothership fishery in years when effort was greater than 1,000 tans, by sub-area and period, 1956-1977 and 1978-83.

Sub-area	Species	Catch June 1-20 56-77	June 1-20 78-83	June 21-30 56-77	June 21-30 78-83	July 1-31 56-77	July 1-31 78-83
North Pacific							
5	Sockeye	577	541	112	285	192	961
	Chum	734	897	141	472	296	910
	Pink	495	615	214	520	164	951
	Coho	2	2	8	3	396	593
	Chinook	4	8	1	7	12	86
7	Sockeye	245	0	59	0	110	0
	Chum	311	0	126	0	165	0
	Pink	301	0	100	0	60	0
	Coho	+	0	19	0	310	0
	Chinook	2	0	1	0	14	0
9	Sockeye	294	0	49	0	134	0
	Chum	193	0	160	0	96	0
	Pink	109	0	64	0	28	0
	Coho	+	0	1	0	178	0
	Chinook	1	0	2	0	10	0
Bering Sea							
6	Sockeye	20	(25)	26	8	145	27
	Chum	53	(24)	100	42	438	102
	Pink	102	(45)	122	50	606	59
	Coho	0	(0)	+	+	1	+
	Chinook	2	(+)	8	1	15	3
8	Sockeye	186	0	79	11	99	58
	Chum	156	0	185	36	868	323
	Pink	134	0	112	55	346	160
	Coho	+	0	+	0	+	+
	Chinook	3	0	14	3	39	42
10	Sockeye	435	0	253	8	104	53
	Chum	171	0	313	28	1217	277
	Pink	83	0	198	32	324	139
	Coho	0	0	+	0	+	1
	Chinook	9	0	28	2	36	48

+ = less than 500 fish.

Table 27. Average annual CPUE (catch per tan x 100, for years when effort was greater than 1,000 tans) of the mothership fishery by sub-area and period, 1956-77 and 1978-83.

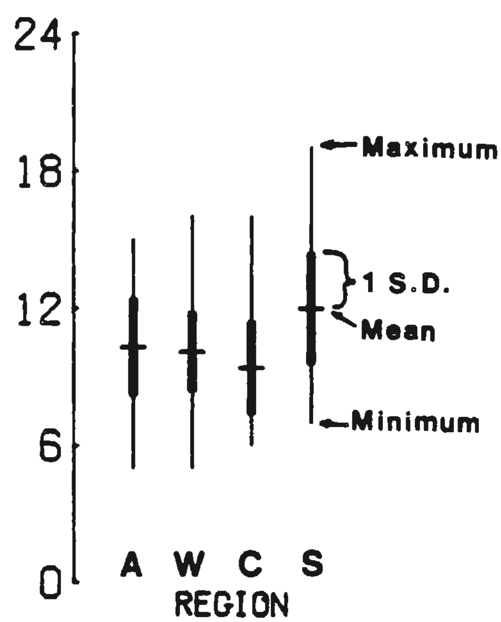
Sub-area	Species	Catch June 1-20 56-77	June 1-20 78-83	June 21-30 56-77	June 21-30 78-83	July 1-31 56-77	July 1-31 78-83
North Pacific							
5	Sockeye	116	58	98	62	69	102
	Chum	124	95	116	107	119	92
	Pink	99	64	153	117	88	102
	Coho	+	+	7	1	125	61
	Chinook	1	1	1	2	4	9
7	Sockeye	126	-	68	-	58	-
	Chum	125	-	116	-	112	-
	Pink	115	-	89	-	43	-
	Coho	+	-	26	-	185	-
	Chinook	1	-	2	-	8	-
9	Sockeye	121	-	62	-	94	-
	Chum	103	-	146	-	125	-
	Pink	71	-	75	-	27	-
	Coho	+	-	3	-	136	-
	Chinook	1	-	1	-	7	-
Bering Sea							
6	Sockeye	83	(35)	31	32	58	48
	Chum	79	(96)	118	105	228	92
	Pink	115	(180)	191	126	233	112
	Coho	0	0	+	0	+	+
	Chinook	3	(3)	7	5	7	4
8	Sockeye	112	-	52	29	39	33
	Chum	121	-	133	79	275	176
	Pink	80	-	107	113	162	107
	Coho	+	-	0	0	+	+
	Chinook	5	-	9	17	12	18
10	Sockeye	150	-	82	32	35	31
	Chum	84	-	133	96	323	176
	Pink	63	-	83	126	97	104
	Coho	0	-	0	0	+	+
	Chinook	4	-	10	12	9	22

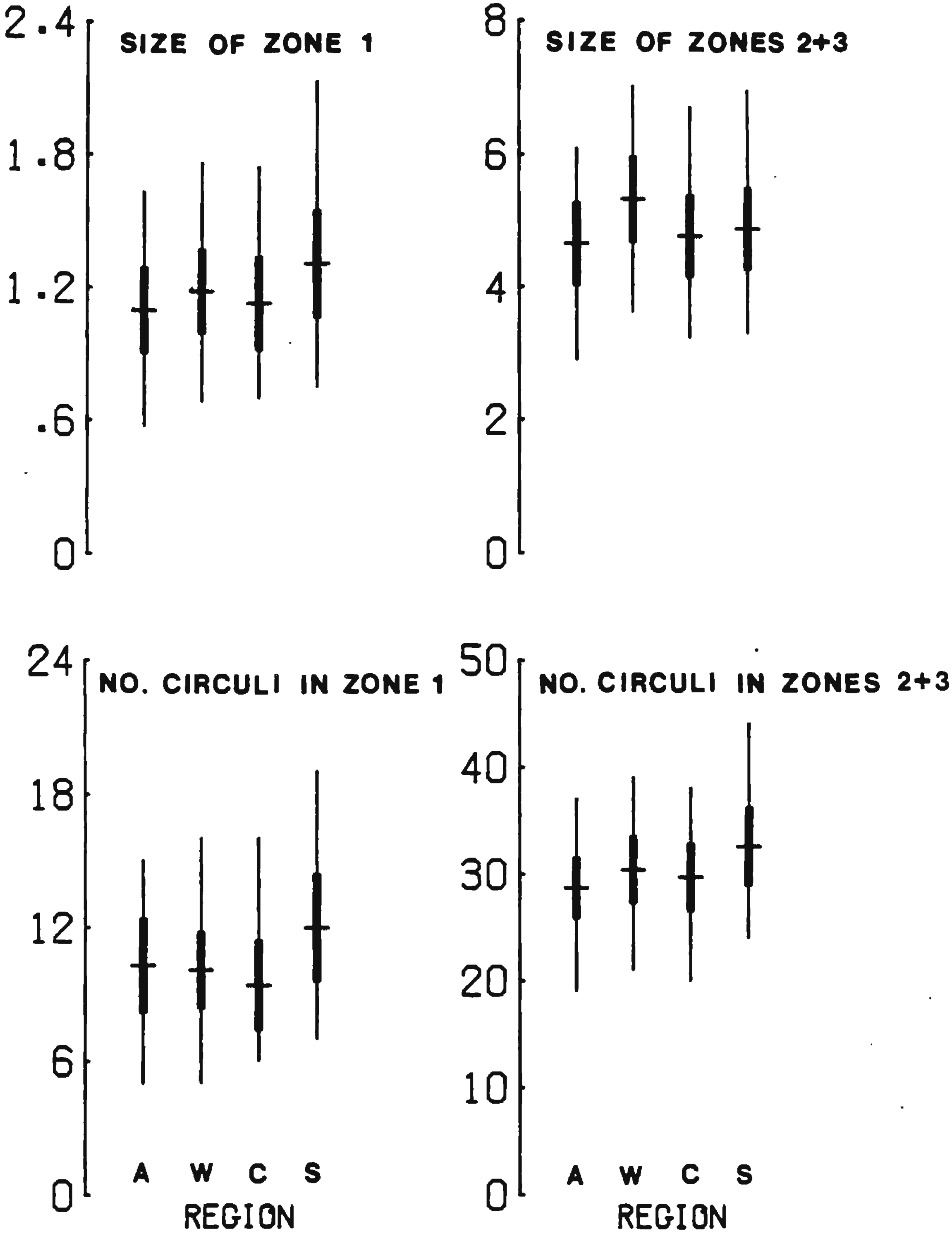
+ = less than .005 fish/tan.

APPENDIX FIGURES 1-7

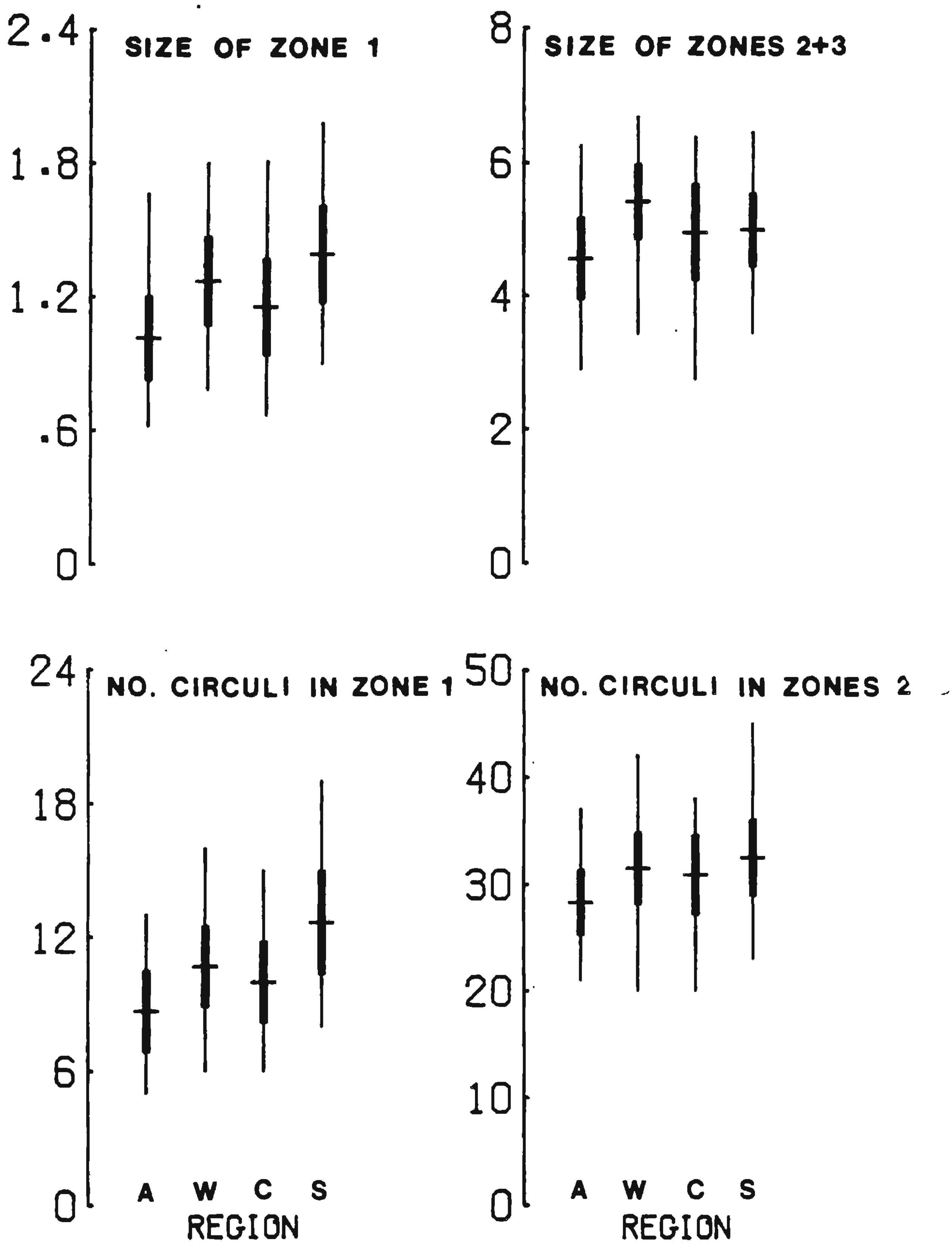
Plots of basic statistics for four scale characters for four regional standards (A = Asia, W = Western Alaska, C = Central Alaska, S = Southeast Alaska and British Columbia) used to classify immature age 1.2 chinook. For each plot the horizontal segment shows the mean, the bold bar shows one standard deviation on each side of the mean, and the thin line shows the range of values. The ordinates for the two size characters are in inches at 104X.

Key

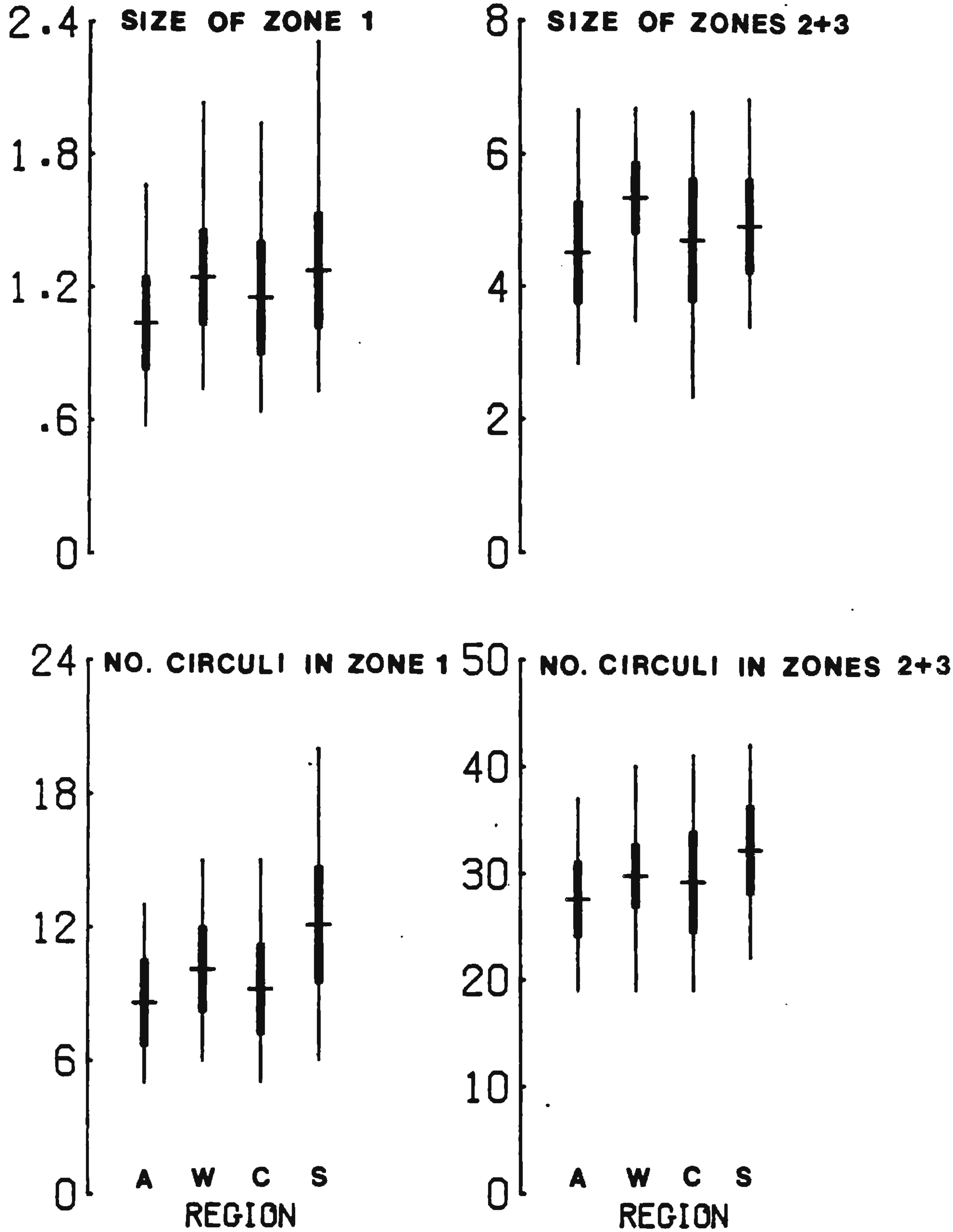




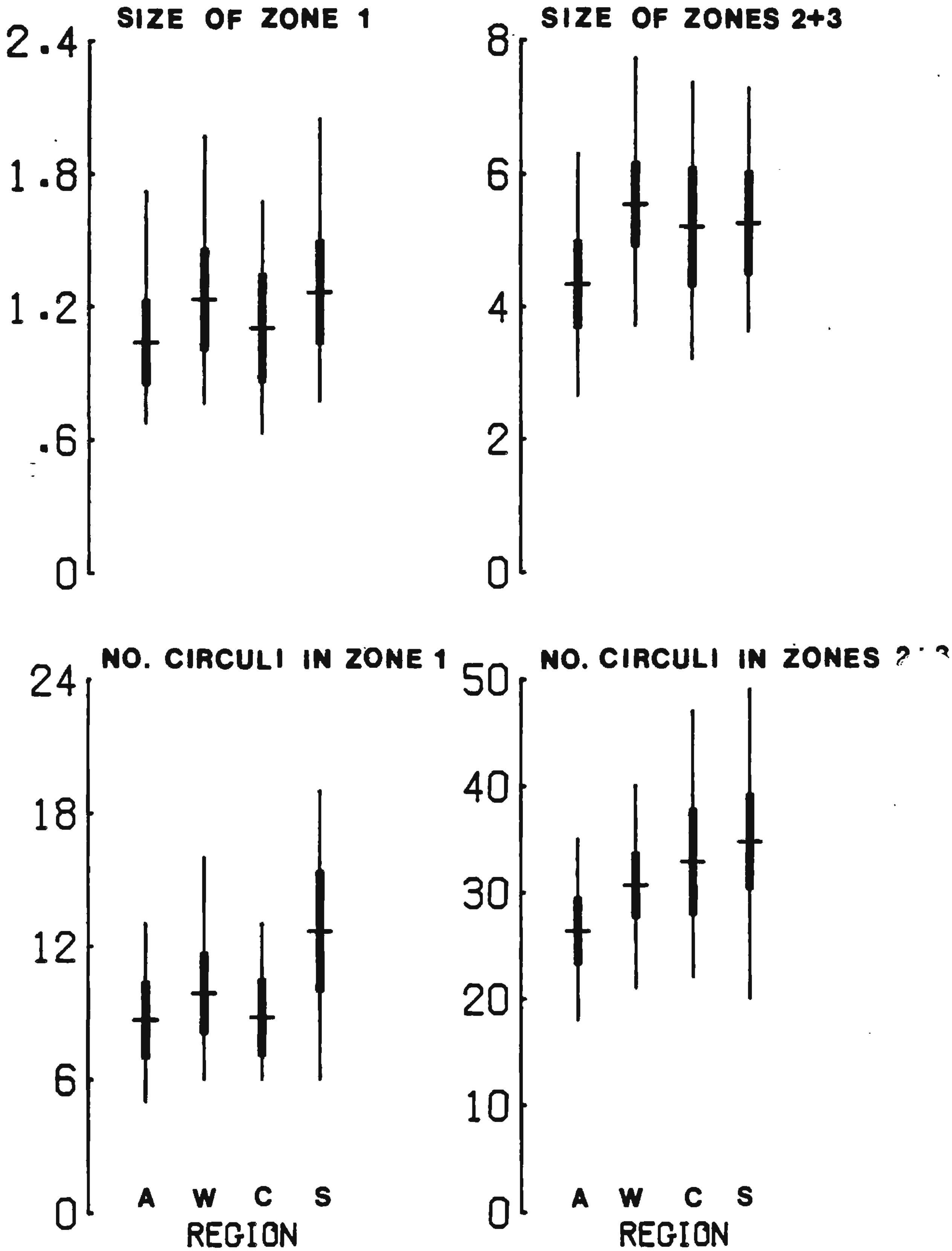
Appendix Figure 1. Plots of scale characters for brood year 1971A standards (used to classify age 1.2 chinook sampled in 1975).



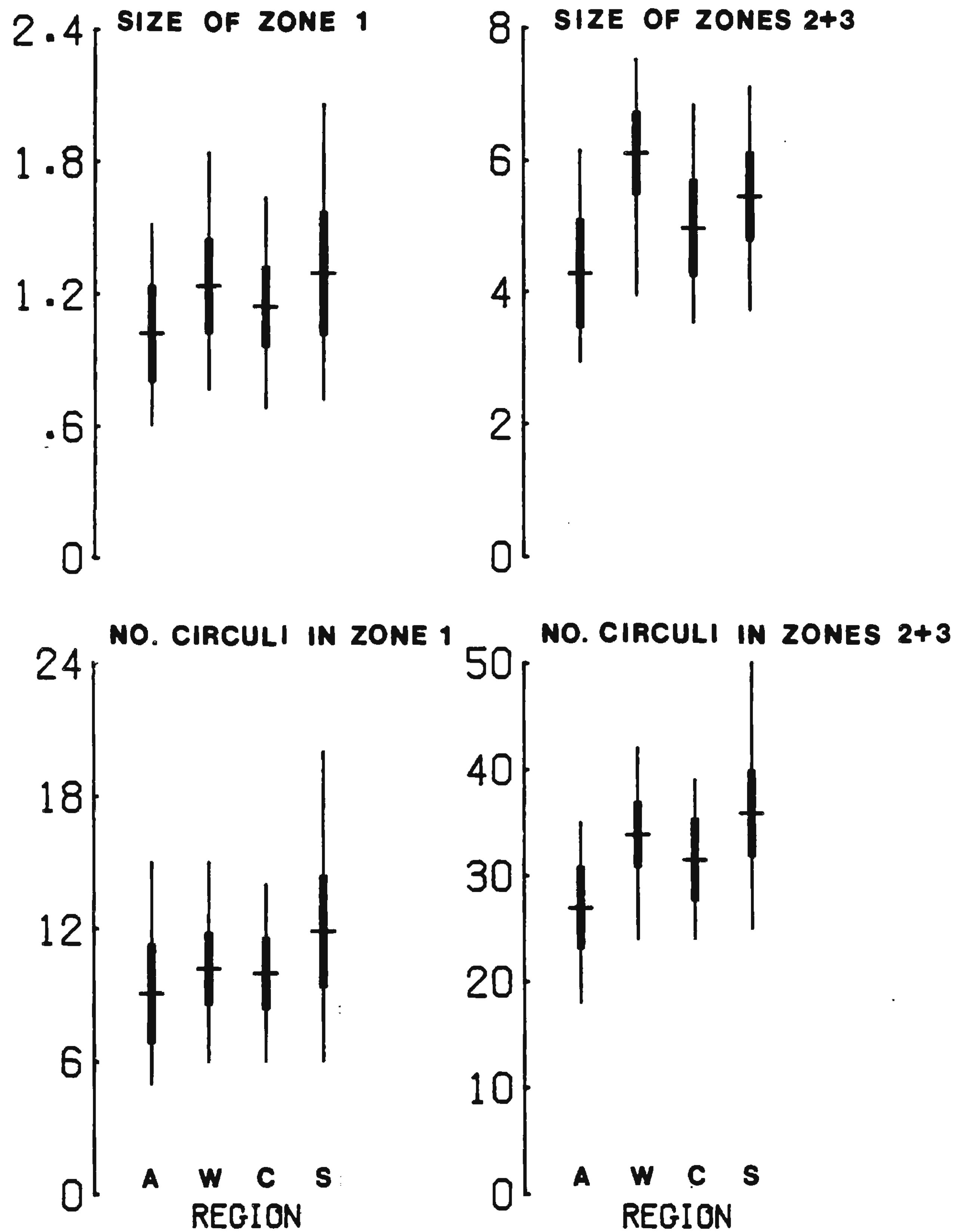
Appendix Figure 2. Plots of scale characters for brood year 1972A standards (used to classify age 1.2 chinook sampled in 1976).



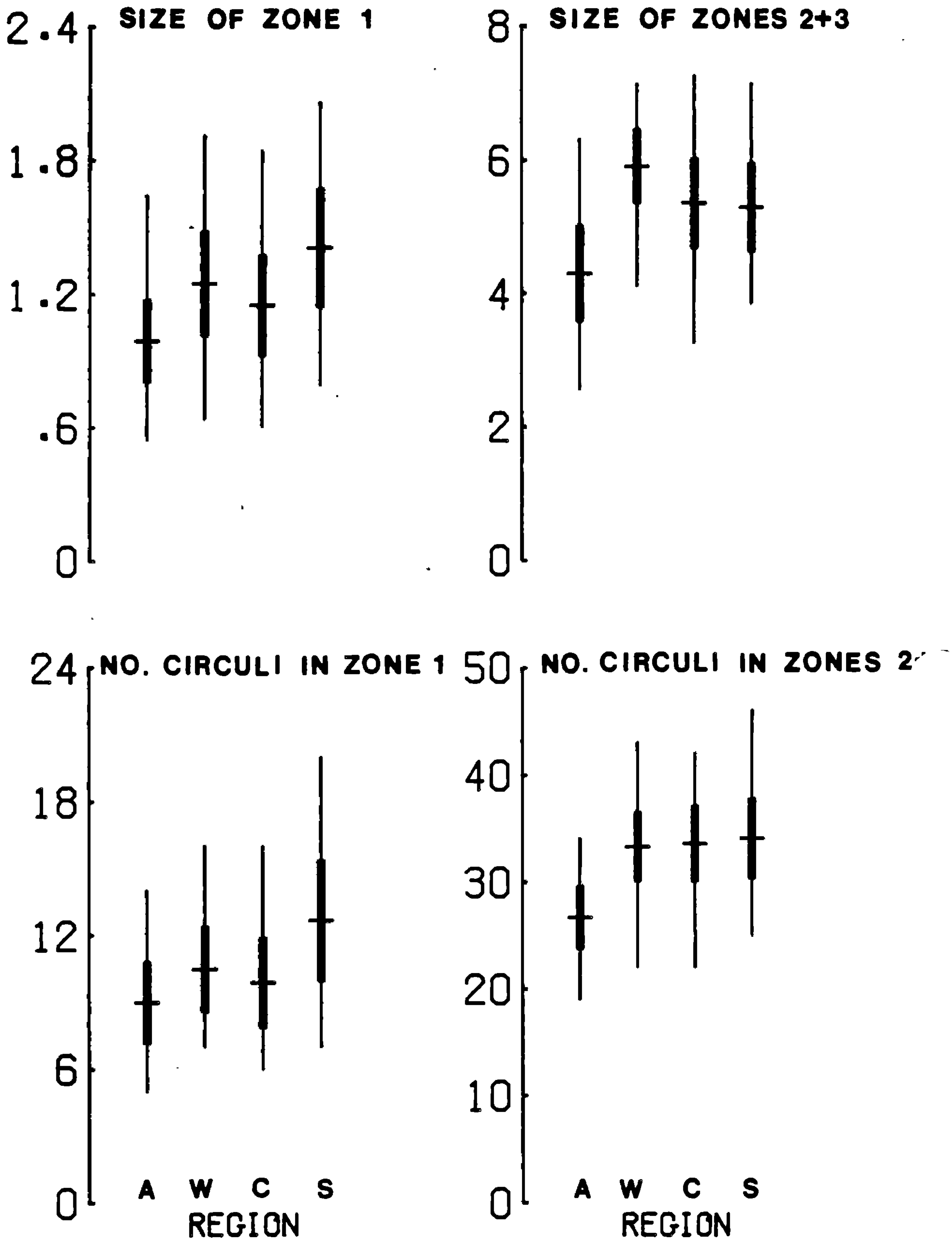
Appendix Figure 3. Plots of scale characters for brood year 1973A standards (used to classify age 1.2 chinook sampled in 1977).



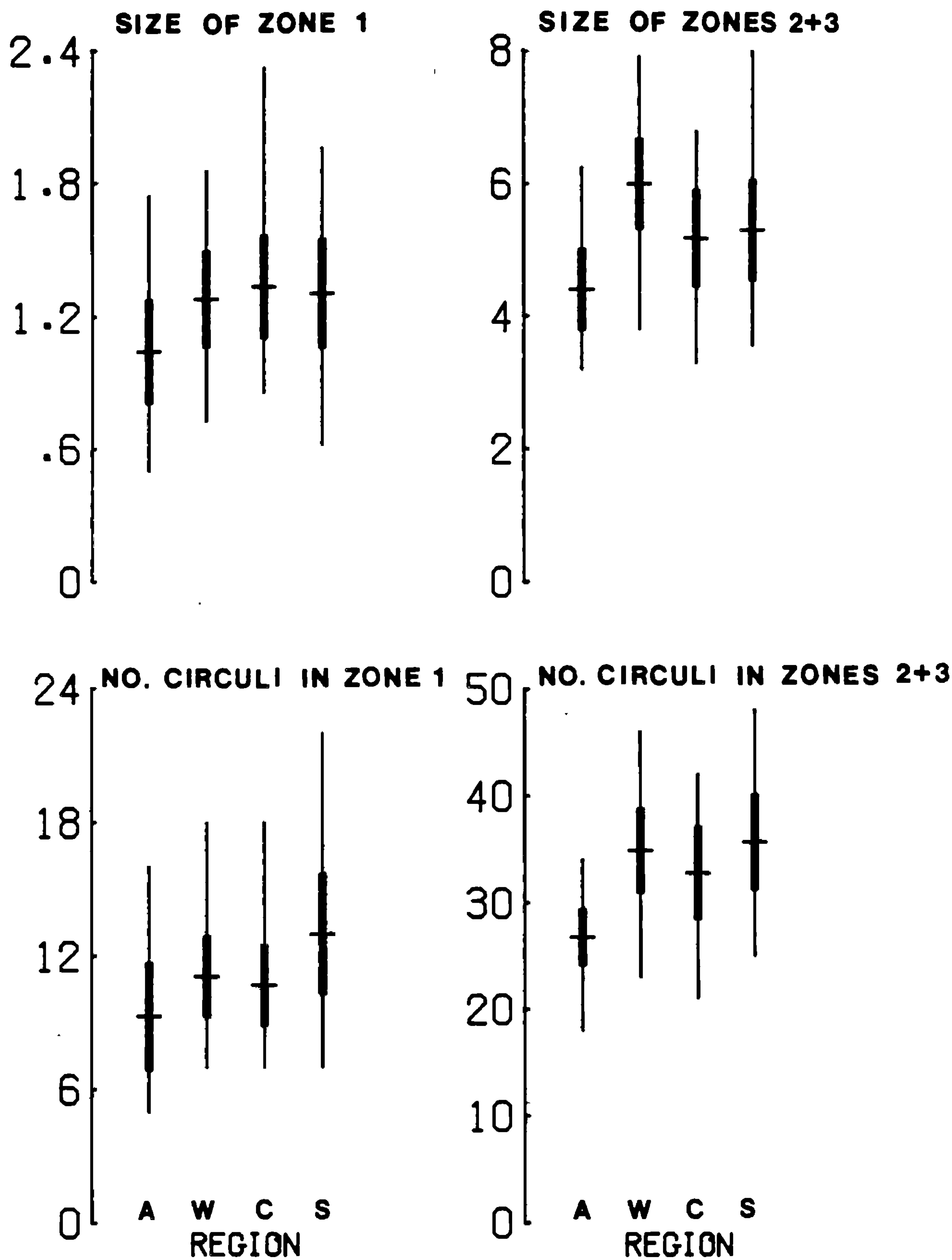
Appendix Figure 4. Plots of scale characters for brood year 1974A standards (used to classify age 1.2 chinook sampled in 1978).



Appendix Figure 5. Plots of scale characters for brood year 1975A standards (used to classify age 1.2 chinook sampled in 1979).



Appendix Figure 6. Plots of scale characters for brood year 1976A standards (used to classify age 1.2 chinook sampled in 1980).



Appendix Figure 7. Plots of scale characters for brood year 1977 standards (used to classify age 1.2 chinook sampled in 1981).

Appendix Table A1. Estimated age and maturity composition of 1975 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n $\geq$ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	ALL	6673	(UNALLOCATED)																
JUNE	1	SAMPLE=	.0000	.3958	.0931	.0000	.4889	.0000	.0000	.3578	.0000	.3578	.0000	.1533	.0000	.1533	.0000	.5111	45
		506	0	200	47	0	247	0	0	181	0	181	0	78	0	78	0	259	
JUNE	2	87	(UNALLOCATED)																0
JUNE	3	SAMPLE=	.1136	.2740	.0134	.0134	.4144	.0247	.0000	.5117	.0000	.5117	.0000	.0493	.0000	.0493	.0000	.5856	181
		2640	300	723	35	35	1094	65	0	1351	0	1351	0	130	0	130	0	1546	
JUNE	4	798	(UNALLOCATED)																0
JUNE	5	SAMPLE=	.0174	.1249	.0436	.0087	.1946	.0031	.0000	.7502	.0055	.7557	.0000	.0466	.0000	.0466	.0000	.8054	370
		5972	104	746	260	52	1162	19	0	4480	33	4513	0	279	0	279	0	4810	
JUNE	6	SAMPLE=	.0000	.0454	.0136	.0091	.0681	.0045	.0075	.8434	.0000	.8509	.0000	.0765	.0000	.0765	.0000	.9319	235
		225	0	10	3	2	15	1	2	190	0	191	0	17	0	17	0	210	
JUNE	7	SAMPLE=	.0293	.2565	.0440	.0220	.3518	.0074	.0000	.5579	.0056	.5635	.0000	.0773	.0000	.0773	.0000	.6482	307
		7733	227	1984	340	170	2720	57	0	4314	44	4358	0	598	0	598	0	5013	
JUNE	8	SAMPLE=	.0000	.0453	.0000	.0057	.0509	.0030	.0060	.8362	.0119	.8542	.0000	.0876	.0044	.0919	.0000	.9491	373
		2139	0	97	0	12	109	6	13	1789	26	1827	0	187	9	197	0	2030	
JUNE	9	SAMPLE=	.0000	.0479	.0240	.0120	.0838	.0000	.0000	.7949	.0000	.7949	.0000	.1091	.0121	.1213	.0000	.9162	167
		6197	0	297	148	74	520	0	0	4926	0	4926	0	676	75	751	0	5677	
JUNE	10	SAMPLE=	.0060	.0298	.0119	.0000	.0476	.0139	.0000	.7553	.0302	.7855	.0000	.1529	.0000	.1529	.0000	.9524	168
		3777	22	112	45	0	180	53	0	2853	114	2967	0	578	0	578	0	3597	
JUNE	ALL	30074	653	4169	879	346	6047	201	14	20083	216	20314	0	2543	85	2627	0	23142	
	(	885	UNALLOCATED)																

Appendix Table Al. Continued.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	1	SAMPLE=	.0137	.0730	.0000	.0046	.0913	.0323	.0000	.8010	.0067	.8078	.0000	.0600	.0046	.0646	.0040	.9087	263
		5296	72	387	0	24	483	171	0	4242	36	4278	0	318	24	342	21	4813	
JULY	2	15	(UNALLOCATED)																0
JULY	3	SAMPLE=	.0000	.0305	.0000	.0000	.0305	.0000	.0060	.8920	.0060	.9041	.0000	.0654	.0000	.0654	.0000	.9695	295
		2942	0	90	0	0	90	0	18	2624	18	2660	0	192	0	192	0	2852	
JULY	4	SAMPLE=	.0000	.0221	.0000	.0000	.0221	.0000	.0000	.9649	.0000	.9649	.0000	.0000	.0000	.0130	.0000	.9779	181
		15447	0	341	0	0	341	0	0	14904	0	14904	0	0	0	201	0	15106	
JULY	5	SAMPLE=	.0000	.0000	.0000	.0000	0.0000	.3398	.0000	.6408	.0000	.6408	.0000	.0194	.0000	.0194	.0000	1.0000	113
		2393	0	0	0	0	0	813	0	1533	0	1533	0	46	0	46	0	2393	
JULY	6	SAMPLE=	.0038	.0038	.0000	.0000	.0075	.0000	.0000	.9749	.0053	.9802	.0000	.0123	.0000	.0123	.0000	.9925	400
		32301	121	121	0	0	242	0	0	31492	171	31663	0	396	0	396	0	32059	
JULY	7	SAMPLE=	.0000	.0000	.0000	.0000	C.0000	.0787	.0000	.8898	.0000	.8898	.0000	.0315	.0000	.0315	.0000	1.0000	142
		7121	0	0	0	0	0	561	0	6336	0	6336	0	224	0	224	0	7121	
JULY	8	SAMPLE=	.0000	.0064	.0000	.0000	.0064	.0050	.0000	.9298	.0092	.9391	.0000	.0471	.0000	.0471	.0025	.9936	466
		13078	0	84	0	0	84	65	0	12161	120	12281	0	616	0	616	32	12994	
JULY	9	SAMPLE=	.0000	.0000	.0000	.0000	0.0000	.0217	.0000	.9203	.0000	.9203	.0000	.0580	.0000	.058C	.0000	1.0000	154
		143	0	0	0	0	0	3	0	132	0	132	0	8	0	8	0	143	
JULY	10	SAMPLE=	.0034	.0068	.0034	.0000	.0135	.0117	.0000	.9243	.0000	.9243	.0000	.0505	.0000	.0505	.0000	.9865	296
		46425	157	314	157	0	627	541	0	42913	0	42913	0	2344	0	2344	0	45798	
JULY	ALL	125161	350	1337	157	24	1868	2154	18	116337	345	116700	0	4145	24	4371	54	123278	
	(	15	UNALLOCATED)																
ALL-SEASON TOTAL	(	161908	1004	5506	1036	370	7916	2354	32	136420	561	137013	0	6688	109	6998	54	146419	
		7573	UNALLOCATED)																

Appendix Table A2. Estimated age and maturity composition of 1976 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n ≥ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	ALL	8122	(UNALLOCATED)																
JUNE	1	102	(UNALLOCATED)																23
JUNE	2	683	(UNALLOCATED)																0
JUNE	3	SAMPLE=	.0333	.1667	.1000	.0333	.3333	.0000	.0000	.6275	.0000	.6275	.0000	.0392	.0000	.0392	.0000	.6667	30
		10243	341	1707	1024	341	3414	0	0	6427	0	6427	0	402	0	402	0	6829	
JUNE	4	SAMPLE=	.0135	.2028	.0541	.0135	.2840	.0000	.0000	.6300	.0185	.6485	.0000	.0676	.0000	.0676	.0000	.7160	81
		8034	109	1629	435	109	2281	0	0	5061	149	5210	0	543	0	543	0	5753	
JUNE	5	SAMPLE=	.0069	.0966	.0759	.0414	.2208	.0078	.0000	.5532	.0000	.5532	.0000	.2026	.0000	.2026	.0156	.7792	154
		3063	21	296	232	127	676	24	0	1695	0	1695	0	621	0	621	48	2387	
JUNE	6	SAMPLE=	.0000	.0797	.0199	.0159	.1155	.0000	.0000	.7734	.0163	.7897	.0000	.0948	.0000	.0948	.0000	.8845	251
		6942	0	553	138	111	802	0	0	5369	113	5482	0	658	0	658	0	6140	
JUNE	7	SAMPLE=	.0037	.1818	.0450	.0056	.2361	.0000	.0095	.6447	.0095	.6637	.0000	.0982	.0000	.0982	.0020	.7639	576
		10562	40	1920	475	59	2494	0	101	6809	101	7010	0	1037	0	1037	21	8068	
JUNE	8	SAMPLE=	.0000	.0290	.0058	.0029	.0377	.0000	.0000	.8389	.0151	.8540	.0044	.1008	.0000	.1052	.0032	.9623	345
		5664	0	164	33	16	213	0	0	4752	85	4837	25	571	0	596	18	5451	
JUNE	9	SAMPLE=	.0084	.0759	.0084	.0000	.0927	.0000	.0000	.8268	.0000	.8268	.0000	.0805	.0000	.0805	.0000	.9073	151
		8035	68	610	68	0	745	0	0	6643	0	6643	0	647	0	647	0	7290	
JUNE	10	SAMPLE=	.0000	.0198	.0028	.0000	.0226	.0000	.0000	.8308	.0060	.8368	.0060	.1253	.0060	.1372	.0033	.9774	354
		20436	0	404	58	0	462	0	0	16979	122	17101	122	2561	122	2805	68	19974	
JUNE	ALL	73764	579	7283	2463	763	11088	24	101	53735	570	54406	147	7038	122	7307	155	61891	
	(	785	UNALLOCATED)																

Appendix Table A2. Continued.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	1	SAMPLE=	.0028	.0126	.0112	.0000	.0266	.0015	.0071	.9232	.0024	.9326	.0023	.0369	.0000	.0392	.0000	.9734	789
		36625	103	462	410	0	975	55	259	33812	86	34158	85	1353	0	1437	0	35650	
JULY	2	902	(UNALLOCATED)																0
JULY	3	SAMPLE=	.0101	.0201	.0000	.0000	.0302	.0212	.0000	.8944	.0225	.9169	.0000	.0317	.0000	.0317	.0000	.9698	298
		14637	147	295	0	0	442	310	0	13091	329	13421	0	465	0	465	0	14195	
JULY	4	SAMPLE=	.0000	.0000	.0000	.0000	0.0000	.0000	.0000	.8609	.0957	.9565	.0000	.0000	.0000	.0435	.0000	1.0000	36
		10496	0	0	0	0	0	0	0	9036	1004	10040	0	0	0	456	0	10496	
JULY	5	SAMPLE=	.0000	.0000	.0000	.0000	0.0000	.0000	.0000	.9250	.0750	1.0000	.0000	.0000	.0000	.0000	.0000	1.0000	76
		4871	0	0	0	0	0	0	0	4506	365	4871	0	0	0	0	0	4871	
JULY	6	SAMPLE=	.0000	.0162	.0081	.0000	.0242	.0000	.0000	.8666	.0542	.9208	.0000	.0550	.0000	.0550	.0000	.9758	165
		16148	0	261	130	0	391	0	0	13994	875	14869	0	888	0	888	0	15757	
JULY	7	SAMPLE=	.0000	.0000	.0000	.0000	.0048	.0213	.0000	.9420	.0000	.9420	.0000	.0319	.0000	.0319	.0000	.9952	210
		45077	0	0	0	0	215	960	0	42463	0	42463	0	1439	0	1439	0	44862	
JULY	8	SAMPLE=	.0000	.0000	.0023	.0000	.0023	.0000	.0000	.8536	.0228	.8763	.0053	.1161	.0000	.1213	.0000	.9977	426
		17345	0	0	41	0	41	0	0	14805	395	15200	92	2013	0	2105	0	17304	
JULY	9	SAMPLE=	.0000	.0000	.0000	.0000	0.0000	.0000	.0000	.9110	.0000	.9110	.0000	.0890	.0000	.0890	.0000	1.0000	165
		19126	0	0	0	0	0	0	0	17423	0	17423	0	1703	0	1703	0	19126	
JULY	10	SAMPLE=	.0023	.0000	.0000	.0000	.0023	.0028	.0000	.8694	.0199	.8893	.0000	.1056	.0000	.1056	.0000	.9977	436
		37769	87	0	0	0	87	105	0	32838	751	33589	0	3989	0	3989	0	37682	
JULY	ALL	202996	337	1017	582	0	2150	1430	259	181968	3805	186033	176	11849	0	12481	0	199944	
	(	902	UNALLOCATED)																
ALL-SEASON		284882	915	8301	3045	763	13238	1453	360	235703	4375	240438	323	18887	122	19788	155	261835	
TOTAL	(	9809	UNALLOCATED)																

Appendix Table A3. Estimated age and maturity composition of 1977 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n $\geq$ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	ALL	1064	(UNALLOCATED)																
JUNE	1	13	(UNALLOCATED)																4
JUNE	3	SAMPLE=	.1099	.3571	.0824	.1648	.7143	.0000	.0000	.1143	.0000	.1143	.0000	.1429	.0000	.1429	.0286	.2857	42
		1026	113	366	85	169	733	0	0	117	0	117	0	147	0	147	29	293	
JUNE	5	SAMPLE=	.0388	.4396	.0853	.0646	.6283	.0000	.0000	.2289	.0000	.2289	.0000	.1374	.0000	.1374	.0054	.3717	452
		7924	307	3483	676	512	4979	0	0	1814	0	1814	0	1088	0	1088	43	2945	
JUNE	7	SAMPLE=	.0048	.3026	.0726	.0472	.4273	.0013	.0022	.4058	.0022	.4102	.0000	.1612	.0000	.1612	.0000	.5727	976
		7538	36	2281	547	356	3221	10	17	3059	17	3092	0	1215	0	1215	0	4317	
JUNE	8	SAMPLE=	.0102	.0356	.0254	.0000	.0711	.0099	.0000	.5385	.0000	.5385	.0000	.3755	.0000	.3755	.0049	.9289	253
		2340	24	83	59	0	166	23	0	1260	0	1260	0	879	0	879	12	2174	
JUNE	9	SAMPLE=	.0000	.0405	.0203	.0135	.0743	.0000	.0118	.7058	.0000	.7176	.0000	.2081	.0000	.2081	.0000	.9257	148
		2516	0	102	51	34	187	0	30	1776	0	1805	0	524	0	524	0	2329	
JUNE	10	SAMPLE=	.0000	.0105	.0000	.0035	.0140	.0000	.0000	.7770	.0000	.7770	.0000	.2051	.0000	.2051	.0039	.9860	286
		9966	0	105	0	35	139	0	0	7743	0	7743	0	2044	0	2044	39	9827	
JUNE	ALL	31323	480	6420	1419	1106	9425	33	46	15770	17	15833	0	5896	0	5896	123	21885	
	(	13	UNALLOCATED)																
JULY	1	163	(UNALLOCATED)																14
JULY	3	SAMPLE=	.0000	.0278	.0000	.0000	.0278	.0278	.0000	.8750	.0000	.8750	.0000	.0694	.0000	.0694	.0000	.9722	72
		2574	0	71	0	0	71	71	0	2252	0	2252	0	179	0	179	0	2503	
JULY	5	SAMPLE=	.0024	.0341	.0000	.0000	.0366	.0041	.0033	.8773	.0167	.8973	.0000	.0620	.0000	.0620	.0000	.9634	547
		8182	20	279	0	0	299	34	27	7178	136	7342	0	507	0	507	0	7883	
JULY	6	SAMPLE=	.0000	.0000	.0000	.0000	0.0000	.0227	.0000	.8930	.0388	.9318	.0000	.0455	.0000	.0455	.0000	1.0000	45
		1586	0	0	0	0	0	36	0	1416	62	1478	0	72	0	72	0	1586	

Appendix Table A3. Continued.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	7	SAMPLE=	.0000	.0092	.0000	.0000	.0092	.0052	.0000	.9545	.0000	.9545	.0000	.0311	.0000	.0311	.0000	.9908	217
		8096	0	75	0	0	75	42	0	7727	0	7727	0	252	0	252	0	8021	
JULY	8	SAMPLE=	.0000	.0044	.0000	.0000	.0044	.0057	.0198	.8514	.0099	.8811	.0000	.1087	.0000	.1087	.0000	.9956	225
		10823	0	48	0	0	48	62	214	9215	107	9536	0	1177	0	1177	0	10775	
JULY	9	SAMPLE=	.0000	.0093	.0000	.0000	.0093	.0000	.0000	.9406	.0000	.9406	.0000	.0500	.0000	.0500	.0000	.9907	107
		12	0	0	0	0	0	0	0	11	0	11	0	1	0	1	0	12	
JULY	10	SAMPLE=	.0014	.0042	.0000	.0000	.0056	.0026	.0051	.8573	.0000	.8624	.0045	.1248	.0000	.1294	.0000	.9944	895
		29430	41	123	0	0	164	77	150	25231	0	25381	134	3674	0	3807	0	29266	
JULY	ALL	60866	61	597	0	0	658	322	392	53031	305	53728	134	5861	0	5995	0	60045	
	(	163	UNALLOCATED)																
ALL-SEASON		93253	541	7017	1419	1106	10083	355	438	68801	322	69561	134	11757	0	11891	123	81930	
TOTAL	(	1240	UNALLOCATED)																

Appendix Table A4. Estimated age and maturity composition of 1978 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n $\geq$ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JUNE	3	638	(UNALLOCATED)																16
JUNE	5	SAMPLE=	.0062	.2161	.0517	.0116	.2856	.0024	.0013	.5719	.0026	.5758	.0000	.1327	.0012	.1339	.0024	.7144	1425
		15747	97	3404	814	182	4498	37	20	9006	41	9067	0	2090	19	2108	37	11249	
JUNE	6	SAMPLE=	.0000	.0566	.0000	.0000	.0566	.0000	.0000	.9041	.0000	.9041	.0000	.0393	.0000	.0393	.0000	.9434	53
		2367	0	134	0	0	134	0	0	2140	0	2140	0	93	0	93	0	2233	
JUNE	8	SAMPLE=	.0000	.0164	.0000	.0000	.0164	.0000	.0000	.9079	.0000	.9079	.0000	.0757	.0000	.0757	.0000	.9836	61
		6368	0	104	0	0	104	0	0	5782	0	5782	0	482	0	482	0	6264	
JUNE	10	SAMPLE=	.0000	.0000	.0256	.0000	.0256	.0000	.0000	.9457	.0000	.9457	.0000	.0000	.0000	.0287	.0000	.9744	39
		100	0	0	3	0	3	0	0	95	0	95	0	0	0	3	0	97	
JUNE	ALL	25220	97	3642	817	182	4739	37	20	17022	41	17083	0	2665	19	2686	37	19843	
	(	638	UNALLOCATED)																
JULY	3	SAMPLE=	.0000	.0365	.0000	.0000	.0365	.0000	.0000	.8947	.0121	.9068	.0000	.0567	.0000	.0567	.0000	.9635	137
		2068	0	75	0	0	75	0	0	1850	25	1875	0	117	0	117	0	1993	
JULY	5	SAMPLE=	.0006	.0246	.0040	.0011	.0303	.0043	.0010	.9147	.0010	.9167	.0000	.0481	.0000	.0481	.0006	.9697	1780
		74781	43	1841	300	86	2269	322	74	68403	74	68550	0	3593	0	3593	46	72512	
JULY	6	193	(UNALLOCATED)																0
JULY	8	695	(UNALLOCATED)																23
JULY	10	SAMPLE=	.0000	.0041	.0000	.0000	.0041	.0806	.0000	.8657	.0163	.8820	.0000	.0285	.0000	.0285	.0047	.9959	241
		1669	0	7	0	0	7	135	0	1445	27	1472	0	47	0	47	8	1662	
JULY	ALL	79406	43	1923	300	86	2351	457	74	71699	126	71898	0	3758	0	3758	54	76167	
	(	888	UNALLOCATED)																
ALL-SEASON		104626	140	5565	1117	268	7090	494	94	88720	166	88981	0	6423	19	6444	91	96010	
TOTAL	(	1526	UNALLOCATED)																

Appendix Table A5. Estimated age and maturity composition of 1979 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data ($n \geq 25$), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JUNE	3	SAMPLE=	.0000	.4204	.1090	.0000	.5294	.0000	.0000	.3193	.0000	.3193	.0000	.1513	.0000	.1513	.0000	.4706	68
		582	0	245	63	0	308	0	0	186	0	186	0	88	0	88	0	274	
JUNE	5	SAMPLE=	.0093	.3146	.0493	.0053	.3786	.0069	.0000	.4629	.0021	.4650	.0000	.1467	.0000	.1467	.0028	.6214	861
		20172	188	6347	995	108	7638	140	0	9338	42	9380	0	2959	0	2959	56	12534	
JUNE	6	53	(UNALLOCATED)																0
JUNE	8	12	(UNALLOCATED)																0
JUNE	10	168	(UNALLOCATED)																0
JUNE	ALL	20987	188	6592	1058	108	7946	140	0	9524	42	9566	0	3047	0	3047	56	12808	
	(	233	UNALLOCATED)																
JULY	3	SAMPLE=	.0000	.0147	.0000	.0000	.0147	.0000	.0000	.7862	.0262	.8124	.0000	.1729	.0000	.1729	.0000	.9853	68
		146	0	2	0	0	2	0	0	115	4	119	0	25	0	25	0	144	
JULY	5	SAMPLE=	.0021	.0127	.0000	.0000	.0149	.0079	.0000	.8919	.0123	.9042	.0000	.0730	.0000	.0730	.0000	.9851	606
		33756	72	430	0	0	501	267	0	30106	417	30522	0	2466	0	2466	0	33255	
JULY	6	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	1.0000	.0000	1.0000	.0000	.0000	.0000	.0000	.0000	1.0000	64
		3388	0	0	0	0	0	0	0	3388	0	3388	0	0	0	0	0	3388	
JULY	8	SAMPLE=	.0000	.0025	.0000	.0000	.0025	.0000	.0000	.9598	.0044	.9642	.0000	.0306	.0000	.0306	.0028	.9975	401
		35382	0	88	0	0	88	0	0	33958	156	34114	0	1081	0	1081	98	35294	
JULY	10	SAMPLE=	.0000	.0044	.0000	.0022	.0066	.0222	.0000	.9589	.0000	.9589	.0000	.0123	.0000	.0123	.0000	.9934	453
		32497	0	143	0	72	215	721	0	31160	0	31160	0	401	0	401	0	32282	
JULY	ALL	105169	72	664	0	72	807	988	0	98727	576	99303	0	3973	0	3973	98	104362	
	(	0	UNALLOCATED)																
ALL-SEASON		126156	260	7255	1058	179	8753	1127	0	108251	618	108869	0	7020	0	7020	154	117170	
TOTAL	(	233	UNALLOCATED)																

Appendix Table A6. Estimated age and maturity composition of 1980 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data ($n \geq 25$), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	M A T U R I N G T.1	T.2	T.3	T.4+	TOTAL	I M M A T U R E S T.1	0.2	1.2	2.2	T.2	0.3	1.3	2.3	T.3	T.4+	TOTAL	TOTAL SAMPLE
JUNE	3	770	(UNALLOCATED)																19
JUNE	5	SAMPLE=	.0042	.2752	.0449	.0050	.3293	.0009	.0128	.4754	.0112	.4993	.0084	.1622	.0000	.1705	.0000	.6707	1321
		28107	117	7736	1262	140	9256	25	359	13362	314	14034	235	4558	0	4793	0	18851	
JUNE	6	1549	(UNALLOCATED)																0
JUNE	8	SAMPLE=	.0000	.0333	.0000	.0000	.0333	.0000	.0541	.7579	.0000	.8120	.0000	.1547	.0000	.1547	.0000	.9667	30
		11981	0	399	0	0	399	0	649	9080	0	9729	0	1853	0	1853	0	11582	
JUNE	10	3300	(UNALLOCATED)																0
JUNE	ALL	45707	117	8136	1262	140	9655	25	1007	22442	314	23763	235	6411	0	6646	0	30433	
	(	5619	UNALLOCATED)																
JULY	3	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9000	.0000	.9000	.0000	.1000	.0000	.1000	.0000	1.0000	107
		7452	0	0	0	0	0	0	0	6707	0	6707	0	745	0	745	0	7452	
JULY	5	SAMPLE=	.0000	.0050	.0006	.0000	.0056	.0006	.0317	.9314	.0123	.9754	.0000	.0184	.0000	.0184	.0000	.9944	1772
		235250	0	1180	148	0	1328	144	7456	219117	2886	229460	0	4319	0	4319	0	233922	
JULY	6	SAMPLE=	.0036	.0109	.0000	.0000	.0146	.0040	.0077	.8498	.0309	.8885	.0093	.0836	.0000	.0929	.0000	.9854	274
		14329	52	157	0	0	209	58	111	12177	443	12731	133	1198	0	1331	0	14120	
JULY	8	SAMPLE=	.0000	.0047	.0000	.0000	.0047	.0040	.0267	.8642	.0107	.9015	.0116	.0768	.0000	.0884	.0013	.9953	849
		186218	0	877	0	0	877	748	4967	160926	1987	167879	2166	14297	0	16464	249	185341	
JULY	10	SAMPLE=	.0000	.0000	.0000	.0000	.0017	.0096	.0159	.9150	.0080	.9389	.0000	.0479	.0000	.0479	.0019	.9983	590
		214842	0	0	0	0	364	2058	3419	196588	1709	201716	0	10292	0	10292	412	214478	
JULY	ALL	658091	52	2214	148	0	2778	3008	15953	595515	7025	618493	2299	30851	0	33150	661	655313	
	(	0	UNALLOCATED)																
ALL-SEASON		703798	169	10350	1410	140	12433	3033	16960	617957	7339	642256	2534	37262	0	39796	661	685746	
TOTAL	(	5619	UNALLOCATED)																

Appendix Table A7. Estimated age and maturity composition of 1981 Japanese mothership fishery chinook catch. For month/sub-area strata represented by sufficient biological data ($n \geq 25$), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING					IMMATURES											TOTAL SAMPLE
			T.1	T.2	T.3	T.4+	TOTAL	T.1	0.2	1.2	2.2	T.2	0.3	1.3	2.3	T.3	T.4+	TOTAL	
JUNE	3	58	(UNALLOCATED)																13
JUNE	5	SAMPLE=	.0161	.2954	.0643	.0161	.3919	.0022	.0038	.4230	.0076	.4344	.0000	.1715	.0000	.1715	.0000	.6081	541
		8943	144	2642	575	144	3504	20	34	3783	68	3885	0	1534	0	1534	0	5439	
JUNE	6	58	(UNALLOCATED)																0
JUNE	8	26	(UNALLOCATED)																0
JUNE	ALL	9085	144	2642	575	144	3504	20	34	3783	68	3885	0	1534	0	1534	0	5439	
	(	142	UNALLOCATED)																
JULY	3	421	(UNALLOCATED)																14
JULY	5	SAMPLE=	.0000	.0071	.0018	.0009	.0097	.0088	.0000	.9237	.0165	.9403	.0000	.0412	.0000	.0412	.0000	.9903	1134
		57315	0	404	101	51	556	506	0	52944	949	53893	0	2360	0	2360	0	56759	
JULY	6	417	(UNALLOCATED)																0
JULY	8	SAMPLE=	.0000	.0020	.0020	.0000	.0039	.0023	.0044	.7982	.0393	.8418	.0051	.1470	.0000	.1520	.0000	.9961	507
		10953	0	22	22	0	43	25	48	8742	430	9220	56	1610	0	1665	0	10910	
JULY	10	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0032	.0000	.8001	.0386	.8387	.0000	.1548	.0000	.1548	.0032	1.0000	333
		9460	0	0	0	0	0	31	0	7569	365	7934	0	1465	0	1465	31	9460	
JULY	ALL	78566	0	426	123	51	599	561	48	69255	1744	71047	56	5435	0	5490	31	77129	
	(	838	UNALLOCATED)																
ALL-SEASON		87651	144	3068	698	194	4104	581	82	73039	1811	74932	56	6969	0	7024	31	82567	
TOTAL	(	980	UNALLOCATED)																

Appendix Table B1. Estimated age and maturity composition of 1975 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n ≥ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	11	SAMPLE=	.0139	.0554	.1108	.0970	.2771	.0000	.0000	.4771	.0000	.4771	.0000	.2212	.0246	.2458	.0000	.7229	83
		5000	69	277	554	485	1386	0	0	2386	0	2386	0	1106	123	1229	0	3614	
MAY	12	SAMPLE=	.0000	.0571	.0571	.1714	.2857	.0000	.0000	.3061	.0000	.3061	.0000	.4082	.0000	.4082	.0000	.7143	35
		8000	0	457	457	1371	2286	0	0	2449	0	2449	0	3265	0	3265	0	5714	
MAY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.7297	.0000	.7297	.0000	.2703	.0000	.2703	.0000	1.0000	37
		15000	0	0	0	0	0	0	0	10946	0	10946	0	4054	0	4054	0	15000	
MAY	14	2000	(UNALLOCATED)																12
MAY	15	1000	(UNALLOCATED)																0
MAY	ALL	31000	69	734	1011	1856	3671	0	0	15780	0	15780	0	8425	123	8548	0	24329	
	(	3000	UNALLOCATED)																
JUNE	11	SAMPLE=	.0281	.0422	.0281	.0703	.1687	.0000	.0000	.5920	.0000	.5920	.0000	.2267	.0000	.2267	.0126	.8313	83
		8000	225	337	225	562	1349	0	0	4736	0	4736	0	1814	0	1814	101	6651	
JUNE	12	SAMPLE=	.0000	.0125	.0000	.0000	.0125	.0000	.0000	.8662	.0000	.8662	.0000	.1213	.0000	.1213	.0000	.9875	80
		10000	0	125	0	0	125	0	0	8662	0	8662	0	1213	0	1213	0	9875	
JUNE	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9411	.0075	.9485	.0000	.0515	.0000	.0515	.0000	1.0000	136
		3000	0	0	0	0	0	0	0	2823	22	2846	0	154	0	154	0	3000	
JUNE	14	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9010	.0145	.9155	.0000	.0845	.0000	.0845	.0000	1.0000	71
		1000	0	0	0	0	0	0	0	901	15	915	0	85	0	85	0	1000	
JUNE	15	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0133	.0000	.8400	.0000	.8400	.0000	.1333	.0133	.1467	.0000	1.0000	76
		2000	0	0	0	0	0	27	0	1680	0	1680	0	267	27	293	0	2000	
JUNE	ALL	24000	225	462	225	562	1474	27	0	18802	37	18839	0	3532	27	3559	101	22526	
	(	0	UNALLOCATED)																

Appendix Table Bl. Continued.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	11	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0165	.0000	.9225	.0114	.9339	.0000	.0496	.0000	.0496	.0000	1.0000	126
		3000	0	0	0	0	0	50	0	2767	34	2802	0	149	0	149	0	3000	
JULY	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0174	.0090	.8954	.0000	.9043	.0000	.0783	.0000	.0783	.0000	1.0000	116
		2000	0	0	0	0	0	35	18	1791	0	1809	0	157	0	157	0	2000	
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.1525	.0000	.8305	.0000	.8305	.0000	.0169	.0000	.0169	.0000	1.0000	62
		16000	0	0	0	0	0	2441	0	13288	0	13288	0	271	0	271	0	16000	
JULY	14	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.2000	.0000	.7857	.0000	.7857	.0000	.0143	.0000	.0143	.0000	1.0000	71
		36000	0	0	0	0	0	7200	0	28286	0	28286	0	514	0	514	0	36000	
JULY	15	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0291	.0000	.9126	.0000	.9126	.0000	.0583	.0000	.0583	.0000	1.0000	104
		7000	0	0	0	0	0	204	0	6388	0	6388	0	408	0	408	0	7000	
JULY	3	SAMPLE=	.0000	.0305	.0000	.0000	.0305	.0000	.0060	.8920	.0060	.9041	.0000	.0654	.0000	.0654	.0000	.9695	295
		4000	0	122	0	0	122	0	24	3568	24	3616	0	262	0	262	0	3878	
JULY	ALL	68000	0	122	0	0	122	9929	42	56089	58	56189	0	1760	0	1760	0	67878	
	(	0	UNALLOCATED)																
ALL-SEASON TOTAL		123000	294	1319	1236	2419	5268	9956	42	90672	95	90809	0	13718	150	13867	101	114732	
	(	3000	UNALLOCATED)																

Appendix Table B2. Estimated age and maturity composition of 1976 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n ≥ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	11	SAMPLE=	.0000	.0713	.1248	.1426	.3387	.0000	.0000	.2581	.0000	.2581	.0252	.3780	.0000	.4032	.0000	.6613	62
		5056	0	361	631	721	1713	0	0	1305	0	1305	127	1911	0	2039	0	3343	
MAY	12	SAMPLE=	.0000	.0800	.0267	.0267	.1333	.0000	.0000	.5930	.0000	.5930	.0000	.2737	.0000	.2737	.0000	.8667	45
		6483	0	519	173	173	864	0	0	3844	0	3844	0	1774	0	1774	0	5619	
MAY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8846	.0000	.8846	.0000	.1154	.0000	.1154	.0000	1.0000	83
		14765	0	0	0	0	0	0	0	13061	0	13061	0	1704	0	1704	0	14765	
MAY	14	4682	(UNALLOCATED)																5
MAY	15	221	(UNALLOCATED)																1
MAY	ALL	31207	0	879	804	894	2577	0	0	18210	0	18210	127	5389	0	5517	0	23727	
		(4903	UNALLOCATED)																
JUNE	11	SAMPLE=	.0000	.0078	.0078	.0156	.0313	.0000	.0000	.7934	.0000	.7934	.0000	.1754	.0000	.1754	.0000	.9688	128
		17142	0	134	134	268	536	0	0	13600	0	13600	0	3006	0	3006	0	16606	
JUNE	12	SAMPLE=	.0000	.0000	.0370	.0000	.0370	.0000	.0000	.6852	.0000	.6852	.0000	.2778	.0000	.2778	.0000	.9630	54
		21199	0	0	785	0	785	0	0	14525	0	14525	0	5889	0	5889	0	20414	
JUNE	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8302	.0000	.8302	.0000	.1698	.0000	.1698	.0000	1.0000	108
		5609	0	0	0	0	0	0	0	4657	0	4657	0	952	0	952	0	5609	
JUNE	14	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0134	.8818	.0134	.9085	.0000	.0915	.0000	.0915	.0000	1.0000	153
		1631	0	0	0	0	0	0	22	1438	22	1482	0	149	0	149	0	1631	
JUNE	15	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8596	.0000	.8596	.0000	.1404	.0000	.1404	.0000	1.0000	57
		29	0	0	0	0	0	0	0	25	0	25	0	4	0	4	0	29	
JUNE	3	SAMPLE=	.0333	.1667	.1000	.0333	.3333	.0000	.0000	.6275	.0000	.6275	.0000	.0392	.0000	.0392	.0000	.6667	30
		994	33	166	99	33	331	0	0	624	0	624	0	39	0	39	0	663	
JUNE	ALL	46604	33	300	1018	301	1652	0	22	34869	22	34912	0	10040	0	10040	0	44952	
		(0	UNALLOCATED)																

Appendix Table B2. Continued.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	11	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0042	.9447	.0000	.9489	.0000	.0474	.0000	.0474	.0036	1.0000	280
		7990	0	0	0	0	0	0	33	7548	0	7582	0	379	0	379	29	7990	
JULY	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9375	.0156	.9531	.0000	.0469	.0000	.0469	.0000	1.0000	64
		10564	0	0	0	0	0	0	0	9904	165	10069	0	495	0	495	0	10564	
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0426	.0000	.8445	.0704	.9149	.0000	.0426	.0000	.0426	.0000	1.0000	51
		28611	0	0	0	0	0	1217	0	24162	2014	26176	0	1217	0	1217	0	28611	
JULY	14	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0177	.0000	.9381	.0000	.9381	.0000	.0442	.0000	.0442	.0000	1.0000	114
		20483	0	0	0	0	0	363	0	19214	0	19214	0	906	0	906	0	20483	
JULY	15	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0568	.0000	.8295	.0000	.8295	.0000	.1136	.0000	.1136	.0000	1.0000	89
		195	0	0	0	0	0	11	0	162	0	162	0	22	0	22	0	195	
JULY	3	SAMPLE=	.0101	.0201	.0000	.0000	.0302	.0212	.0000	.8944	.0225	.9169	.0000	.0317	.0000	.0317	.0000	.9698	298
		27989	282	564	0	0	845	592	0	25033	630	25663	0	888	0	888	0	27144	
JULY	ALL	95832	282	564	0	0	845	2183	33	86024	2808	88866	0	3909	0	3909	29	94987	
	(	0	UNALLOCATED)																
ALL-SEASON		173643	315	1742	1822	1195	5074	2183	55	139103	2830	141988	127	19338	0	19465	29	163666	
TOTAL	(	4903	UNALLOCATED)																

Appendix Table B3. Estimated age and maturity composition of 1977 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data ($n \geq 25$), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	11	3373	(UNALLOCATED)																0
MAY	12	756	(UNALLOCATED)																0
MAY	13	275	(UNALLOCATED)																0
MAY	ALL	4404	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		(4404	UNALLOCATED)																
JUNE	11	SAMPLE=	.0000	.0263	.0263	.0526	.1053	.0000	.0000	.3107	.0000	.3107	.0000	.5716	.0000	.5716	.0124	.8947	95
		11428	0	301	301	601	1203	0	0	3550	0	3550	0	6533	0	6533	142	10225	
JUNE	12	SAMPLE=	.0313	.0625	.0625	.0000	.1563	.0338	.0000	.0844	.0844	.1688	.0000	.6075	.0000	.6075	.0338	.8438	32
		12259	383	766	766	0	1915	414	0	1034	1034	2069	0	7447	0	7447	414	10344	
JUNE	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.5918	.0000	.5918	.0000	.4082	.0000	.4082	.0000	1.0000	50
		9908	0	0	0	0	0	0	0	5864	0	5864	0	4044	0	4044	0	9908	
JUNE	14	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.6741	.0000	.6741	.0000	.3259	.0000	.3259	.0000	1.0000	135
		282	0	0	0	0	0	0	0	190	0	190	0	92	0	92	0	282	
JUNE	ALL	33877	383	1067	1067	601	3118	414	0	10639	1034	11673	0	18116	0	18116	556	30759	
		(0	UNALLOCATED)																

Appendix Table B3. Continued.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	T.2	T.3	T.4+	TOTAL	IMMATURES T.1	0.2	1.2	2.2	T.2	0.3	1.3	2.3	T.3	T.4+	TOTAL	TOTAL SAMPLE
JULY	11	SAMPLE=	.0000	.0000	.0000	.0128	.0128	.0823	.0000	.7404	.0000	.7404	.0000	.1645	.0000	.1645	.0000	.9872	78
		2694	0	0	0	35	35	222	0	1995	0	1995	0	443	0	443	0	2659	
JULY	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9118	.0000	.9118	.0000	.0882	.0000	.0882	.0000	1.0000	34
		514	0	0	0	0	0	0	0	469	0	469	0	45	0	45	0	514	
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8940	.0199	.9139	.0000	.0861	.0000	.0861	.0000	1.0000	151
		3666	0	0	0	0	0	0	0	3278	73	3350	0	316	0	316	0	3666	
JULY	14	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9510	.0000	.9510	.0000	.0490	.0000	.0490	.0000	1.0000	102
		66291	0	0	0	0	0	0	0	63041	0	63041	0	3250	0	3250	0	66291	
JULY	15	22907	(UNALLOCATED)																15
JULY	3	SAMPLE=	.0000	.0278	.0000	.0000	.0278	.0278	.0000	.8750	.0000	.8750	.0000	.0694	.0000	.0694	.0000	.9722	72
		2745	0	76	0	0	76	76	0	2402	0	2402	0	191	0	191	0	2669	
JULY	ALL	98817	0	76	0	35	111	298	0	71184	73	71257	0	4244	0	4244	0	75799	
	(	22907	UNALLOCATED)																
ALL-SEASON		137098	383	1143	1067	636	3229	712	0	81823	1107	82930	0	22360	0	22360	556	106558	
TOTAL	(	27311	UNALLOCATED)																

Appendix Table B4. Estimated age and maturity composition of 1978 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n $\geq$ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	11	SAMPLE=	.0130	.1166	.0648	.0130	.2073	.0000	.0000	.5436	.0226	.5662	.0000	.2265	.0000	.2265	.0000	.7927	82
		9107	118	1062	590	118	1888	0	0	4950	206	5156	0	2063	0	2063	0	7219	
MAY	12	SAMPLE=	.0000	.0000	.0000	.0545	.0545	.0210	.0000	.8404	.0000	.8404	.0840	.0000	.0000	.0840	.0000	.9455	55
		42027	0	0	0	2292	2292	883	0	35320	0	35320	3532	0	0	3532	0	39735	
MAY	13	34231	(UNALLOCATED)																7
MAY	ALL	85365	118	1062	590	2410	4180	883	0	40270	206	40476	3532	2063	0	5595	0	46954	
	(	34231	UNALLOCATED)																
JUNE	11	SAMPLE=	.0000	.0196	.0196	.0000	.0392	.0000	.0000	.7937	.0000	.7937	.0000	.1671	.0000	.1671	.0000	.9608	51
		12566	0	246	246	0	493	0	0	9974	0	9974	0	2100	0	2100	0	12073	
JUNE	12	11347	(UNALLOCATED)																6
JUNE	13	SAMPLE=	.0000	.0029	.0029	.0058	.0116	.0000	.0000	.8313	.0030	.8343	.0000	.1541	.0000	.1541	.0000	.9884	344
		21571	0	63	63	125	251	0	0	17933	64	17997	0	3323	0	3323	0	21320	
JUNE	ALL	45484	0	309	309	125	744	0	0	27906	64	27970	0	5423	0	5423	0	33393	
	(	11347	UNALLOCATED)																
JULY	11	1830	(UNALLOCATED)																3
JULY	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9184	.0000	.9184	.0000	.0816	.0000	.0816	.0000	1.0000	51
		7015	0	0	0	0	0	0	0	6442	0	6442	0	573	0	573	0	7015	
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0140	.0000	.9494	.0017	.9511	.0000	.0349	.0000	.0349	.0000	1.0000	573
		8123	0	0	0	0	0	113	0	7712	14	7726	0	284	0	284	0	8123	
JULY	ALL	16968	0	0	0	0	0	113	0	14154	14	14168	0	856	0	856	0	15138	
	(	1830	UNALLOCATED)																
ALL-SEASON		147817	118	1371	899	2536	4924	996	0	82330	284	82615	3532	8342	0	11874	0	95485	
TOTAL	(	47408	UNALLOCATED)																

Appendix Table B5. Estimated age and maturity composition of 1979 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data (n $\geq$ 25), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
MAY	11	2148	(UNALLOCATED)																13
MAY	12	SAMPLE=	.0000	.0000	.0645	.0323	.0968	.0000	.0000	.5558	.0000	.5558	.0000	.3474	.0000	.3474	.0000	.9032	31
		4222	0	0	272	136	409	0	0	2347	0	2347	0	1467	0	1467	0	3813	
MAY	13	SAMPLE=	.0000	.0000	.0000	.0345	.0345	.0000	.0000	.7427	.0000	.7427	.0000	.2228	.0000	.2228	.0000	.9655	29
		18222	0	0	0	628	628	0	0	13534	0	13534	0	4060	0	4060	0	17594	
MAY	ALL	24592	0	0	272	765	1037	0	0	15880	0	15880	0	5527	0	5527	0	21407	
	(	2148	UNALLOCATED)																
JUNE	11	9588	(UNALLOCATED)																17
JUNE	12	12404	(UNALLOCATED)																8
JUNE	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.7619	.0000	.7619	.0000	.2381	.0000	.2381	.0000	1.0000	63
		33512	0	0	0	0	0	0	0	25533	0	25533	0	7979	0	7979	0	33512	
JUNE	ALL	55504	0	0	0	0	0	0	0	25533	0	25533	0	7979	0	7979	0	33512	
	(	21992	UNALLOCATED)																
JULY	11	1812	(UNALLOCATED)																19
JULY	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.7931	.0345	.8276	.0000	.1724	.0000	.1724	.0000	1.0000	29
		8394	0	0	0	0	0	0	0	6657	289	6947	0	1447	0	1447	0	8394	
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8707	.0164	.8871	.0000	.1129	.0000	.1129	.0000	1.0000	62
		30861	0	0	0	0	0	0	0	26870	507	27377	0	3484	0	3484	0	30861	
JULY	ALL	41067	0	0	0	0	0	0	0	33527	796	34323	0	4932	0	4932	0	39255	
	(	1812	UNALLOCATED)																
ALL-SEASON		121163	0	0	272	765	1037	0	0	74940	796	75737	0	18437	0	18437	0	94174	
TOTAL	(	25952	UNALLOCATED)																

Appendix Table B6. Estimated age and maturity composition of 1980 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data ($n \geq 25$), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING					IMMATURES											TOTAL SAMPLE
			T.1	T.2	T.3	T.4+	TOTAL	T.1	0.2	1.2	2.2	T.2	0.3	1.3	2.3	T.3	T.4+	TOTAL	
MAY	11	941	(UNALLOCATED)																11
MAY	12	3295	(UNALLOCATED)																1
MAY	13	9514	(UNALLOCATED)																16
MAY	3	9	(UNALLOCATED)																0
MAY	5	3	(UNALLOCATED)																9
MAY	ALL	13762	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		(13762	UNALLOCATED)																
JUNE	11	5008	(UNALLOCATED)																12
JUNE	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8788	.0000	.8788	.0000	.1212	.0000	.1212	.0000	1.0000	34
		12095	0	0	0	0	0	0	0	10629	0	10629	0	1466	0	1466	0	12095	
JUNE	13	SAMPLE=	.0000	.0000	.0041	.0000	.0041	.0000	.0125	.7733	.0249	.8107	.0041	.1811	.0000	.1852	.0000	.9959	244
		35588	0	0	146	0	146	0	444	27520	888	28852	146	6444	0	6590	0	35442	
JUNE	3	13	(UNALLOCATED)																19
JUNE	ALL	52704	0	0	146	0	146	0	444	38149	888	39481	146	7910	0	8057	0	47537	
		(5021	UNALLOCATED)																

Appendix Table B6. Continued.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	11	SAMPLE=	.0000	.0000	.0156	.0000	.0156	.0000	.0000	.8147	.0000	.8147	.0000	.1527	.0000	.1527	.0170	.9844	64
		1130	0	0	18	0	18	0	0	921	0	921	0	173	0	173	19	1112	
JULY	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.8611	.0000	.8611	.0000	.1389	.0000	.1389	.0000	1.0000	37
		10094	0	0	0	0	0	0	0	8692	0	8692	0	1402	0	1402	0	10094	
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0398	.9254	.0174	.9826	.0000	.0174	.0000	.0174	.0000	1.0000	402
		58514	0	0	0	0	0	0	2329	54147	1019	57495	0	1019	0	1019	0	58514	
JULY	ALL	69738	0	0	18	0	18	0	2329	63760	1019	67108	0	2593	0	2593	19	69720	
	(	0	UNALLOCATED)																
ALL-SEASON TOTAL		136204	0	0	164	0	164	0	2773	101909	1907	106588	146	10504	0	10650	19	117257	
	(	18783	UNALLOCATED)																

Appendix Table B7. Estimated age and maturity composition of 1981 Japanese landbased driftnet fishery chinook catch. For month/sub-area strata represented by sufficient biological data ($n \geq 25$), the table shows the age/maturity composition of the total sample available, and the resulting allocation of the reported mothership catch, in numbers of fish.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING					IMMATURES											TOTAL SAMPLE
			1.1	1.2	1.3	1.4+	TOTAL	1.1	0.2	1.2	2.2	T.2	0.3	1.3	2.3	T.3	T.4+	TOTAL	
MAY	11	1729	(UNALLOCATED)																2
MAY	12	4400	(UNALLOCATED)																10
MAY	13	29024	(UNALLOCATED)																7
MAY	ALL	35153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		(35153	UNALLOCATED)																
JUNE	11	1089	(UNALLOCATED)																1
JUNE	12	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.7000	.0000	.7000	.0000	.3000	.0000	.3000	.0000	1.0000	30
		12117	0	0	0	0	0	0	0	8482	0	8482	0	3635	0	3635	0	12117	
JUNE	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0106	.5951	.0213	.6170	.0000	.3830	.0000	.3830	.0000	1.0000	94
		79075	0	0	0	0	0	0	841	46267	1682	48791	0	30284	0	30284	0	79075	
JUNE	3	109	(UNALLOCATED)																13
JUNE	5	SAMPLE=	.0161	.2954	.0643	.0161	.3919	.0022	.0038	.4230	.0076	.4344	.0000	.1715	.0000	.1715	.0000	.6081	541
		146	2	43	9	2	57	0	1	62	1	63	0	25	0	25	0	89	
JUNE	ALL	92532	2	43	9	2	57	0	842	54811	1684	57336	0	33944	0	33944	0	91281	
		(1194	UNALLOCATED)																

Appendix Table B7. Continued.

MONTH	SUB-AREA	SAMPLE/ CATCH	MATURING T.1	MATURING T.2	MATURING T.3	MATURING T.4+	MATURING TOTAL	IMMATURES T.1	IMMATURES 0.2	IMMATURES 1.2	IMMATURES 2.2	IMMATURES T.2	IMMATURES 0.3	IMMATURES 1.3	IMMATURES 2.3	IMMATURES T.3	IMMATURES T.4+	IMMATURES TOTAL	TOTAL SAMPLE
JULY	11	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.6342	.0846	.7188	.0000	.2813	.0000	.2813	.0000	1.0000	33
		2707	0	0	0	0	0	0	0	1717	229	1946	0	761	0	761	0	2707	
JULY	12	8463	(UNALLOCATED)																9
JULY	13	SAMPLE=	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.9475	.0262	.9738	.0000	.0262	.0000	.0262	.0000	1.0000	306
		27755	0	0	0	0	0	0	0	26299	728	27027	0	728	0	728	0	27755	
JULY	1	36	(UNALLOCATED)																11
JULY	3	7	(UNALLOCATED)																14
JULY	ALL	38968	0	0	0	0	0	0	0	28016	957	28973	0	1489	0	1489	0	30462	
	(	8506	UNALLOCATED)																
ALL-SEASON TOTAL	(	166653	2	43	9	2	57	0	842	82827	2640	86309	0	35434	0	35434	0	121743	
		44853	UNALLOCATED)																

Appendix Table C1. Decision arrays for brood year 1971 chinook salmon caught as immature age 1.2's in 1975.

A) 4-WAY REGION ANALYSIS: ASIA71A, WEST71A, CENT71A, SEBC71A
VARIABLES USED: 9,34,16,17,44,35,11, 6,40
OVERALL ACCURACY: 70.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA71A	WEST71A	CENT71A	SEBC71A
ASIA71A	113 (70.2)	26 (13.0)	17 (13.9)	11 (5.6)
WEST71A	27 (16.8)	156 (78.0)	16 (13.1)	2 (1.0)
CENT71A	18 (11.2)	18 (9.0)	71 (58.2)	37 (19.0)
SEBC71A	3 (1.9)	0 (0.0)	18 (14.8)	145 (74.4)
TOTAL	161	200	122	195

B) 3-WAY REGION ANALYSIS: ASIA71A, WEST71A, CENT71A
VARIABLES USED: 17,44,34,21,35,16
OVERALL ACCURACY: 72.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71A	WEST71A	CENT71A
ASIA71A	110 (68.3)	28 (14.0)	16 (13.1)
WEST71A	32 (19.9)	151 (75.5)	15 (12.3)
CENT71A	19 (11.8)	21 (10.5)	91 (74.6)
TOTAL	161	200	122

C) 3-WAY REGION ANALYSIS: ASIA71A, WEST71A, SEBC71A
VARIABLES USED: 9,34,16,17,35,44,11, 1,45,42,23,52,25,46
OVERALL ACCURACY: 83.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71A	WEST71A	SEBC71A
ASIA71A	131 (81.4)	33 (16.5)	13 (6.7)
WEST71A	27 (16.8)	165 (82.5)	13 (6.7)
SEBC71A	3 (1.9)	2 (1.0)	169 (86.7)
TOTAL	161	200	195

D) 3-WAY REGION ANALYSIS: WEST71A, CENT71A, SEBC71A
VARIABLES USED: 7,16,34,21,35,52,5
OVERALL ACCURACY: 78.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST71A	CENT71A	SEBC71A
WEST71A	176 (88.0)	17 (13.9)	3 (1.5)
CENT71A	24 (12.0)	90 (73.8)	47 (24.1)
SEBC71A	0 (0.0)	15 (12.3)	145 (74.4)
TOTAL	200	122	195

Appendix Table Cl. Continued.

E) 3-WAY REGION ANALYSIS: ASIA71A, CENT71A, SEBC71A
VARIABLES USED: 7,55,17,39,24,22
OVERALL ACCURACY: 75.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71A	CENT71A	SEBC71A
ASIA71A	129 (80.1)	19 (15.6)	15 (7.7)
CENT71A	27 (16.8)	85 (69.7)	33 (16.9)
SEBC71A	5 (3.1)	18 (14.8)	147 (75.4)
TOTAL	161	122	195

F) 2-WAY REGION ANALYSIS: ASIA71A, WEST71A
VARIABLES USED: 5,34,42,44,17,35,11,40,23,41,27,56
OVERALL ACCURACY: 84.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA71A	WEST71A
ASIA71A	141 (87.6)	36 (18.0)
WEST71A	20 (12.4)	164 (82.0)
TOTAL	161	200

G) 2-WAY REGION ANALYSIS: ASIA71A, CENT71A
VARIABLES USED: 9,17,34,44
OVERALL ACCURACY: 84.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA71A	CENT71A
ASIA71A	135 (83.9)	19 (15.6)
CENT71A	26 (16.1)	103 (84.4)
TOTAL	161	122

H) 2-WAY REGION ANALYSIS: WEST71A, CENT71A
VARIABLES USED: 21,34,35, 9, 5
OVERALL ACCURACY: 84.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST71A	CENT71A
WEST71A	168 (84.0)	19 (15.6)
CENT71A	32 (16.0)	103 (84.4)
TOTAL	200	122

Appendix Table C1. Continued.

I) 2-WAY REGION ANALYSIS: CENT71A, SEBC71A
VARIABLES USED: 7,55,24,44,17,26
OVERALL ACCURACY: 81.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	CENT71A	SEBC71A
CENT71A	101 (82.8)	37 (19.0)
SEBC71A	21 (17.2)	158 (81.0)
TOTAL	122	195

J) 6-WAY RIVER ANALYSIS: ASIA71A, YUK71A, KUSK71A, BRIS71A, CENT71A, SEBC71A
VARIABLES USED: 9,34,16,25,17,44,11,35, 6,52,40,24,47
OVERALL ACCURACY: 57.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA71A	YUK71A	KUSK71A	BRIS71A	CENT71A	SEBC71A
ASIA71A	102 (63.4)	20 (10.0)	21 (11.8)	17 (8.5)	18 (14.8)	5 (2.6)
YUK71A	14 (8.7)	100 (50.0)	25 (14.0)	23 (11.5)	17 (13.9)	3 (1.5)
KUSK71A	19 (11.8)	33 (16.5)	88 (49.4)	36 (18.0)	5 (4.1)	2 (1.0)
BRIS71A	7 (4.3)	23 (11.5)	31 (17.4)	114 (57.0)	4 (3.3)	1 (.5)
CENT71A	16 (9.9)	23 (11.5)	12 (6.7)	9 (4.5)	65 (53.3)	39 (20.0)
SEBC71A	3 (1.9)	1 (.5)	1 (.6)	1 (.5)	13 (10.7)	145 (74.4)
TOTAL	161	200	178	200	122	195

K) 5-WAY RIVER ANALYSIS: ASIA71A, YUK71A, KUSK71A, BRIS71A, CENT71A
VARIABLES USED: 6,52,21,34,35,12,44,11,40,25,24
OVERALL ACCURACY: 57.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA71A	YUK71A	KUSK71A	BRIS71A	CENT71A
ASIA71A	102 (63.4)	17 (8.5)	22 (12.4)	14 (7.0)	18 (14.8)
YUK71A	11 (6.8)	99 (49.5)	25 (14.0)	25 (12.5)	15 (12.3)
KUSK71A	22 (13.7)	33 (16.5)	92 (51.7)	38 (19.0)	5 (4.1)
BRIS71A	5 (3.1)	25 (12.5)	28 (15.7)	112 (56.0)	4 (3.3)
CENT71A	21 (13.0)	26 (13.0)	11 (6.2)	11 (5.5)	80 (65.6)
TOTAL	161	200	178	200	122

L) 5-WAY RIVER ANALYSIS: ASIA71A, YUK71A, KUSK71A, BRIS71A, SEBC71A
VARIABLES USED: 9,34,16,25,44,35,11, 6,40,52,24
OVERALL ACCURACY: 64.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA71A	YUK71A	KUSK71A	BRIS71A	SEBC71A
ASIA71A	111 (68.9)	27 (13.5)	22 (12.4)	15 (7.5)	10 (5.1)
YUK71A	18 (11.2)	111 (55.5)	31 (17.4)	28 (14.0)	14 (7.2)
KUSK71A	23 (14.3)	35 (17.5)	92 (51.7)	39 (19.5)	2 (1.0)
BRIS71A	7 (4.3)	25 (12.5)	31 (17.4)	117 (58.5)	2 (1.0)
SEBC71A	2 (1.2)	2 (1.0)	2 (1.1)	1 (.5)	167 (85.6)
TOTAL	161	200	178	200	195

Appendix Table Cl. Continued.

M) 5-WAY RIVER ANALYSIS: YUK71A, KUSK71A, BRIS71A, CENT71A, SEBC71A
VARIABLES USED: 7,25,21,34,35, 5,44,52,24
OVERALL ACCURACY: 62.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	YUK71A	KUSK71A	BRIS71A	CENT71A	SEBC71A
YUK71A	100 (50.0)	24 (13.5)	22 (11.0)	18 (14.8)	3 (1.5)
KUSK71A	40 (20.0)	106 (59.6)	42 (21.0)	6 (4.9)	0 (0.0)
BRIS71A	25 (12.5)	32 (13.3)	118 (59.0)	4 (3.3)	1 (.5)
CENT71A	33 (16.5)	15 (8.4)	16 (8.0)	80 (65.6)	43 (22.1)
SEBC71A	2 (1.0)	1 (.6)	2 (1.0)	14 (11.5)	148 (75.9)
TOTAL	200	178	200	122	195

N) 4-WAY RIVER ANALYSIS: ASIA71A, YUK71A, KUSK71A, BRIS71A
VARIABLES USED: 6,52,35,44,17,34,24,25,47,11,40
OVERALL ACCURACY: 59.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA71A	YUK71A	KUSK71A	BRIS71A
ASIA71A	117 (72.7)	22 (11.0)	24 (13.5)	17 (8.5)
YUK71A	17 (10.6)	110 (55.0)	28 (15.7)	32 (16.0)
KUSK71A	21 (13.0)	40 (20.0)	97 (54.5)	37 (18.5)
BRIS71A	6 (3.7)	28 (14.0)	29 (16.3)	114 (57.0)
TOTAL	161	200	178	200

O) 4-WAY RIVER ANALYSIS: ASIA71A, YUK71A, BRIS71A, SEBC71A
VARIABLES USED: 25,21,34,35, 5, 7,51,44,52,17
OVERALL ACCURACY: 74.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA71A	YUK71A	BRIS71A	SEBC71A
ASIA71A	121 (75.2)	29 (14.5)	22 (11.0)	13 (6.7)
YUK71A	23 (14.3)	137 (68.5)	44 (22.0)	12 (6.2)
BRIS71A	14 (8.7)	32 (16.0)	133 (66.5)	1 (.5)
SEBC71A	3 (1.9)	2 (1.0)	1 (.5)	169 (86.7)
TOTAL	161	200	200	195

P) 4-WAY RIVER ANALYSIS: YUK71A, KUSK71A, BRIS71A, CENT71A
VARIABLES USED: 9,34,16,25,39,52, 5,35,11,40
OVERALL ACCURACY: 62.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK71A	KUSK71A	BRIS71A	CENT71A
YUK71A	102 (51.0)	23 (12.9)	23 (11.5)	16 (13.1)
KUSK71A	44 (22.0)	108 (60.7)	47 (23.5)	7 (5.7)
BRIS71A	25 (12.5)	31 (17.4)	115 (57.5)	2 (1.6)
CENT71A	29 (14.5)	16 (9.0)	15 (7.5)	97 (79.5)
TOTAL	200	178	200	122

Appendix Table C1. Continued.

Q) 4-WAY RIVER ANALYSIS: YUK71A, KUSK71A, BRIS71A, SEBC71A
VARIABLES USED: 7,25,21,34,35,44,24, 9
OVERALL ACCURACY: 68.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK71A	KUSK71A	BRIS71A	SEBC71A
YUK71A	119 (59.5)	38 (21.3)	24 (12.0)	14 (7.2)
KUSK71A	44 (22.0)	107 (60.1)	49 (24.5)	2 (1.0)
BRIS71A	32 (16.0)	31 (17.4)	126 (63.0)	3 (1.5)
SEBC71A	5 (2.5)	2 (1.1)	1 (.5)	176 (90.3)
TOTAL	200	178	200	195

R) 4-WAY RIVER ANALYSIS: YUK71A, KUSK71A, CENT71A, SEBC71A
VARIABLES USED: 7,34,21,52, 5,39,24,35,29
OVERALL ACCURACY: 68.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK71A	KUSK71A	CENT71A	SEBC71A
YUK71A	114 (57.0)	34 (19.1)	19 (15.6)	4 (2.1)
KUSK71A	54 (27.0)	126 (70.8)	4 (3.3)	0 (0.0)
CENT71A	30 (15.0)	17 (9.6)	85 (69.7)	43 (22.1)
SEBC71A	2 (1.0)	1 (.6)	14 (11.5)	148 (75.9)
TOTAL	200	178	122	195

S) 3-WAY RIVER ANALYSIS: YUK71A, KUSK71A, BRIS71A
VARIABLES USED: 25,49,27,23,11,26
OVERALL ACCURACY: 61.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK71A	KUSK71A	BRIS71A
YUK71A	117 (58.5)	35 (19.7)	30 (15.0)
KUSK71A	50 (25.0)	112 (62.9)	47 (23.5)
BRIS71A	33 (16.5)	31 (17.4)	123 (61.5)
TOTAL	200	178	200

T) 3-WAY RIVER ANALYSIS: ASIA71A, YUK71A, KUSK71A
VARIABLES USED: 44,34,17, 1,47,40,52,35,51,41
OVERALL ACCURACY: 67.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71A	YUK71A	KUSK71A
ASIA71A	128 (79.5)	25 (12.5)	26 (14.6)
YUK71A	13 (8.1)	124 (62.0)	42 (23.6)
KUSK71A	20 (12.4)	51 (25.5)	110 (61.8)
TOTAL	161	200	178

Appendix Table Cl. Continued.

U) 3-WAY RIVER ANALYSIS: ASIA71A, YUK71A, BRIS71A
VARIABLES USED: 5,52,34,44,17,26,11,47,40,25
OVERALL ACCURACY: 72.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71A	YUK71A	BRIS71A
ASIA71A	126 (78.3)	26 (13.0)	20 (10.0)
YUK71A	23 (14.3)	143 (71.5)	47 (23.5)
BRIS71A	12 (7.5)	31 (15.5)	133 (66.5)
TOTAL	161	200	200

V) 3-WAY RIVER ANALYSIS: YUK71A, BRIS71A, SEBC71A
VARIABLES USED: 55,25, 7,21,34,28
OVERALL ACCURACY: 79.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK71A	BRIS71A	SEBC71A
YUK71A	147 (73.5)	49 (24.5)	14 (7.2)
BRIS71A	51 (25.5)	149 (74.5)	3 (1.5)
SEBC71A	2 (1.0)	2 (1.0)	178 (91.3)
TOTAL	200	200	195

W) 3-WAY RIVER ANALYSIS: ASIA71A, YUK71A, SEBC71A
VARIABLES USED: 28, 9,34,16,39,11,56, 6,40,42,52,41,44
OVERALL ACCURACY: 84.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71A	YUK71A	SEBC71A
ASIA71A	133 (82.6)	24 (12.0)	17 (8.7)
YUK71A	24 (14.9)	173 (86.5)	11 (5.6)
SEBC71A	4 (2.5)	3 (1.5)	167 (85.6)
TOTAL	161	200	195

X) 2-WAY RIVER ANALYSIS: ASIA71A, YUK71A
VARIABLES USED: 44,17,34,47,26,11,45,46,56
OVERALL ACCURACY: 85.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA71A	YUK71A
ASIA71A	135 (83.9)	27 (13.5)
YUK71A	26 (16.1)	173 (86.5)
TOTAL	161	200

Appendix Table C2. Decision arrays for brood year 1972 chinook salmon caught as immature age 1.2's in 1976.

A) 4-WAY REGION ANALYSIS: ASIA72A, WEST72A, CENT72A, SEBC72A
VARIABLES USED: 7, 5,34,21,35,11,17,42,44
OVERALL ACCURACY: 70.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA72A	WEST72A	CENT72A	SEBC72A
ASIA72A	133 (71.5)	21 (10.5)	32 (17.3)	1 (.6)
WEST72A	34 (18.3)	155 (77.5)	20 (10.8)	9 (5.0)
CENT72A	16 (8.6)	16 (8.0)	104 (56.2)	31 (17.2)
SEBC72A	3 (1.6)	8 (4.0)	29 (15.7)	139 (77.2)
TOTAL	186	200	185	180

B) 3-WAY REGION ANALYSIS: ASIA72A, WEST72A, CENT72A
VARIABLES USED: 6,34,21,35, 5
OVERALL ACCURACY: 75.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA72A	WEST72A	CENT72A
ASIA72A	135 (72.6)	23 (11.5)	32 (17.3)
WEST72A	30 (16.1)	159 (79.5)	18 (9.7)
CENT72A	21 (11.3)	18 (9.0)	135 (73.0)
TOTAL	186	200	185

C) 3-WAY REGION ANALYSIS: WEST72A, CENT72A, SEBC72A
VARIABLES USED: 7,22,27,16,23,26,44,30,57,51,25,21, 6,58
OVERALL ACCURACY: 80.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST72A	CENT72A	SEBC72A
WEST72A	175 (87.5)	23 (12.4)	9 (5.0)
CENT72A	19 (9.5)	134 (72.4)	27 (15.0)
SEBC72A	6 (3.0)	28 (15.1)	144 (80.0)
TOTAL	200	185	180

D) 2-WAY REGION ANALYSIS: ASIA72A, WEST72A
VARIABLES USED: 6,53,11
OVERALL ACCURACY: 84.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA72A	WEST72A
ASIA72A	154 (82.8)	28 (14.0)
WEST72A	32 (17.2)	172 (86.0)
TOTAL	186	200

Appendix Table C2. Continued.

E) 2-WAY REGION ANALYSIS: ASIA72A, CENT72A
VARIABLES USED: 34,16, 9
OVERALL ACCURACY: 82.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA72A	CENT72A
ASIA72A	156 (83.9)	35 (18.9)
CENT72A	30 (16.1)	150 (81.1)
TOTAL	186	185

F) 2-WAY REGION ANALYSIS: WEST72A, CENT72A
VARIABLES USED: 36,11,34,21,35,31, 7
OVERALL ACCURACY: 88.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST72A	CENT72A
WEST72A	178 (89.0)	21 (11.4)
CENT72A	22 (11.0)	164 (88.6)
TOTAL	200	185

G) 2-WAY REGION ANALYSIS: WEST72A, SEBC72A
VARIABLES USED: 27,49,34,35,21, 7,22
OVERALL ACCURACY: 93.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST72A	SEBC72A
WEST72A	190 (95.0)	14 (7.8)
SEBC72A	10 (5.0)	166 (92.2)
TOTAL	200	180

H) 6-WAY RIVER ANALYSIS: ASIA72A, YUK72A, KUSK72A, BRIS72A, CENT72A, SEBC72A
VARIABLES USED: 7,36,34,21,35, 5,11,17,42,22
OVERALL ACCURACY: 58.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA72A	YUK72A	KUSK72A	BRIS72A	CENT72A	SEBC72A
ASIA72A	129 (69.4)	17 (8.5)	13 (6.5)	5 (2.5)	35 (18.9)	1 (.6)
YUK72A	15 (8.1)	110 (55.0)	38 (19.0)	26 (13.0)	8 (4.3)	4 (2.2)
KUSK72A	23 (12.4)	34 (17.0)	77 (38.5)	34 (17.0)	4 (2.2)	3 (1.7)
BRIS72A	5 (2.7)	18 (9.0)	54 (27.0)	123 (61.5)	10 (5.4)	3 (1.7)
CENT72A	13 (7.0)	17 (8.5)	10 (5.0)	4 (2.0)	96 (51.9)	30 (16.7)
SEBC72A	1 (.5)	4 (2.0)	8 (4.0)	8 (4.0)	32 (17.3)	139 (77.2)
TOTAL	186	200	200	200	185	180

Appendix Table C2. Continued.

I) 5-WAY RIVER ANALYSIS: ASIA72A, YUK72A, KUSK72A, BRIS72A, CENT72A
VARIABLES USED: 6,35,34,16,36,11, 1,17,22,42
OVERALL ACCURACY: 59.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA72A	YUK72A	KUSK72A	BRIS72A	CENT72A
ASIA72A	130 (69.9)	20 (10.0)	13 (6.5)	6 (3.0)	33 (17.8)
YUK72A	19 (10.2)	114 (57.0)	41 (20.5)	24 (12.0)	10 (5.4)
KUSK72A	19 (10.2)	35 (17.5)	76 (38.0)	34 (17.0)	6 (3.2)
BRIS72A	5 (2.7)	16 (8.0)	54 (27.0)	126 (63.0)	10 (5.4)
CENT72A	13 (7.0)	15 (7.5)	16 (8.0)	10 (5.0)	126 (68.1)
TOTAL	186	200	200	200	185

J) 5-WAY RIVER ANALYSIS: ASIA72A, YUK72A, KUSK72A, CENT72A, SEBC72A
VARIABLES USED: 7,36,34,21,11,35,42,37, 9, 1,22,30,29,28,44,39
OVERALL ACCURACY: 65.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA72A	YUK72A	KUSK72A	CENT72A	SEBC72A
ASIA72A	129 (69.4)	18 (9.0)	14 (7.0)	31 (16.8)	1 (.6)
YUK72A	15 (8.1)	124 (62.0)	43 (21.5)	9 (4.9)	5 (2.8)
KUSK72A	26 (14.0)	38 (19.0)	119 (59.5)	8 (4.3)	5 (2.8)
CENT72A	13 (7.0)	17 (8.5)	16 (8.0)	106 (57.3)	27 (15.0)
SEBC72A	3 (1.6)	3 (1.5)	8 (4.0)	31 (16.8)	142 (78.9)
TOTAL	186	200	200	185	180

K) 4-WAY RIVER ANALYSIS: ASIA72A, YUK72A, KUSK72A, CENT72A
VARIABLES USED: 6,21,34,35, 5,36, 9,42
OVERALL ACCURACY: 64.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA72A	YUK72A	KUSK72A	CENT72A
ASIA72A	132 (71.0)	19 (9.5)	18 (9.0)	29 (15.7)
YUK72A	14 (7.5)	112 (56.0)	45 (22.5)	13 (7.0)
KUSK72A	25 (13.4)	46 (23.0)	123 (61.5)	12 (6.5)
CENT72A	15 (8.1)	23 (11.5)	14 (7.0)	131 (70.8)
TOTAL	186	200	200	185

L) 4-WAY RIVER ANALYSIS: ASIA72A, YUK72A, BRIS72A, CENT72A
VARIABLES USED: 6,34,21,35, 5,36,22,59,32,17,47
OVERALL ACCURACY: 69.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA72A	YUK72A	BRIS72A	CENT72A
ASIA72A	136 (73.1)	25 (12.5)	5 (2.5)	38 (20.5)
YUK72A	22 (11.8)	137 (68.5)	44 (22.0)	10 (5.4)
BRIS72A	12 (6.5)	20 (10.0)	138 (69.0)	16 (8.6)
CENT72A	16 (8.6)	18 (9.0)	13 (6.5)	121 (65.4)
TOTAL	186	200	200	185

Appendix Table C2. Continued.

M) 4-WAY RIVER ANALYSIS: YUK72A, KUSK72A, BRIS72A, CENT72A
VARIABLES USED: 37,11,34,21,35,42,22,26
OVERALL ACCURACY: 63.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK72A	KUSK72A	BRIS72A	CENT72A
YUK72A	123 (61.5)	41 (20.5)	23 (11.5)	13 (7.0)
KUSK72A	39 (19.5)	90 (45.0)	36 (18.0)	10 (5.4)
BRIS72A	16 (8.0)	53 (26.5)	132 (66.0)	10 (5.4)
CENT72A	22 (11.0)	16 (8.0)	9 (4.5)	152 (82.2)
TOTAL	200	200	200	185

N) 4-WAY RIVER ANALYSIS: YUK72A, KUSK72A, BRIS72A, SEBC72A
VARIABLES USED: 36,34,21,35,49, 6
OVERALL ACCURACY: 65.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK72A	KUSK72A	BRIS72A	SEBC72A
YUK72A	137 (68.5)	53 (26.5)	31 (15.5)	10 (5.6)
KUSK72A	39 (19.5)	82 (41.0)	35 (17.5)	5 (2.8)
BRIS72A	17 (8.5)	55 (27.5)	126 (63.0)	5 (2.8)
SEBC72A	7 (3.5)	10 (5.0)	8 (4.0)	160 (88.9)
TOTAL	200	200	200	180

O) 4-WAY RIVER ANALYSIS: YUK72A, KUSK72A, CENT72A, SEBC72A
VARIABLES USED: 55,12,34,21,35, 7,44,37,22,56
OVERALL ACCURACY: 69.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK72A	KUSK72A	CENT72A	SEBC72A
YUK72A	129 (64.5)	53 (26.5)	13 (7.0)	6 (3.3)
KUSK72A	47 (23.5)	125 (62.5)	12 (6.5)	4 (2.2)
CENT72A	21 (10.5)	17 (8.5)	127 (68.6)	22 (12.2)
SEBC72A	3 (1.5)	5 (2.5)	33 (17.8)	148 (82.2)
TOTAL	200	200	185	180

P) 3-WAY RIVER ANALYSIS: YUK72A, KUSK72A, SEBC72A
VARIABLES USED: 34,21, 7,35,36,49,39,30,42
OVERALL ACCURACY: 76.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK72A	KUSK72A	SEBC72A
YUK72A	146 (73.0)	54 (27.0)	10 (5.6)
KUSK72A	48 (24.0)	135 (67.5)	8 (4.4)
SEBC72A	6 (3.0)	11 (5.5)	162 (90.0)
TOTAL	200	200	180

Appendix Table C2. Continued.

Q) 3-WAY RIVER ANALYSIS: YUK72A, BRIS72A, SEBC72A
VARIABLES USED: 36,37, 7,22,27,34,21,35,54,42,41
OVERALL ACCURACY: 83.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK72A	BRIS72A	SEBC72A
YUK72A	167 (83.5)	40 (20.0)	10 (5.6)
BRIS72A	26 (13.0)	150 (75.0)	3 (1.7)
SEBC72A	7 (3.5)	10 (5.0)	167 (92.8)
TOTAL	200	200	180

R) 3-WAY RIVER ANALYSIS: ASIA72A, YUK72A, CENT72A
VARIABLES USED: 6,21,34,35,16,36,17,22,49,47
OVERALL ACCURACY: 74.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA72A	YUK72A	CENT72A
ASIA72A	140 (75.3)	25 (12.5)	34 (18.4)
YUK72A	26 (14.0)	153 (76.5)	17 (9.2)
CENT72A	20 (10.8)	22 (11.0)	134 (72.4)
TOTAL	186	200	185

Appendix Table C2. Continued.

Q) 3-WAY RIVER ANALYSIS: YUK72A, BRIS72A, SEBC72A
VARIABLES USED: 36,37, 7,22,27,34,21,35,54,42,41
OVERALL ACCURACY: 83.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK72A	BRIS72A	SEBC72A
YUK72A	167 (83.5)	40 (20.0)	10 (5.6)
BRIS72A	26 (13.0)	150 (75.0)	3 (1.7)
SEBC72A	7 (3.5)	10 (5.0)	167 (92.8)
TOTAL	200	200	180

R) 3-WAY RIVER ANALYSIS: ASIA72A, YUK72A, CENT72A
VARIABLES USED: 6,21,34,35,16,36,17,22,49,47
OVERALL ACCURACY: 74.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA72A	YUK72A	CENT72A
ASIA72A	140 (75.3)	25 (12.5)	34 (18.4)
YUK72A	26 (14.0)	153 (76.5)	17 (9.2)
CENT72A	20 (10.8)	22 (11.0)	134 (72.4)
TOTAL	186	200	185

Appendix Table C3. Decision arrays for brood year 1973 chinook salmon caught as immature age 1.2's in 1977.

A) 4-WAY REGION ANALYSIS: ASIA73A, WEST73A, CENT73A, SEBC73A
VARIABLES USED: 34, 7,21,35,44,36,11, 5,23,52,58
OVERALL ACCURACY: 71.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA73A	WEST73A	CENT73A	SEBC73A
ASIA73A	69 (58.5)	21 (10.6)	22 (16.4)	6 (3.1)
WEST73A	31 (26.3)	161 (81.3)	11 (8.2)	2 (1.0)
CENT73A	17 (14.4)	13 (6.6)	87 (64.9)	27 (13.9)
SEBC73A	1 (.8)	3 (1.5)	14 (10.4)	159 (82.0)
TOTAL	118	198	134	194

B) 3-WAY REGION ANALYSIS: ASIA73A, WEST73A, CENT73A
VARIABLES USED: 36,50,16,37,22,25,11,44, 7
OVERALL ACCURACY: 71.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA73A	WEST73A	CENT73A
ASIA73A	74 (62.7)	22 (11.1)	26 (19.4)
WEST73A	30 (25.4)	158 (79.8)	11 (8.2)
CENT73A	14 (11.9)	18 (9.1)	97 (72.4)
TOTAL	118	198	134

C) 3-WAY REGION ANALYSIS: ASIA73A, WEST73A, SEBC73A
VARIABLES USED: 9,34,16,36,39,11,52,42,22,58,26,53
OVERALL ACCURACY: 83.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA73A	WEST73A	SEBC73A
ASIA73A	84 (71.2)	22 (11.1)	9 (4.6)
WEST73A	32 (27.1)	170 (85.9)	4 (2.1)
SEBC73A	2 (1.7)	6 (3.0)	181 (93.3)
TOTAL	118	198	194

D) 3-WAY REGION ANALYSIS: WEST73A, CENT73A, SEBC73A
VARIABLES USED: 9,34, 7,21,25,36,23,44
OVERALL ACCURACY: 83.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST73A	CENT73A	SEBC73A
WEST73A	178 (89.9)	14 (10.4)	8 (4.1)
CENT73A	17 (8.6)	103 (76.9)	24 (12.4)
SEBC73A	3 (1.5)	17 (12.7)	162 (83.5)
TOTAL	198	134	194

Appendix Table C3. Continued.

E) 2-WAY REGION ANALYSIS: WEST73A, CENT73A
VARIABLES USED: 36,16,37,25,22,21,51,35
OVERALL ACCURACY: 90.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST73A	CENT73A
WEST73A	178 (89.9)	13 (9.7)
CENT73A	20 (10.1)	121 (90.3)
TOTAL	198	134

F) 2-WAY REGION ANALYSIS: WEST73A, SEBC73A
VARIABLES USED: 9,34,60,39,52,21,32
OVERALL ACCURACY: 95.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST73A	SEBC73A
WEST73A	191 (96.5)	11 (5.7)
SEBC73A	7 (3.5)	183 (94.3)
TOTAL	198	194

G) 6-WAY RIVER ANALYSIS: ASIA73A, YUK73A, KUSK73A, BRIS73A, CENT73A, SEBC73A
VARIABLES USED: 9,34,25,16,21,39,26,52, 6,57,23,50,58,53,22,55
OVERALL ACCURACY: 59.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA73A	YUK73A	KUSK73A	BRIS73A	CENT73A	SEBC73A
ASIA73A	57 (48.3)	15 (7.5)	8 (8.9)	6 (3.0)	22 (16.4)	2 (1.0)
YUK73A	13 (11.0)	100 (50.3)	18 (20.0)	11 (5.5)	7 (5.2)	0 (0.0)
KUSK73A	23 (19.5)	50 (25.1)	40 (44.4)	27 (13.5)	4 (3.0)	2 (1.0)
BRIS73A	10 (8.5)	21 (10.6)	18 (20.0)	148 (74.0)	5 (3.7)	2 (1.0)
CENT73A	14 (11.9)	11 (5.5)	5 (5.6)	5 (2.5)	73 (54.5)	24 (12.4)
SEBC73A	1 (.8)	2 (1.0)	1 (1.1)	3 (1.5)	23 (17.2)	164 (84.5)
TOTAL	118	199	90	200	134	194

H) 5-WAY RIVER ANALYSIS: ASIA73A, YUK73A, KUSK73A, BRIS73A, SEBC73A
VARIABLES USED: 9,34,16,25,44,52, 5,57,50,23,31,22,55,28,26,53,49
OVERALL ACCURACY: 64.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA73A	YUK73A	KUSK73A	BRIS73A	SEBC73A
ASIA73A	68 (57.6)	17 (8.5)	10 (11.1)	7 (3.5)	8 (4.1)
YUK73A	17 (14.4)	108 (54.3)	18 (20.0)	12 (6.0)	1 (.5)
KUSK73A	19 (16.1)	47 (23.6)	40 (44.4)	29 (14.5)	2 (1.0)
BRIS73A	11 (9.3)	26 (13.1)	20 (22.2)	150 (75.0)	3 (1.5)
SEBC73A	3 (2.5)	1 (.5)	2 (2.2)	2 (1.0)	180 (92.8)
TOTAL	118	199	90	200	194

Appendix Table C3. Continued.

I) 5-WAY RIVER ANALYSIS: YUK73A, KUSK73A, BRIS73A, CENT73A, SEBC73A
VARIABLES USED: 55, 7,25,21,34, 6,39, 9,60,23,17
OVERALL ACCURACY: 64.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	YUK73A	KUSK73A	BRIS73A	CENT73A	SEBC73A
YUK73A	93 (46.7)	20 (22.2)	13 (6.5)	12 (9.0)	0 (0.0)
KUSK73A	54 (27.1)	46 (51.1)	28 (14.0)	4 (3.0)	5 (2.6)
BRIS73A	33 (16.6)	17 (18.9)	152 (76.0)	9 (6.7)	5 (2.6)
CENT73A	17 (8.5)	7 (7.8)	5 (2.5)	94 (70.1)	33 (17.0)
SEBC73A	2 (1.0)	0 (0.0)	2 (1.0)	15 (11.2)	151 (77.8)
TOTAL	199	90	200	134	194

J) 5-WAY RIVER ANALYSIS: ASIA73A, KUSK73A, BRIS73A, CENT73A, SEBC73A
VARIABLES USED: 7,23,36, 6,52,21,34,39,11,26,53,50
OVERALL ACCURACY: 66.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA73A	KUSK73A	BRIS73A	CENT73A	SEBC73A
ASIA73A	63 (53.4)	10 (11.1)	7 (3.5)	25 (18.7)	3 (1.5)
KUSK73A	26 (22.0)	53 (58.9)	36 (18.0)	7 (5.2)	3 (1.5)
BRIS73A	11 (9.3)	20 (22.2)	150 (75.0)	4 (3.0)	1 (.5)
CENT73A	17 (14.4)	6 (6.7)	4 (2.0)	85 (63.4)	26 (13.4)
SEBC73A	1 (.8)	1 (1.1)	3 (1.5)	13 (9.7)	161 (83.0)
TOTAL	118	90	200	134	194

K) 4-WAY RIVER ANALYSIS: ASIA73A, YUK73A, KUSK73A, BRIS73A
VARIABLES USED: 6,52,50,39,25,57
OVERALL ACCURACY: 57.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA73A	YUK73A	KUSK73A	BRIS73A
ASIA73A	77 (65.3)	16 (8.0)	13 (14.4)	8 (4.0)
YUK73A	13 (11.0)	99 (49.7)	24 (26.7)	17 (8.5)
KUSK73A	18 (15.3)	52 (26.1)	33 (36.7)	19 (9.5)
BRIS73A	10 (8.5)	32 (16.1)	20 (22.2)	156 (78.0)
TOTAL	118	199	90	200

L) 4-WAY RIVER ANALYSIS: ASIA73A, YUK73A, BRIS73A, SEBC73A
VARIABLES USED: 9,34,16,25,44,52, 5,57,50,23
OVERALL ACCURACY: 76.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA73A	YUK73A	BRIS73A	SEBC73A
ASIA73A	75 (63.6)	20 (10.1)	9 (4.5)	9 (4.6)
YUK73A	25 (21.2)	144 (72.4)	26 (13.0)	5 (2.6)
BRIS73A	15 (12.7)	34 (17.1)	161 (80.5)	4 (2.1)
SEBC73A	3 (2.5)	1 (.5)	4 (2.0)	176 (90.7)
TOTAL	118	199	200	194

Appendix Table C3. Continued.

M) 4-WAY RIVER ANALYSIS: ASIA73A, KUSK73A, BRIS73A, SEBC73A
VARIABLES USED: 9,34,16,25,39,52,57,50,23,11,42,21
OVERALL ACCURACY: 73.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA73A	KUSK73A	BRIS73A	SEBC73A
ASIA73A	77 (65.3)	13 (14.4)	5 (2.5)	7 (3.6)
KUSK73A	30 (25.4)	53 (58.9)	37 (18.5)	5 (2.6)
BRIS73A	9 (7.6)	23 (25.6)	155 (77.5)	4 (2.1)
SEBC73A	2 (1.7)	1 (1.1)	3 (1.5)	178 (91.8)
TOTAL	118	90	200	194

N) 4-WAY RIVER ANALYSIS: YUK73A, KUSK73A, BRIS73A, CENT73A
VARIABLES USED: 55,25,21,34,23,33,11,17,44,35
OVERALL ACCURACY: 64.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK73A	KUSK73A	BRIS73A	CENT73A
YUK73A	97 (48.7)	18 (20.0)	16 (8.0)	11 (8.2)
KUSK73A	56 (28.1)	47 (52.2)	29 (14.5)	4 (3.0)
BRIS73A	30 (15.1)	16 (17.8)	147 (73.5)	7 (5.2)
CENT73A	16 (8.0)	9 (10.0)	8 (4.0)	112 (83.6)
TOTAL	199	90	200	134

O) 4-WAY RIVER ANALYSIS: YUK73A, KUSK73A, BRIS73A, SEBC73A
VARIABLES USED: 52,34,16,55,31,50,57,39,22,49, 5,12,23
OVERALL ACCURACY: 71.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK73A	KUSK73A	BRIS73A	SEBC73A
YUK73A	113 (56.8)	19 (21.1)	16 (8.0)	3 (1.5)
KUSK73A	56 (28.1)	52 (57.8)	28 (14.0)	4 (2.1)
BRIS73A	28 (14.1)	17 (18.9)	153 (76.5)	7 (3.6)
SEBC73A	2 (1.0)	2 (2.2)	3 (1.5)	180 (92.8)
TOTAL	199	90	200	194

P) 4-WAY RIVER ANALYSIS: KUSK73A, BRIS73A, CENT73A, SEBC73A
VARIABLES USED: 55, 7,36,23,25,16, 5,34,39, 6
OVERALL ACCURACY: 74.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	KUSK73A	BRIS73A	CENT73A	SEBC73A
KUSK73A	59 (65.6)	37 (18.5)	11 (8.2)	3 (1.5)
BRIS73A	21 (23.3)	156 (78.0)	9 (6.7)	4 (2.1)
CENT73A	9 (10.0)	5 (2.5)	98 (73.1)	28 (14.4)
SEBC73A	1 (1.1)	2 (1.0)	16 (11.9)	159 (82.0)
TOTAL	90	200	134	194

Appendix Table C3. Continued.

Q) 3-WAY RIVER ANALYSIS: YUK73A, KUSK73A, BRIS73A
VARIABLES USED: 25,23,44,55,17,30,27
OVERALL ACCURACY: 62.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK73A	KUSK73A	BRIS73A
YUK73A	114 (57.3)	24 (26.7)	18 (9.0)
KUSK73A	53 (26.6)	48 (53.3)	28 (14.0)
BRIS73A	32 (16.1)	18 (20.0)	154 (77.0)
TOTAL	199	90	200

R) 3-WAY RIVER ANALYSIS: ASIA73A, YUK73A, BRIS73A
VARIABLES USED: 6,52,50,44,25,57,59
OVERALL ACCURACY: 73.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA73A	YUK73A	BRIS73A
ASIA73A	80 (67.8)	22 (11.1)	11 (5.5)
YUK73A	25 (21.2)	145 (72.9)	30 (15.0)
BRIS73A	13 (11.0)	32 (16.1)	159 (79.5)
TOTAL	118	199	200

S) 3-WAY RIVER ANALYSIS: YUK73A, KUSK73A, SEBC73A
VARIABLES USED: 28,34,21,60,52,16,59,40
OVERALL ACCURACY: 72.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK73A	KUSK73A	SEBC73A
YUK73A	129 (64.8)	35 (38.9)	8 (4.1)
KUSK73A	66 (33.2)	52 (57.8)	4 (2.1)
SEBC73A	4 (2.0)	3 (3.3)	182 (93.8)
TOTAL	199	90	194

T) 3-WAY RIVER ANALYSIS: YUK73A, BRIS73A, CENT73A
VARIABLES USED: 25,21,49,60,23,34,55,35,11
OVERALL ACCURACY: 77.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK73A	BRIS73A	CENT73A
YUK73A	143 (71.9)	36 (18.0)	15 (11.2)
BRIS73A	36 (18.1)	155 (77.5)	7 (5.2)
CENT73A	20 (10.1)	9 (4.5)	112 (83.6)
TOTAL	199	200	134

Appendix Table C3. Continued.

U) 3-WAY RIVER ANALYSIS: KUSK73A, BRIS73A, SEBC73A
VARIABLES USED: 55,36, 7,23,44,25, 1,22,24,21, 9
OVERALL ACCURACY: 80.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	KUSK73A	BRIS73A	SEBC73A
KUSK73A	64 (71.1)	39 (19.5)	7 (3.6)
BRIS73A	22 (24.4)	156 (78.0)	6 (3.1)
SEBC73A	4 (4.4)	5 (2.5)	181 (93.3)
TOTAL	90	200	194

Appendix Table C4. Decision arrays for brood year 1974 chinook salmon caught as immature age 1.2's in 1978.

A) 4-WAY REGION ANALYSIS: ASIA74A, WEST74A, CENT74A, SEBC74A
VARIABLES USED: 7,36,21, 6,34,28,55,35,11
OVERALL ACCURACY: 76.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA74A	WEST74A	CENT74A	SEBC74A
ASIA74A	105 (73.9)	13 (6.5)	8 (12.3)	3 (1.5)
WEST74A	24 (16.9)	165 (82.5)	7 (10.8)	3 (1.5)
CENT74A	13 (9.2)	21 (10.5)	44 (67.7)	30 (15.0)
SEBC74A	0 (0.0)	1 (.5)	6 (9.2)	164 (82.0)
TOTAL	142	200	65	200

B) 3-WAY REGION ANALYSIS: ASIA74A, WEST74A, CENT74A
VARIABLES USED: 6,16,36,34,35, 1,12,28
OVERALL ACCURACY: 76.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA74A	WEST74A	CENT74A
ASIA74A	111 (78.2)	15 (7.5)	11 (16.9)
WEST74A	23 (16.2)	162 (81.0)	8 (12.3)
CENT74A	8 (5.6)	23 (11.5)	46 (70.8)
TOTAL	142	200	65

C) 3-WAY REGION ANALYSIS: ASIA74A, WEST74A, SEBC74A
VARIABLES USED: 27,36,34,28,35,11, 5,39,27,54
OVERALL ACCURACY: 87.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA74A	WEST74A	SEBC74A
ASIA74A	112 (78.9)	12 (6.0)	6 (3.0)
WEST74A	29 (20.4)	185 (92.5)	12 (6.0)
SEBC74A	1 (.7)	3 (1.5)	182 (91.0)
TOTAL	142	200	200

D) 3-WAY REGION ANALYSIS: WEST74A, CENT74A, SEBC74A
VARIABLES USED: 34,21, 7,26, 6
OVERALL ACCURACY: 81.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST74A	CENT74A	SEBC74A
WEST74A	171 (85.5)	10 (15.4)	4 (2.0)
CENT74A	26 (13.0)	50 (76.9)	31 (15.5)
SEBC74A	3 (1.5)	5 (7.7)	165 (82.5)
TOTAL	200	65	200

Appendix Table C4. Continued.

E) 2-WAY REGION ANALYSIS: WEST74A, CENT74A
VARIABLES USED: 21,34, 9,35,16,45
OVERALL ACCURACY: 83.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST74A	CENT74A
WEST74A	175 (87.5)	14 (21.5)
CENT74A	25 (12.5)	51 (78.5)
TOTAL	200	65

F) 2-WAY REGION ANALYSIS: WEST74A, SEBC74A
VARIABLES USED: 9,29,34,16,44
OVERALL ACCURACY: 95.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST74A	SEBC74A
WEST74A	195 (97.5)	13 (6.5)
SEBC74A	5 (2.5)	187 (93.5)
TOTAL	200	200

G) 6-WAY RIVER ANALYSIS: ASIA74A, YUK74A, KUSK74A, BRIS74A, CENT74A, SEBC74A
VARIABLES USED: 36,24,35,21,49,12,50, 1,31,58,52,39,17,25,23,44,28
OVERALL ACCURACY: 67.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA74A	YUK74A	KUSK74A	BRIS74A	CENT74A	SEBC74A
ASIA74A	106 (74.6)	4 (2.0)	11 (11.2)	6 (4.6)	6 (9.2)	3 (1.5)
YUK74A	7 (4.9)	134 (67.0)	12 (12.2)	12 (9.2)	7 (10.8)	4 (2.0)
KUSK74A	10 (7.0)	21 (10.5)	50 (51.0)	17 (13.1)	4 (6.2)	0 (0.0)
BRIS74A	14 (9.9)	23 (11.5)	19 (19.4)	87 (66.9)	3 (4.6)	2 (1.0)
CENT74A	5 (3.5)	14 (7.0)	5 (5.1)	8 (6.2)	40 (61.5)	25 (12.5)
SEBC74A	0 (0.0)	4 (2.0)	1 (1.0)	0 (0.0)	5 (7.7)	166 (83.0)
TOTAL	142	200	98	130	65	200

H) 5-WAY RIVER ANALYSIS: ASIA74A, YUK74A, KUSK74A, BRIS74A, SEBC74A
VARIABLES USED: 7,36,24,35,49, 1,34,52,25,17, 5,39,44,28,55
OVERALL ACCURACY: 71.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA74A	YUK74A	KUSK74A	BRIS74A	SEBC74A
ASIA74A	104 (73.2)	4 (2.0)	13 (13.3)	5 (3.8)	5 (2.5)
YUK74A	9 (6.3)	142 (71.0)	15 (15.3)	16 (12.3)	11 (5.5)
KUSK74A	14 (9.9)	28 (14.0)	50 (51.0)	16 (12.3)	1 (.5)
BRIS74A	15 (10.6)	23 (11.5)	19 (19.4)	92 (70.8)	3 (1.5)
SEBC74A	0 (0.0)	3 (1.5)	1 (1.0)	1 (.8)	180 (90.0)
TOTAL	142	200	98	130	200

Appendix Table C4. Continued.

I) 5-WAY RIVER ANALYSIS: YUK74A, KUSK74A, BRIS74A, CENT74A, SEBC74A
VARIABLES USED: 9,34,35,21,50,11,12,25,30
OVERALL ACCURACY: 67.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	YUK74A	KUSK74A	BRIS74A	CENT74A	SEBC74A
YUK74A	139 (69.5)	10 (10.2)	13 (10.0)	6 (9.2)	1 (.5)
KUSK74A	20 (10.0)	56 (57.1)	16 (12.3)	4 (6.2)	0 (0.0)
BRIS74A	22 (11.0)	23 (23.5)	86 (66.2)	5 (7.7)	4 (2.0)
CENT74A	18 (9.0)	8 (8.2)	15 (11.5)	42 (64.6)	33 (16.5)
SEBC74A	1 (.5)	1 (1.0)	0 (0.0)	8 (12.3)	162 (81.0)
TOTAL	200	98	130	65	200

J) 5-WAY RIVER ANALYSIS: ASIA74A, YUK74A, BRIS74A, CENT74A, SEBC74A
VARIABLES USED: 7,36,35,21,34, 5,50,28,11,55,44,52,25,17,39
OVERALL ACCURACY: 73.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA74A	YUK74A	BRIS74A	CENT74A	SEBC74A
ASIA74A	105 (73.9)	7 (3.5)	6 (4.6)	8 (12.3)	3 (1.5)
YUK74A	10 (7.0)	151 (75.5)	17 (13.1)	8 (12.3)	4 (2.0)
BRIS74A	18 (12.7)	26 (13.0)	96 (73.8)	3 (4.6)	2 (1.0)
CENT74A	8 (5.6)	13 (6.5)	10 (7.7)	40 (61.5)	25 (12.5)
SEBC74A	1 (.7)	3 (1.5)	1 (.8)	6 (9.2)	166 (83.0)
TOTAL	142	200	130	65	200

K) 5-WAY RIVER ANALYSIS: ASIA74A, YUK74A, KUSK74A, CENT74A, SEBC74A
VARIABLES USED: 7,36,12, 6,34, 1,50,52,31,39,58,23,43,44
OVERALL ACCURACY: 68.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA74A	YUK74A	KUSK74A	CENT74A	SEBC74A
ASIA74A	106 (74.6)	4 (2.0)	16 (16.3)	8 (12.3)	7 (3.5)
YUK74A	8 (5.6)	137 (68.5)	17 (17.3)	8 (12.3)	7 (3.5)
KUSK74A	22 (15.5)	36 (18.0)	57 (58.2)	4 (6.2)	1 (.5)
CENT74A	6 (4.2)	21 (10.5)	7 (7.1)	38 (58.5)	20 (10.0)
SEBC74A	0 (0.0)	2 (1.0)	1 (1.0)	7 (10.8)	165 (82.5)
TOTAL	142	200	98	65	200

L) 4-WAY RIVER ANALYSIS: ASIA74A, YUK74A, KUSK74A, CENT74A
VARIABLES USED: 6,16,34,36,50, 1, 9,52,35,25
OVERALL ACCURACY: 69.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA74A	YUK74A	KUSK74A	CENT74A
ASIA74A	105 (73.9)	4 (2.0)	12 (12.2)	10 (15.4)
YUK74A	10 (7.0)	146 (73.0)	16 (16.3)	9 (13.8)
KUSK74A	23 (16.2)	35 (17.5)	63 (64.3)	3 (4.6)
CENT74A	4 (2.8)	15 (7.5)	7 (7.1)	43 (66.2)
TOTAL	142	200	98	65

Appendix Table C4. Continued.

M) 4-WAY RIVER ANALYSIS: YUK74A, KUSK74A, BRIS74A, SEBC74A
VARIABLES USED: 9,34,16,35,50,25,44,30, 1,17
OVERALL ACCURACY: 73.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK74A	KUSK74A	BRIS74A	SEBC74A
YUK74A	149 (74.5)	16 (16.3)	15 (11.5)	9 (4.5)
KUSK74A	27 (13.5)	56 (57.1)	21 (16.2)	2 (1.0)
BRIS74A	20 (10.0)	24 (24.5)	93 (71.5)	4 (2.0)
SEBC74A	4 (2.0)	2 (2.0)	1 (.8)	185 (92.5)
TOTAL	200	98	130	200

N) 4-WAY RIVER ANALYSIS: ASIA74A, YUK74A, CENT74A, SEBC74A
VARIABLES USED: 7,36,24,21, 6,34,31,58,11,44
OVERALL ACCURACY: 77.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA74A	YUK74A	CENT74A	SEBC74A
ASIA74A	110 (77.5)	13 (6.5)	9 (13.8)	8 (4.0)
YUK74A	21 (14.8)	161 (80.5)	6 (9.2)	2 (1.0)
CENT74A	11 (7.7)	25 (12.5)	46 (70.8)	25 (12.5)
SEBC74A	0 (0.0)	1 (.5)	4 (6.2)	165 (82.5)
TOTAL	142	200	65	200

O) 3-WAY RIVER ANALYSIS: ASIA74A, YUK74A, KUSK74A
VARIABLES USED: 6,49, 5,52,30,51
OVERALL ACCURACY: 73.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA74A	YUK74A	KUSK74A
ASIA74A	109 (76.8)	7 (3.5)	13 (13.3)
YUK74A	13 (9.2)	155 (77.5)	19 (19.4)
KUSK74A	20 (14.1)	38 (19.0)	66 (67.3)
TOTAL	142	200	98

P) 3-WAY RIVER ANALYSIS: YUK74A, BRIS74A, SEBC74A
VARIABLES USED: 9,35,34,16,50,23,52,17
OVERALL ACCURACY: 85.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK74A	BRIS74A	SEBC74A
YUK74A	165 (82.5)	22 (16.9)	11 (5.5)
BRIS74A	31 (15.5)	105 (80.8)	2 (1.0)
SEBC74A	4 (2.0)	3 (2.3)	187 (93.5)
TOTAL	200	130	200

Appendix Table C4. Continued.

Q) 3-WAY RIVER ANALYSIS: YUK74A, KUSK74A, SEBC74A
VARIABLES USED: 9,28,34,11,50,39,29,30,52
OVERALL ACCURACY: 83.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK74A	KUSK74A	SEBC74A
YUK74A	156 (78.0)	19 (19.4)	8 (4.0)
KUSK74A	39 (19.5)	75 (76.5)	3 (1.5)
SEBC74A	5 (2.5)	4 (4.1)	189 (94.5)
TOTAL	200	98	200

R) 3-WAY RIVER ANALYSIS: ASIA74A, YUK74A, CENT74A
VARIABLES USED: 5,16,34
OVERALL ACCURACY: 78.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA74A	YUK74A	CENT74A
ASIA74A	121 (85.2)	17 (8.5)	12 (18.5)
YUK74A	13 (9.2)	157 (78.5)	7 (10.8)
CENT74A	8 (5.6)	26 (13.0)	46 (70.8)
TOTAL	142	200	65

S) 3-WAY RIVER ANALYSIS: ASIA74A, YUK74A, SEBC74A
VARIABLES USED: 7,36,24,21,34,31,58, 5,49,27,54, 9
OVERALL ACCURACY: 88.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA74A	YUK74A	SEBC74A
ASIA74A	114 (80.3)	10 (5.0)	7 (3.5)
YUK74A	26 (18.3)	186 (93.0)	10 (5.0)
SEBC74A	2 (1.4)	4 (2.0)	183 (91.5)
TOTAL	142	200	200

T) 2-WAY RIVER ANALYSIS: YUK74A, SEBC74A
VARIABLES USED: 29,28,34,21,60
OVERALL ACCURACY: 95.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	YUK74A	SEBC74A
YUK74A	196 (98.0)	13 (6.5)
SEBC74A	4 (2.0)	187 (93.5)
TOTAL	200	200

Appendix Table C5. Decision arrays for brood year 1975 chinook salmon caught as immature age 1.2's in 1979.

A) 4-WAY REGION ANALYSIS: ASIA75A, WEST75A, CENT75A, SEBC75A
VARIABLES USED: 7, 5,34,12,31,35,26,48,53,22,55, 9
OVERALL ACCURACY: 74.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA75A	WEST75A	CENT75A	SEBC75A
ASIA75A	61 (71.8)	7 (3.5)	11 (12.5)	2 (1.0)
WEST75A	6 (7.1)	165 (82.9)	9 (10.2)	9 (4.5)
CENT75A	18 (21.2)	22 (11.1)	57 (64.8)	32 (16.0)
SEBC75A	0 (0.0)	5 (2.5)	11 (12.5)	157 (78.5)
TOTAL	85	199	88	200

B) 3-WAY REGION ANALYSIS: ASIA75A, WEST75A, CENT75A
VARIABLES USED: 6,26,53,23,31,21,49,57
OVERALL ACCURACY: 76.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA75A	WEST75A	CENT75A
ASIA75A	61 (71.8)	6 (3.0)	12 (13.6)
WEST75A	8 (9.4)	168 (84.4)	12 (13.6)
CENT75A	16 (18.8)	25 (12.6)	64 (72.7)
TOTAL	85	199	88

C) 2-WAY REGION ANALYSIS: WEST75A, CENT75A
VARIABLES USED: 36, 6,22, 7,55
OVERALL ACCURACY: 87.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST75A	CENT75A
WEST75A	177 (88.9)	12 (13.6)
CENT75A	22 (11.1)	76 (86.4)
TOTAL	199	88

D) 2-WAY REGION ANALYSIS: ASIA75A, CENT75A
VARIABLES USED: 26,34,21
OVERALL ACCURACY: 83.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA75A	CENT75A
ASIA75A	69 (81.2)	13 (14.8)
CENT75A	16 (18.8)	75 (85.2)
TOTAL	85	88

Appendix Table C5. Continued.

E) 6-WAY RIVER ANALYSIS: ASIA75A, YUK75A, KUSK75A, BRIS75A, CENT75A, SEBC75A
VARIABLES USED: 7, 5,17,34,12,35,31,48,58,44,11,60,27,54
OVERALL ACCURACY: 64.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA75A	YUK75A	KUSK75A	BRIS75A	CENT75A	SEBC75A
ASIA75A	59 (69.4)	3 (1.5)	5 (2.5)	0 (0.0)	14 (15.9)	3 (1.5)
YUK75A	2 (2.4)	143 (71.5)	19 (9.6)	33 (16.8)	7 (8.0)	9 (4.5)
KUSK75A	10 (11.8)	21 (10.5)	120 (60.9)	52 (26.4)	6 (6.8)	2 (1.0)
BRIS75A	1 (1.2)	22 (11.0)	40 (20.3)	100 (50.8)	5 (5.7)	0 (0.0)
CENT75A	13 (15.3)	8 (4.0)	13 (6.6)	10 (5.1)	46 (52.3)	24 (12.0)
SEBC75A	0 (0.0)	3 (1.5)	0 (0.0)	2 (1.0)	10 (11.4)	162 (81.0)
TOTAL	85	200	197	197	88	200

F) 5-WAY RIVER ANALYSIS: ASIA75A, YUK75A, KUSK75A, BRIS75A, CENT75A
VARIABLES USED: 6,26,53,17, 5,34,52,21,44,60,27
OVERALL ACCURACY: 63.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA75A	YUK75A	KUSK75A	BRIS75A	CENT75A
ASIA75A	55 (64.7)	1 (.5)	4 (2.0)	0 (0.0)	9 (10.2)
YUK75A	3 (3.5)	146 (73.0)	19 (9.6)	32 (16.2)	8 (9.1)
KUSK75A	11 (12.9)	21 (10.5)	117 (59.4)	53 (26.9)	7 (8.0)
BRIS75A	1 (1.2)	21 (10.5)	44 (22.3)	103 (52.3)	6 (6.8)
CENT75A	15 (17.6)	11 (5.5)	13 (6.6)	9 (4.6)	58 (65.9)
TOTAL	85	200	197	197	88

G) 5-WAY RIVER ANALYSIS: ASIA75A, YUK75A, KUSK75A, CENT75A, SEBC75A
VARIABLES USED: 9, 7,34,17,21,35,31,58,48,44,32,26,53
OVERALL ACCURACY: 70.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA75A	YUK75A	KUSK75A	CENT75A	SEBC75A
ASIA75A	56 (65.9)	2 (1.0)	6 (3.0)	12 (13.6)	3 (1.5)
YUK75A	3 (3.5)	152 (76.0)	25 (12.7)	8 (9.1)	7 (3.5)
KUSK75A	12 (14.1)	28 (14.0)	153 (77.7)	8 (9.1)	3 (1.5)
CENT75A	14 (16.5)	14 (7.0)	13 (6.6)	49 (55.7)	30 (15.0)
SEBC75A	0 (0.0)	4 (2.0)	0 (0.0)	11 (12.5)	157 (78.5)
TOTAL	85	200	197	88	200

H) 4-WAY RIVER ANALYSIS: ASIA75A, YUK75A, KUSK75A, CENT75A
VARIABLES USED: 5,17,26,23,53,16, 6,44,34,35,46,45,32,31,50
OVERALL ACCURACY: 74.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA75A	YUK75A	KUSK75A	CENT75A
ASIA75A	59 (69.4)	2 (1.0)	6 (3.0)	7 (8.0)
YUK75A	2 (2.4)	157 (78.5)	24 (12.2)	7 (8.0)
KUSK75A	9 (10.6)	25 (12.5)	158 (80.2)	11 (12.5)
CENT75A	15 (17.6)	16 (8.0)	9 (4.6)	63 (71.6)
TOTAL	85	200	197	88

Appendix Table C5. Continued.

I) 4-WAY RIVER ANALYSIS: YUK75A, KUSK75A, BRIS75A, CENT75A
VARIABLES USED: 17,25,60,23,11,52,44,53,21,34,27,50,55,28
OVERALL ACCURACY: 66.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK75A	KUSK75A	BRIS75A	CENT75A
YUK75A	149 (74.5)	20 (10.2)	33 (16.8)	9 (10.2)
KUSK75A	19 (9.5)	126 (64.0)	51 (25.9)	7 (8.0)
BRIS75A	22 (11.0)	45 (22.3)	108 (54.8)	7 (8.0)
CENT75A	10 (5.0)	6 (3.0)	5 (2.5)	65 (73.9)
TOTAL	200	197	197	88

J) 4-WAY RIVER ANALYSIS: ASIA75A, KUSK75A, CENT75A, SEBC75A
VARIABLES USED: 7, 6,34,26,53,16,35,48, 9, 1
OVERALL ACCURACY: 75.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA75A	KUSK75A	CENT75A	SEBC75A
ASIA75A	57 (67.1)	3 (1.5)	9 (10.2)	2 (1.0)
KUSK75A	11 (12.9)	172 (87.3)	11 (12.5)	5 (2.5)
CENT75A	17 (20.0)	21 (10.7)	58 (65.9)	32 (16.0)
SEBC75A	0 (0.0)	1 (.5)	10 (11.4)	161 (80.5)
TOTAL	85	197	88	200

K) 3-WAY RIVER ANALYSIS: YUK75A, KUSK75A, BRIS75A
VARIABLES USED: 17,52,11,34,28,53,21,33,39
OVERALL ACCURACY: 65.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK75A	KUSK75A	BRIS75A
YUK75A	152 (76.0)	21 (10.7)	34 (17.3)
KUSK75A	21 (10.5)	128 (65.0)	54 (27.4)
BRIS75A	27 (13.5)	48 (24.4)	109 (55.3)
TOTAL	200	197	197

L) 3-WAY RIVER ANALYSIS: YUK75A, KUSK75A, CENT75A
VARIABLES USED: 5,17,36, 7,50,21,39,34,23,25,27,46,33
OVERALL ACCURACY: 79.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK75A	KUSK75A	CENT75A
YUK75A	155 (77.5)	19 (9.6)	8 (9.1)
KUSK75A	32 (16.0)	168 (85.3)	14 (15.9)
CENT75A	13 (6.5)	10 (5.1)	66 (75.0)
TOTAL	200	197	88

Appendix Table C6. Decision arrays for brood year 1976 chinook salmon caught as immature age 1.2's in 1980.

A) 4-WAY REGION ANALYSIS: ASIA76A, WEST76A, CENT76A, SEBC76A
VARIABLES USED: 7,16,34, 5,35,31, 9,58,54,27,32
OVERALL ACCURACY: 72.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76A	WEST76A	CENT76A	SEBC76A
ASIA76A	165 (82.9)	6 (3.0)	20 (10.0)	7 (3.5)
WEST76A	10 (5.0)	158 (79.4)	34 (17.0)	7 (3.5)
CENT76A	24 (12.1)	31 (15.6)	111 (55.5)	44 (22.0)
SEBC76A	0 (0.0)	4 (2.0)	35 (17.5)	142 (71.0)
TOTAL	199	199	200	200

B) 3-WAY REGION ANALYSIS: ASIA76A, WEST76A, CENT76A
VARIABLES USED: 7, 6,35,17,34,12,44
OVERALL ACCURACY: 80.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76A	WEST76A	CENT76A
ASIA76A	179 (89.9)	12 (6.0)	23 (11.5)
WEST76A	7 (3.5)	158 (79.4)	34 (17.0)
CENT76A	13 (6.5)	29 (14.6)	143 (71.5)
TOTAL	199	199	200

C) 3-WAY REGION ANALYSIS: ASIA76A, WEST76A, SEBC76A
VARIABLES USED: 5,34,26,16,52,25
OVERALL ACCURACY: 89.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76A	WEST76A	SEBC76A
ASIA76A	179 (89.9)	9 (4.5)	9 (4.5)
WEST76A	14 (7.0)	180 (90.5)	13 (6.5)
SEBC76A	6 (3.0)	10 (5.0)	178 (89.0)
TOTAL	199	199	200

D) 3-WAY REGION ANALYSIS: WEST76A, CENT76A, SEBC76A
VARIABLES USED: 12,21,34,35, 9,40,24
OVERALL ACCURACY: 74.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST76A	CENT76A	SEBC76A
WEST76A	170 (85.4)	37 (18.5)	7 (3.5)
CENT76A	24 (12.1)	127 (63.5)	44 (22.0)
SEBC76A	5 (2.5)	36 (18.0)	149 (74.5)
TOTAL	199	200	200

Appendix Table C6. Continued.

E) 3-WAY REGION ANALYSIS: ASIA76A, CENT76A, SEBC76A
VARIABLES USED: 7,12,27,34, 5,54, 9,31,32,11,56
OVERALL ACCURACY: 77.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76A	CENT75A	SEBC76A
ASIA76A	171 (85.9)	20 (10.0)	9 (4.5)
CENT76A	28 (14.1)	146 (73.0)	43 (21.5)
SEBC76A	0 (0.0)	34 (17.0)	148 (74.0)
TOTAL	199	200	200

F) 2-WAY REGION ANALYSIS: ASIA76A, WEST76A
VARIABLES USED: 6,35,16,32,59,27,36,49
OVERALL ACCURACY: 94.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA76A	WEST76A
ASIA76A	190 (95.5)	13 (6.5)
WEST75A	9 (4.5)	186 (93.5)
TOTAL	199	199

G) 2-WAY REGION ANALYSIS: WEST75A, SEBC76A
VARIABLES USED: 36,27,34,21
OVERALL ACCURACY: 94.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST76A	SEBC76A
WEST76A	186 (93.5)	10 (5.0)
SEBC76A	13 (6.5)	190 (95.0)
TOTAL	199	200

H) 2-WAY REGION ANALYSIS: WEST76A, CENT76A
VARIABLES USED: 21,34,35,11
OVERALL ACCURACY: 83.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST76A	CENT75A
WEST76A	167 (83.9)	35 (17.5)
CENT76A	32 (16.1)	165 (32.5)
TOTAL	199	200

Appendix Table C6. Continued.

I) 6-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, BRIS76A, CENT76A, SEBC76A
VARIABLES USED: 6, 7,34,17,35,16,31,58,54,27,51,36,55
OVERALL ACCURACY: 59.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA76A	YUK76A	KUSK76A	BRIS76A	CENT76A	SEBC76A
ASIA76A	157 (78.9)	2 (1.0)	8 (4.0)	1 (.5)	16 (8.0)	4 (2.0)
YUK76A	11 (5.5)	97 (48.5)	36 (18.0)	28 (14.2)	13 (6.5)	7 (3.5)
KUSK76A	11 (5.5)	41 (20.5)	103 (51.5)	34 (17.3)	22 (11.0)	2 (1.0)
BRIS76A	0 (0.0)	37 (18.5)	36 (18.0)	114 (57.9)	11 (5.5)	7 (3.5)
CENT76A	20 (10.1)	19 (9.5)	12 (6.0)	14 (7.1)	98 (49.0)	42 (21.0)
SEBC76A	0 (0.0)	4 (2.0)	5 (2.5)	6 (3.0)	40 (20.0)	138 (69.0)
TOTAL	199	200	200	197	200	200

J) 5-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, BRIS76A, CENT76A
VARIABLES USED: 6,21,35,34,16, 5,60,54
OVERALL ACCURACY: 61.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA76A	YUK76A	KUSK76A	BRIS76A	CENT76A
ASIA76A	169 (84.9)	4 (2.0)	9 (4.5)	0 (0.0)	17 (8.5)
YUK76A	5 (2.5)	105 (52.5)	51 (25.5)	30 (15.2)	16 (8.0)
KUSK76A	9 (4.5)	41 (20.5)	89 (44.5)	34 (17.3)	16 (8.0)
BRIS76A	0 (0.0)	31 (15.5)	37 (18.5)	116 (58.9)	16 (8.0)
CENT76A	16 (8.0)	19 (9.5)	14 (7.0)	17 (8.6)	135 (67.5)
TOTAL	199	200	200	197	200

K) 5-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, BRIS76A, SEBC76A
VARIABLES USED: 6, 7,34,17,53,52,31,51,11,58, 1,25,45,44,55
OVERALL ACCURACY: 67.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA76A	YUK76A	KUSK76A	BRIS76A	SEBC76A
ASIA76A	164 (82.4)	1 (.5)	7 (3.5)	0 (0.0)	7 (3.5)
YUK76A	16 (8.0)	111 (55.5)	36 (18.0)	29 (14.7)	11 (5.5)
KUSK76A	17 (8.5)	43 (21.5)	113 (56.5)	36 (18.3)	10 (5.0)
BRIS76A	0 (0.0)	38 (19.0)	37 (18.5)	122 (61.9)	8 (4.0)
SEBC76A	2 (1.0)	7 (3.5)	7 (3.5)	10 (5.1)	164 (82.0)
TOTAL	199	200	200	197	200

Appendix Table C6. Continued.

L) 5-WAY RIVER ANALYSIS: YUK76A, KUSK76A, BRIS76A, CENT76A, SEBC76A
VARIABLES USED: 36,12,26,34,21,52,24, 9,11,35,37,55
OVERALL ACCURACY: 58.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	YUK76A	KUSK76A	BRIS76A	CENT76A	SEBC76A
YUK76A	106 (53.0)	42 (21.0)	30 (15.2)	9 (4.5)	7 (3.5)
KUSK76A	34 (17.0)	102 (51.0)	34 (17.3)	21 (10.5)	2 (1.0)
BRIS76A	40 (20.0)	34 (17.0)	113 (57.4)	11 (5.5)	6 (3.0)
CENT76A	20 (10.0)	17 (8.5)	15 (7.6)	125 (62.5)	46 (23.0)
SEBC76A	0 (0.0)	5 (2.5)	5 (2.5)	34 (17.0)	139 (69.5)
TOTAL	200	200	197	200	200

M) 5-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, CENT76A, SEBC76A
VARIABLES USED: 7,36,34,21,35,16, 9,31,58,28,55,39,44,24,54,27
OVERALL ACCURACY: 67.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA76A	YUK76A	KUSK76A	CENT76A	SEBC76A
ASIA76A	161 (80.9)	1 (.5)	9 (4.5)	16 (8.0)	6 (3.0)
YUK76A	10 (5.0)	128 (64.0)	44 (22.0)	14 (7.0)	11 (5.5)
KUSK76A	8 (4.0)	49 (24.5)	124 (62.0)	26 (13.0)	1 (.5)
CENT76A	20 (10.1)	20 (10.0)	16 (8.0)	114 (57.0)	39 (19.5)
SEBC76A	0 (0.0)	2 (1.0)	7 (3.5)	30 (15.0)	143 (71.5)
TOTAL	199	200	200	200	200

N) 4-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, BRIS76A
VARIABLES USED: 6,35,50,54,31,58,11,39,30,57,23,42,47,49,17
OVERALL ACCURACY: 64.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76A	YUK76A	KUSK76A	BRIS76A
ASIA76A	162 (81.4)	3 (1.5)	7 (3.5)	1 (.5)
YUK76A	15 (7.5)	111 (55.5)	42 (21.0)	34 (17.3)
KUSK76A	22 (11.1)	47 (23.5)	120 (60.0)	41 (20.8)
BRIS76A	0 (0.0)	39 (19.5)	31 (15.5)	121 (61.4)
TOTAL	199	200	200	197

O) 4-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, CENT76A
VARIABLES USED: 6,34,35,16,11,60,39,54, 9,27,45,24,55
OVERALL ACCURACY: 70.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76A	YUK76A	KUSK76A	CENT76A
ASIA76A	167 (83.9)	2 (1.0)	9 (4.5)	14 (7.0)
YUK76A	8 (4.0)	132 (66.0)	53 (26.5)	18 (9.0)
KUSK76A	10 (5.0)	48 (24.0)	121 (60.5)	27 (13.5)
CENT76A	14 (7.0)	18 (9.0)	17 (8.5)	141 (70.5)
TOTAL	199	200	200	200

Appendix Table C6. Continued.

P) 4-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A, SEBC76A
VARIABLES USED: 7,36,34,21,35,17,31,58,54,27, 9,24,55,60,39,45,28
OVERALL ACCURACY: 76.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76A	YUK76A	KUSK76A	SEBC76A
ASIA76A	165 (82.9)	3 (1.5)	8 (4.0)	7 (3.5)
YUK76A	13 (6.5)	142 (71.0)	50 (25.0)	13 (6.5)
KUSK76A	18 (9.0)	50 (25.0)	131 (65.5)	11 (5.5)
SEBC76A	3 (1.5)	5 (2.5)	11 (5.5)	169 (84.5)
TOTAL	199	200	200	200

Q) 4-WAY RIVER ANALYSIS: YUK76A, KUSK76A, BRIS76A, CENT76A
VARIABLES USED: 21,35,34,12,24,54,30,44,55
OVERALL ACCURACY: 61.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK76A	KUSK76A	BRIS76A	CENT76A
YUK76A	108 (54.0)	37 (18.5)	29 (14.7)	14 (7.0)
KUSK76A	30 (15.0)	107 (53.5)	29 (14.7)	19 (9.5)
BRIS76A	42 (21.0)	40 (20.0)	122 (61.9)	17 (8.5)
CENT76A	20 (10.0)	16 (8.0)	17 (8.6)	150 (75.0)
TOTAL	200	200	197	200

R) 4-WAY RIVER ANALYSIS: ASIA76A, YUK76A, CENT76A, SEBC76A
VARIABLES USED: 7,36,12,58,31,34,11,44, 5, 1,39,32
OVERALL ACCURACY: 73.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76A	YUK76A	CENT76A	SEBC75A
ASIA76A	159 (79.9)	6 (3.0)	16 (8.0)	9 (4.5)
YUK76A	12 (6.0)	163 (81.5)	27 (13.5)	8 (4.0)
CENT76A	28 (14.1)	27 (13.5)	121 (60.5)	38 (19.0)
SEBC76A	0 (0.0)	4 (2.0)	36 (18.0)	145 (72.5)
TOTAL	199	200	200	200

S) 3-WAY RIVER ANALYSIS: YUK76A, KUSK76A, BRIS76A
VARIABLES USED: 26,50,25,58,44,47,49,40,30,55,24
OVERALL ACCURACY: 60.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK76A	KUSK76A	BRIS76A
YUK76A	119 (59.5)	47 (23.5)	37 (18.8)
KUSK76A	39 (19.5)	116 (58.0)	37 (18.8)
BRIS76A	42 (21.0)	37 (18.5)	123 (62.4)
TOTAL	200	200	197

Appendix Table C6. Continued.

T) 3-WAY RIVER ANALYSIS: ASIA76A, YUK76A, KUSK76A
VARIABLES USED: 6,35,50,54,47,60,39,27,17,55,36,28
OVERALL ACCURACY: 77.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76A	YUK76A	KUSK76A
ASIA76A	180 (90.5)	3 (1.5)	6 (3.0)
YUK76A	10 (5.0)	144 (72.0)	52 (26.0)
KUSK76A	9 (4.5)	53 (26.5)	142 (71.0)
TOTAL	199	200	200

U) 3-WAY RIVER ANALYSIS: ASIA76A, YUK76A, BRIS76A
VARIABLES USED: 6,35,54,31,11,58,30
OVERALL ACCURACY: 77.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76A	YUK76A	BRIS76A
ASIA76A	170 (85.4)	8 (4.0)	1 (.5)
YUK76A	29 (14.6)	142 (71.0)	46 (23.4)
BRIS76A	0 (0.0)	50 (25.0)	150 (76.1)
TOTAL	199	200	197

V) 3-WAY RIVER ANALYSIS: YUK76A, CENT76A, SEBC76A
VARIABLES USED: 36,12,21,34, 5,27, 9
OVERALL ACCURACY: 74.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK76A	CENT76A	SEBC76A
YUK76A	170 (85.0)	27 (13.5)	9 (4.5)
CENT76A	25 (12.5)	130 (65.0)	43 (21.5)
SEBC76A	5 (2.5)	43 (21.5)	148 (74.0)
TOTAL	200	200	200

W) 3-WAY RIVER ANALYSIS: YUK76A, KUSK76A, CENT76A
VARIABLES USED: 36,21,34,11,35,55,39,24,47,60
OVERALL ACCURACY: 69.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK76A	KUSK76A	CENT76A
YUK76A	133 (66.5)	51 (25.5)	17 (8.5)
KUSK76A	48 (24.0)	132 (66.0)	29 (14.5)
CENT76A	19 (9.5)	17 (8.5)	154 (77.0)
TOTAL	200	200	200

Appendix Table C6. Continued.

X) 2-WAY RIVER ANALYSIS: YUK76A, KUSK76A
VARIABLES USED: 21,55,39,60,47,50,23,25
OVERALL ACCURACY: 74.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	YUK76A	KUSK76A
YUK76A	149 (74.5)	50 (25.0)
KUSK76A	51 (25.5)	150 (75.0)
TOTAL	200	200

Y) 2-WAY RIVER ANALYSIS: YUK76A, CENT76A
VARIABLES USED: 21,36,11,34,31,39, 1,54
OVERALL ACCURACY: 86.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	YUK76A	CENT76A
YUK76A	178 (89.0)	33 (16.5)
CENT76A	22 (11.0)	167 (83.5)
TOTAL	200	200

Appendix Table C7. Decision arrays for brood year 1977 chinook salmon caught as immature age 1.2's in 1981.

A) 4-WAY REGION ANALYSIS: ASIA77 , WEST77 , CENT77 , SEBC77
VARIABLES USED: 27, 9,34,17,58,16,31,35,28,44,42,21,36,47,25,26
OVERALL ACCURACY: 80.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA77	WEST77	CENT77	SEBC77
ASIA77	174 (87.0)	10 (5.0)	11 (5.5)	1 (.5)
WEST77	15 (7.5)	146 (73.4)	22 (11.1)	7 (3.5)
CENT77	10 (5.0)	34 (17.1)	147 (73.9)	20 (10.1)
SEBC77	1 (.5)	9 (4.5)	19 (9.5)	170 (85.9)
TOTAL	200	199	199	198

B) 3-WAY REGION ANALYSIS: ASIA77 , WEST77 , CENT77
VARIABLES USED: 7,28, 5,17,27,60,44
OVERALL ACCURACY: 81.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA77	WEST77	CENT77
ASIA77	179 (89.5)	9 (4.5)	15 (7.5)
WEST77	10 (5.0)	152 (76.4)	26 (13.1)
CENT77	11 (5.5)	38 (19.1)	158 (79.4)
TOTAL	200	199	199

C) 3-WAY REGION ANALYSIS: ASIA77 , CENT77 , SEBC77
VARIABLES USED: 27,17,28,31,21,54,34,16,44,58
OVERALL ACCURACY: 88.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA77	CENT77	SEBC77
ASIA77	182 (91.0)	15 (7.5)	2 (1.0)
CENT77	17 (8.5)	168 (84.4)	19 (9.6)
SEBC77	1 (.5)	16 (8.0)	177 (89.4)
TOTAL	200	199	198

D) 2-WAY REGION ANALYSIS: ASIA77 , CENT77
VARIABLES USED: 27,28,25,29,26,11
OVERALL ACCURACY: 92.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA77	CENT77
ASIA77	190 (95.0)	19 (9.5)
CENT77	10 (5.0)	180 (90.5)
TOTAL	200	199

Appendix Table C7. Continued.

E) 6-WAY RIVER ANALYSIS: ASIA77 , YUK77 , KUSK77 , BRIS77 , CENT77 , SEBC77
VARIABLES USED: 7,36,28,11,23,21,35,34,44,17, 5,50,27,54,47,40,31,48,42
OVERALL ACCURACY: 72.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA77	YUK77	KUSK77	BRIS77	CENT77	SEBC77
ASIA77	160 (80.0)	6 (3.0)	5 (2.6)	2 (1.0)	9 (4.5)	1 (.5)
YUK77	22 (11.0)	147 (73.5)	40 (20.4)	5 (2.5)	15 (7.5)	1 (.5)
KUSK77	6 (3.0)	32 (16.0)	100 (51.0)	28 (14.0)	11 (5.5)	1 (.5)
BRIS77	0 (0.0)	4 (2.0)	23 (11.7)	148 (74.0)	7 (3.5)	7 (3.5)
CENT77	11 (5.5)	11 (5.5)	24 (12.2)	8 (4.0)	141 (70.9)	22 (11.1)
SEBC77	1 (.5)	0 (0.0)	4 (2.0)	9 (4.5)	16 (8.0)	166 (83.8)
TOTAL	200	200	196	200	199	198

F) 5-WAY RIVER ANALYSIS: ASIA77 , YUK77 , KUSK77 , BRIS77 , CENT77
VARIABLES USED: 36,11,28,21,35,44,17,31,27,54,42,40, 5,12,50,23,16, 1,41,43
OVERALL ACCURACY: 71.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA77	YUK77	KUSK77	BRIS77	CENT77
ASIA77	158 (79.0)	6 (3.0)	7 (3.6)	1 (.5)	10 (5.0)
YUK77	21 (10.5)	145 (72.5)	41 (20.9)	5 (2.5)	19 (9.5)
KUSK77	9 (4.5)	34 (17.0)	103 (52.6)	29 (14.5)	8 (4.0)
BRIS77	1 (.5)	2 (1.0)	21 (10.7)	154 (77.0)	13 (6.5)
CENT77	11 (5.5)	13 (6.5)	24 (12.2)	11 (5.5)	149 (74.9)
TOTAL	200	200	196	200	199

G) 5-WAY RIVER ANALYSIS: ASIA77 , YUK77 , KUSK77 , BRIS77 , SEBC77
VARIABLES USED: 7, 5,23, 6,39,31,58,34,37,12,35,27,28,42,47,36,50,32
OVERALL ACCURACY: 73.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA77	YUK77	KUSK77	BRIS77	SEBC77
ASIA77	159 (79.5)	7 (3.5)	7 (3.6)	2 (1.0)	1 (.5)
YUK77	33 (16.5)	146 (73.0)	48 (24.5)	11 (5.5)	6 (3.0)
KUSK77	6 (3.0)	40 (20.0)	105 (53.6)	37 (18.5)	2 (1.0)
BRIS77	0 (0.0)	7 (3.5)	29 (14.8)	143 (71.5)	9 (4.5)
SEBC77	2 (1.0)	0 (0.0)	7 (3.6)	7 (3.5)	180 (90.9)
TOTAL	200	200	196	200	198

Appendix Table C7. Continued.

H) 4-WAY RIVER ANALYSIS: ASIA77 , YUK77 , BRIS77 , CENT77
VARIABLES USED: 36,11,28,21,35,44,34,17,31,42,40,58,27,54,37,48, 1,41,45
OVERALL ACCURACY: 82.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA77	YUK77	BRIS77	CENT77
ASIA77	163 (81.5)	7 (3.5)	4 (2.0)	10 (5.0)
YUK77	25 (12.5)	169 (84.5)	19 (9.5)	23 (11.6)
BRIS77	3 (1.5)	8 (4.0)	168 (84.0)	11 (5.5)
CENT77	9 (4.5)	16 (8.0)	9 (4.5)	155 (77.9)
TOTAL	200	200	200	199

I) 4-WAY RIVER ANALYSIS: YUK77 , KUSK77 , BRIS77 , CENT77
VARIABLES USED: 36,21,17,44,50,35, 5,27,16
OVERALL ACCURACY: 71.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK77	KUSK77	BRIS77	CENT77
YUK77	147 (73.5)	39 (19.9)	10 (5.0)	18 (9.0)
KUSK77	37 (18.5)	110 (56.1)	27 (13.5)	10 (5.0)
BRIS77	4 (2.0)	22 (11.2)	151 (75.5)	14 (7.0)
CENT77	12 (6.0)	25 (12.8)	12 (6.0)	157 (78.9)
TOTAL	200	196	200	199

J) 3-WAY RIVER ANALYSIS: YUK77 , KUSK77 , CENT77
VARIABLES USED: 36,16,37,44,17,21,50,26,54
OVERALL ACCURACY: 74.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK77	KUSK77	CENT77
YUK77	150 (75.0)	44 (22.4)	19 (9.5)
KUSK77	39 (19.5)	127 (64.8)	15 (7.5)
CENT77	11 (5.5)	25 (12.8)	165 (82.9)
TOTAL	200	196	199

Appendix Table D1. Decision arrays for brood year 1970 chinook salmon caught as immature age 1.3's in 1975.

A) 4-WAY REGION ANALYSIS: ASIA70 , WEST70 , CENT70 , SEBC70
VARIABLES USED: 27, 9,34,21,44,11,45,35,49,16
OVERALL ACCURACY: 72.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA70	WEST70	CENT70	SEBC70
ASIA70	86 (81.9)	27 (13.5)	3 (2.9)	10 (7.8)
WEST70	10 (9.5)	145 (72.5)	13 (12.5)	11 (8.6)
CENT70	4 (3.8)	19 (9.5)	71 (68.3)	23 (18.0)
SEBC70	5 (4.8)	9 (4.5)	17 (16.3)	84 (65.6)
TOTAL	105	200	104	128

B) 3-WAY REGION ANALYSIS: ASIA70 , WEST70 , CENT70
VARIABLES USED: 6,16,34,44,11,40,12,35,22
OVERALL ACCURACY: 79.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA70	WEST70	CENT70
ASIA70	90 (85.7)	32 (16.0)	6 (5.8)
WEST70	9 (8.6)	147 (73.5)	16 (15.4)
CENT70	6 (5.7)	21 (10.5)	82 (78.8)
TOTAL	105	200	104

C) 5-WAY RIVER ANALYSIS: ASIA70 , YUK70 , KUSK70 , BRIS70 , CENT70
VARIABLES USED: 6,16,34,44,35,54,11,12,45,23,22,47,31
OVERALL ACCURACY: 61.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA70	YUK70	KUSK70	BRIS70	CENT70
ASIA70	83 (79.0)	10 (5.2)	12 (6.7)	23 (11.5)	5 (4.8)
YUK70	7 (6.7)	122 (63.9)	23 (12.8)	44 (22.0)	6 (5.8)
KUSK70	4 (3.8)	15 (7.9)	93 (52.0)	50 (25.0)	6 (5.8)
BRIS70	5 (4.8)	25 (13.1)	44 (24.6)	74 (37.0)	7 (6.7)
CENT70	6 (5.7)	19 (9.9)	7 (3.9)	9 (4.5)	80 (76.9)
TOTAL	105	191	179	200	104

D) 4-WAY RIVER ANALYSIS: ASIA70 , YUK70 , BRIS70 , CENT70
VARIABLES USED: 6,16,34,44,17,11,45,54,35,22,12
OVERALL ACCURACY: 71.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA70	YUK70	BRIS70	CENT70
ASIA70	86 (81.9)	9 (4.7)	23 (11.5)	4 (3.8)
YUK70	5 (4.8)	127 (66.5)	46 (23.0)	8 (7.7)
BRIS70	8 (7.6)	35 (18.3)	118 (59.0)	10 (9.6)
CENT70	6 (5.7)	20 (10.5)	13 (6.5)	82 (78.8)
TOTAL	105	191	200	104

Appendix Table D2. Decision arrays for brood year 1971 chinook salmon caught as immature age 1.3's in 1976.

A) 4-WAY REGION ANALYSIS: ASIA71B, WEST71B, CENT71B, SEBC71B
VARIABLES USED: 7,34,21,35, 9,44, 5,40,42, 1
OVERALL ACCURACY: 65.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA71B	WEST71B	CENT71B	SEBC71B
ASIA71B	110 (65.5)	23 (11.5)	19 (14.4)	8 (4.8)
WEST71B	26 (15.5)	153 (76.5)	15 (11.4)	7 (4.2)
CENT71B	27 (16.1)	22 (11.0)	76 (57.6)	44 (26.7)
SEBC71B	5 (3.0)	2 (1.0)	22 (16.7)	106 (64.2)
TOTAL	168	200	132	165

B) 3-WAY REGION ANALYSIS: ASIA71B, WEST71B, SEBC71B
VARIABLES USED: 9,34,16,35,44,11,40, 6,42,56,50
OVERALL ACCURACY: 81.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA71B	WEST71B	SEBC71B
ASIA71B	134 (79.8)	27 (13.5)	15 (9.1)
WEST71B	25 (14.9)	165 (82.5)	13 (7.9)
SEBC71B	9 (5.4)	8 (4.0)	137 (83.0)
TOTAL	168	200	165

C) 2-WAY REGION ANALYSIS: ASIA71B, WEST71B
VARIABLES USED: 17,44,34,47, 1,40,35,23,56,45
OVERALL ACCURACY: 86.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA71B	WEST71B
ASIA71B	146 (86.9)	30 (15.0)
WEST71B	22 (13.1)	170 (85.0)
TOTAL	168	200

D) 2-WAY REGION ANALYSIS: ASIA71B, SEBC71B
VARIABLES USED: 28,34,21,23,50,42,11,44,43,45
OVERALL ACCURACY: 92.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA71B	SEBC71B
ASIA71B	157 (93.5)	15 (9.1)
SEBC71B	11 (6.5)	150 (90.9)
TOTAL	168	165

Appendix Table D3. Decision arrays for brood year 1972 chinook salmon caught as immature age 1.3's in 1977.

A) 4-WAY REGION ANALYSIS: ASIA72B, WEST72B, CENT72B, SEBC72B
VARIABLES USED: 12,26,49,21,34,53
OVERALL ACCURACY: 68.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA72B	WEST72B	CENT72B	SEBC72B
ASIA72B	130 (69.9)	17 (8.5)	32 (16.5)	2 (1.3)
WEST72B	36 (19.4)	154 (77.0)	18 (9.3)	5 (3.1)
CENT72B	18 (9.7)	19 (9.5)	102 (52.6)	33 (20.8)
SEBC72B	2 (1.1)	10 (5.0)	42 (21.6)	119 (74.8)
TOTAL	186	200	194	159

B) 3-WAY REGION ANALYSIS: ASIA72B, WEST72B, CENT72B
VARIABLES USED: 6,22, 9,34,16,35,45,47
OVERALL ACCURACY: 74.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA72B	WEST72B	CENT72B
ASIA72B	133 (71.5)	20 (10.0)	39 (20.1)
WEST72B	32 (17.2)	158 (79.0)	14 (7.2)
CENT72B	21 (11.3)	22 (11.0)	141 (72.7)
TOTAL	186	200	194

C) 3-WAY REGION ANALYSIS: ASIA72B, WEST72B, SEBC72B
VARIABLES USED: 7, 6,34,35,21,46,49,41
OVERALL ACCURACY: 83.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA72B	WEST72B	SEBC72B
ASIA72B	146 (78.5)	22 (11.0)	7 (4.4)
WEST72B	36 (19.4)	166 (83.0)	10 (6.3)
SEBC72B	4 (2.2)	12 (6.0)	142 (89.3)
TOTAL	186	200	159

D) 2-WAY REGION ANALYSIS: ASIA72B, WEST72B
VARIABLES USED: 6, 3
OVERALL ACCURACY: 84.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA72B	WEST72B
ASIA72B	153 (82.3)	26 (13.0)
WEST72B	33 (17.7)	174 (87.0)
TOTAL	186	200

Appendix Table D3. Continued.

E) 2-WAY REGION ANALYSIS: WEST72B, CENT72B
VARIABLES USED: 36,11,49,21,35,34,40
OVERALL ACCURACY: 88.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST72B	CENT72B
WEST72B	178 (89.0)	22 (11.3)
CENT72B	22 (11.0)	172 (88.7)
TOTAL	200	194

F) 6-WAY RIVER ANALYSIS: ASIA72B, YUK72B, KUSK72B, BRIS72B, CENT72B, SEBC72B
VARIABLES USED: 7, 36,34,21,35, 5,11,42,49, 1,39,44,48,59
OVERALL ACCURACY: 58.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA72B	YUK72B	KUSK72B	BRIS72B	CENT72B	SEBC72B
ASIA72B	120 (64.5)	12 (6.0)	10 (5.0)	10 (5.0)	38 (19.6)	2 (1.3)
YUK72B	21 (11.3)	121 (60.5)	39 (19.5)	27 (13.5)	10 (5.2)	2 (1.3)
KUSK72B	24 (12.9)	30 (15.0)	82 (41.0)	34 (17.0)	3 (1.5)	3 (1.9)
BRIS72B	8 (4.3)	16 (8.0)	50 (25.0)	121 (60.5)	11 (5.7)	3 (1.9)
CENT72B	12 (6.5)	18 (9.0)	10 (5.0)	4 (2.0)	104 (53.6)	38 (23.9)
SEBC72B	1 (.5)	3 (1.5)	9 (4.5)	4 (2.0)	28 (14.4)	111 (69.8)
TOTAL	186	200	200	200	194	159

G) 5-WAY RIVER ANALYSIS: ASIA72B, YUK72B, KUSK72B, BRIS72B, CENT72B
VARIABLES USED: 6,35,34,16,36,11, 1,17,42,22,39,44
OVERALL ACCURACY: 59.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA72B	YUK72B	KUSK72B	BRIS72B	CENT72B
ASIA72B	124 (66.7)	15 (7.5)	12 (6.0)	10 (5.0)	37 (19.1)
YUK72B	19 (10.2)	114 (57.0)	40 (20.0)	25 (12.5)	8 (4.1)
KUSK72B	21 (11.3)	36 (18.0)	87 (43.5)	33 (16.5)	8 (4.1)
BRIS72B	8 (4.3)	17 (8.5)	47 (23.5)	124 (62.0)	10 (5.2)
CENT72B	14 (7.5)	18 (9.0)	14 (7.0)	8 (4.0)	131 (67.5)
TOTAL	186	200	200	200	194

H) 4-WAY RIVER ANALYSIS: ASIA72B, YUK72B, KUSK72B, BRIS72B
VARIABLES USED: 7,34,59,36,11,32,42,21,35
OVERALL ACCURACY: 60.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA72B	YUK72B	KUSK72B	BRIS72B
ASIA72B	139 (74.7)	21 (10.5)	19 (9.5)	9 (4.5)
YUK72B	17 (9.1)	122 (61.0)	38 (19.0)	27 (13.5)
KUSK72B	20 (10.8)	37 (18.5)	90 (45.0)	40 (20.0)
BRIS72B	10 (5.4)	20 (10.0)	53 (26.5)	124 (62.0)
TOTAL	186	200	200	200

Appendix Table D3. Continued.

I) 4-WAY RIVER ANALYSIS: ASIA72B, YUK72B, KUSK72B, CENT72B
VARIABLES USED: 6,34,21,35, 1,11, 9,42,36,22,39
OVERALL ACCURACY: 65.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA72B	YUK72B	KUSK72B	CENT72B
ASIA72B	123 (66.1)	14 (7.0)	15 (7.5)	34 (17.5)
YUK72B	17 (9.1)	120 (60.0)	39 (19.5)	8 (4.1)
KUSK72B	30 (16.1)	46 (23.0)	131 (65.5)	15 (7.7)
CENT72B	16 (8.6)	20 (10.0)	15 (7.5)	137 (70.6)
TOTAL	186	200	200	194

J) 3-WAY RIVER ANALYSIS: ASIA72B, YUK72B, KUSK72B
VARIABLES USED: 6,35,12,34,42,39,55
OVERALL ACCURACY: 69.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA72B	YUK72B	KUSK72B
ASIA72B	142 (76.3)	22 (11.0)	26 (13.0)
YUK72B	13 (7.0)	128 (64.0)	40 (20.0)
KUSK72B	31 (16.7)	50 (25.0)	134 (67.0)
TOTAL	186	200	200

Appendix Table D4. Decision arrays for brood year 1973 chinook salmon caught as immature age 1.3's in 1978.

A) 4-WAY REGION ANALYSIS: ASIA73B, WEST73B, CENT73B, SEBC73B
VARIABLES USED: 9, 7,34,21,25,44,53
OVERALL ACCURACY: 69.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA73B	WEST73B	CENT73B	SEBC73B
ASIA73B	75 (57.3)	25 (12.6)	38 (24.8)	9 (4.6)
WEST73B	30 (22.9)	162 (81.8)	9 (5.9)	4 (2.0)
CENT73B	25 (19.1)	10 (5.1)	85 (55.6)	22 (11.2)
SEBC73B	1 (.8)	1 (.5)	21 (13.7)	161 (82.1)
TOTAL	131	198	153	196

B) 3-WAY REGION ANALYSIS: ASIA73B, WEST73B, CENT73B
VARIABLES USED: 21,52,34, 5,26,49,44,17,31,36
OVERALL ACCURACY: 68.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA73B	WEST73B	CENT73B
ASIA73B	77 (58.8)	26 (13.1)	36 (23.5)
WEST73B	33 (25.2)	159 (80.3)	14 (9.2)
CENT73B	21 (16.0)	13 (6.6)	103 (67.3)
TOTAL	131	198	153

C) 3-WAY REGION ANALYSIS: ASIA73B, WEST73B, SEBC73B
VARIABLES USED: 7,34,25,21,26,32
OVERALL ACCURACY: 82.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA73B	WEST73B	SEBC73B
ASIA73B	95 (72.5)	26 (13.1)	16 (8.2)
WEST73B	34 (26.0)	171 (86.4)	4 (2.0)
SEBC73B	2 (1.5)	1 (.5)	176 (89.8)
TOTAL	131	198	196

D) 3-WAY REGION ANALYSIS: WEST73B, CENT73B, SEBC73B
VARIABLES USED: 7,34,21,25,44,11,53,23, 5,27,59,31,51
OVERALL ACCURACY: 84.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST73B	CENT73B	SEBC73B
WEST73B	177 (89.4)	16 (10.5)	6 (3.1)
CENT73B	19 (9.6)	123 (80.4)	26 (13.3)
SEBC73B	2 (1.0)	14 (9.2)	164 (83.7)
TOTAL	198	153	196

Appendix Table D4. Continued.

E) 2-WAY REGION ANALYSIS: ASIA73B, WEST73B
VARIABLES USED: 6,50,25,26,16,39
OVERALL ACCURACY: 81.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	ASIA73B	WEST73B
ASIA73B	99 (75.6)	27 (13.6)
WEST73B	32 (24.4)	171 (86.4)
TOTAL	131	198

F) 2-WAY REGION ANALYSIS: WEST73B, CENT73B
VARIABLES USED: 21,52,49,35,51,11,31,37
OVERALL ACCURACY: 89.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST73B	CENT73B
WEST73B	177 (89.4)	15 (9.8)
CENT73B	21 (10.6)	138 (90.2)
TOTAL	198	153

G) 5-WAY RIVER ANALYSIS: YUK73B, KUSK73B, BRIS73B, CENT73B, SEBC73B
VARIABLES USED: 9,52, 7,34,21,44,26, 1, 5,50,57,31,55,23,25
OVERALL ACCURACY: 66.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	YUK73B	KUSK73B	BRIS73B	CENT73B	SEBC73B
YUK73B	106 (53.3)	18 (20.0)	14 (7.0)	14 (9.2)	3 (1.5)
KUSK73B	50 (25.1)	45 (50.0)	33 (16.6)	5 (3.3)	3 (1.5)
BRIS73B	28 (14.1)	19 (21.1)	146 (73.4)	9 (5.9)	2 (1.0)
CENT73B	12 (6.0)	7 (7.8)	5 (2.5)	110 (71.9)	28 (14.3)
SEBC73B	3 (1.5)	1 (1.1)	1 (.5)	15 (9.8)	160 (81.6)
TOTAL	199	90	199	153	196

Appendix Table D5. Decision arrays for brood year 1974 chinook salmon caught as immature age 1.3's in 1979.

A) 4-WAY REGION ANALYSIS: ASIA74B, WEST74B, CENT74B, SEBC74B
VARIABLES USED: 9,27,34,16,36, 5,53,54, 6,28,22,39,50
OVERALL ACCURACY: 68.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA74B	WEST74B	CENT74B	SEBC74B
ASIA74B	109 (73.2)	19 (9.6)	7 (9.3)	9 (4.6)
WEST74B	24 (16.1)	156 (78.3)	8 (10.7)	9 (4.6)
CENT74B	6 (4.0)	18 (9.1)	39 (52.0)	37 (19.0)
SEBC74B	10 (6.7)	5 (2.5)	21 (28.0)	140 (71.8)
TOTAL	149	198	75	195

B) 3-WAY REGION ANALYSIS: ASIA74B, WEST74B, CENT74B
VARIABLES USED: 5,16,34,26,27
OVERALL ACCURACY: 76.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA74B	WEST74B	CENT74B
ASIA74B	113 (75.8)	18 (9.1)	11 (14.7)
WEST74B	25 (16.8)	160 (80.8)	9 (12.0)
CENT74B	11 (7.4)	20 (10.1)	55 (73.3)
TOTAL	149	198	75

Appendix Table D6. Decision arrays for brood year 1975 chinook salmon caught as immature age 1.3's in 1980.

A) 4-WAY REGION ANALYSIS: ASIA75B, WEST75B, CENT75B, SEBC75B
VARIABLES USED: 6, 7,34,17,31,44,35,30,57
OVERALL ACCURACY: 71.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA75B	WEST75B	CENT75B	SEBC75B
ASIA75B	71 (72.4)	4 (2.0)	9 (14.1)	2 (1.0)
WEST75B	6 (6.1)	168 (84.4)	9 (14.1)	12 (6.0)
CENT75B	20 (20.4)	17 (8.5)	35 (54.7)	35 (17.5)
SEBC75B	1 (1.0)	10 (5.0)	11 (17.2)	151 (75.5)
TOTAL	98	199	64	200

B) 3-WAY REGION ANALYSIS: ASIA75B, WEST75B, CENT75B
VARIABLES USED: 6,26,53,34,21,31,35
OVERALL ACCURACY: 75.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA75B	WEST75B	CENT75B
ASIA75B	71 (72.4)	5 (2.5)	10 (15.6)
WEST75B	8 (8.2)	175 (87.9)	11 (17.2)
CENT75B	19 (19.4)	19 (9.5)	43 (67.2)
TOTAL	98	199	64

C) 3-WAY REGION ANALYSIS: ASIA75B, WEST75B, SEBC75B
VARIABLES USED: 6, 7,34,17,31,44,35,39,21,52,57,30,58
OVERALL ACCURACY: 88.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA75B	WEST75B	SEBC75B
ASIA75B	79 (80.6)	5 (2.5)	4 (2.0)
WEST75B	15 (15.3)	184 (92.5)	13 (6.5)
SEBC75B	4 (4.1)	10 (5.0)	183 (91.5)
TOTAL	98	199	200

D) 3-WAY REGION ANALYSIS: WEST75B, CENT75B, SEBC75B
VARIABLES USED: 6,34,21,35,48,60
OVERALL ACCURACY: 76.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST75B	CENT75B	SEBC75B
WEST75B	177 (88.9)	12 (18.8)	10 (5.0)
CENT75B	14 (7.0)	43 (67.2)	41 (20.5)
SEBC75B	8 (4.0)	9 (14.1)	149 (74.5)
TOTAL	199	64	200

Appendix Table D6. Continued.

E) 2-WAY REGION ANALYSIS: WEST75B, CENT75B
VARIABLES USED: 6,36,21,22
OVERALL ACCURACY: 86.9 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	WEST75B	CENT75B
WEST75B	184 (92.5)	12 (18.8)
CENT75B	15 (7.5)	52 (81.3)
TOTAL	199	64

F) 6-WAY RIVER ANALYSIS: ASIA75B, YUK75B, KUSK75B, BRIS75B, CENT75B, SEBC75B
VARIABLES USED: 6, 7,34,17,30,35,12,44,31,48,58,11
OVERALL ACCURACY: 60.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA75B	YUK75B	KUSK75B	BRIS75B	CENT75B	SEBC75B
ASIA75B	71 (72.4)	2 (1.0)	4 (2.1)	1 (.5)	11 (17.2)	3 (1.5)
YUK75B	5 (5.1)	144 (72.0)	26 (13.4)	29 (14.7)	7 (10.9)	14 (7.0)
KUSK75B	10 (10.2)	19 (9.5)	96 (49.5)	58 (29.4)	4 (6.3)	3 (1.5)
BRIS75B	0 (.0)	16 (8.0)	54 (27.8)	95 (48.2)	2 (3.1)	6 (3.0)
CENT75B	12 (12.2)	10 (5.0)	6 (3.1)	9 (4.6)	30 (46.9)	27 (13.5)
SEBC75B	0 (.0)	9 (4.5)	8 (4.1)	5 (2.5)	10 (15.6)	147 (73.5)
TOTAL	98	200	194	197	64	200

G) 5-WAY RIVER ANALYSIS: ASIA75B, YUK75B, KUSK75B, BRIS75B, CENT75B
VARIABLES USED: 6,17,26,53, 1,52,44,34,21,27,31,22
OVERALL ACCURACY: 61.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA75B	YUK75B	KUSK75B	BRIS75B	CENT75B
ASIA75B	65 (66.3)	2 (1.0)	4 (2.1)	1 (.5)	11 (17.2)
YUK75B	5 (5.1)	150 (75.0)	20 (10.3)	29 (14.7)	7 (10.9)
KUSK75B	11 (11.2)	21 (10.5)	99 (51.0)	58 (29.4)	3 (4.7)
BRIS75B	0 (.0)	14 (7.0)	63 (32.5)	100 (50.8)	2 (3.1)
CENT75B	17 (17.3)	13 (6.5)	8 (4.1)	9 (4.6)	41 (64.1)
TOTAL	98	200	194	197	64

H) 5-WAY RIVER ANALYSIS: ASIA75B, YUK75B, KUSK75B, BRIS75B, SEBC75B
VARIABLES USED: 6, 7,34,17,35,12,31,58,48,44,27,26,39,32
OVERALL ACCURACY: 67.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA75B	YUK75B	KUSK75B	BRIS75B	SEBC75B
ASIA75B	71 (72.4)	2 (1.0)	4 (2.1)	3 (1.5)	4 (2.0)
YUK75B	6 (6.1)	146 (73.0)	24 (12.4)	28 (14.2)	16 (8.0)
KUSK75B	17 (17.3)	25 (12.5)	102 (52.6)	54 (27.4)	4 (2.0)
BRIS75B	1 (1.0)	18 (9.0)	57 (29.4)	106 (53.8)	7 (3.5)
SEBC75B	3 (3.1)	9 (4.5)	7 (3.6)	6 (3.0)	169 (84.5)
TOTAL	98	200	194	197	200

Appendix Table D6. Continued.

I) 4-WAY RIVER ANALYSIS: ASIA75B, YUK75B, KUSK75B, CENT75B
VARIABLES USED: 6,17, 7,34, 5,35,44,30,32,31,40,50
OVERALL ACCURACY: 75.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA75B	YUK75B	KUSK75B	CENT75B
ASIA75B	73 (74.5)	2 (1.0)	5 (2.6)	10 (15.6)
YUK75B	4 (4.1)	154 (77.0)	23 (11.9)	6 (9.4)
KUSK75B	5 (5.1)	30 (15.0)	155 (79.9)	3 (4.7)
CENT75B	16 (16.3)	14 (7.0)	11 (5.7)	45 (70.3)
TOTAL	98	200	194	64

J) 4-WAY RIVER ANALYSIS: ASIA75B, YUK75B, KUSK75B, SEBC75B
VARIABLES USED: 5, 7,34,17,16,31,44,35,58,48,52,39,32,25,55
OVERALL ACCURACY: 81.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA75B	YUK75B	KUSK75B	SEBC75B
ASIA75B	75 (76.5)	2 (1.0)	4 (2.1)	3 (1.5)
YUK75B	5 (5.1)	160 (80.0)	23 (11.9)	18 (9.0)
KUSK75B	16 (16.3)	30 (15.0)	158 (81.4)	6 (3.0)
SEBC75B	2 (2.0)	8 (4.0)	9 (4.6)	173 (86.5)
TOTAL	98	200	194	200

K) 4-WAY RIVER ANALYSIS: YUK75B, KUSK75B, BRIS75B, CENT75B
VARIABLES USED: 36,17, 9,11,35,44,34,22,60,24,52
OVERALL ACCURACY: 66.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	YUK75B	KUSK75B	BRIS75B	CENT75B
YUK75B	157 (78.5)	22 (11.3)	25 (12.7)	7 (10.9)
KUSK75B	20 (10.0)	107 (55.2)	61 (31.0)	4 (6.3)
BRIS75B	11 (5.5)	56 (28.9)	103 (52.3)	3 (4.7)
CENT75B	12 (6.0)	9 (4.6)	8 (4.1)	50 (78.1)
TOTAL	200	194	197	64

L) 3-WAY RIVER ANALYSIS: ASIA75B, YUK75B, KUSK75B
VARIABLES USED: 6,17,26, 5,34,44,31,52,16
OVERALL ACCURACY: 82.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA75B	YUK75B	KUSK75B
ASIA75B	79 (80.6)	4 (2.0)	6 (3.1)
YUK75B	6 (6.1)	166 (83.0)	26 (13.4)
KUSK75B	13 (13.3)	30 (15.0)	162 (83.5)
TOTAL	98	200	194

Appendix Table D6. Continued.

M) 3-WAY RIVER ANALYSIS: YUK75B, KUSK75B, CENT75B
VARIABLES USED: 5,17,36, 7,44, 9,34,52,30,50
OVERALL ACCURACY: 81.2 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK75B	KUSK75B	CENT75B
YUK75B	159 (79.5)	21 (10.8)	7 (10.9)
KUSK75B	29 (14.5)	164 (34.5)	6 (9.4)
CENT75B	12 (6.0)	9 (4.6)	51 (79.7)
TOTAL	200	194	64

Appendix Table D7. Decision arrays for brood year 1976 chinook salmon caught as immature age 1.3's in 1981.

A) 4-WAY REGION ANALYSIS: ASIA76B, WEST76B, CENT76B, SEBC76B
VARIABLES USED: 6,21,34,35,12,60,25,52,44,11, 1,32,49,22
OVERALL ACCURACY: 73.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76B	WEST76B	CENT76B	SEBC76B
ASIA76B	163 (81.9)	3 (1.5)	12 (6.0)	12 (6.0)
WEST76B	7 (3.5)	155 (77.5)	28 (14.0)	5 (2.5)
CENT76B	17 (8.5)	28 (14.0)	127 (63.5)	42 (21.0)
SEBC76B	12 (6.0)	14 (7.0)	33 (16.5)	141 (70.5)
TOTAL	199	200	200	200

B) 3-WAY REGION ANALYSIS: ASIA76B, WEST76B, CENT76B
VARIABLES USED: 7,21,35,17,60,44,34,25,52,49,32
OVERALL ACCURACY: 81.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76B	WEST76B	CENT76B
ASIA76B	176 (88.4)	7 (3.5)	21 (10.5)
WEST76B	6 (3.0)	164 (82.0)	29 (14.5)
CENT76B	17 (8.5)	29 (14.5)	150 (75.0)
TOTAL	199	200	200

C) 3-WAY REGION ANALYSIS: WEST76B, CENT76B, SEBC76B
VARIABLES USED: 36,12,30,24,27,57,51,21,34, 6,44,58
OVERALL ACCURACY: 74.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	WEST76B	CENT76B	SEBC76B
WEST76B	156 (78.0)	30 (15.0)	6 (3.0)
CENT76B	35 (17.5)	131 (65.5)	37 (18.5)
SEBC76B	9 (4.5)	39 (19.5)	157 (78.5)
TOTAL	200	200	200

D) 6-WAY RIVER ANALYSIS: ASIA76B, YUK76B, KUSK76B, BRIS76B, CENT76B, SEBC76B
VARIABLES USED: 6, 7,34,17,25,52,44,26,11,27,54, 9,60,24,59,39
OVERALL ACCURACY: 59.6 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)					
	ASIA76B	YUK76B	KUSK76B	BRIS76B	CENT76B	SEBC76B
ASIA76B	150 (75.4)	4 (2.0)	3 (1.5)	1 (.5)	15 (7.5)	10 (5.0)
YUK76B	9 (4.5)	107 (53.5)	45 (22.5)	21 (10.5)	11 (5.5)	5 (2.5)
KUSK76B	14 (7.0)	43 (21.5)	88 (44.0)	27 (13.5)	15 (7.5)	2 (1.0)
BRIS76B	0 (.0)	24 (12.0)	37 (18.5)	123 (61.5)	15 (7.5)	7 (3.5)
CENT76B	17 (8.5)	19 (9.5)	24 (12.0)	18 (9.0)	113 (56.5)	43 (21.5)
SEBC76B	9 (4.5)	3 (1.5)	3 (1.5)	10 (5.0)	31 (15.5)	133 (66.5)
TOTAL	199	200	200	200	200	200

Appendix Table D7. Continued.

E) 5-WAY RIVER ANALYSIS: ASIA76B, YUK76B, KUSK76B, BRIS76B, CENT76B
VARIABLES USED: 6,21,35,34,60,25,52,12,24,59,44,17,39,31
OVERALL ACCURACY: 62.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA76B	YUK76B	KUSK76B	BRIS76B	CENT76B
ASIA76B	164 (82.4)	8 (4.0)	5 (2.5)	3 (1.5)	16 (8.0)
YUK76B	6 (3.0)	106 (53.0)	47 (23.5)	23 (11.5)	10 (5.0)
KUSK76B	11 (5.5)	37 (18.5)	91 (45.5)	36 (18.0)	16 (8.0)
BRIS76B	0 (.0)	33 (16.5)	37 (18.5)	116 (58.0)	15 (7.5)
CENT76B	18 (9.0)	16 (8.0)	20 (10.0)	22 (11.0)	143 (71.5)
TOTAL	199	200	200	200	200

F) 5-WAY RIVER ANALYSIS: YUK76B, KUSK76B, BRIS76B, CENT76B, SEBC76B
VARIABLES USED: 36,12,35,21,34,24,54,59,32, 9,39,30
OVERALL ACCURACY: 59.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	YUK76B	KUSK76B	BRIS76B	CENT76B	SEBC76B
YUK76B	107 (53.5)	43 (21.5)	24 (12.0)	12 (6.0)	4 (2.0)
KUSK76B	46 (23.0)	98 (49.0)	28 (14.0)	15 (7.5)	3 (1.5)
BRIS76B	29 (14.5)	37 (18.5)	122 (61.0)	16 (8.0)	7 (3.5)
CENT76B	14 (7.0)	18 (9.0)	18 (9.0)	119 (59.5)	35 (17.5)
SEBC76B	4 (2.0)	4 (2.0)	8 (4.0)	38 (19.0)	151 (75.5)
TOTAL	200	200	200	200	200

G) 5-WAY RIVER ANALYSIS: ASIA76B, YUK76B, BRIS76B, CENT76B, SEBC76B
VARIABLES USED: 6, 7,34,17,35,12,60,54,27,44, 9,59,39,26,25
OVERALL ACCURACY: 68.3 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)				
	ASIA76B	YUK76B	BRIS76B	CENT76B	SEBC76B
ASIA76B	155 (77.9)	6 (3.0)	1 (.5)	19 (9.5)	12 (6.0)
YUK76B	15 (7.5)	134 (67.0)	29 (14.5)	14 (7.0)	7 (3.5)
BRIS76B	2 (1.0)	37 (18.5)	138 (69.0)	21 (10.5)	5 (2.5)
CENT76B	17 (8.5)	19 (9.5)	21 (10.5)	118 (59.0)	39 (19.5)
SEBC76B	10 (5.0)	4 (2.0)	11 (5.5)	28 (14.0)	137 (68.5)
TOTAL	199	200	200	200	200

H) 4-WAY RIVER ANALYSIS: ASIA76B, YUK76B, BRIS76B, CENT76B
VARIABLES USED: 6,21,35,50,34,16,11,54,17,44,59,31,25
OVERALL ACCURACY: 72.7 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76B	YUK76B	BRIS76B	CENT76B
ASIA76B	171 (85.9)	11 (5.5)	3 (1.5)	18 (9.0)
YUK76B	10 (5.0)	131 (65.5)	34 (17.0)	18 (9.0)
BRIS76B	2 (1.0)	38 (19.0)	139 (69.5)	24 (12.0)
CENT76B	16 (8.0)	20 (10.0)	24 (12.0)	140 (70.0)
TOTAL	199	200	200	200

Appendix Table D7. Continued.

I) 4-WAY RIVER ANALYSIS: ASIA76B, YUK76B, BRIS76B, SEBC76B
VARIABLES USED: 6, 7,34,35,17,60,54
OVERALL ACCURACY: 79.4 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76B	YUK76B	BRIS76B	SEBC76B
ASIA76B	178 (89.4)	8 (4.0)	2 (1.0)	22 (11.0)
YUK76B	10 (5.0)	150 (75.0)	41 (20.5)	9 (4.5)
BRIS76B	3 (1.5)	33 (16.5)	142 (71.0)	5 (2.5)
SEBC76B	8 (4.0)	9 (4.5)	15 (7.5)	164 (82.0)
TOTAL	199	200	200	200

J) 4-WAY RIVER ANALYSIS: ASIA76B, YUK76B, CENT76B, SEBC76B
VARIABLES USED: 6,21,34,12,35,60,25,52,59,32,39,11
OVERALL ACCURACY: 73.0 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)			
	ASIA76B	YUK76B	CENT76B	SEBC76B
ASIA76B	164 (82.4)	6 (3.0)	18 (9.0)	13 (6.5)
YUK76B	11 (5.5)	160 (80.0)	29 (14.5)	7 (3.5)
CENT76B	15 (7.5)	28 (14.0)	120 (60.0)	41 (20.5)
SEBC76B	9 (4.5)	6 (3.0)	33 (16.5)	139 (69.5)
TOTAL	199	200	200	200

K) 3-WAY RIVER ANALYSIS: YUK76B, CENT76B, SEBC76B
VARIABLES USED: 36,12,21,34,60,54
OVERALL ACCURACY: 75.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	YUK76B	CENT76B	SEBC76B
YUK76B	173 (86.5)	28 (14.0)	6 (3.0)
CENT76B	24 (12.0)	132 (66.0)	46 (23.0)
SEBC76B	3 (1.5)	40 (20.0)	148 (74.0)
TOTAL	200	200	200

L) 3-WAY RIVER ANALYSIS: ASIA76B, YUK76B, CENT76B
VARIABLES USED: 6,21,35,60,34,16,11,39,17,25,31
OVERALL ACCURACY: 81.1 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76B	YUK76B	CENT76B
ASIA76B	172 (86.4)	12 (6.0)	21 (10.5)
YUK76B	10 (5.0)	166 (83.0)	31 (15.5)
CENT76B	17 (8.5)	22 (11.0)	148 (74.0)
TOTAL	199	200	200

Appendix Table D7. Continued.

M) 3-WAY RIVER ANALYSIS: ASIA76B, YUK76B, SEBC76B
VARIABLES USED: 6, 7,34,17,35,60,39,11
OVERALL ACCURACY: 87.8 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)		
	ASIA76B	YUK76B	SEBC76B
ASIA76B	180 (90.5)	10 (5.0)	22 (11.0)
YUK76B	9 (4.5)	178 (89.0)	10 (5.0)
SEBC76B	10 (5.0)	12 (6.0)	168 (84.0)
TOTAL	199	200	200

N) 2-WAY RIVER ANALYSIS: YUK76B, CENT76B
VARIABLES USED: 21,34,12,36,54,60
OVERALL ACCURACY: 86.5 PERCENT

CALCULATED DECISION	CORRECT DECISION (PERCENT)	
	YUK76B	CENT76B
YUK76B	174 (87.0)	28 (14.0)
CENT76B	26 (13.0)	172 (86.0)
TOTAL	200	200

Appendix Table E1. Estimates of the regional stock composition of brood year 1971 chinook salmon caught as immature age 1.2's in 1975.

MONTH	10-DAY PERIOD	AREA	N	ASIA71A	WEST71A	CENT71A	SEBC71A
JUNE	1-10	E7046	71	40.9 (27.2)	2.0 (19.2)	53.6 (34.9)	3.5 (17.7)
JUNE	1-10	E7552	32	64.0 (20.7)	36.0 (20.7)	0	0
JUNE	1-10	8046	26	0	15.8 (24.5)	63.7 (39.5)	20.5 (29.3)
JUNE	11-20	E7054	44	13.2 (27.9)	70.7 (30.9)	12.8 (31.0)	3.2 (13.1)
JUNE	11-20	E7056	35	72.7 (19.2)	27.3 (19.2)	0	0
JUNE	11-20	E7556	41	49.9 (26.5)	48.9 (26.2)	0	1.2 (5.3)
JULY	1-10	E7058	67	16.3 (19.2)	81.5 (19.5)	0	2.2 (5.4)
JULY	1-10	E7558	83	7.0 (20.3)	87.6 (22.8)	2.9 (20.7)	2.5 (7.3)
JULY	1-10	E7560	28	76.8 (20.8)	23.2 (20.8)	0	0
JULY	11-20	E6046	46	0	12.2 (16.6)	87.8 (16.6)	0
JULY	11-20	E6552	26	16.6 (22.0)	0	83.4 (22.0)	0
JULY	21-31	E7048	27	0	0	100.0 (18.2)	0
JULY	21-31	8046	42	81.8 (17.8)	0	18.2 (17.8)	0
JULY	21-31	8048	50	61.2 (32.8)	16.9 (26.4)	19.1 (32.5)	2.7 (14.4)
JUNE	ALL	E7046	76	39.2 (26.1)	4.3 (19.1)	51.2 (33.5)	4.3 (17.3)
JUNE	ALL	E7054	44	13.2 (27.9)	70.7 (30.9)	12.8 (31.0)	3.2 (13.1)
JUNE	ALL	E7056	44	72.1 (17.3)	27.9 (17.3)	0	0
JUNE	ALL	E7546	28	7.5 (34.3)	7.4 (30.6)	82.5 (56.8)	2.7 (30.9)
JUNE	ALL	E7552	32	64.0 (20.7)	36.0 (20.7)	0	0
JUNE	ALL	E7556	42	48.1 (26.2)	50.7 (25.90	1.1 (6.1)	0
JUNE	ALL	8046	34	0	24.7 (22.8)	52.2 (34.3)	23.0 (25.5)
JULY	ALL	E6046	49	10.1 (16.0)	0	89.9 (16.0)	0
JULY	ALL	E6048	25	0	15.1 (25.9)	76.0 (39.5)	9.0 (26.7)
JULY	ALL	E6050	46	19.2 (29.6)	3.9 (22.8)	67.3 (44.6)	9.6 (25.6)
JULY	ALL	E6548	57	0	24.6 (19.2)	70.5 (27.1)	4.9 (16.3)
JULY	ALL	E6552	38	0	15.7 (18.4)	84.3 (18.4)	0
JULY	ALL	E7048	27	0	0	100.0 (15.7)	0
JULY	ALL	E7058	72	18.7 (23.7)	79.6 (24.8)	0.4 (20.3)	1.3 (6.4)
JULY	ALL	E7558	90	8.9 (19.9)	86.2 (22.1)	0.8 (19.5)	4.1 (7.3)
JULY	ALL	E7560	32	64.0 (20.7)	36.0 (20.7)	0	0
JULY	ALL	8046	42	81.8 (17.8)	0	18.2 (17.8)	0
JULY	ALL	8048	50	61.2 (32.8)	16.9 (26.4)	19.1 (32.5)	2.7 (14.4)
JULY	ALL	8056	28	13.7.(31.7)	86.3 (34.3)	0.1 (20.7)	0
JUNE	1-10	5	76	38.8 (26.3)	4.4 (19.2)	54.4 (34.0)	2.4 (16.9)
JUNE	1-10	7	26	0	39.1 (23.9)	60.9 (23.9)	0
JUNE	1-10	8	32	64.0 (20.7)	36.0 (20.7)	0	0
JUNE	1-10	9	26	0	15.8 (24.5)	63.7 (39.5)	20.5 (29.3)
JUNE	11-20	6	79	29.7 (18.0)	67.4 (18.9)	0	3.0 (5.6)
JUNE	11-20	8	59	42.9 (22.2)	54.8 (22.0)	0	2.4 (6.1)
JUNE	21-30	10	25	37.4 (23.9)	62.6 (23.9)	0	0
JULY	1-10	1	43	17.1 (30.2)	15.1 (27.0)	65.6 (44.9)	2.2 (22.9)
JULY	1-10	3	25	0	41.9 (29.2)	50.3 (38.0)	7.8 (22.7)
JULY	1-10	6	78	15.5 (22.4)	81.8 (23.9)	1.7 (20.6)	1.0 (5.1)
JULY	1-10	8	111	13.9 (15.4)	83.2 (15.7)	0	2.9 (4.7)
JULY	11-20	3	68	0	7.5 (16.3)	89.5 (25.8)	3.0 (17.2)
JULY	11-20	10	32	10.1 (19.0)	89.9 (19.0)	0	0
JULY	11-20	11	46	0	12.2 (16.6)	87.8 (16.6)	0
JULY	21-31	1	25	0	0	95.6 (22.3)	4.4 (22.3)
JULY	21-31	3	33	19.7 (34.2)	12.9 (29.3)	59.3 (49.8)	8.1 (27.6)
JULY	21-31	5	27	0	0	100.0 (18.2)	0
JULY	21-31	7	33	14.5 (29.3)	12.4 (26.5)	73.2 (30.8)	0
JULY	21-31	9	94	77.5 (25.9)	5.0 (19.1)	17.1 (25.0)	0.4 (9.3)

Appendix **Table E1.** Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA71A	WEST71A	CENT71A	SEBC71A
JUNE	ALL	3	36	46.1 (36.6)	21.7 (30.6)	23.0 (39.3)	9.2 ([illegible].4)
JUNE	ALL	5	89	36.2 (23.9)	8.3 (18.3)	49.7 (31.1)	5.9 (15.3
JUNE	ALL	6	38	34.5 (18.2)	53.0 (18.2)	0	2.5 ([illegible])
JUNE	ALL	7	43	0.9 (25.2)	40.9 (30.7)	57.1 (43.0)	[illegible].2 (20.6.
JUNE	ALL	8	92	51.8 (18.4)	47.4 (18.1)	0	0.3 (4.2)
JUNE	ALL	9	42	0	32.3 (21.7)	50.4 (30.5)	17.3 (21.3)
JUNE	ALL	10	33	52.5 (21.0)	47.5 (21.0)	0	0
JUNE	ALL	11	31	4.4 (32.3)	0.0 (26.6)	92.3 (55.6)	3.3 (31.6)
JULY	ALL	1	88	13.2 (21.5)	7.3 (18.1)	69.1 (34.6)	10.4 (20.1)
JULY	ALL	3	126	0	18.1 (13.8)	78.9 (20.5)	3.0 (13.0)
JULY	ALL	4	30	0	74.7 (21.3)	25.3 (21.3)	0
JULY	ALL	5	29	0	0	100.0 (15.0)	0
JULY	ALL	6	92	17.2 (21.1)	79.4 (22.4)	2.9 (19.6)	0.4 (5.5)
JULY	ALL	7	46	15.5 (25.6)	6.2 (21.6)	78.3 (25.6)	0
JULY	ALL	8	127	14.0 (14.6)	81.7 (14.9)	0	4.2 (5.0)
JULY	ALL	9	94	77.5 (25.9)	5.0 (19.1)	17.1 (25.0)	0.4 (9.3)
JULY	ALL	10	43	4.2 (24.0)	94.1 (27.3)	1.7 (17.8)	0
JULY	ALL	11	49	10.1 (16.0)	0	89.9 (16.0)	0
JUNE	1-10	MS-PAC	133	18.3 (18.9)	16.5 (15.3)	61.1 (28.3)	3.6 (14.3)
JUNE	1-10	MS-BS	44	72.1 (17.3)	27.9 (17.3)	0	0
JUNE	11-20	MS-PAC	46	25.0 (28.9)	25.6 (26.6)	29.6 (37.4)	19.8 (24.0)
JUNE	11-20	MS-BS	139	36.0 (15.1)	61.4 (15.0)	0	2.7 (4.2)
JUNE	21-30	MS-PAC	39	41.3 (34.4)	27.2 (30.1)	19.1 (36.7)	12.4 (21.5)
JUNE	21-30	MS-BS	30	36.4 (21.9)	63.6 (21.9)	0	0
JULY	1-10	MS-PAC	77	0	24.7 (14.2)	75.3 (14.2)	0
JULY	1-10	MS-BS	201	18.3 (15.8)	79.5 (16.8)	0.3 (14.4)	1.4 (4.2)
JULY	11-20	LBDN	70	8.6 (13.9)	0	91.4 (13.9)	0
JULY	11-20	MS-PAC	94	5.7 (21.4)	4.2 (18.7)	89.4 (36.6)	0.7 (20.0)
JULY	11-20	MS-BS	86	9.6 (20.3)	76.0 (23.0)	14.4 (23.2)	0.0 (7.7)
JULY	21-31	MS-PAC	212	38.3 (17.4)	6.0 (13.2)	51.1 (22.9)	4.1 (11.3)
JUNE	ALL	LBDN	54	8.9 (26.0)	8.6 (23.2)	78.3 (42.9)	4.2 (23.6)
JUNE	ALL	MS-PAC	218	24.1 (15.4)	20.3 (13.7)	47.0 ([illegible])	8.6 ([illegible])
JUNE	ALL	MS-BS	213	45.7 (13.0)	53.2 (12.8)	0	[illegible] (3.0)
JULY	ALL	LBDN	73	7.3 (13.6)	0	92.7 (13.6	0
JULY	ALL	MS-PAC	383	24.9 (14.3)	7.8 (11.7)	65.1 (21.6	2.3 ([illegible].6)
JULY	ALL	MS-BS	292	15.0 (13.6)	78.9 (14.9)	5.2 (13.6	0.9 (3.9)

Appendix Table E2. Estimates of the regional stock composition of brood year 1972 chinook salmon caught as immature age 1.2's in 1976.

MONTH	10-DAY PERIOD	AREA	N	ASIA72A	WEST72A	CENT72A	SEBC72A
JUNE	1-10	E7046	28	1.5 (31.3)	22.3 (31.6)	62.2 (53.8)	13.9 (32.5)
JUNE	1-10	E7546	33	40.9 (22.5)	0	59.1 (22.5)	0
JUNE	11-20	E7054	25	39.2 (35.2)	51.3 (33.5)	9.5 (25.6)	0
JUNE	11-20	E7056	46	23.0 (24.1)	68.1 (24.7)	8.9 (18.8)	0
JUNE	11-20	E7546	32	0	0	100.0 (50.4)	0
JUNE	11-20	E7554	29	18.5 (29.5)	58.5 (30.6)	23.0 (27.5)	0
JUNE	21-30	E7550	30	0	28.3 (18.6)	71.7 (18.6)	0
JUNE	21-30	8054	42	29.5 (30.4)	59.4 (31.9)	6.9 (28.3)	4.1 (15.5)
JUNE	21-30	8056	25	0	92.0 (12.5)	0	8.0 (12.5)
JULY	1-10	E6046	29	0	12.0 (16.5)	88.0 (16.5)	0
JULY	1-10	E6050	25	0	0	100.0 (20.0)	0
JULY	1-10	E6052	77	0	12.1 (10.7)	87.9 (10.7)	0
JULY	1-10	E6552	66	0	14.7 (11.7)	85.3 (11.7)	0
JULY	11-20	E6046	26	4.9 (30.5)	13.2 (25.0)	82.0 (34.0)	0
JULY	11-20	E6048	90	0	15.4 (10.4)	84.6 (10.4)	0
JULY	11-20	E6050	29	0	0	100.0 (17.8)	0
JULY	11-20	E6052	42	0	0	100.0 (43.0)	0
JULY	11-20	E7558	26	42.8 (35.2)	42.8 (32.4)	14.5 (26.9)	0
JULY	11-20	8050	25	14.1 (32.9)	19.2 (27.6)	66.7 (35.1)	0
JULY	11-20	8056	43	0	72.2 (15.6)	27.8 (15.6)	0
JULY	21-31	E6048	26	0	10.1 (17.0)	89.9 (17.0)	0
JULY	21-31	E7058	28	58.5 (41.2)	36.2 (38.6)	4.8 (32.7)	0.6 (14.1)
JULY	21-31	8048	40	12.0 (25.7)	24.4 (22.9)	63.7 (28.1)	0
JUNE	ALL	E6044	31	0	22.8 (17.7)	77.2 (17.7)	0
JUNE	ALL	E7046	34	0	39.9 (24.0)	44.3 (30.2)	15.9 (22.3)
JUNE	ALL	E7054	28	39.0 (33.2)	54.1 (31.8)	6.9 (23.2)	0
JUNE	ALL	E7056	46	23.0 (24.1)	68.1 (24.7)	8.9 (18.8)	0
JUNE	ALL	E7546	65	13.5 (15.4)	0	86.5 (15.4)	0
JUNE	ALL	E7550	46	0	41.4 (15.9)	58.6 (15.9)	0
JUNE	ALL	E7554	36	29.3 (28.5)	51.0 (27.7)	19.6 (24.2)	0
JUNE	ALL	E7556	27	22.2 (37.4)	48.0 (38.3)	29.1 (44.5)	0.7 (20.6)
JUNE	ALL	8046	25	17.0 (39.6)	6.9 (29.0)	63.8 (56.9)	12.2 (33.6)
JUNE	ALL	8054	65	23.4 (20.6)	69.9 (21.1)	6.7 (15.5)	0
JUNE	ALL	8056	25	0	92.0 (12.5)	0	8.0 (12.5)
JULY	ALL	E6046	60	0	17.6 (12.6)	82.4 (12.6)	0
JULY	ALL	E6048	123	0	12.6 (3.9)	87.4 (3.9)	0
JULY	ALL	E6050	54	0	0	100.0 (14.3)	0
JULY	ALL	E6052	119	0	0	100.0 (31.0)	0
JULY	ALL	E6546	34	33.0 (31.9)	4.1 (20.3)	62.9 (30.6)	0
JULY	ALL	E6552	75	0	12.9 (10.9)	87.1 (10.9)	0
JULY	ALL	E7048	31	0	15.9 (21.5)	59.7 (33.2)	24.4 (27.0)
JULY	ALL	E7058	47	39.0 (26.2)	46.5 (24.5)	14.5 (20.2)	0
JULY	ALL	E7546	28	0	26.8 (19.1)	73.2 (19.1)	0
JULY	ALL	E7548	34	0	30.8 (17.8)	69.2 (17.8)	0
JULY	ALL	E7558	32	30.5 (30.4)	50.4 (29.3)	19.0 (25.4)	0
JULY	ALL	8048	63	11.4 (20.9)	23.7 (18.4)	64.9 (22.8)	0
JULY	ALL	8050	26	19.2 (33.5)	17.4 (26.8)	63.4 (34.5)	0
JULY	ALL	8056	51	14.1 (21.8)	60.6 (23.3)	25.3 (21.4)	0
JULY	ALL	8058	29	11.2 (30.7)	81.1 (36.1)	4.0 (32.1)	3.7 (18.3)

Appendix Table E2. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA72A	WEST72A	CENT72A	SEBC72A
JUNE	1-10	5	28	1.5 (31.3)	22.3 (31.6)	62.2 (53.8)	13.9 (32.5)
JUNE	1-10	7	39	34.0 (20.7)	0	66.0 (20.7)	0
JUNE	1-10	11	30	0	28.3 (18.6)	71.7 (18.6)	0
JUNE	11-20	6	71	28.7 (20.5)	62.1 (20.4)	9.1 (15.5)	0
JUNE	11-20	7	59	0	22.5 (13.1)	77.5 (13.1)	0
JUNE	11-20	8	56	27.2 (27.0)	47.8 (27.2)	23.5 (30.0)	1.4 (14.2)
JUNE	21-30	7	30	0	28.3 (18.6)	71.7 (18.6)	0
JUNE	21-30	8	45	31.6 (25.6)	62.8 (25.3)	5.6 (18.0)	0
JUNE	21-30	10	73	16.4 (21.3)	70.7 (24.2)	7.3 (22.5)	5.1 (12.8)
JULY	1-10	1	109	0	0	100.0 (32.1)	0
JULY	1-10	3	69	0	15.2 (11.6)	84.8 (11.6)	0
JULY	1-10	8	41	44.0 (28.3)	44.9 (26.2)	11.0 (20.7)	0
JULY	1-10	11	29	0	12.0 (16.5)	88.0 (16.5)	0
JULY	11-20	1	161	0	5.4 (7.6)	94.6 (7.6)	0
JULY	11-20	3	42	0.2 (17.0)	0	99.8 (17.0)	0
JULY	11-20	7	34	0	27.0 (17.4)	73.0 (17.4)	0
JULY	11-20	8	33	28.2 (29.8)	44.3 (28.4)	27.6 (27.0)	0
JULY	11-20	9	54	14.3 (23.1)	19.2 (19.2)	66.5 (24.6)	0
JULY	11-20	10	68	18.7 (19.5)	70.8 (20.5)	10.5 (16.1)	0
JULY	11-20	11	26	4.9 (30.5)	13.2 (25.0)	82.0 (34.0)	0
JULY	21-31	1	26	0	10.1 (17.0)	89.9 (17.0)	0
JULY	21-31	6	28	58.5 (41.2)	36.2 (38.6)	4.8 (32.7)	0.6 (14.1)
JULY	21-31	7	29	0	34.2 (19.4)	65.8 (19.4)	0
JULY	21-31	9	42	14.1 (25.7)	22.3 (22.1)	63.6 (27.5)	0
JUNE	ALL	5	35	1.1 (28.1)	31.5 (30.5)	58.5 (47.4)	8.6 (26.9)
JUNE	ALL	6	74	29.1 (20.1)	62.8 (20.1)	8.1 (15.0)	0
JUNE	ALL	7	128	3.9 (15.8)	12.6 (12.3)	83.5 (17.4)	0
JUNE	ALL	8	104	23.7 (16.8)	59.7 (17.0)	15.6 (14.3)	0
JUNE	ALL	9	46	18.3 (30.9)	8.2 (22.7)	67.9 (43.0)	5.1 (23.2)
JUNE	ALL	10	96	10.9 (18.2)	76.4 (21.4)	11.0 (20.3)	1.7 (10.5)
JUNE	ALL	11	50	0	31.7 (14.3)	68.3 (14.3)	0
JULY	ALL	1	296	0	6.7 (6.5)	93.3 (6.5)	0
JULY	ALL	3	133	0	22.2 (9.2)	77.8 (9.2)	0
JULY	ALL	5	41	0	15.1 (13.7)	60.3 (29.1)	24.6 (23.7)
JULY	ALL	6	47	39.0 (26.2)	46.5 (24.5)	14.5 (20.2)	0
JULY	ALL	7	63	0	30.4 (13.3)	69.6 (13.3)	0
JULY	ALL	8	74	36.9 (21.1)	44.6 (19.6)	18.4 (17.1)	0
JULY	ALL	9	96	14.2 (17.9)	20.6 (14.9)	65.2 (19.1)	0
JULY	ALL	10	90	18.1 (17.2)	68.8 (18.1)	13.1 (14.7)	0
JULY	ALL	11	60	0	17.6 (12.6)	82.4 (12.6)	0
JUNE	1-10	LBDN	56	0	19.9 (13.2)	80.1 (13.2)	0
JUNE	1-10	MS-PAC	73	9.7 (20.1)	12.7 (15.6)	77.7 (21.6)	0
JUNE	11-20	MS-PAC	98	0.5 (15.4)	21.1 (14.3)	79.4 (19.2)	0
JUNE	11-20	MS-BS	173	20.4 (13.3)	64.5 (13.8)	15.0 (11.3)	0
JUNE	21-30	MS-PAC	47	5.7 (23.0)	22.1 (20.3)	72.2 (26.1)	0
JUNE	21-30	MS-BS	118	16.5 (17.6)	71.0 (19.3)	11.1 (18.9)	1.4 (9.3)
JULY	1-10	LBDN	29	0	12.0 (16.5)	88.0 (16.5)	0
JULY	1-10	MS-PAC	178	0	10.7 (7.7)	89.3 (7.7)	0
JULY	1-10	MS-BS	59	31.8 (22.9)	46.3 (21.7)	21.9 (19.5)	0
JULY	11-20	LBDN	32	3.9 (27.6)	12.6 (22.5)	83.5 (30.8)	0
JULY	11-20	MS-PAC	311	0	14.8 (6.6)	85.2 (6.6)	0
JULY	11-20	MS-BS	113	24.6 (16.3)	59.9 (16.5)	15.5 (13.6)	0
JULY	21-31	MS-PAC	140	0	28.0 (9.1)	72.0 (9.1)	0
JULY	21-31	MS-BS	44	41.9 (31.8)	50.8 (31.5)	6.2 (27.0)	1.1 (12.6)

Appendix Table E2. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA72A	WEST72A	CENT72A	SEBC72A
MAY	ALL	LBDN	35	0	30.9 (22.9)	51.5 (30.5)	17.7 (23.1)
JUNE	ALL	LBDN	94	0	25.1 (10.8)	74.9 (10.8)	0
JUNE	ALL	MS-PAC	218	4.7 (13.0)	18.5 (10.5)	76.8 (14.4)	0
JUNE	ALL	MS-BS	297	21.3 (10.9)	65.7 (11.4)	13.1 (9.1)	0
JULY	ALL	LBDN	66	0	20.5 (12.3)	79.5 (12.3)	0
JULY	ALL	MS-PAC	629	0	16.9 (5.5)	83.1 (5.5)	0
JULY	ALL	MS-BS	216	29.7 (12.8)	55.0 (12.6)	15.3 (10.4)	0

Appendix Table E3. Estimates of the regional stock composition of brood year 1973 chinook salmon caught as immature age 1.2's in 1977.

MONTH	10-DAY PERIOD	AREA	N	ASIA73A	WEST73A	CENT73A	SEBC73A
JUNE	21-30	E7548	25	0	32.8 (20.1)	67.2 (20.1)	0
JUNE	21-30	E7550	28	0	32.0 (25.0)	65.8 (31.2)	2.2 (18.3)
JUNE	21-30	8050	35	30.3 (37.5)	13.2 (26.0)	56.5 (30.3)	0
JUNE	21-30	8056	73	0	97.2 (9.0)	2.8 (9.0)	0
JULY	1-10	E7048	63	19.5 (33.6)	12.2 (21.7)	67.7 (33.7)	0.6 (13.7)
JULY	1-10	E7050	79	30.1 (26.6)	9.6 (17.5)	60.3 (21.7)	0
JULY	1-10	8058	28	0	88.2 (12.2)	0	11.8 (12.2)
JULY	11-20	E7550	32	17.4 (36.4)	23.6 (27.3)	58.9 (32.0)	0
JULY	11-20	8050	53	6.2 (28.7)	16.0 (19.3)	77.8 (26.1)	0
JULY	11-20	8054	34	2.8 (31.5)	81.4 (32.7)	7.5 (26.5)	8.3 (16.1)
JULY	11-20	8056	67	2.6 (24.1)	92.4 (23.9)	3.6 (17.3)	1.5 (7.4)
JULY	11-20	8058	63	21.6 (20.3)	74.4 (21.2)	0	4.0 (7.5)
JULY	21-31	E7048	46	0	39.4 (15.3)	60.6 (15.3)	0
JULY	21-31	E7548	74	51.5 (28.2)	13.9 (20.8)	34.6 (20.5)	0
JULY	21-31	8056	27	18.6 (29.4)	80.4 (30.5)	0	1.0 (3.9)
JUNE	ALL	E7548	50	0	30.3 (14.3)	69.7 (14.3)	0
JUNE	ALL	E7550	52	0	50.2 (14.6)	49.8 (14.6)	0
JUNE	ALL	E7552	28	0	96.0 (9.1)	0	4.0 (9.1)
JUNE	ALL	8050	35	30.3 (37.5)	13.2 (26.0)	56.5 (30.3)	0
JUNE	ALL	8056	31	0	94.1 (9.1)	5.9 (9.1)	0
JULY	ALL	E6046	30	0	4.5 (13.7)	95.5 (13.7)	0
JULY	ALL	E7048	115	10.3 (24.3)	25.6 (17.3)	63.2 (25.7)	0.9 (10.7)
JULY	ALL	E7050	103	31.0 (24.0)	9.6 (15.7)	59.4 (19.5)	0
JULY	ALL	E7548	94	46.1 (25.3)	13.1 (18.2)	40.8 (19.2)	0
JULY	ALL	E7550	32	17.4 (36.4)	23.6 (27.3)	58.9 (32.0)	0
JULY	ALL	8050	53	6.2 (28.7)	16.0 (19.3)	77.8 (26.1)	0
JULY	ALL	8054	41	3.8 (29.3)	78.8 (30.3)	7.9 (24.7)	9.4 (15.4)
JULY	ALL	8056	100	5.1 (21.1)	89.0 (20.7)	3.1 (15.2)	2.8 (7.0)
JULY	ALL	8058	111	10.3 (14.6)	86.9 (15.6)	0	2.8 (5.7)
JUNE	11-20	7	55	0.0 (25.1)	36.8 (21.9)	63.2 (25.1)	0
JUNE	21-30	7	55	0	33.2 (13.8)	66.8 (13.8)	0
JUNE	21-30	8	31	12.1 (37.0)	79.0 (35.7)	3.0 (25.3)	5.9 (14.6)
JUNE	21-30	9	45	24.5 (32.9)	13.7 (22.6)	61.8 (27.7)	0
JUNE	21-30	10	80	0	98.6 (3.4)	1.4 (3.4)	0
JULY	1-10	5	143	24.9 (21.0)	9.9 (13.5)	65.2 (17.4)	0
JULY	1-10	10	34	2.9 (31.7)	89.1 (32.1)	2.8 (23.7)	5.1 (13.4)
JULY	11-20	5	30	28.6 (47.1)	10.0 (30.6)	52.3 (45.2)	9.1 (22.0)
JULY	11-20	7	43	12.9 (31.5)	21.2 (23.4)	65.9 (28.3)	0
JULY	11-20	9	53	6.2 (28.7)	16.0 (19.3)	77.8 (26.1)	0
JULY	11-20	10	166	15.0 (18.3)	77.9 (17.3)	1.5 (12.5)	5.6 (6.5)
JULY	21-31	5	54	0	31.8 (13.9)	68.2 (13.9)	0
JULY	21-31	7	84	48.0 (32.6)	14.4 (22.8)	37.3 (27.2)	0.3 (9.1)
JULY	21-31	10	54	9.6 (19.4)	87.5 (20.8)	0	2.9 (7.3)
JUNE	ALL	5	26	19.2 (48.5)	21.0 (35.2)	58.5 (48.3)	1.3 (19.2)
JUNE	ALL	7	114	0	37.1 (10.1)	62.9 (10.1)	0
JUNE	ALL	8	41	6.1 (21.0)	91.8 (22.6)	0	2.1 (8.4)
JUNE	ALL	9	50	27.4 (31.5)	15.5 (22.2)	57.1 (26.2)	0
JUNE	ALL	10	99	5.4 (21.5)	93.9 (20.7)	0.1 (14.2)	0.7 (5.5)
JULY	ALL	3	36	9.1 (34.4)	13.5 (23.3)	77.4 (30.8)	0
JULY	ALL	5	227	21.4 (20.4)	19.1 (13.7)	59.0 (20.2)	0.5 (8.3)
JULY	ALL	7	136	36.9 (21.0)	18.7 (15.5)	44.4 (16.4)	0
JULY	ALL	8	40	45.9 (42.2)	39.7 (35.0)	7.4 (28.5)	7.0 (13.9)
JULY	ALL	9	66	23.7 (28.2)	10.4 (18.4)	66.0 (23.6)	0
JULY	ALL	10	254	12.4 (16.0)	81.1 (15.4)	0.5 (10.7)	6.0 (5.5)
JULY	ALL	11	30	0	4.5 (13.7)	95.5 (13.7)	0

Appendix Table E3. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA73A	WEST73A	CENT73A	SEBC73A
JUNE	11-20	MS-PAC	67	3.8 (23.5)	37.7 (20.3)	58.6 (22.8)	0
JUNE	11-20	MS-BS	29	4.5 (24.1)	94.9 (25.6)	0	0.5 (8.5)
JUNE	21-30	MS-PAC	113	0	30.9 (10.0)	69.1 (10.1)	0
JUNE	21-30	MS-BS	111	2.2 (19.9)	94.3 (19.7)	2.2 (14.2)	1.3 (5.8)
JULY	1-10	MS-PAC	168	24.6 (19.8)	10.9 (12.8)	64.5 (16.4)	0
JULY	1-10	MS-BS	43	8.8 (21.3)	89.3 (22.7)	0	1.9 (8.1)
JULY	11-20	MS-PAC	141	11.2 (20.0)	18.5 (13.6)	70.3 (17.7)	0
JULY	11-20	MS-BS	190	17.8 (18.2)	73.4 (17.1)	3.8 (12.4)	5.0 (6.0)
JULY	21-31	MS-PAC	161	33.3 (23.6)	20.5 (16.7)	46.0 (21.3)	0.2 (7.8)
JULY	21-31	MS-BS	69	18.3 (27.2)	74.2 (25.6)	0.3 (17.4)	7.2 (10.4)
JUNE	ALL	MS-PAC	191	0	35.6 (8.1)	64.4 (8.1)	0
JUNE	ALL	MS-BS	140	1.9 (12.5)	96.7 (13.5)	0	1.4 (4.9)
JULY	ALL	LBDN	32	0	3.5 (13.0)	96.5 (13.0)	0
JULY	ALL	MS-PAC	470	23.1 (14.4)	16.0 (9.4)	60.9 (11.9)	0
JULY	ALL	MS-BS	302	16.5 (15.5)	75.4 (14.6)	2.2 (10.5)	5.8 (5.1)

Appendix Table E4. Estimates of the regional stock composition of brood year 1974 chinook salmon caught as immature age 1.2's in 1978.

MONTH	10-DAY PERIOD	AREA	N	ASIA74A	WEST74A	CENT74A	SEBC74A
JUNE	1-10	E7046	34	34.5 (30.0)	22.4 (27.3)	16.3 (31.6)	26.7 (23.9)
JUNE	11-20	E7046	45	15.3 (20.6)	38.0 (24.8)	10.2 (26.3)	36.6 (22.6)
JUNE	11-20	E7050	34	12.2 (23.6)	82.7 (29.5)	2.3 (25.6)	2.8 (9.6)
JUNE	21-30	E7048	49	18.3 (23.4)	30.6 (24.6)	38.1 (31.5)	12.9 (17.4)
JUNE	21-30	E7050	47	13.0 (22.6)	27.4 (24.4)	44.0 (33.3)	15.6 (19.2)
JULY	1-10	E7048	38	24.6 (29.9)	19.6 (27.1)	55.8 (38.1)	.0 (14.4)
JULY	1-10	E7050	158	26.1 (14.4)	31.7 (14.5)	25.2 (17.2)	17.0 (10.3)
JULY	1-10	8056	29	6.2 (17.2)	87.7 (20.2)	0	6.1 (11.4)
JULY	11-20	E7046	138	29.0 (16.4)	22.5 (15.0)	35.8 (20.1)	12.6 (10.8)
JULY	11-20	E7048	120	22.7 (16.6)	25.5 (16.0)	37.9 (21.6)	13.9 (11.9)
JULY	11-20	E7050	80	11.7 (17.3)	29.4 (19.4)	44.1 (26.7)	14.7 (15.0)
JULY	11-20	8056	35	5.8 (21.4)	68.7 (30.3)	21.4 (32.4)	4.1 (13.4)
JULY	11-20	8058	28	0	94.9 (9.0)	0	5.1 (9.0)
JULY	21-31	E7048	26	19.0 (29.7)	34.9 (32.9)	20.4 (37.5)	25.6 (27.2)
JULY	21-31	E7548	32	30.8 (31.1)	31.9 (30.7)	25.1 (34.7)	12.2 (19.5)
JUNE	ALL	E7046	89	26.5 (17.6)	29.0 (17.7)	13.2 (19.7)	31.2 (15.6)
JUNE	ALL	E7048	69	16.9 (20.8)	23.2 (20.5)	49.7 (29.1)	10.2 (15.1)
JUNE	ALL	E7050	84	11.9 (16.2)	53.3 (20.3)	24.9 (22.5)	9.9 (11.6)
JULY	ALL	E6550	25	43.1 (37.2)	43.1 (37.2)	10.4 (32.3)	3.4 (13.0)
JULY	ALL	E7046	149	30.2 (16.0)	22.5 (14.5)	34.1 (19.2)	13.2 (10.5)
JULY	ALL	E7048	184	22.6 (14.2)	25.6 (13.6)	39.1 (18.7)	12.7 (10.0)
JULY	ALL	E7050	252	22.5 (11.9)	32.1 (12.0)	29.5 (15.2)	15.8 (8.6)
JULY	ALL	E7548	38	31.6 (29.1)	31.2 (23.4)	27.6 (32.6)	9.5 (16.8)
JULY	ALL	8048	34	3.5 (21.7)	46.1 (27.9)	50.4 (31.3)	0
JULY	ALL	8056	64	3.7 (15.0)	79.1 (22.1)	11.3 (22.3)	5.9 (10.1)
JULY	ALL	8058	28	0	94.9 (9.0)	0	5.1 (9.0)
JUNE	1-10	5	37	31.1 (28.0)	30.7 (27.7)	13.5 (29.3)	24.7 (22.1)
JUNE	11-20	5	103	13.0 (14.5)	49.8 (19.1)	19.6 (19.6)	17.6 (12.3)
JUNE	21-30	5	121	16.5 (15.3)	33.8 (16.5)	35.8 (21.2)	13.9 (11.8)
JULY	1-10	5	204	25.6 (13.5)	28.9 (13.1)	32.7 (16.9)	12.9 (9.1)
JULY	1-10	10	31	0	95.7 (8.2)	0	4.3 (8.2)
JULY	11-20	5	338	22.7 (11.5)	25.2 (10.9)	38.5 (15.5)	13.5 (8.2)
JULY	11-20	10	71	6.8 (15.3)	83.1 (21.0)	5.1 (19.9)	4.3 (3.0)
JULY	21-31	3	26	23.3 (32.2)	33.2 (33.6)	28.1 (39.4)	15.4 (23.6)
JULY	21-31	5	51	31.5 (24.2)	36.8 (24.7)	11.7 (24.4)	20.0 (17.4)
JULY	21-31	7	60	29.8 (22.3)	42.4 (23.5)	13.3 (23.0)	14.5 (14.4)
JULY	21-31	9	32	34.8 (32.3)	34.9 (31.7)	25.8 (34.6)	4.5 (14.6)
JUNE	ALL	5	261	17.2 (10.8)	39.6 (12.0)	26.3 (14.6)	16.9 (8.4)
JULY	ALL	3	50	17.5 (22.9)	42.8 (25.3)	34.1 (30.2)	5.7 (13.6)
JULY	ALL	5	593	24.5 (9.7)	27.5 (9.1)	34.2 (12.3)	13.9 (6.6)
JULY	ALL	7	71	31.6 (21.1)	40.7 (21.8)	15.9 (21.9)	11.7 (12.4)
JULY	ALL	9	68	20.0 (20.8)	42.9 (22.7)	36.0 (26.7)	1.1 (9.7)
JULY	ALL	10	103	4.6 (12.4)	82.8 (17.9)	6.8 (17.3)	5.8 (7.7)
MAY	21-32	LBDN	32	9.5 (27.0)	20.6 (28.1)	57.4 (41.3)	12.5 (23.0)
JUNE	1-10	MS-PAC	38	29.6 (27.6)	29.5 (27.2)	17.3 (30.1)	23.5 (21.7)
JUNE	11-20	LBDN	25	21.1 (35.2)	17.0 (31.3)	58.3 (46.3)	3.0 (20.0)
JUNE	11-20	MS-PAC	103	13.0 (14.5)	49.8 (18.1)	19.6 (19.6)	17.6 (12.3)
JUNE	21-30	MS-PAC	123	17.2 (15.4)	32.9 (16.4)	36.4 (21.2)	13.5 (11.6)
JUNE	21-30	MS-BS	27	7.1 (18.4)	90.4 (20.2)	0	2.5 (8.9)
JULY	1-10	MS-PAC	239	24.4 (12.6)	33.3 (12.6)	31.9 (15.9)	10.5 (8.1)
JULY	1-10	MS-BS	32	0	90.5 (22.7)	3.9 (22.9)	5.6 (11.9)
JULY	11-20	MS-PAC	375	21.4 (11.2)	26.7 (10.7)	40.0 (15.4)	11.9 (7.9)
JULY	11-20	MS-BS	79	6.8 (14.7)	81.9 (20.2)	8.1 (19.5)	3.2 (7.3)
JULY	21-31	MS-PAC	169	30.3 (14.2)	37.9 (14.5)	17.4 (15.4)	14.4 (9.0)

Appendix Table E4. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA74A	WEST74A	CENT74A	SEBC74
MAY	ALL	LBDN	44	12.6 (25.1)	19.7 (24.7)	60.9 (36.8)	6.9 (18.1)
JUNE	ALL	LBDN	46	0	39.9 (20.0)	60.1 (20.0)	0
JUNE	ALL	MS-PAC	264	17.3 (10.9)	39.0 (12.0)	27.1 (14.7)	16.5 (8.4)
JUNE	ALL	MS-BS	39	0	99.9 (5.0)	0	0.1 (5.0)
JULY	ALL	MS-PAC	783	24.2 (8.9)	31.1 (8.6)	32.6 (11.8)	12.0 (5.9)
JULY	ALL	MS-BS	116	5.2 (12.1)	30.1 (17.3)	10.0 (17.2)	4.7 (7.0)

Appendix Table E5. Estimates of the regional stock composition of brood year 1975 chinook salmon caught as immature age 1.2's in 1979.

MONTH	10-DAY PERIOD	AREA	N	ASIA75A	WEST75A	CENT75A	SEBC75A
JUNE	1-10	E7544	25	21.8 (31.7)	21.6 (27.8)	56.6 (39.4)	0
JUNE	21-30	E7050	79	14.9 (15.3)	54.9 (17.7)	30.2 (20.9)	0
JULY	1-10	E7050	55	45.9 (28.2)	33.2 (22.0)	17.9 (33.5)	3.0 (12.0)
JULY	1-10	E7558	26	0	84.0 (18.5)	16.0 (18.5)	0
JULY	11-20	E7050	84	26.5 (19.6)	16.0 (15.5)	57.5 (23.7)	0
JULY	11-20	E7556	96	4.3 (11.6)	63.4 (16.4)	32.3 (19.3)	0
JULY	11-20	8056	30	0	71.5 (12.2)	28.5 (12.2)	0
JULY	21-31	8050	56	22.7 (23.3)	46.1 (23.1)	28.0 (32.7)	3.2 (13.6)
JULY	21-31	8056	28	0	72.0 (19.7)	28.0 (19.7)	0
JULY	21-31	8058	39	0	90.8 (14.1)	9.2 (14.1)	0
JUNE	ALL	E7050	93	14.8 (14.1)	57.6 (16.4)	27.6 (19.1)	0
JUNE	ALL	E7544	32	24.4 (28.3)	26.3 (25.3)	49.3 (34.6)	0
JULY	ALL	E7048	38	50.8 (36.4)	10.5 (20.9)	26.5 (43.9)	2.1 (14.6)
JULY	ALL	E7050	139	32.6 (19.3)	17.1 (13.5)	49.5 (27.0)	0.7 (11.0)
JULY	ALL	E7556	118	0	64.0 (10.6)	36.0 (10.6)	0
JULY	ALL	E7558	35	0	88.1 (15.4)	11.9 (15.4)	0
JULY	ALL	8050	62	21.4 (22.2)	44.7 (22.0)	32.3 (32.0)	1.6 (12.7)
JULY	ALL	8056	125	0.4 (3.-	78.0 (14.1)	21.6 (15.2)	0
JULY	ALL	8058	50	0	85.5 (13.5)	14.5 (13.5)	0
JUNE	1-10	14	25	21.8 (31.7)	21.6 (27.8)	56.6 (39.4)	0
JUNE	11-20	5	29	9.3 (23.2)	49.5 (23.6)	41.2 (34.5)	0
JUNE	21-30	5	39	20.3 (15.7)	51.3 (16.7)	27.4 (19.7)	0
JULY	1-10	5	77	45.5 (24.5)	29.3 (18.4)	21.3 (23.7)	3.9 ([illegible])
JULY	1-10	8	48	0	84.2 (13.9)	15.8 (13.9)	0
JULY	1-10	10	33	12.0 (19.5)	79.9 (24.7)	8.1 (25.3)	0
JULY	11-20	5	116	28.7 (17.4)	17.8 (13.7)	53.5 (20.7)	0
JULY	11-20	8	96	4.3 (11.6)	63.4 (16.4)	32.3 (19.3)	0
JULY	11-20	10	84	0	72.0 (11.9)	28.0 (11.9)	0
JULY	21-31	9	70	26.9 (22.1)	44.2 (20.7)	27.4 (29.9)	1.5 ([illegible])
JULY	21-31	10	67	0	83.0 (12.1)	17.0 (12.1)	0
JUNE	ALL	5	132	18.5 (13.0)	51.4 (14.1)	30.1 (16.9)	0
JUNE	ALL	14	32	24.4 (28.3)	26.3 (25.3)	49.3 (34.6)	0
JULY	ALL	3	25	25.9 (24.3)	0	74.1 (24.3)	0
JULY	ALL	5	197	39.3 (17.5)	19.1 (11.8)	40.9 (23.4)	0.6 (8.9)
JULY	ALL	8	153	0	69.5 (9.3)	30.5 (9.3)	0
JULY	ALL	9	78	28.6 (21.6)	41.9 (19.6)	28.9 (29.0)	0.6 (10.5)
JULY	ALL	10	184	0.3 (7.1)	81.4 (12.1)	17.9 (13.7)	0
JUNE	1-10	LBDN	33	26.5 (29.2)	16.5 (23.4)	57.0 (35.0)	0
JUNE	1-10	MS-PAC	25	34.6 (36.6)	53.6 (34.1)	10.0 (42.7)	1.8 (15.0)
JUNE	11-20	MS-PAC	36	12.6 (22.9)	40.3 (25.5)	47.1 (32.0)	0
JUNE	21-30	MS-PAC	90	20.6 (15.5)	52.6 (16.6)	26.8 (19.5)	0
JULY	1-10	MS-PAC	110	40.6 (21.5)	20.3 (14.9)	37.6 (28.1)	1.5 (10.5)
JULY	1-10	MS-BS	81	2.5 (10.0)	83.8 (16.3)	13.7 (18.2)	0
JULY	11-20	MS-PAC	129	31.5 (17.0)	16.6 (13.0)	51.9 (19.9)	0
JULY	11-20	MS-BS	200	6.8 (8.8)	66.6 (12.0)	26.6 (14.0)	0
JULY	21-31	MS-PAC	83	27.9 (18.5)	31.8 (16.6)	40.3 (22.1)	0
JULY	21-31	MS-BS	78	0	85.7 (11.1)	14.3 (11.1)	0
MAY	ALL	LBDN	30	12.9 (20.8)	0	87.1 (20.8)	0
JUNE	ALL	LBDN	41	27.0 (25.9)	23.7 (22.1)	49.3 (31.1)	0
JUNE	ALL	MS-PAC	151	17.4 (12.4)	49.1 (13.4)	33.4 (16.4)	0
JULY	ALL	MS-PAC	322	31.8 (12.3)	21.7 (9.7)	46.5 (14.5)	0
JULY	ALL	MS-BS	359	3.7 (6.5)	75.4 (9.8)	20.9 (11.3)	0

Appendix Table E6. Estimates of the regional stock composition of brood year 1976 chinook salmon caught as immature age 1.2's in 1980.

MONTH	10-DAY PERIOD	AREA	N	ASIA76A	WEST76A	CENT76A	SEBC76A
JUNE	21-30	E7048	98	15.6 (13.7)	16.3 (17.2)	39.5 (33.6)	28.6 (22.1)
JUNE	21-30	E7050	53	14.9 (19.0)	27.3 (27.0)	56.6 (45.5)	1.2 (22.5)
JULY	1-10	E7048	32	46.9 (24.5)	0	19.6 (31.7)	33.5 (27.5)
JULY	1-10	E7050	25	0	45.9 (25.2)	54.1 (25.2)	0
JULY	1-10	E7054	56	11.4 (12.1)	81.5 (15.5)	0	7.0 (11.0)
JULY	1-10	E7556	130	10.1 (8.9)	88.4 (15.3)	1.5 (14.1)	0
JULY	1-10	8056	51	8.1 (9.4)	91.9 (9.4)	0	0
JULY	11-20	E7048	44	18.6 (22.5)	0.7 (22.9)	68.9 (51.9)	11.8 (30.9)
JULY	11-20	E7050	117	10.3 (10.9)	14.7 (15.2)	75.0 (18.6)	0
JULY	11-20	E7052	41	0	42.1 (24.8)	39.4 (34.8)	18.5 (24.2)
JULY	11-20	E7556	91	11.1 (10.5)	87.9 (17.5)	1.1 (15.8)	0
JULY	11-20	8048	25	22.6 (24.5)	22.5 (30.2)	54.9 (36.0)	0
JULY	11-20	8054	28	0	100.0 (3.3)	0	0
JULY	11-20	8056	88	0	98.5 (11.8)	1.5 (11.8)	0
JULY	21-31	E7048	224	7.9 (9.4)	7.5 (12.8)	63.4 (27.0)	21.3 (15.9)
JULY	21-31	E7050	271	18.6 (9.5)	20.2 (12.3)	49.5 (22.8)	11.7 (12.9)
JULY	21-31	E7558	29	4.3 (10.9)	95.7 (10.9)	0	0
JUNE	ALL	E7048	115	13.9 (12.6)	15.7 (16.4)	45.3 (32.0)	25.1 (20.5)
JUNE	ALL	E7050	73	10.1 (14.0)	50.0 (24.6)	36.9 (35.9)	3.0 (17.5)
JULY	ALL	E7048	300	9.9 (8.9)	4.9 (11.7)	56.6 (24.9)	18.7 (15.3)
JULY	ALL	E7050	413	15.2 (8.4)	14.4 (11.3)	63.7 (22.0)	6.7 (12.4)
JULY	ALL	E7052	41	0	42.1 (24.8)	39.4 (34.8)	18.5 (24.2)
JULY	ALL	E7054	75	12.7 (13.3)	82.7 (23.6)	1.7 (30.6)	2.9 (11.9)
JULY	ALL	E7556	223	10.4 (7.3)	88.5 (12.9)	1.1 (25.1)	0
JULY	ALL	E7558	29	4.3 (10.9)	95.7 (10.9)	0	0
JULY	ALL	8048	25	22.6 (24.5)	22.5 (30.2)	54.9 (36.0)	0
JULY	ALL	8054	28	0	100.0 (3.3)	0	0
JULY	ALL	8056	139	12.9 (6.7)	87.1 (6.7)	0	0
JUNE	1-10	5	27	18.1 (24.8)	36.6 (34.7)	13.0 (53.9)	32.3 (37.5)
JUNE	11-20	5	32	0	81.9 (20.4)	18.1 (20.4)	0
JUNE	21-30	5	155	14.9 (11.1)	23.1 (15.3)	43.3 (27.6)	18.7 (16.7)
JULY	1-10	5	57	37.3 (18.1)	0	35.2 (25.9)	27.5 (21.[illegible])
JULY	1-10	6	56	11.4 (12.1)	81.5 (15.5)	0	7.0 (11.0)
JULY	1-10	8	130	10.1 (8.9)	88.4 (15.3)	1.5 (14.1)	0
JULY	1-10	10	57	12.9 (6.7)	87.1 (6.7)	0	0
JULY	11-20	5	208	9.3 (10.6)	6.7 (14.4)	77.6 (29.2)	6.4 (16.8)
JULY	11-20	6	30	11.9 (20.7)	72.2 (36.4)	11.4 (48.9)	4.5 (21.8)
JULY	11-20	8	105	12.9 (6.7)	87.1 (6.7)	0	0
JULY	11-20	9	38	14.3 (18.1)	30.7 (26.3)	55.0 (29.9)	0
JULY	11-20	10	116	10.1 (6.9)	89.9 (6.9)	0	0
JULY	21-31	3	25	13.2 (21.8)	33.3 (32.6)	53.6 (36.6)	0
JULY	21-31	5	495	13.8 (7.4)	14.5 (10.1)	55.8 (20.0)	16.0 (11.9)
JULY	21-31	8	31	3.5 (10.3)	96.5 (10.3)	0	0
JUNE	ALL	5	214	12.6 (9.1)	30.1 (13.9)	38.7 (23.8)	18.6 (14.2)
JULY	ALL	3	46	0	45.7 (18.8)	54.3 (18.8)	0
JULY	ALL	5	760	11.9 (6.9)	11.1 (9.6)	64.5 (19.5)	12.5 (11.4)
JULY	ALL	6	93	9.8 (9.3)	83.1 (12.2)	0	7.1 (8.8)
JULY	ALL	8	266	10.3 (6.9)	89.4 (12.3)	0.3 (11.4)	0
JULY	ALL	9	56	12.9 (14.7)	35.6 (22.3)	51.5 (24.9)	0
JULY	ALL	10	185	9.1 (5.6)	90.9 (5.6)	0	0

Appendix Table E6. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA76A	WEST76A	CENT76A	SEBC76A
JUNE	1-10	MS-PAC	29	16.8 (23.2)	43.4 (34.4)	9.4 (50.3)	30.5 (35.1)
JUNE	11-20	MS-PAC	33	0	83.1 (20.0)	16.9 (20.0)	0
JUNE	21-30	LBDN	38	3.2 (15.8)	15.6 (25.5)	81.2 (30.2)	0
JUNE	21-30	MS-PAC	167	13.8 (10.7)	23.1 (15.1)	46.5 (27.2)	16.6 (16.2)
JULY	1-10	MS-PAC	98	7.7 (13.5)	14.4 (19.3)	73.4 (37.3)	4.5 (20.8)
JULY	1-10	MS-BS	243	14.9 (5.5)	85.1 (5.5)	0	0
JULY	11-20	MS-PAC	269	10.0 (9.8)	8.0 (13.4)	75.4 (26.9)	5.5 (15.4)
JULY	11-20	MS-BS	251	8.1 (7.2)	90.0 (15.7)	1.5 (21.1)	0.4 (7.1)
JULY	21-31	MS-PAC	533	12.6 (7.3)	14.8 (10.2)	59.1 (20.1)	13.6 (11.7)
JULY	21-31	MS-BS	50	8.2 (14.4)	83.7 (28.3)	6.5 (37.8)	1.7 (14.5)
JUNE	ALL	LBDN	52	1.6 (12.9)	22.4 (23.0)	76.0 (26.5)	0
JUNE	ALL	MS-PAC	229	11.7 (8.8)	31.1 (13.7)	40.2 (23.3)	15.9 (13.7)
JULY	ALL	MS-PAC	900	11.3 (6.7)	12.7 (9.5)	65.3 (19.1)	10.2 (11.0)
JULY	ALL	MS-BS	544	13.3 (4.2)	86.7 (4.2)	0	0

Appendix Table E7. Estimates of the regional stock composition of brood year 1977 chinook salmon caught as immature age 1.2's in 1981.

MONTH	10-DAY PERIOD	AREA	N	ASIA77	WEST77	CENT77	SEBC77
JUNE	11-20	E7048	28	46.1 (28.9)	42.3 (35.7)	11.2 (30.0)	0.4 (11.3)
JUNE	11-20	E7050	79	24.8 (15.4)	71.2 (23.5)	2.2 (18.9)	1.8 (8.4)
JUNE	21-30	E7048	42	48.3 (20.0)	0	48.3 (22.2)	3.4 (10.5)
JUNE	21-30	E7050	200	35.9 (10.8)	33.5 (13.9)	28.8 (14.2)	1.8 (5.9)
JUNE	21-30	E7544	39	57.2 (24.5)	16.2 (24.1)	11.1 (23.2)	15.5 (17.8)
JUNE	21-30	E7546	57	36.0 (12.8)	0	64.0 (12.8)	0
JULY	1-10	E7048	92	53.9 (16.4)	7.5 (14.4)	28.6 (18.5)	10.0 (10.8)
JULY	1-10	E7050	145	45.5 (13.0)	25.6 (14.8)	21.8 (14.9)	7.2 (7.9)
JULY	1-10	E7556	48	6.3 (11.6)	75.6 (24.7)	18.1 (24.0)	0
JULY	11-20	E7046	43	56.6 (23.6)	20.0 (24.5)	15.7 (23.9)	7.7 (13.8)
JULY	11-20	E7048	141	60.6 (13.6)	9.1 (12.5)	24.7 (14.7)	5.5 (7.3)
JULY	11-20	E7050	424	28.1 (7.3)	34.7 (10.3)	29.6 (10.7)	7.6 (5.5)
JULY	11-20	E7052	33	3.3 (13.2)	51.6 (29.8)	44.6 (30.6)	0
JULY	11-20	E7556	71	13.5 (11.7)	56.7 (20.6)	29.8 (20.3)	0
JULY	11-20	8056	65	20.8 (13.6)	50.0 (20.9)	29.2 (20.6)	0
JULY	21-31.	E7048	327	20.8 (7.8)	24.8 (11.2)	53.6 (13.5)	0.8 (6.0)
JULY	21-31	E7050	255	32.3 (9.4)	29.5 (12.1)	32.1 (13.0)	6.1 (6.5)
JULY	21-31	E7556	27	6.2 (15.8)	50.4 (32.6)	43.4 (33.5)	0
JULY	21-31	8056	37	11.9 (15.9)	36.4 (26.7)	51.7 (28.4)	0
–	–	–	–	–	–	–	–
JUNE	ALL	E7048	79	43.3 (17.3)	15.6 (18.0)	37.5 (21.6)	3.6 (9.8)
JUNE	ALL	E7050	279	32.8 (9.2)	44.2 (12.9)	21.3 (12.3)	1.8 (5.1)
JUNE	ALL	E7544	39	57.2 (24.5)	16.2 (24.1)	11.1 (23.2)	15.5 (17.8)
JUNE	ALL	E7546	57	36.0 (12.8)	0	64.0 (12.8)	0
JULY	ALL	E7046	52	53.2 (21.3)	23.9 (23.0)	9.9 (20.4)	13.0 (14.6)
JULY	ALL	E7048	560	36.3 (7.1)	18.0 (8.4)	42.2 (10.2)	3.5 (4.3)
JULY	ALL	E7050	824	32.4 (5.8)	31.5 (8.1)	29.0 (8.5)	7.1 (4.2)
JULY	ALL	E7052	37	5.8 (13.5)	48.4 (27.9)	45.8 (28.9)	0
JULY	ALL	E7556	146	9.8 (7.8)	61.7 (15.2)	28.5 (15.1)	0
JULY	ALL	8046	25	65.2 (25.2)	31.9 (28.5)	2.9 (21.5)	0
JULY	ALL	8056	111	18.8 (10.4)	42.9 (16.2)	38.3 (16.6)	0
–	–	–	–	–	–	–	–
JUNE	11-20	5	107	30.4 (14.0)	63.7 (20.5)	4.5 (16.6)	1.4 (7.0)
JUNE	21-30	5	242	35.6 (9.9)	27.1 (12.3)	34.6 (13.4)	2.7 (5.9)
JUNE	21-30	7	59	36.4 (12.6)	0	63.6 (12.6)	0
JUNE	21-30	14	39	57.2 (24.5)	16.2 (24.1)	11.1 (23.2)	15.5 (17.8)
JULY	1-10	5	250	47.9 (10.3)	20.8 (11.1)	22.1 (11.6)	9.2 (6.5)
JULY	1-10	8	48	6.3 (11.6)	75.6 (24.7)	18.1 (24.0)	0
JULY	11-20	5	641	35.9 (6.6)	29.4 (8.6)	28.1 (9.0)	6.6 (4.5)
JULY	11-20	8	71	13.5 (11.7)	56.7 (20.6)	29.8 (20.3)	0
JULY	11-20	9	55	51.6 (17.6)	23.3 (18.8)	25.2 (19.6)	0
JULY	11-20	10	76	18.3 (12.3)	50.3 (19.6)	31.4 (19.4)	0
JULY	21-31	5	582	25.8 (6.4)	26.9 (9.0)	44.2 (10.5)	3.1 (4.9)
JULY	21-31	8	42	7.0 (13.2)	44.2 (26.0)	48.9 (27.1)	0
JULY	21-31	10	37	11.9 (15.9)	36.4 (26.7)	51.7 (28.4)	0
–	–	–	–	–	–	–	–
JUNE	ALL	5	371	34.9 (8.2)	36.0 (11.0)	27.0 (11.1)	2.1 (4.7)
JUNE	ALL	7	59	36.4 (12.6)	0	63.6 (12.6)	0
JUNE	ALL	14	39	57.2 (24.5)	16.2 (24.1)	11.1 (23.2)	15.5 (17.8)
JULY	ALL	5	1473	34.0 (4.9)	26.9 (6.8)	33.4 (7.5)	5.7 (3.6)
JULY	ALL	8	161	9.6 (7.5)	59.1 (14.6)	31.3 (14.6)	0
JULY	ALL	9	57	53.7 (17.4)	22.2 (18.2)	24.1 (19.0)	0
JULY	ALL	10	122	17.4 (9.8)	43.7 (15.6)	38.9 (16.0)	0

Appendix Table E7. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA77	WEST77	CENT77	SEBC77
JUNE	11-20	MS-PAC	107	30.4 (14.0)	63.7 (20.5)	4.5 (16.6)	1.4 (7.0)
JUNE	21-30	LBDN	53	52.1 (21.1)	11.2 (19.5)	22.6 (23.0)	14.2 (15.4)
JUNE	21-30	MS-PAC	305	38.9 (9.2)	21.0 (10.7)	38.4 (12.3)	1.5 (5.3)
JULY	1-10	MS-PAC	269	48.6 (10.0)	19.5 (10.7)	23.2 (11.3)	3.7 (6.3)
JULY	1-10	MS-BS	75	9.5 (10.4)	66.9 (20.3)	23.5 (19.8)	0
JULY	11-20	MS-PAC	698	37.0 (5.4)	28.8 (3.3)	28.5 (3.7)	5.3 (4.2)
JULY	11-20	MS-BS	147	15.0 (3.7)	53.4 (14.8)	30.6 (14.7)	0
JULY	21-31	MS-PAC	594	25.3 (5.4)	26.4 (3.9)	43.6 (10.4)	3.8 (4.9)
JULY	21-31	MS-BS	79	9.3 (10.5)	40.5 (19.1)	50.2 (20.1)	0
MAY	ALL	LBDN	40	46.6 (20.5)	24.8 (22.4)	28.6 (23.6)	0
JUNE	ALL	LBDN	53	52.1 (21.1)	11.2 (19.5)	22.6 (23.0)	14.2 (15.4)
JUNE	ALL	MS-PAC	435	37.2 (7.8)	30.7 (10.0)	30.6 (10.5)	1.5 (4.4)
JULY	ALL	MS-PAC	1561	34.9 (4.9)	26.2 (6.7)	33.3 (7.3)	5.5 (3.5)
JULY	ALL	MS-BS	301	12.6 (5.1)	53.4 (11.3)	34.0 (11.4)	0

Appendix Table F1. Estimates of the regional stock composition of brood year 1970 chinook salmon caught as immature age 1.3's in 1975.

MONTH	10-DAY PERIOD	AREA	N	ASIA70	WEST70	CENT70	SEBC70
JUNE	ALL	MS-BS	27	16.1 (26.1)	71.0 (34.1)	12.9 (23.3)	0

Appendix Table F2. Estimates of the regional stock composition of brood year 1971 chinook salmon caught as immature age 1.3's in 1976.

MONTH	10-DAY PERIOD	AREA	N	ASIA71B	WEST71B	CENT71B	SEBC71B
JUNE	ALL	MS-PAC	36	69.6 (26.6)	1.5 (19.0)	0	28.9 (21.3)
JUNE	ALL	MS-BS	38	74.3 (17.9)	25.7 (17.9)	0	0
JULY	ALL	MS-PAC	28	86.6 (14.5)	0	0	13.4 (14.5)

Appendix Table F3. Estimates of the regional stock composition of brood year 1972 chinook salmon caught as immature age 1.3's in 1977.

MONTH	10-DAY PERIOD	AREA	N	ASIA72B	WEST72B	CENT72B	SEBC72B
JUNE	ALL	E6044	25	0	0	100.0 (67.9)	0
JUNE	ALL	E7550	27	60.1 (36.6)	28.0 (31.0)	11.9 (26.7)	0
JULY	ALL	8058	32	42.4 (36.8)	45.3 (36.2)	4.8 (38.4)	7.5 (23.0)
JUNE	11-20	7	34	27.5 (29.8)	47.6 (28.1)	25.0 (26.9)	0
JULY	11-20	10	32	21.8 (32.1)	66.7 (35.7)	5.2 (38.6)	6.2 (23.2)
JUNE	ALL	5	25	55.2 (39.9)	4.6 (24.9)	40.3 (34.1)	0
JUNE	ALL	7	54	34.0 (24.8)	42.0 (22.4)	24.0 (21.4)	0
JUNE	ALL	8	32	37.6 (31.5)	50.0 (29.7)	12.4 (24.6)	0
JUNE	ALL	10	27	18.7 (20.6)	81.3 (20.6)	0	0
JUNE	ALL	11	34	0	0.5 (12.6)	99.5 (12.6)	0
JULY	ALL	10	49	29.8 (27.9)	57.9 (29.5)	4.1 (31.3)	8.1 (19.4)
JUNE	1-10	LBDN	30	0	6.9 (15.1)	93.1 (15.1)	0
JUNE	1-10	MS-PAC	25	40.0 (39.3)	6.7 (24.4)	53.3 (35.3)	0
JUNE	11-20	MS-PAC	47	24.9 (25.0)	51.7 (24.1)	23.4 (22.8)	0
JUNE	21-30	MS-PAC	29	71.8 (35.6)	18.4 (28.9)	9.8 (25.2)	0
JUNE	21-30	MS-BS	46	25.2 (16.7)	74.8 (16.7)	0	0
JULY	11-20	MS-BS	35	22.6 (31.5)	63.5 (34.3)	10.0 (38.9)	4.0 (21.9)
JUNE	ALL	LBDN	48	0	4.2 (11.7)	95.8 (11.7)	0
JUNE	ALL	MS-PAC	101	42.1 (19.4)	31.0 (16.2)	26.9 (16.4)	0
JUNE	ALL	MS-BS	59	27.7 (15.1)	72.3 (15.1)	0	0
JULY	ALL	MS-PAC	25	5.3 (32.3)	28.2 (28.3)	66.4 (35.7)	0
JULY	ALL	MS-BS	59	38.2 (27.2)	48.7 (27.2)	7.9 (29.7)	5.2 (16.8)

Appendix Table F4. Estimates of the regional stock composition of brood year 1973 chinook salmon caught as immature age 1.3's in 1978.

MONTH	10-DAY PERIOD	AREA	N	ASIA73B	WEST73B	CENT73B	SEBC73B
JUNE	ALL	E7046	25	0	12.8 (17.1)	87.2 (17.1)	0
JUNE	11-20	5	29	12.8 (44.0)	37.6 (32.0)	49.6 (37.1)	0
JUNE	21-30	5	31	56.1 (24.7)	43.9 (24.7)	0	0
JUNE	ALL	5	78	26.7 (29.4)	33.4 (20.6)	39.9 (23.0)	0
JULY	ALL	5	36	0	38.1 (21.9)	40.3 (25.7)	21.7 (19.5)
JUNE	11-20	MS-PAC	29	12.8 (44.0)	37.6 (32.0)	49.6 (37.1)	0
JUNE	21-30	MS-PAC	32	58.7 (24.3)	41.3 (24.3)	0	0
JUNE	ALL	MS-PAC	80	24.9 (28.9)	34.2 (20.4)	40.9 (22.7)	0
JULY	ALL	MS-PAC	53	0	50.2 (18.8)	36.4 (20.9)	13.5 (13.9)

Appendix Table F5. Estimates of the regional stock composition of brood year 1974 chinook salmon caught as immature age 1.3's in 1979.

MONTH	10-DAY PERIOD	AREA	N	ASIA74B	WEST74B	CENT74B	SEBC74B
JUNE	ALL	E7050	28	55.2 (31.7)	35.8 (31.0)	9.0 (22.4)	0
JUNE	ALL	5	39	46.6 (26.7)	38.9 (26.5)	14.4 (21.0)	0
JUNE	ALL	MS-PAC	44	43.0 (24.9)	42.3 (25.1)	14.6 (19.9)	0
JULY	ALL	MS-PAC	34	50.2 (33.7)	19.7 (30.3)	24.6 (43.0)	5.5 (32.4)

Appendix Table F6. Estimates of the regional stock composition of brood year 1975 chinook salmon caught as immature age 1.3's in 1980.

MONTH	10-DAY PERIOD	AREA	N	ASIA75B	WEST75B	CENT75B	SEBC75B
JUNE	ALL	E7050	39	5.7 (22.1)	57.4 (29.1)	35.3 (46.1)	1.7 (22.4)
JUNE	21-30	5	28	0	61.8 (20.8)	38.2 (20.8)	0
JUNE	ALL	5	64	14.4 (18.1)	50.4 (19.6)	35.2 (25.2)	0
JULY	ALL	5	26	23.1 (36.4)	27.4 (32.1)	40.5 (51.2)	9.0 (31.6)
JULY	ALL	8	28	10.5 (16.3)	36.9 (19.8)	0	2.6 (12.5)
JUNE	21-30	MS-PAC	30	0	60.5 (20.3)	39.5 (20.3)	0
JUNE	ALL	MS-PAC	66	16.2 (18.0)	50.6 (19.2)	33.2 (24.6)	0
JULY	ALL	MS-PAC	46	32.6 (29.2)	31.0 (24.4)	28.0 (44.7)	8.4 (22.1)
JULY	ALL	MS-BS	48	12.3 (13.4)	30.3 (16.6)	0	6.4 (11.4)

Appendix Table F7. Estimates of the regional stock composition of brood year 1976 chinook salmon caught as immature age 1.3's in 1981.

MONTH	10-DAY PERIOD	AREA	N	ASIA76B	WEST76B	CENT76B	SEBC76B
JUNE	11-20	E7050	49	14.2 (16.2)	55.0 (27.7)	26.2 (33.9)	4.6 (21.2)
JUNE	21-30	E7050	74	13.9 (13.7)	36.7 (22.0)	43.4 (30.4)	6.1 (19.4)
JULY	1-10	E7050	26	0	49.4 (31.8)	19.0 (40.0)	31.7 (30.8)
JUNE	ALL	E7048	46	22.7 (19.9)	33.2 (25.5)	24.1 (34.8)	20.0 (27.0)
JUNE	ALL	E7050	124	13.8 (10.6)	43.4 (17.8)	37.7 (23.6)	5.1 (14.9)
JULY	ALL	E7048	33	17.2 (22.1)	19.0 (27.1)	37.2 (44.5)	26.6 (35.0)
JULY	ALL	E7050	58	12.2 (15.0)	32.7 (24.4)	48.8 (34.3)	6.3 (22.3)
JULY	ALL	8056	25	12.2 (19.6)	57.6 (31.3)	30.1 (32.9)	0
JUNE	11-20	5	64	11.8 (13.5)	54.0 (24.8)	32.8 (31.0)	1.5 (18.2)
JUNE	21-30	5	95	13.6 (12.1)	35.7 (19.1)	37.2 (26.7)	13.5 (18.7)
JULY	1-10	5	39	0	33.6 (24.1)	21.4 (33.5)	45.0 (27.5)
JULY	11-20	5	32	32.9 (22.3)	25.8 (24.5)	41.3 (29.5)	0
JULY	21-31	5	25	36.1 (25.6)	38.0 (29.0)	25.9 (30.9)	0
JUNE	ALL	5	177	19.0 (9.8)	39.7 (14.7)	31.8 (19.6)	9.4 (13.2)
JULY	ALL	5	96	15.7 (12.7)	27.4 (18.2)	43.0 (27.2)	13.9 (19.1)
JULY	ALL	10	28	10.2 (17.7)	59.6 (29.7)	30.2 (31.2)	0
JUNE	11-20	MS-PAC	64	11.8 (13.5)	54.0 (24.8)	32.8 (31.0)	1.5 (18.2)
JUNE	21-30	MS-PAC	103	14.6 (11.9)	35.0 (18.3)	36.0 (25.6)	14.4 (18.1)
JULY	1-10	MS-PAC	40	0.4 (11.7)	29.3 (26.6)	26.1 (40.7)	44.1 (34.8)
JULY	11-20	MS-PAC	35	29.6 (21.2)	30.1 (24.2)	40.3 (28.3)	0
JULY	11-20	MS-BS	27	15.3 (22.0)	62.9 (36.7)	17.7 (42.4)	4.1 (26.8)
JULY	21-31	MS-PAC	25	36.1 (25.6)	38.0 (29.0)	25.9 (30.9)	0
JUNE	ALL	MS-PAC	186	19.2 (9.6)	39.7 (14.3)	31.1 (19.1)	10.0 (13.0)
JULY	ALL	MS-PAC	100	16.1 (12.6)	27.3 (17.3)	42.2 (26.6)	14.4 (18.8)
JULY	ALL	MS-BS	59	10.4 (12.8)	48.1 (20.9)	41.5 (22.8)	0

Appendix Table G1. Estimates of the western Alaskan stock composition of brood year 1971 chinook salmon caught as immature 1.2's in 1975.

MONTH	10-DAY PERIOD	AREA	N	ASIA71A	YUK71A	KUSK71A	BRIS71A	CENT71A	SEBC71A
JUNE	11-20	E7054	44	0	72.5 (47.7)	16.4 (46.8)	5.8 (33.0)	0	5.3 (11.1)
JULY	1-10	E7058	67	0	49.4 (32.8)	18.0 (33.3)	32.6 (28.6)	0	0
JULY	1-10	E7558	83	0	74.4 (25.3)	0	21.3 (24.9)	0	4.2 (5.7)
JUNE	ALL	E7054	44	0	72.5 (47.7)	16.4 (46.8)	5.8 (33.0)	0	5.3 (11.1)
JUNE	ALL	E7556	42	46.4 (25.5)	39.2 (31.2)	0	14.3 (25.0)	0	0
JULY	ALL	E7058	72	12.5 (19.2)	32.0 (34.6)	14.8 (36.1)	40.7 (33.3)	0	0
JULY	ALL	E7558	90	0	76.5 (24.4)	0	18.5 (23.9)	0	5.0 (5.9)
JULY	ALL	8056	28	18.5 (27.1)	76.2 (49.9)	5.3 (47.6)	0	0	0
JUNE	11-20	6	79	36.6 (13.6)	63.4 (13.6)	0	0	0	0
JUNE	11-20	8	59	41.1 (26.8)	47.1 (32.8)	0	11.3 (25.3)	0	0.5 (5.2)
JUNE	21-30	10	25	30.5 (30.6)	40.2 (41.2)	0	29.3 (36.8)	0	0
JULY	1-10	6	78	7.8 (17.5)	35.8 (34.1)	19.5 (35.9)	36.8 (32.0)	0	0
JULY	1-10	8	111	4.2 (16.2)	74.2 (26.9)	0	19.5 (22.4)	0	2.1 (4.8)
JULY	11-20	10	32	9.5 (23.4)	76.6 (37.7)	0	14.0 (31.4)	0	0
JUNE	ALL	6	88	39.0 (13.0)	61.0 (13.0)	0	0	0	0
JULY	ALL	4	30	0	53.9 (57.7)	25.2 (54.6)	9.3 (41.0)	11.6 (28.4)	0
JULY	ALL	6	92	12.9 (17.3)	36.1 (31.5)	15.5 (32.5)	35.4 (29.1)	0	0
JULY	ALL	8	127	4.8 (15.5)	74.9 (25.5)	0	16.9 (20.9)	0	3.5 (5.3)
JULY	ALL	10	43	2.8 (18.1)	67.9 (33.7)	0	29.3 (30.2)	0	0
JUNE	11-20	MS-BS	139	35.8 (18.3)	58.0 (23.3)	0	5.2 (17.0)	0	1.0 (4.0)
JUNE	21-30	MS-BS	30	32.4 (28.3)	40.6 (37.6)	0	27.0 (33.1)	0	0
JULY	1-10	MS-BS	201	7.2 (13.1)	66.6 (21.3)	0	24.9 (18.0)	0	1.2 (3.2)
JULY	11-20	MS-BS	86	5.3 (23.0)	66.9 (47.6)	8.7 (42.0)	13.8 (31.2)	3.4 (28.5)	1.9 (8.2)
JUNE	ALL	MS-BS	213	43.0 (15.8)	51.7 (19.5)	0	5.2 (14.2)	0	0.1 (2.9)
JULY	ALL	MS-BS	292	6.4 (11.7)	69.2 (19.0)	0	22.7 (15.8)	0	1.7 (3.0)

Appendix Table G2. Estimates of the western Alaskan stock composition of brood year 1972 chinook salmon caught as immature 1.2's in 1976.

MONTH	10-DAY PERIOD	AREA	N	ASIA72A	YUK72A	KUSK72A	BRIS72A	CENT72A	SEBC72A
JUNE	11-20	E7054	25	43.6 (34.8)	54.6 (34.1)	0	0	1.8 (23.3)	0
JUNE	11-20	E7056	46	14.4 (22.3)	82.2 (24.8)	0	0	3.4 (18.5)	0
JUNE	11-20	E7554	29	33.9 (36.3)	46.3 (54.6)	7.7 (46.9)	0	12.2 (29.3)	0
JUNE	21-30	8054	42	15.9 (29.2)	37.3 (50.8)	13.1 (74.3)	17.9 (45.6)	15.9 (26.6)	0
JUNE	21-30	8056	25	0	27.1 (32.4)	0	64.4 (34.2)	0	8.4 (16.0)
JULY	11-20	E7558	26	34.9 (40.4)	41.4 (42.4)	0	5.1 (26.7)	18.6 (34.4)	0
JULY	11-20	8056	43	0	26.6 (41.7)	45.9 (64.0)	4.7 (38.6)	22.9 (23.1)	0
JUNE	ALL	E7054	28	36.5 (45.5)	54.7 (65.6)	1.3 (86.4)	1.8 (42.2)	5.7 (27.4)	0
JUNE	ALL	E7056	46	14.4 (22.3)	82.2 (24.8)	0	0	3.4 (18.5)	0
JUNE	ALL	E7554	36	25.7 (34.5)	45.0 (58.6)	22.8 (85.6)	0.5 (44.5)	6.0 (24.6)	0
JUNE	ALL	E7556	27	18.8 (33.9)	28.6 (55.2)	31.1 (53.2)	0	21.5 (32.9)	0
JUNE	ALL	8054	65	6.0 (19.8)	31.1 (42.2)	31.7 (67.1)	17.7 (41.5)	13.5 (21.0)	0
JUNE	ALL	8056	25	0	27.1 (32.4)	0	64.4 (34.2)	0	8.4 (16.0)
JULY	ALL	E7058	47	38.2 (30.5)	47.3 (32.9)	0	3.6 (19.5)	10.9 (23.5)	0
JULY	ALL	E7558	32	26.0 (34.1)	50.2 (40.4)	0	11.4 (27.5)	12.4 (28.7)	0
JULY	ALL	8056	51	12.2 (26.2)	19.4 (42.9)	33.3 (70.8)	8.5 (42.5)	26.6 (27.7)	0
JULY	ALL	8058	29	0	83.8 (42.7)	16.2 (43.4)	0	0	0.0 (8.9)
JUNE	11-20	6	71	24.7 (19.7)	72.5 (20.9)	0	0	2.8 (15.0)	0
JUNE	11-20	8	56	32.1 (29.3)	30.7 (36.4)	20.6 (36.8)	0	12.5 (28.0)	4.1 (14.7)
JUNE	21-30	8	45	6.3 (21.6)	36.9 (49.5)	53.1 (47.7)	0	3.7 (19.9)	0
JUNE	21-30	10	73	11.5 (20.2)	36.1 (38.5)	1.5 (56.6)	38.9 (39.0)	11.9 (18.9)	0
JULY	1-10	8	41	22.2 (28.5)	58.0 (37.5)	0	17.5 (26.7)	2.3 (21.1)	0
JULY	11-20	8	33	21.8 (34.2)	34.4 (36.4)	0	10.8 (26.6)	33.0 (34.5)	0
JULY	11-20	10	68	10.5 (19.3)	20.3 (38.6)	61.0 (39.0)	0	8.2 (17.4)	0
JUNE	ALL	6	74	14.6 (21.8)	82.0 (28.7)	0	0.0 (16.2)	3.3 (17.6)	0
JUNE	ALL	8	104	19.6 (17.6)	36.0 (31.2)	32.6 (29.5)	0	11.8 (15.5)	0
JUNE	ALL	10	96	5.9 (15.9)	32.2 (34.4)	16.9 (53.8)	33.8 (35.9)	11.3 (16.5)	0
JULY	ALL	6	47	38.2 (30.5)	47.3 (32.9)	0	3.6 (19.5)	10.9 (23.5)	0
JULY	ALL	8	74	22.0 (22.3)	47.5 (27.1)	0	14.5 (19.3)	16.0 (20.1)	0
JULY	ALL	10	90	14.7 (17.9)	17.1 (33.0)	58.0 (33.9)	0	10.2 (15.8)	0

Appendix Table G2. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA72A	YUK72A	KUSK72A	BRIS72A	CENT72A	SEBC72A
JUNE	11-20	MS-BS	173	15.0 (15.9)	58.6 (30.8)	11.7 (42.0)	0.3 (21.0)	14.4 (14.1)	0
JUNE	21-30	MS-BS	118	8.7 (15.6)	41.0 (33.3)	19.0 (50.1)	23.3 (31.1)	8.1 (14.3)	0
JULY	1-10	MS-BS	59	21.6 (24.7)	50.2 (30.3)	0	11.4 (21.2)	14.8 (22.1)	0
JULY	11-20	MS-BS	113	16.1 (18.5)	33.4 (32.9)	30.5 (50.9)	4.6 (28.6)	15.4 (16.8)	0
JULY	21-31	MS-BS	44	28.8 (28.4)	55.4 (48.0)	13.4 (42.1)	0	2.5 (20.6)	0
JUNE	ALL	MS-BS	297	12.6 (11.9)	50.3 (24.3)	15.9 (34.6)	9.9 (19.0)	11.3 (10.5)	0
JULY	ALL	MS-BS	216	18.7 (14.5)	42.5 (25.9)	19.6 (37.6)	4.7 (20.3)	14.6 (12.5)	0

Appendix Table G3. Estimates of the western Alaskan stock composition of brood year 1973 chinook salmon caught as immature 1.2's in 1977.

MONTH	10-DAY PERIOD	AREA	N	ASIA73A	YUK73A	KUSK73A	BRIS73A	CENT73A	SEBC73A
JUNE	21-30	8056	73	0	29.1 (34.7)	24.7 (38.8)	46.2 (22.6)	0	0
JULY	1-10	8058	28	0	0	45.3 (39.8)	54.5 (38.9)	0	0.2 (8.9)
JULY	11-20	8054	34	0	0	70.6 (46.1)	15.7 (38.1)	9.0 (26.0)	4.7 (13.7)
JULY	11-20	8056	67	0	47.1 (37.9)	5.3 (39.1)	42.5 (25.7)	0	5.1 (8.0)
JULY	11-20	8058	63	17.7 (27.9)	13.0 (39.8)	27.8 (60.8)	38.0 (33.0)	0	3.5 (8.5)
JULY	21-31	8056	27	12.8 (25.2)	23.9 (34.4)	0	63.3 (32.3)	0	0
JUNE	ALL	E7550	52	0	43.0 (26.2)	0	17.0 (20.6)	39.9 (19.9)	0
JUNE	ALL	E7552	28	0	42.4 (59.6)	29.4 (65.7)	22.0 (36.4)	0	6.2 (13.5)
JUNE	ALL	8056	81	0	27.7 (34.7)	34.0 (39.2)	38.3 (21.5)	0	0
JULY	ALL	8054	41	0	0	72.7 (42.9)	14.9 (35.5)	8.9 (24.0)	3.5 (11.6)
JULY	ALL	8056	100	3.2 (22.1)	34.0 (42.6)	15.2 (56.2)	44.7 (28.4)	1.0 (15.8)	1.9 (7.5)
JULY	ALL	8058	111	6.6 (19.9)	5.7 (32.5)	45.1 (52.9)	37.6 (27.8)	0	5.1 (7.5)
JUNE	21-30	8	31	3.6 (24.8)	54.7 (39.8)	0	35.8 (34.4)	0	5.9 (12.4)
JUNE	21-30	10	80	0	26.3 (33.0)	25.9 (37.3)	47.9 (21.8)	0	0
JULY	1-10	10	34	0	0	48.5 (36.3)	48.8 (35.5)	0	2.7 (10.1)
JULY	11-20	10	166	4.9 (18.6)	27.0 (33.1)	19.9 (45.3)	41.3 (22.6)	2.3 (13.7)	4.6 (7.5)
JULY	21-31	10	54	0	31.0 (40.1)	21.6 (45.2)	47.1 (29.4)	0	0.4 (5.3)
JUNE	ALL	8	41	0	47.0 (50.7)	26.3 (55.3)	22.9 (30.6)	0	3.7 (9.4)
JUNE	ALL	10	99	0	23.2 (33.0)	46.6 (39.3)	27.7 (22.2)	0	2.5 (5.9)
JULY	ALL	10	254	4.1 (16.0)	21.7 (28.8)	28.6 (40.9)	39.7 (19.8)	0.3 (11.3)	5.5 (6.4)
JUNE	11-20	MS-BS	29	0	28.7 (81.3)	66.9 (82.8)	0	0	4.4 (11.6)
JUNE	21-30	MS-BS	111	0	27.9 (30.5)	36.0 (35.6)	32.9 (20.9)	0	3.2 (5.7)
JULY	1-10	MS-BS	43	4.2 (26.6)	0	53.8 (52.1)	35.7 (38.8)	0	6.3 (10.9)
JULY	11-20	MS-BS	190	8.1 (18.9)	26.1 (30.7)	17.7 (42.1)	40.1 (21.0)	4.7 (14.1)	3.3 (6.8)
JULY	21-31	MS-BS	69	14.4 (25.6)	30.5 (42.5)	21.1 (58.3)	29.0 (29.8)	0	4.9 (8.8)
JUNE	ALL	MS-BS	140	0	30.2 (29.1)	40.6 (33.9)	26.3 (18.8)	0	2.9 (5.1)
JULY	ALL	MS-BS	302	10.9 (16.4)	24.0 (25.9)	20.4 (36.3)	38.5 (17.6)	1.1 (11.0)	5.1 (5.8)

Appendix Table G4. Estimates of the western Alaskan stock composition of brood year 1974 chinook salmon caught as immature 1.2's in 1978.

MONTH	10-DAY PERIOD	AREA	N	ASIA74A	YUK74A	KUSK74A	BRIS74A	CENT74A	SEBC74A
JUNE	11-20	E7046	45	14.4 (24.8)	44.8 (37.9)	16.0 (40.1)	0	4.5 (27.2)	20.2 (20.5)
JUNE	11-20	E7050	34	20.2 (22.4)	56.2 (31.5)	23.6 (34.7)	0	0	0
JULY	1-10	E7050	158	39.6 (15.5)	27.7 (14.6)	0	0	23.1 (15.7)	9.6 (7.8)
JULY	1-10	8056	29	11.7 (18.7)	86.6 (20.1)	0	0	0	1.7 (8.4)
JULY	11-20	8056	35	9.1 (22.8)	46.1 (36.5)	0	16.1 (30.4)	18.0 (33.8)	10.7 (19.6)
JULY	11-20	8058	28	0	72.9 (39.4)	2.4 (40.1)	18.8 (35.9)	0	5.9 (13.6)
JULY	21-31	E7048	26	22.5 (38.1)	23.3 (43.3)	0	0	30.0 (47.2)	14.3 (26.6)
JULY	21-31	E7548	32	22.3 (36.7)	22.5 (41.8)	39.7 (55.1)	0	9.9 (33.2)	5.5 (15.8)
JUNE	ALL	E7050	84	13.9 (20.6)	39.1 (29.3)	24.9 (33.1)	0	21.4 (25.7)	0.8 (8.6)
JULY	ALL	E6550	25	44.9 (29.3)	44.2 (31.1)	0	0	10.9 (26.2)	0
JULY	ALL	E7050	252	36.0 (12.5)	30.7 (12.1)	0	0	21.7 (13.0)	11.7 (6.7)
JULY	ALL	8056	64	5.3 (14.4)	68.5 (28.5)	0	11.9 (23.2)	7.1 (21.2)	7.2 (12.2)
JULY	ALL	8058	28	0	72.9 (39.4)	2.4 (40.1)	18.8 (35.9)	0	5.9 (13.6)
JUNE	11-20	5	103	18.3 (18.0)	46.6 (26.4)	10.9 (27.1)	0	13.8 (21.5)	10.4 (11.4)
JULY	1-10	10	31	0	91.6 (9.7)	0	0	0	8.4 (9.7)
JULY	11-20	10	71	10.0 (15.9)	62.5 (27.1)	0	13.4 (22.3)	7.8 (20.4)	6.3 (11.1)
JULY	21-31	3	26	22.5 (38.1)	23.2 (43.3)	10.0 (46.1)	0	30.8 (47.2)	14.3 (26.6)
JULY	21-31	5	51	35.5 (18.8)	42.4 (19.4)	0	0	0	22.1 (13.9)
JULY	21-31	7	60	15.3 (25.4)	25.2 (31.8)	31.5 (38.8)	0	24.0 (30.3)	4.3 (12.7)
JULY	21-31	9	32	5.0 (21.1)	60.6 (39.9)	25.3 (42.4)	0	9.1 (25.2)	0
JUNE	ALL	5	261	16.2 (12.2)	43.8 (18.1)	10.8 (38.6)	0	21.0 (16.5)	8.2 (7.6)
JULY	ALL	3	50	19.5 (22.2)	50.7 (26.1)	0	0	24.8 (27.1)	5.1 (11.0)
JULY	ALL	7	71	17.7 (23.7)	28.5 (29.7)	24.8 (34.6)	0	26.2 (28.8)	2.8 (11.2)
JULY	ALL	9	68	3.3 (14.8)	58.0 (28.2)	23.5 (29.3)	0	15.2 (19.7)	0
JULY	ALL	10	103	6.6 (12.1)	69.5 (23.3)	0	11.1 (18.8)	6.8 (17.1)	6.0 (9.2)

Appendix Table G4. Continued.

MONTH	10-DAY PERIOD	AREA	N	ASIA74A	YUK74A	KUSK74A	BRIS74A	CENT74A	SEBC74A
JUNE	11-20	MS-PAC	103	18.3 (18.0)	46.6 (26.4)	10.9 (27.1)	0	13.8 (21.5)	10.4 (11.4)
JUNE	21-30	MS-BS	27	0	87.3 (33.1)	11.6 (32.7)	0	0	1.1 (8.8)
JULY	1-10	MS-PAC	239	37.7 (13.0)	31.4 (12.6)	0	0	22.6 (13.4)	8.3 (6.2)
JULY	1-10	MS-BS	32	0	84.6 (26.4)	0	10.8 (24.9)	0	4.6 (10.2)
JULY	11-20	MS-BS	79	8.4 (14.5)	64.3 (25.9)	0	12.4 (21.1)	8.0 (19.6)	6.9 (10.9)
JULY	21-31	MS-PAC	169	21.7 (16.0)	34.7 (20.5)	19.1 (23.2)	0	18.1 (18.1)	6.3 (8.2)
JUNE	ALL	MS-PAC	264	16.4 (12.2)	43.0 (18.0)	10.5 (18.4)	0	22.1 (16.7)	7.9 (7.6)
JUNE	ALL	MS-BS	39	0	91.4 (33.0)	4.3 (36.1)	3.7 (26.2)	0	0.7 (7.4)
JULY	ALL	MS-BS	116	11.7 (13.5)	68.9 (27.6)	2.0 (24.1)	7.3 (20.9)	5.0 (16.8)	5.1 (9.0)

Appendix Table G5. Estimates of the western Alaskan stock composition of brood year 1975 chinook salmon caught as immature 1.2's in 1979.

MONTH	10-DAY PERIOD	AREA	N	ASIA75A	YUK75A	KUSK75A	BRIS75A	CENT75A	SEBC75A
JUNE	21-30	E7050	79	11.5 (14.7)	42.7 (20.5)	13.6 (18.0)	0	32.2 (22.0)	0
JULY	1-10	E7558	26	0	55.7 (40.2)	31.6 (49.5)	2.2 (49.5)	10.5 (22.8)	0
JULY	11-20	E7556	96	0	35.2 (20.9)	12.7 (25.0)	23.4 (29.6)	28.7 (16.4)	0
JULY	11-20	8056	80	0	21.4 (20.5)	42.5 (32.9)	16.1 (34.3)	19.9 (15.6)	0
JULY	21-31	8050	56	12.3 (19.5)	0	52.7 (23.2)	0	33.4 (31.7)	1.6 (11.7)
JULY	21-31	8056	28	0	42.5 (38.8)	20.6 (49.0)	27.1 (56.3)	9.9 (21.1)	0
JULY	21-31	8058	39	0	23.1 (26.1)	39.8 (43.4)	37.1 (49.0)	0	0
JUNE	ALL	E7050	93	12.3 (13.8)	42.1 (19.0)	15.2 (17.0)	0	30.3 (20.1)	0
JULY	ALL	E7556	118	0	42.0 (19.4)	17.9 (22.9)	14.4 (25.7)	25.8 (14.5)	0
JULY	ALL	E7558	35	0	54.7 (35.0)	33.6 (44.2)	5.4 (45.0)	6.3 (17.3)	0
JULY	ALL	8050	62	13.3 (18.7)	0	54.5 (22.1)	0	30.9 (29.8)	1.3 (10.7)
JULY	ALL	8056	125	1.0 (9.8)	30.2 (19.9)	26.9 (30.5)	15.7 (31.0)	26.2 (19.3)	0
JULY	ALL	8058	50	0	27.5 (27.6)	38.8 (42.7)	32.9 (47.1)	0.8 (10.2)	0
JUNE	11-20	5	29	15.0 (25.5)	32.5 (31.4)	22.7 (31.0)	0	29.8 (34.3)	0
JUNE	21-30	5	89	14.4 (15.0)	36.7 (18.8)	15.1 (17.3)	0	33.8 (21.2)	0
JULY	1-10	8	48	0	65.7 (23.6)	19.0 (21.1)	0	15.2 (17.3)	0
JULY	1-10	10	33	4.5 (20.6)	52.1 (39.9)	15.9 (48.2)	2.6 (47.1)	24.8 (35.5)	0
JULY	11-20	8	96	0	35.2 (20.9)	12.7 (25.0)	23.4 (29.6)	28.7 (16.4)	0
JULY	11-20	10	84	0	23.6 (20.3)	44.8 (32.2)	13.0 (33.2)	18.7 (15.0)	0
JULY	21-31	9	70	17.4 (19.3)	0	50.1 (21.0)	0	32.0 (28.7)	0.5 (9.9)
JULY	21-31	10	67	0	29.0 (24.5)	31.4 (36.6)	38.0 (41.4)	1.5 (9.4)	0
JUNE	ALL	5	132	16.0 (12.9)	36.2 (15.7)	17.8 (14.8)	0	30.0 (17.4)	0
JULY	ALL	8	153	0	44.9 (17.5)	21.5 (20.9)	12.3 (23.0)	21.3 (12.2)	0
JULY	ALL	9	78	19.0 (18.8)	0	50.0 (20.0)	0	30.9 (27.3)	0.1 (9.0)
JULY	ALL	10	184	0.6 (7.5)	28.3 (16.7)	29.4 (26.9)	20.6 (27.7)	21.2 (15.3)	0
JUNE	1-10	MS-PAC	25	23.6 (42.2)	24.6 (43.6)	14.2 (60.8)	18.0 (64.2)	17.9 (54.2)	1.8 (17.5)
JUNE	21-30	MS-PAC	90	14.1 (14.9)	36.1 (18.7)	16.4 (17.4)	0	33.3 (21.0)	0
JULY	1-10	MS-BS	81	0	60.5 (18.5)	19.7 (16.7)	0	19.8 (14.5)	0
JULY	11-20	MS-BS	200	2.8 (9.4)	27.1 (15.9)	24.9 (24.6)	15.3 (25.0)	29.8 (16.8)	0
JULY	21-31	MS-BS	78	0	34.6 (23.3)	31.3 (33.6)	33.8 (37.8)	0.4 (8.2)	0
JUNE	ALL	MS-PAC	151	16.0 (12.4)	33.0 (14.5)	18.2 (14.1)	0	32.8 (16.9)	0
JULY	ALL	MS-BS	359	1.3 (6.5)	34.5 (13.2)	25.8 (19.8)	15.2 (20.3)	23.1 (12.3)	0

Appendix Table G6. Estimates of the western Alaskan stock composition of brood year 1976 chinook salmon caught as immature 1.2's in 1980.

MONTH	10-DAY PERIOD	AREA	N	ASIA76A	YUK76A	KUSK76A	BRIS76A	CENT76A	SEBC76A
JULY	1-10	E7054	56	12.1 (10.8)	69.3 (31.3)	18.6 (30.8)	0	0	0
JULY	1-10	E7556	130	8.2 (6.4)	60.9 (22.2)	30.9 (22.3)	0	0	0
JULY	1-10	8056	51	4.9 (10.7)	50.6 (48.8)	29.7 (45.3)	14.7 (35.5)	0	0
JULY	11-20	E7052	41	0	59.0 (23.3)	0	0	18.8 (30.8)	22.2 (24.2)
JULY	11-20	E7556	91	10.2 (8.1)	62.8 (25.6)	27.0 (25.5)	0	0	0
JULY	11-20	8054	28	0	64.9 (32.0)	35.1 (32.0)	0	0	0
JULY	11-20	8056	88	0	43.9 (28.8)	54.2 (28.9)	0	1.9 (11.1)	0
JULY	21-31	E7558	29	1.0 (9.3)	59.7 (42.4)	0	39.3 (40.2)	0	0
JUNE	ALL	E7050	73	7.4 (10.2)	70.9 (36.5)	9.2 (35.5)	0	12.4 (18.6)	0
JULY	ALL	E7052	41	0	59.0 (23.3)	0	0	18.8 (30.8)	22.2 (24.2)
JULY	ALL	E7054	75	4.6 (9.4)	46.9 (36.4)	41.1 (38.1)	0	7.5 (16.7)	0
JULY	ALL	E7556	223	8.9 (5.1)	61.6 (18.1)	29.5 (18.2)	0	0	0
JULY	ALL	E7558	29	1.0 (9.3)	59.7 (42.4)	0	39.3 (40.2)	0	0
JULY	ALL	8054	28	0	64.9 (32.0)	35.1 (32.0)	0	0	0
JULY	ALL	8056	139	4.1 (6.8)	33.4 (30.8)	53.9 (31.0)	8.6 (21.7)	0	0
JUNE	1-10	5	27	19.2 (25.3)	50.7 (33.8)	0	0	7.8 (42.6)	22.2 (30.9)
JUNE	11-20	5	32	0	85.0 (17.1)	0	0	15.0 (17.1)	0
JULY	1-10	6	56	12.1 (10.8)	69.3 (31.3)	18.6 (30.8)	0	0	0
JULY	1-10	8	130	8.2 (6.4)	60.9 (22.2)	30.9 (22.3)	0	0	0
JULY	1-10	10	57	4.1 (9.6)	54.0 (46.9)	29.3 (43.3)	12.6 (33.6)	0	0
JULY	11-20	6	30	8.0 (19.6)	47.0 (79.2)	25.1 (84.2)	6.2 (46.0)	13.7 (32.8)	0
JULY	11-20	8	105	9.7 (7.4)	65.9 (24.2)	24.4 (24.1)	0	0	0
JULY	11-20	10	116	1.9 (6.7)	27.8 (33.6)	66.5 (34.6)	3.9 (23.0)	0	0
JULY	21-31	8	31	0.8 (8.7)	59.5 (41.1)	0	39.8 (39.0)	0	0
JULY	ALL	6	93	9.8 (10.4)	39.2 (29.1)	49.2 (31.6)	0	0	1.8 (7.9)
JULY	ALL	8	266	8.4 (4.6)	62.5 (17.2)	29.1 (17.2)	0	0	0
JULY	ALL	10	185	2.1 (5.5)	33.0 (28.1)	59.6 (28.5)	5.3 (19.4)	0	0
JUNE	1-10	MS-PAC	29	17.8 (23.7)	56.0 (32.9)	0	0	5.3 (40.1)	20.9 (28.9)
JUNE	11-20	MS-PAC	31	0	78.1 (42.6)	4.5 (39.0)	0	17.4 (23.2)	0
JULY	1-10	MS-BS	243	7.6 (4.7)	66.8 (17.9)	25.6 (17.9)	0	0	0
JULY	11-20	MS-BS	251	6.2 (4.4)	54.6 (17.5)	39.3 (17.7)	0	0	0
JULY	21-31	MS-BS	50	0	58.6 (24.5)	41.4 (24.5)	0	0	0
JULY	ALL	MS-BS	544	6.4 (3.2)	60.3 (14.1)	33.3 (14.2)	0	0	0

Appendix Table G7. Estimates of the western Alaskan stock composition of brood year 1977 chinook salmon caught as immature 1.2's in 1981.

MONTH	10-DAY PERIOD	AREA	N	ASIA77	YUK77	KUSK77	BRIS77	CENT77	SEBC77
JUNE	11-20	E7050	79	20.8 (16.5)	55.0 (32.9)	10.5 (36.6)	9.0 (16.6)	0	4.6 (7.8)
JULY	1-10	E7556	48	0	74.2 (33.2)	0.5 (35.7)	16.5 (18.9)	8.9 (17.4)	0
JULY	11-20	E7050	424	17.8 (7.8)	22.9 (12.3)	11.9 (15.0)	12.4 (8.0)	30.3 (11.7)	4.8 (5.6)
JULY	11-20	E7052	33	3.7 (15.6)	24.3 (40.5)	31.5 (53.3)	16.9 (28.1)	23.6 (31.8)	0
JULY	11-20	E7556	71	1.3 (9.3)	61.3 (32.6)	14.5 (36.5)	6.8 (14.0)	16.2 (19.8)	0
JULY	11-20	8056	65	8.5 (13.5)	57.1 (32.2)	3.8 (34.5)	19.7 (18.8)	10.8 (18.3)	0
JULY	21-31	E7556	27	0	21.4 (34.8)	47.0 (40.6)	0	31.5 (27.3)	0
JUNE	ALL	E7050	279	19.2 (9.6)	37.7 (17.5)	20.5 (20.9)	1.0 (7.0)	18.9 (12.7)	2.7 (5.0)
JULY	ALL	E7052	37	6.8 (16.7)	21.8 (36.2)	24.7 (48.5)	26.1 (29.3)	20.5 (28.6)	0
JULY	ALL	E7556	146	0.1 (6.3)	58.7 (23.9)	15.8 (26.9)	5.1 (9.6)	20.3 (15.0)	0
JULY	ALL	8056	111	5.9 (8.8)	62.3 (17.0)	0	15.1 (11.4)	16.7 (13.9)	0
JUNE	11-20	5	107	26.5 (15.4)	50.6 (28.7)	12.7 (31.4)	5.0 (12.8)	0	5.2 (7.0)
JULY	1-10	8	48	0	74.2 (33.2)	0.5 (35.7)	16.5 (18.9)	8.9 (17.4)	0
JULY	11-20	8	71	1.3 (9.3)	61.3 (32.6)	14.5 (36.5)	6.8 (14.0)	16.2 (19.8)	0
JULY	11-20	10	76	8.5 (12.5)	51.1 (30.1)	14.6 (34.8)	18.9 (17.8)	7.0 (16.1)	0
JUNE	ALL	5	371	22.1 (9.0)	38.9 (15.6)	14.0 (17.6)	0.7 (5.6)	22.1 (11.5)	2.2 (4.4)
JULY	ALL	8	161	0	64.1 (20.2)	15.1 (23.3)	11.7 (10.2)	9.1 (10.5)	0
JULY	ALL	10	122	6.9 (9.6)	58.2 (24.9)	6.6 (27.1)	15.3 (13.0)	13.0 (14.4)	0
JUNE	11-20	MS-PAC	107	26.5 (15.4)	50.6 (28.7)	12.7 (31.4)	5.0 (12.8)	0	5.2 (7.0)
JULY	1-10	MS-BS	75	0	66.2 (27.4)	9.0 (30.8)	17.4 (15.9)	7.4 (13.9)	0
JULY	11-20	MS-BS	147	5.0 (8.1)	56.0 (23.3)	14.5 (26.6)	13.0 (11.7)	11.4 (13.1)	0
JULY	ALL	MS-BS	301	2.5 (5.5)	60.9 (18.3)	11.6 (20.6)	10.1 (7.8)	15.0 (10.3)	0

Appendix Table H1. Estimates of the western Alaskan stock composition of brood year 1970 chinook salmon caught as immature 1.3's in 1975.

MONTH	10-DAY PERIOD	AREA	N	ASIA70	YUK70	KUSK70	BRIS70	CENT70	SEBC70
JUNE	ALL	MS-BS	27	4.1 (21.5)	37.3 (51.2)	0	49.1 (54.9)	9.5 (24.7)	0

Appendix Table H2. Estimates of the western Alaskan stock composition of brood year 1972 chinook salmon caught as immature 1.3's in 1977.

MONTH	10-DAY PERIOD	AREA	N	ASIA72B	YUK72B	KUSK72B	BRIS72B	CENT72B	SEBC72B
JULY	ALL	8058	32	28.9 (34.2)	23.4 (44.2)	41.1 (47.7)	0	6.5 (24.0)	0
JUNE	11-20	7	34	23.0 (37.0)	7.8 (42.2)	21.0 (65.6)	20.2 (45.4)	27.9 (33.9)	0
JULY	11-20	10	32	7.6 (26.4)	25.8 (47.4)	59.8 (50.2)	0	6.8 (24.1)	0
JUNE	ALL	7	54	30.4 (31.3)	13.9 (34.9)	10.5 (49.2)	19.8 (34.1)	25.4 (26.6)	0
JUNE	ALL	8	32	24.7 (32.4)	43.4 (48.6)	31.1 (48.0)	0	0.8 (21.5)	0
JUNE	ALL	10	27	13.2 (29.7)	64.3 (56.1)	17.6 (77.2)	4.8 (46.7)	0	0
JULY	ALL	10	49	24.5 (26.9)	16.0 (35.5)	53.0 (39.9)	0	6.5 (19.4)	0
JUNE	11-20	MS-PAC	47	26.3 (32.6)	7.3 (36.6)	27.0 (57.8)	12.1 (37.1)	27.2 (29.0)	0
JUNE	21-30	MS-BS	46	12.2 (20.2)	57.0 (35.3)	30.9 (36.3)	0	0	0
JULY	11-20	MS-BS	35	15.8 (28.6)	21.3 (43.9)	57.8 (47.7)	0	5.1 (22.2)	0
JUNE	ALL	MS-BS	59	15.9 (18.7)	51.7 (30.9)	32.4 (32.2)	0	0	0
JULY	ALL	MS-BS	59	38.8 (27.3)	9.0 (30.4)	49.0 (36.2)	0	3.2 (16.6)	0

Appendix Table H3. Estimates of the western Alaskan stock composition of brood year 1973 chinook salmon caught as immature 1.3's in 1978.

MONTH	10-DAY PERIOD	AREA	N	ASIA73B	YUK73B	KUSK73B	BRIS73B	CENT73B	SEBC73B
JULY	ALL	MS-PAC	53	0	18.5 (43.0)	23.1 (49.7)	6.9 (25.4)	40.8 (29.5)	10.6 (17.9)

Appendix Table H4. Estimates of the western Alaskan stock composition of brood year 1975 chinook salmon caught as immature 1.3's in 1980.

MONTH	10-DAY PERIOD	AREA	N	ASIA75B	YUK75B	KUSK75B	BRIS75B	CENT75B	SEBC75B
JUNE	ALL	E7050	39	9.5 (18.6)	22.6 (27.2)	58.8 (29.9)	0	9.0 (22.6)	0
JUNE	21-30	5	28	0	20.6 (26.1)	52.6 (28.5)	0	26.8 (24.0)	0
JUNE	ALL	5	64	9.9 (15.3)	29.1 (22.3)	47.9 (23.3)	0	13.2 (19.5)	0
JULY	ALL	8	28	9.9 (16.5)	2.3 (21.3)	87.8 (26.4)	0	0	0
JUNE	21-30	MS-PAC	30	0	23.0 (25.8)	48.0 (27.5)	0	28.9 (23.7)	0
JUNE	ALL	MS-PAC	66	9.6 (14.8)	29.9 (22.1)	48.0 (23.1)	0	12.5 (18.9)	0
JULY	ALL	MS-BS	48	14.1 (16.3)	5.6 (19.6)	75.2 (26.5)	0	0	5.0 (12.6)

Appendix Table H5. Estimates of the western Alaskan stock composition of brood year 1976 chinook salmon caught as immature 1.3's in 1981.

MONTH	10-DAY PERIOD	AREA	N	ASIA76B	YUK76B	KUSK76B	BRIS76B	CENT76B	SEBC76B
JUNE	11-20	E7050	49	16.4 (15.1)	59.7 (18.5)	0	0	0	23.9 (17.2)
JULY	1-10	E7050	26	0	44.4 (27.6)	0	0	20.5 (39.8)	35.1 (33.6)
JUNE	ALL	E7048	46	24.8 (20.7)	44.8 (26.2)	0	0	7.6 (32.3)	22.8 (25.5)
JUNE	ALL	E7050	124	13.6 (10.9)	54.9 (17.6)	0	0	16.7 (22.5)	14.8 (14.8)
JULY	ALL	8056	25	0.6 (15.3)	66.0 (31.2)	0	0	33.4 (32.2)	0
JUNE	11-20	5	64	18.3 (13.6)	61.1 (16.2)	0	0	0	20.6 (14.5)
JULY	21-31	5	25	26.1 (24.7)	52.2 (30.2)	0	0	21.7 (29.1)	0
JUNE	ALL	5	177	19.4 (10.2)	50.7 (14.7)	0	0	12.9 (18.6)	17.1 (12.8)
JULY	ALL	10	28	0	59.1 (21.4)	0	0	40.9 (21.4)	0
JUNE	11-20	MS-PAC	64	18.3 (13.6)	61.1 (16.2)	0	0	0	20.6 (14.5)
JULY	11-20	MS-BS	27	20.5 (24.0)	60.4 (39.5)	0	5.9 (30.7)	0	13.2 (22.3)
JULY	21-31	MS-PAC	25	26.1 (24.7)	52.2 (30.2)	0	0	21.7 (29.1)	0
JUNE	ALL	MS-PAC	186	19.6 (10.0)	51.0 (14.4)	0	0	10.6 (18.0)	18.8 (12.7)
JULY	ALL	MS-BS	59	5.2 (12.1)	58.2 (20.9)	0	0	36.6 (21.6)	0