

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

PRINCE WILLIAM SOUND AREA
ANNUAL FINFISH MANAGEMENT REPORT

1985



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PREFACE

This is the twenty-sixth annual management report prepared since the State assumed control of the fisheries from the federal government in 1960. The 1984 data is preliminary and will be finalized and corrected in subsequent reports. Data presented here supersedes information in previous management reports.

Table 1 is the most current and tables summarizing individual Districts may vary.

The report presents a brief description of the 1985 fishery and summarizes recent historical catch, escapement and related data on each species harvested by the commercial and subsistence salmon and herring fisheries.

The 1985 Annual Management Report was completed throughout the Fall of 1985 and Spring of 1986 and age composition tables were completed using preliminary catch data resulting in minor differences between similar catch and escapement data in other tables within this report.

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INTRODUCTION

The commercial salmon management area encompasses all coastal waters and inland drainages entering the northcentral Gulf of Alaska between Cape Suckling and Cape Fairfield (Figure 1). The area includes the Bering River, Copper River and all of Prince William Sound along with a total adjacent land area of approximately 38,000 square miles.

The Prince William Sound area consists of eleven management districts which correspond to the local geography and distribution of the five species of salmon harvested by the commercial fishery. The management objective for all districts is the achievement of desired escapement goals for major species while at the same time allowing for the orderly harvest of all fish surplus to spawning requirements.

The 1985 season harvest amounted to 29.1 million fish with an ex-vessel value of over \$43 million (Table 1). This establishes a new record for a combined species harvest and compares to an average annual harvest of approximately 16.7 million fish during the past decade (Table 3 and Figure 2). With only a few minor exceptions catches were within or above forecasted ranges for all districts and species and included new records for pink salmon within the Sound as well as for cohos in both the Copper River and Bering River districts. Sockeye harvests were slightly below the preseason projection for the Copper River district while returns of this species to Eshamy Lake were below a level necessary to permit an opening of the commercial fishery in this district. Price agreements were resolved by the start of the season in all fisheries and peak capacity was exceeded for only a short period during the seine season when buying operations were suspended for some fishermen.

Escapements are monitored through a variety of weir, sonar, aerial and ground enumeration programs. Escapements were optimum or above for all species and districts with the exception of king salmon in the Copper River and chum salmon in the Coghill and Northwestern districts (Table 2). Legal gear for the salmon fishery includes purse seines and both drift and set gill nets. Drift gill net fishermen are the most numerous and are permitted to fish in the Bering River, Copper River, Coghill, Unakwik and Eshamy districts. During the 1985 season 511 drift gillnet permit holders participated at least some time during the season. Set gill net gear is legal only in the Eshamy district and with a limited opening of only the Main Bay section 20 set gill net fishermen participated in the fishery this season. Purse seine gear is restricted to Prince William Sound proper and is utilized primarily to harvest pink and chum salmon. A total of 267 purse seine fishermen participated during the peak of that fishery this season.

The record setting salmon production for the Prince William Sound area continues a trend that began in 1979 and has been

sustained now for six consecutive years (Table 3 and Figure 2). The 1985 production is remarkable not only for the overall record number of fish but also for the depth and distribution of the return throughout all districts and amongst all species of salmon. The economic picture appears relatively stable at this time with an ex-vessel value that will rank as one of the most valuable harvests to the fishermen since the inception of the commercial fishery.

SEASON SUMMARY

Copper River District

This district was expected to produce a sockeye salmon harvest that would be near double the historic average with a likely surplus of 1.0-1.4 million fish after allowing for a desired escapement of 411,000 fish in the upriver spawning areas. A commercial harvest of this magnitude is considerably above the recent ten year average harvest of 550,000 sockeyes (Table 4 and Figure 3). The parent year escapement for a majority of the 1985 return was from 1980 which resulted from a season long closure of the sockeye salmon fishery that year. Despite the fact that the parent year escapement was slightly below that year's desired level of 350,000 fish, the distribution throughout the various spawning systems was good and coupled with prevailing mild winter conditions, above average survival conditions were expected to bolster returns. Escapements to the delta systems during the parent year were far above average with good distribution and this was also expected to contribute to the increased return. Management strategies during 1985 included a May 13 season opening with an optimum of two evenly spaced periods per week with inseason adjustments being made dependent on the development of the run. The projected season harvest was allocated into expected weekly harvests based on the historic pattern of catch in the commercial fishery (Table 5). In-season escapement trends were monitored using sonar counters on the main Copper River with aerial surveys of major spawning areas on the river delta not covered by the sonar. Adjustments in weekly fishing time were made based on the observed day to day changes in the status of the run compared to catch expectations and desired escapement goals.

Although the opening period was originally scheduled to be 36-hours, based on the unseasonably late breakup of the Copper River and the likelihood of a delay in the entry of fish into the river a decision was made just prior to the season to have two 24-hour periods during the first week. Two fishing periods per week were considered a better means of evaluating the early run entry pattern into the district so the opening period was shortened to reduce the catch and better assure that a second period later in the week would be possible. There were 15 buyers on the grounds for the opener and a delay in fishing due to unresolved prices was not a factor as has normally occurred during recent years. An estimated 446 boats managed a catch of 46,386 sockeyes which was near the midpoint of the predicted harvest range for the

first week (Tables 5 and 6 and Figure 6). Although the catch after the end of the first period was just below the midpoint of the projected weekly catch the early trend looked favorable and the second weekly period was permitted as scheduled. Weather conditions and tidal cycles were optimum throughout the week and the early catches suggested a rapidly building trend within the district. The catch of 87,608 sockeyes during the second period was unexpectedly strong and was nearly double the initial period. The king salmon catch during these first two periods was unexpectedly strong and amounted to nearly 6,800 fish.

The sonar counter at Miles Lake was not installed and operational until May 28 due to ice conditions in the river. This is the latest the sonar has ever been installed since the program began in 1978 and is over a week later than the normal startup date. The river ice began to move out on May 26 and the first sonar unit was placed on the southbank site as soon as conditions improved. The second sonar unit was installed on the northbank on June 1 and continued to operate as ice and debris conditions allowed for the remainder of the season. The daily escapement counts observed on the southbank during the first few days were less than 2,000 fish and revealed that the first significant migration of fish had not yet reached Miles Lake. It appeared that the late breakup in the river had delayed the movement of the fish into the lower end of the river. Due to the delay in the normal timing of the migration no significant escapements were observed until June 2 and a clear trend was not apparent until later that week (Table 7 and Figure 4).

Faced with the uncertainty over the status of early escapements and an unexpectedly strong catch during the first week of the season a single 24-hour fishing period was scheduled for Monday May 20. This period produced an additional 98,329 sockeyes which brought the cumulative catch to just over 232,000 fish. Based on historic catch patterns the anticipated harvest for the second week of the season would be about 224,000 sockeyes so in light of the favorable forecast and the need for a continued test of the buildup of the run within the district a second 24-hour period was announced for Thursday evening, May 23. This period netted an additional 87,189 sockeyes and along with production from the earlier period resulted in a weekly catch of nearly 186,000. Weather conditions continued unseasonably mild and stable throughout the week and during an aerial survey of the fishery on May 24 nearly 65% of the fleet was observed fishing in outside waters with over 20 tenders taking deliveries out in the ocean under nearly calm conditions. This extended period of mild weather probably contributed to continued strong catches during the first two weeks of the season.

The strategy of two regularly spaced 24-hour periods each week continued through the end of May with indications that the run continued to build within the district and harvest trends progressed at a rate consistent with preseason expectations. Through the end of the second week of the season the cumulative sockeye catch stood at just over 320,000 which was at the upper

end of the projected harvest range for that stage of the run. King salmon catches also continued strong and the cumulative catch for this species was over 17,000 fish through the same period. The third week proved to be the peak and was highlighted by a catch of nearly 153,000 sockeyes and 7,100 kings during the 24-hour period that began on Monday May 27. The water level in the Copper River was beginning to rise rapidly by that time and along with the breakup and movement of ice out of the river the conditions for normal migration of fish into the lower end of the river were improving rapidly. With the delay in the installation of the sonar at Miles Lake until the end of May and the normal 7-9 day travel time required for fish to reach this point the escapement trend through the end of May provided little insight into the overall status of the run.

The second period of the week began as scheduled on Thursday evening, May 30 and produced an additional 86,000 sockeyes. Inclement weather severely reduced catches during that period but brought the weekly catch to 239,000 which was slightly above expectations for that week and was ultimately to be the peak with nearly 25% of the total season catch. The king catch during the same period progressed at nearly the same level with a weekly harvest of 10,700 fish.

With catches continuing as expected through the first part of June and a rapidly increasing escapement trend beginning at Miles Lake and into the lower end of the Copper River another 24-hour period was scheduled for Monday June 3. The catch during this period produced an additional 57,422 sockeyes and although weather conditions significantly reduced the effort it appeared that the run was past peak in the district. Although the cumulative escapement through Miles Lake was below desired levels for that date there appeared to be a delay of as much as a week in the normal migration of fish into the lower river. Based on this pattern and a normal week lag in the travel time for fish migrating between the fishing district and the Miles Lake sonar station, it was assumed that there was likely to be between 75,000 and 150,000 fish in the river above the fishing district by that time. As expected the escapements increased rapidly through the end of the first week of June and between June 4 and 9 the rate averaged over 1,000 fish per hour. Peak daily counts have exceeded this level on numerous occasions during previous years but the sustained rate observed during this period was unprecedented. Due to the late and sudden breakup of the river ice that coincided with with rapidly rising water levels, the largest tides of the summer and a period of severe weather the fish that had tended to accumulate within the district and the lower end of the river began moving in response to this combination of conditions.

Since the overall trend remained unchanged the management strategy of having two regularly spaced 24-hour periods was extended for an additional week. The catch during the week of June 10-14 produced an additional 95,672 sockeyes which brought the season cumulative to 763,000 fish which was near the lower

end of the expected range through the end of that week. The weekly harvest was considerably below what was expected but also coincided with the opening of the fishery in the Bering River district and the 50-60 boats that fished there shifted some of the pressure from the Copper River district.

Commencing with the week of June 17 the pattern of weekly periods was extended until further notice to include a 48-hour and a 36-hour period each week. This change also coincided with the season opening of the Coghill and Unakwik districts so effort was widely distributed amongst the four districts open to drift gill net gear at that time. Sockeye catches for the week amounted to 70,056 fish and were disappointing since the anticipated catch would have been closer to double this amount. The cumulative sockeye catch through the end of the week was about 827,000 and was over 100,000 below preseason expectations. During this same time period the daily escapement trend at Miles Lake declined to a level that was consistently below desired counts for this stage of the season.

Based on this pattern, fishing time was reduced to a single 48-hour period each week commencing with the start of fishing on June 24 and remained in effect through the first week in July. Sockeye catches during these two weeks amounted to 31,000 and 25,000 fish, respectively and continued a trend in the catches that were below expectations relative to the forecast. Escapements paralleled this pattern and by the end of June the cumulative escapement trend was falling below desired levels following more than two consecutive weeks of inadequate daily counts (Figure 5).

Faced with a long term decline in both catch and escapement the Copper River district was closed until further notice after the end of the weekly period on July 3. Daily escapements remained unchanged until July 9 when the trend reversed itself and began what was ultimately to be a favorable pattern that would sustain itself for the duration of the season. Based on this situation the Copper River district was reopened for a 48-hour period on Wednesday July 17 and was followed by a resumption of regular weekly fishing periods for the balance of the season. Catches during this period contributed an additional 42,500 sockeyes which brought the season total to 925,000 fish. This was slightly below the lower end of the preseason projection but is over 400,000 above the recent ten year average and was the fourth largest catch since statehood (Table 4 and Figure 3).

The final count at Miles Lake was 436,313 when the sonar was pulled in early August which is about 25,000 above the desired goal of 411,000 for this system. Aerial surveys of the upper river systems amounted to 44,985 fish which compares to a recent ten year average of 58,831 and revealed good distribution to all major systems (Table 12). Aerial surveys of the major delta systems were conducted throughout the season and the combined peak estimate for the index areas of 146,043 which is above average with excellent distribution to all systems except for

Eyak Lake (Table 10 and Figure 3).

Sampling of the commercial sockeye catch revealed a normal preponderance of five year old fish. Age-length data from sockeye salmon sampling from both catch and escapement are summarized in Tables 16, 17 and 18.

King salmon are harvested incidental to the sockeye salmon with a portion of the fleet fishing large mesh king gear during the early periods. The king salmon catch was also unexpectedly strong and continued later in the season than usual. The season catch of 42,333 king salmon was the third largest historic harvest for this species in the Copper River district and considerably above the recent ten year average of 31,000 (Table 4 and Figure 7). King salmon escapements into the main Copper River are monitored through aerial surveys of major index areas and the results of this season's surveys showed an index that was only about a third of the long term average (Table 13). The escapements were disappointing in light of the above average size of the return and indicates there was an exploitation rate on king salmon that was higher than average for this species which is normally taken incidental to the sockeye harvests. Age-length analysis data for king salmon sampled from the commercial catch are summarized in Table 19.

As anticipated, the coho salmon return was also above average with a season harvest of 587,990 fish which establishes a new record for this species and surpasses the previous record set in 1982 by nearly 150,000 fish (Table 4 and Figure 8). Competitive markets existed from the onset of the season and encouraged full fishing effort starting with the season opener on August 5. Fishing effort was above average throughout the year due to a combination of large return, high prices and good weather and there was a peak effort of 334 boats during the week of August 26 through 29 (Table 6). The season continued uninterrupted until markets became unavailable during the last week in September and fishing effort ceased. The Age-length data for coho salmon sampled from the commercial catch are summarized in Table 23).

Aerial surveys of coho spawning systems provide an index to the escapement. Inclement weather and muddy streams make comparable annual escapement estimates difficult; however surveys were flown as late as the first week in October and suggests above average coho escapements in almost all spawning systems (Table 11).

Subsistence Fishery

Subsistence fishing for salmon in the Prince William Sound Area is permitted in the commercial fishing districts as well as in selected areas of the upper Copper River. In 1984, a personal use fishery was created in one section of the upper Copper River previously allocated to subsistence fishing. In 1985, the personal use category was returned to the subsistence priority. Catches from the subsistence fishery are monitored through the

use of mandatory permits that are available to Alaska residents only.

In the commercial districts, subsistence fishing is restricted to methods, means and times that are consistent with those of the commercial fishery except that fishing with gillnet gear is restricted to a maximum of 50 fathoms. The number of subsistence fishermen operating in these districts has fluctuated widely over the years, but catches have remained small. The number of subsistence permits and reported catches for the Copper River delta and Prince William Sound proper in recent years are outlined in Tables 14 and 15.

Subsistence fishing for salmon in the upper Copper River is permitted with dip nets and fishwheels. The parent year indicated an above average return for 1985, with a fully adequate escapement anticipated including sufficient numbers to provide for an unrestricted subsistence fishwheel fishery. The Department advised the public that with the anticipated return of salmon, restrictions would be unlikely. Seven day per week (unrestricted) fishing time was announced in late May for fishwheels while acknowledging that sonar counts during the season might necessitate adjustments in fishing time. Sonar counts ultimately verified that the sockeye return was nearly as strong as anticipated, thus no restrictions were applied to the subsistence fishwheel fishery, and it opened June 1 as scheduled. During a significant portion of the Copper River subsistence fishing season, sonar counts indicated a run in excess of the 411,000 salmon desired escapement level, thus no restriction was applied per the requirements of the Management Plan. The entire season went without change and closed on September 30. The final sonar count of 436,313 fish (Table 7 and Figure 6) support the lack of restriction in the fishery.

In 1985 there were 533 fishwheel permits issued for the upper Copper River subsistence fishery. The number of permits was not significantly changed from past years. Preliminary figures show individuals fishing subsistence fishwheel permits harvested 22,191 sockeye, 455 chinook, and 213 coho salmon (Table 14). The reported catch was consistent with expectations based upon past years and the revised management plan.

The subsistence dip net fishery was the designated gear type in the Chitina subdistrict. Most of the regulations governing the fishery are nearly identical to the subsistence fishwheel fishery rules with a few major exceptions. The dip net fishery does not have the same use priority (at least by implication) that the fishwheel fishery enjoys. The Copper River Salmon Management Plan was altered so that allocations or guideline harvest levels are established for both fishwheel and dip net users.

Weekly dip net fishery guideline harvest levels were established

for the first five weeks in order to control harvest rates in relation to escapement levels. The combination of all the above mentioned changes plus other minor revisions created an entirely new set of operational requirements which were accomplished without undue stress or problems.

The first four weeks of the fishery saw fishing periods 48 to 120 hours long with intensive effort. As the season progressed, however, effort decreased rapidly and weekly catches dropped also. By late June it was clear that sonar counts indicated run strength adequate to increase fishing time and continuous fishing was allowed until the end of the season (September 30).

In 1985, there were 4,153 dip net permits issued for the Copper River subsistence dip net fishery. The number of permits issued is comparable to the 1984 participation level showed a significant decline in dip net permittees (Table 13). Preliminary figures show that persons fishing dip net permits harvested 28,297 sockeye, 1,218 chinook and 331 coho salmon. The reported catch was below expectations and reflected lack of significant effort after the first four weeks of the fishery. The age composition of the sockeye salmon catches in the subsistence and personal use fisheries at Chitina are summarized in Table 24.

In the commercial districts, subsistence fishing is restricted to methods, means and times that are consistent with those of the commercial fishery. The number of subsistence fishing permits issued in 1985 was 94 gillnet permits for the Copper River Flats and 17 gillnet permits for the Coghill/Unakwik districts, 4 purse seine permits and 1 set gill net permit. Harvest from these areas is shown in Table 14, 15 and 16.

Bering River District

The pre-season outlook for this district was for an above average sockeye harvest of 80-100,000 fish in excess of the annual escapement goal of 30-40,000 fish in the Bering River system. A revised management plan for this district was adopted by the Board of Fisheries dealing with the fishery offshore of Kayak Island which stipulated a maximum harvest of 93,000 sockeye salmon from the outside waters with a season opening date of June 10 which is about a week earlier than normal. The fishery would be allowed to remain open in the outside waters until the harvest reached this level or until July 10 whichever occurred first. The primary management objective for the district was to be the achievement of the desired escapement goal for the Bering River and a closure of the entire district if escapements declined below desired levels. In light of the potential interception of non local stocks the outside fishery was to close if the Situk River had to be closed to obtain its escapement goal. The fishery in the outside waters has developed in recent years and has been contested by fishermen from the Yakutat area farther to the south. In addition to the primary objective of managing for local escapements the plan was geared to prevent any increase in the

harvest from outside waters and to reduce the potential interception of stocks of non local origin.

The season was opened as scheduled on June 10 and fishing periods coincided with those in the adjacent Copper River district. This initial 36-hour period produced a catch of 3,232 sockeye salmon with a majority reported from the waters offshore of Kayak Island. An aerial survey of the grounds revealed that 34 boats were fishing outside Kayak Island while only 18 boats were observed fishing inside Controller Bay and near the mouth of Bering River. Peak fishing effort and catch occurred during the second period later that week when a catch of 10,767 sockeyes was reported from 35 boats. The first aerial escapement survey of the season was flown on June 19 and revealed 200 fish already in the Bering River above the fishery which was less than has been observed by this date in recent years but wasn't unusual considering the delay in upriver migration already observed on the Copper River.

Catches declined significantly during the following week as weather severely reduced effort in outside waters. Several fishing boats were lost or had to be abandoned during this period due to rough seas and although no lives were lost a number of fishermen were rescued by helicopter from the grounds. Only 6,500 sockeyes were reported from the entire district during the week from less than 30 boats. Despite the impact of weather and reduced effort catch trends were considerably below what has been observed in this area during recent years.

Fishing time during the following week was reduced to a single 48-hour period due to concerns over declining escapements in the Copper River district and the necessity of scheduling similar fishing time in these two adjacent districts. No catches were reported from the Bering River district during this period. Sockeye returns to the Situk River were also developing below expectations by this time and by early July all fisheries in the Yakutat area that either directly or indirectly harvest Situk River sockeye were closed to increase escapements in that system. Consistent with the management plan developed for the Bering River district relative to potential interceptions of Situk River fish the area offshore of Kayak Island was closed to fishing for the duration of the season after July 1. The inside area remained open to fishing for various periods during the remainder of the summer season but no catches were reported from there until the start of the coho season in early August.

The total sockeye catch for the season amounted to only 26,561 fish with only 5,587 of these reported from the inside portion of the district (Table 25 and Figure 9). The average sockeye harvest in this district during the past ten years is 70,079 fish with a majority of the catch coming from the offshore area.

Considerable controversy has developed over the potential impact of the Kayak Island cape fishery on non local stocks. In an effort to better understand the composition and timing of the

stocks present in this fishery a tagging study was conducted in the area in 1985 during late June and early July. The detailed results of this study are summarized in a separate data report but it revealed the presence of a complex mixture of species and stocks bound for systems not only in the Prince William Sound and Copper/Bering area but also to the west in Cook Inlet and to the Situk River to the south. These findings suggest significant implications relative to the stock specific management of not only local stocks but also to those bound for other areas. Of particular importance to management of local stocks is the presence of a large number of Coghill Lake sockeyes since this stock is managed in a terminal fishery more than 100 miles away within Prince William Sound. In light of this new information and the continuing controversy over the potential impact of the Kayak Island cape fishery on management of the Situk River, the Department submitted a proposal to the Board of Fisheries requesting a permanent closure of this fishery.

Age-length data for sockeye salmon sampled from the commercial catch from the Bering River fisheries are summarized in Table 28. Because of the relatively small catches from the Controller Bay portion of the Bering River district and the tendency for these fish to be mixed aboard tenders in the Copper River district discrete samples were not consistently available from the inside area.

Escapements of sockeye salmon into local systems in the district are monitored through aerial surveys of key index streams. Sockeye escapements into Bering River index streams were late in developing this season and although not as large as what has been observed in recent years was at desired levels for this system. The peak escapement into index streams in 1985 amounted to 24,300 (Table 10 and Table 27). Escapements into index streams and lakes have averaged 34,755 fish during the past ten years and remain at or above desired levels for this district despite the recent development of the outside fishery and above average catches in the past six years (Table 27).

The coho season opened on August 5 but it wasn't until the middle of August that significant effort shifted to this district. Preseason projections suggested an above average harvest of coho salmon from this district based on the strong escapements in the parent years and the prevailing favorable environmental conditions. Early coho season catches were very strong and by the end of the first week of September the cumulative harvest had surpassed the previous record set a year earlier by nearly 100,000 fish. The total season harvest of 419,276 cohos was nearly double the previous record and is nearly four times the recent 10-year average (Table 25 and Figure 10).

Late season aerial surveys, although hindered by poor visibility, indicated that escapements were at unprecedented levels in most all Bering River district coho salmon index streams (Table 11). Based on the record harvests and the above average escapement trends, the season remained open until all fishing effort had

terminated. Age-length data for coho salmon sampled from the commercial catch are summarized in Table 29.

Coghill and Unakwik Districts

An above average return of sockeye salmon was forecasted for these districts with an anticipated combined harvest of 100-260,000 fish. The season opening date and weekly fishing periods in these adjacent districts traditionally coincide to maintain stable distribution of fishing effort. The actual return was considerably stronger than anticipated and resulted in a season harvest of 350,053 sockeye salmon which was more than double preseason expectations (Tables 30 and 55).

The Coghill River camp was opened during the first week of June but ice conditions on the lake prevented the operation of the weir until June 13. Despite the delay in the installation of the weir there were no significant escapements observed until the third week of June. Fish tended to school below the weir due apparently to the cold water conditions in the river and were reluctant to move upstream over the weir. The fish finally began to move on June 26 and daily counts seldom fell below 3,000 fish for the next three weeks (Table 33).

The season was opened for regular Monday through Thursday periods after June 17 and the first period produced a catch of 20,758 sockeye salmon from the Coghill district alone which was larger than expected for the first week of the season (Table 30). There were an additional 1,454 sockeyes delivered from the Unakwik district during this same period (Table 35).

Above average catches continued into the following week and produced an additional 71,535 sockeye salmon and brought the cumulative catch for the Coghill district to over 92,000 fish. Fishing effort increased significantly during the second week as 263 boats were operating in the area. The escapements increased rapidly during this time and by the end of the week the cumulative count through the weir was 33,579 sockeyes.

By the end of June the weir count had reached 45,155 sockeyes which was within the range of the desired escapement goal of 40-50,000 for Coghill Lake. Based on the continued strong escapements and the higher than expected catches in the Coghill district the season was extended until further notice after Friday evening, July 5 in an effort to maximize harvests of surplus sockeye salmon bound for Coghill Lake. Continuous seven day per week fishing remained in effect though the end of the normal weekly period on July 19. During this period an additional 136,565 sockeyes were delivered by gill net fishermen which brought the cumulative catch to over 364,000 fish. The extension of fishing time was allowed only in the Coghill district while regular Monday through Friday periods remained in effect in the Unakwik district. In accordance with a newly adopted regulation purse seine fishing was legal in the Coghill district commencing

on Saturday, July 6 which coincided with the extension of fishing time in that area. With no other areas open to seining at that time an unusually large number of seine boats fished this area until the general seine season opened later in mid July. During this period 57 seine boats caught an additional 9,537 sockeye salmon from the Coghill district. The Coghill district remained open for regular weekly fishing periods until it was closed for the season on Friday August 16 and the total sockeye catch for both gear types had reached 350,053 fish by that time. The peak period of the season occurred during the week of July 1-6 when 362 gill net fishermen delivered 135,804 sockeyes. The overall harvest was the second largest ever recorded for this district surpassed only by the catch of 947,431 sockeyes during 1982 (Table 31 and Figure 11). Of the season total purse seine gear caught 10,757 sockeyes or slightly more than 3% of the harvest for this species.

The weir on the Coghill River remained in operation through July 25 and the final escapement count of 163,332 sockeye salmon was the second largest escapement ever and above the optimum goal of 40-50,000 fish (Table 32). The combined catch and escapement for the Coghill return during 1985 amounted to over 500,000 fish which consisted predominantly of five year fish from a parent escapement of 142,000 in 1980. Prior to this season an analysis of the historic escapement and total return data for Coghill Lake had suggested the optimum escapement goal for this system could be lower than the current goal of 50,000 fish but based on the 1985 return it appears a longer term evaluation of escapement goals will be necessary. If future return information suggests a higher optimum goal for this system a return to the previous advertised range of 40-60,000 fish may be more reasonable.

The final catch for the Unakwik district was 27,670 sockeye salmon which is nearly double the recent 10-year average for this area (Table 35). With the exception of the extended period of continuous fishing allowed in the Coghill district the weekly fishing periods were identical for both districts and the season was closed in the Unakwik district at the same time on August 16.

The pink salmon harvest in the Coghill district amounted to 523,773 fish and was less than had been projected while the chum salmon catch of 266,154 fish was the largest ever recorded (Table 31.) The peak of the chum salmon catch occurred during the first two weeks of July while the pink salmon catches didn't peak until two weeks later during the last week of the month. A summary of the age and sex composition for chum salmon sampled from the commercial catch are presented in Table 54. Much of the fishing effort shifted to the Copper River district after the first week of August with the start of the coho season there and although the season remained open in the the Coghill district through mid August there were no gill net deliveries reported from there after August 9. The pink salmon escapement into the Coghill district was estimated to be 299,350 fish and although not as large as has been observed in recent years was above the current escapement goal for this district. The chum salmon

escapement of 23,290 was disappointing compared to a minimum desired level of 49,000 fish for this species.

The issue of early season allocations of fish between gill net and purse seine fishermen continues and has prompted several proposals requesting the further reduction in early purse seine catches. In addition to this several proposals are before the Board asking for an expansion of the Coghill district boundaries.

Coghill River climatological and stream observation data along with sockeye composition information of escapement and the commercial catches are summarized in Table 34 and Appendix Table C.

Eshamy District

The preseason outlook for the Eshamy district suggested the likelihood of at least a limited opening of the entire area for a harvest of 15-25,000 sockeye salmon surplus to the Eshamy Lake escapement goal of 20-30,000 fish. In addition to the potential for a sockeye fishery there was also a projected surplus of nearly one million pink salmon returning to the Main Bay hatchery also located within the district. The Main Bay subdistrict was opened for continuous fishing after July 29 and a separate discussion of the management of the returns of this species are covered under the hatchery section below.

The sockeye salmon return was much less than anticipated and a general opening of the district was never possible this season. The Eshamy River weir was operational by July 4 but the escapement trend for the balance of the month remained insignificant with daily counts seldom larger than a few hundred fish. Although the escapements gradually increased after the first week in August and reached a peak daily count of 1,985 fish on August 21, the cumulative count never approached a level that justified even a test opening of the commercial fishery.

The weir was operated through early October but the lower end of the desired escapement range of 20,000 wasn't reached until September 2 and the final escapement when the weir was dismantled was only 26,178 sockeye salmon. This season's escapement is the third largest in the last 10 years but is only the fourth time during this period that the minimum escapement goal has been secured (Table 40 and Figure 12). This continues a long term trend of less than adequate escapements to Eshamy Lake with only two years out of the four year cycle managing to achieve even minimum escapement goals. During this same period 10-year period the commercial fishery has been open only four years and the average sockeye harvest has been about 16,500 fish (Table 39).

Age composition data from sockeye salmon sampling of the escapement are summarized in Table 42. The pink, coho and chum salmon escapements that were enumerated during the season are summarized in Table 40. The climatological and stream observations recorded

at the Eshamy River weir are presented in Appendix Table D.

In response to the continued poor returns to the Eshamy district, several proposals have been submitted by Eshamy set net fishermen requesting changes in the Southwestern district purse seine fishery that would reduce the interception of sockeye salmon migrating through that area and bound for Eshamy Lake. The proposals cover a wide range of selective time and are closures within the Southwestern district.

General Purse Seine Districts

The outlook for the general purse seine districts was for an above average harvest of both pink and chum salmon. The midpoint of the forecasted return of wild stocks of pink salmon suggested a likely harvest of 12.8 million fish from a total run of 14.3 million. The return was expected to be strong in all districts since escapement goals were exceeded in all areas during the parent year. Early run pink salmon have produced harvestable returns during most recent odd year cycles permitting a late June opening of the general purse seine fishery. The most recent odd year cycle was not particularly strong during the early part of the run and this trend was expected to continue into the 1985 return with a likely opening of the purse seine fishery in selected areas of the Sound sometime after the first week of July. Unresolved fish prices have traditionally delayed the start of purse seine fishing in recent years but price disputes were not a major factor this season.

Aerial surveillance of the early buildup of pink and chum salmon began on June 20. The numbers of fish observed during these surveys were surprisingly strong compared to the parent year but appeared consistent with the large forecast and the normal tendency for strength in the early part of the run on the odd year cycle. There were no widespread indications, however that the early chum run was developing at forecasted levels. The early buildup of pink salmon was restricted to portions of the Eastern district and by the end of June continued aerial surveillance of the area revealed the number of fish in the area had doubled in less than a week. Based on the observed buildup and the large forecast the season was opened for two days in the Eastern district beginning on July 1. This period produced a pink salmon catch of 512,297 fish and chum catch of 51,508 by 154 purse seine boats.

Aerial monitoring of the entire Sound continued and the buildup of pink and chum salmon escapements spread to additional areas in both the Northern and Southeastern districts. The purse seine fishery was reopened in the Eastern, Northern and Southeastern districts for three days commencing on Wednesday, July 10. A special closure at the head of Wells Bay in the Northern district was imposed to provide additional protection to early chum salmon stocks needed for hatchery egg takes. This second opening produced an additional 820,119 pink salmon and 167,589 chum

salmon which brought the cumulative harvest to 1,332,416 and 219,097 for pink and chum salmon, respectively. The season was extended for regular Monday through Friday periods in these same three districts during the following week.

Aerial surveys throughout the Sound revealed a widespread buildup of pink salmon in many areas and prompted the expansion of the general purse seine fishery to include all remaining districts including the Northwestern, Southwestern and Montague districts. Regular weekly fishing periods were permitted until further notice after Monday, July 15. Daily pink salmon catches remained fairly stable throughout this first full week of fishing and averaged just under 400,000 fish per day and contributed an additional 1.9 million fish for the week. Catch trends picked up somewhat during the following week but did not appear to be developing at a rate consistent with the preseason projections and the normal odd year run timing. The daily catches increased to just under 600,000 pink salmon during the week of July 22-26 and with a weekly catch of almost 3.0 million fish brought the season cumulative to about 6.1 million fish. The strongest catches tended to be from the southern half of the Sound with an unexpectedly favorable show of fish in the Montague district. The northern half of the Sound appeared to lag early in the season and most of the fishing effort shifted out of the Northern and Northwestern districts. Chum catches were generally below forecasted levels during this same period and daily catches seldom exceeded 30,000 fish for all districts combined.

Pink salmon catches improved dramatically with the start of the weekly period on July 29 and held fairly steady for over two consecutive weeks. During this period the daily pink salmon catches average over one million fish per day. The peak catches occurred during the week of July 29-August 2 with a harvest of almost 6.0 million fish and an average daily catch of nearly 1.2 million pink salmon for all districts combined. Processing capacity was exceeded for only brief periods during the peak of the season when one major processor suspended buying on two separate days.

Due to less than adequate escapements to the private hatchery at Port San Juan the Point Elrington and Port San Juan subdistricts in the Southwestern district were closed for the entire week of August 12-16. Special adjustments were also required in the terminal area near the State hatchery at Cannery Creek in the Northern district to manage for pink salmon broodstock needs at that facility. A detailed discussion of the management of the returns to all six private and State hatcheries throughout the Prince William Sound area are included in a special section below.

Aerial surveys continued throughout the Sound and indicated adequate escapements were developing in most areas through the first week in August. Regular weekly fishing continued through August 16 by which time daily catches had begun a sharp decline throughout the Sound. The Northern, Coghill, Unakwik, and

Northwestern districts were closed for the season after the end of the regular weekly period on Friday, August 16 in order to assure minimum escapement requirements for pink salmon in those areas. By this time the cumulative pink salmon catch for the purse seine fishery was over 21.4 million fish. The Port Fidalgo subdistrict of the Eastern district was also closed for the season after August 16 in order to assure adequate late season chum salmon escapements into this area.

Catches continued to decline steadily during the next two weeks and the balance of the purse seine districts were closed with the end of the weekly period on Friday, August 30. By the end of the season the pink salmon catch in all general purse seine districts was over 22.2 million and the chum salmon was close to one million.

The season harvest of all species of salmon in the purse seine districts amounted to over 24.5 million fish which establishes a new harvest record for this fishery surpassing the previous record set in 1981 by almost 2.6 million fish (Table 44). This was highlighted by a record pink salmon harvest of over 23.3 million fish. The total return for this species in all Prince William fisheries was close to 26.7 million and was the largest run on record (Table 49 and Figure 13). Pink salmon escapements were at or above optimum levels in all districts but considering the record size of the return the escapements to the northern and northwestern portion of the Sound were relatively small (Table 48 and Figures 13 and 14).

The total run of chum salmon amounted to nearly 1.5 million fish (Table 48 and 50 and Figure 15). The total run was the third largest on record but the estimated season escapement of nearly 176,000 fish was shy of the desired escapement goal for this species. Escapements were at or above desired levels for only the Eastern and Northern districts (Table 48). The return was at the lower end of the forecasted range for this species and although escapements were below desired levels in some areas this was due in part to low escapements in those same areas during the parent years. Another contributing factor to generally inadequate chum escapements is the fact that chum salmon are also caught incidental to the more numerous pink salmon and can't be harvested at the same rate and still come out with a surplus in most years. They are also more valuable per pound than pink salmon and when schooled up are selectively targeted on in selected locations with the aid of spotter planes and deep seines. Also due to a loss of spawning and rearing areas as a result of the 1964 earthquake, desired escapements are no longer possible in areas such as Montague Island. Age composition data for chum sampled from the commercial fishery are summarized in Table 53.

The sockeye catch in the general purse seine districts was 125,041 fish (Table 43). This is the third largest catch of this species during the last ten years and compares to an average of just over 82,937 fish during the same period (Table 44). Of the

total catch of sockeyes in 1985 over 78,000 fish were taken from the Southwestern district. Aerial escapement estimates of sockeye salmon into various systems scattered throughout the Sound are summarized in Table 51 and age and sex composition of sockeye salmon sampled from the commercial catch from the general purse seine districts are summarized in Table 52.

Hatchery Management

Prince William Sound presently has three private non profit (one under construction) and two state operated hatchery facilities building toward a combined potential incubation capacity of 580 million pink eggs and 220 million chum eggs. If this production capacity is realized the future annual hatchery contribution to Prince William Sound fisheries could reach 20 million pink and 4.5 million chum salmon. Estimates of pink salmon returns since the inception of hatchery production are summarized in Table 47. The forecast combined hatchery return for 1985 was 6.68 million pink salmon and 155,000 chum salmon. The actual return of pink salmon was estimated at 8.7 million, coming in well above the forecast. With the exception of Main Bay, all facilities experienced higher than anticipated marine survival rates. A total of 379.7 million pink eggs were collected in 1985 for incubation in Prince William Sound hatcheries.

Chum returns to Prince William Sound hatcheries were in general below forecast levels. Development of chum salmon brood stock and hatchery returns is still underway for all facilities. An estimated 31.8 million chum salmon eggs were taken in 1985 for incubation in Prince William Sound facilities.

Solomon Gulch Hatchery (VFDA)

The Valdez Fisheries Development Association's Solomon Gulch hatchery had a forecast return of 294,000 pink salmon from the 1984 fry release of 8.4 million. This was the largest hatchery return to date, and a substantial sales harvest was anticipated. A small buildup of fish was reported in front of the hatchery in mid June, and on June 17th the Special Harvest Area (SHA) was opened to the hatchery operator primarily for the purpose of sex ratio sampling. Sales harvesting began on June 21 with sex ratios running between 80 and 85% males, and lasted through June 27, yielding a total harvest of 285,050 pinks (Table 47). Unlike past years, the quality of sales fish was good. The commercial fishery, which opened in the Eastern District on July 1, targeted to a limited degree on hatchery fish, based on stock composition from tagging and timing studies the hatchery contribution to the commercial harvest was 70,000 fish. The hatchery's pink return contributed significantly to the Port Valdez sports fishery. VFDA staff estimate the sports harvest around the hatchery amounted to 30,000 fish.

In accordance with their basic hatchery plan, VFDA conducted a tagging study in 1985 to evaluate stock composition and timing

within the hatchery Special Harvest Area (SHA). A total of 4,482 tags were applied to fish within or immediately adjacent to the hatchery SHA, between June 17 and July 9. Of the 1,295 total recoveries, 822 were recovered in identifiable terminal locations, ie. the Solomon Gulch Hatchery system or Port Valdez natural spawning streams. Although Jack, Galena and Sawmill bays were examined, there were no recoveries in spawning systems outside of Valdez Narrows. Preliminary analysis indicates a shift in stock composition through time within the hatchery SHA. For the time strata June 17-20, wild fish outnumbered hatchery fish (59% wild to 41% hatchery). Between June 21 and July 3 the ratio was roughly even, (51% wild vs 49% hatchery). During the final strata, July 4-9 hatchery fish dominated, (36% wild to 64% hatchery). Recoveries of fin clipped carcasses suggests that some unquantifiable number of 1983 brood hatchery pinks may have strayed into wild systems. Imprinting at the head of Port Valdez may no be precise due to the mixing of the numerous fresh water systems in the area.

Breakdown of recovery of tags applied to pink salmon in and adjacent to the VFDA Solomon Gulch Hatchery special harvest area, 1985.

Date of Tag Application	Number of Tags Applied	Wild Recoveries Number	Wild Recoveries %	Hatchery Recoveries Number	Hatchery Recoveries %
6/17-6/20	1,588	132	59.2%	91	40.8%
6/21-6/28	881	93	51.1%	89	48.9%
6/29-7/03	1,013	110	51.9%	102	48.1%
7/04-7/09	1,000	76	35.8%	136	64.2%

Broodstock development is still in progress for VFDA chum salmon. Only 380 chums returned to the Solomon Gulch Hatchery in 1985, far short of the expected 3,000 return. Additional eggs were taken from two donor sources, Crooked Creek and Spring Creek (a side tributary of Mineral Creek) yielding a combined egg take of 3.2 million eggs. Commercial interception of hatchery chums is small.

The Solomon Gulch hatchery is on its fourth year of coho salmon broodstock development. Adult returns from the 1982 egg take was minimal due to the near total mortality during incubation. An estimated 100,000 fry from the 1983 brood year were released in April of 85. An outdoor raceway completed in 1985, is currently holding 200,000 coho fry (1984 brood year) for release in the spring of 1986. The 1985 egg take at the time of this writing is still under progress.

Armin F. Koernig Hatchery (PWSAC)

The Armin F. Koernig (AFK) Hatchery (formerly Port San Juan Hatchery) had a forecast adult return for 1985 of 4.1 million adult pink salmon from a 1984 fry release of 76.8 million. Run entry to the hatchery SHA was later than anticipated and sales

harvest of hatchery fish did not start until June 25. Sales harvests, brood collection and sex ratios were tracked daily, but failed to regain the desired levels. On August 9 the cumulative total of brood collection and sales harvests was 440,000 fish, roughly 37% below the desired level for that date. The sex ratio at this time was 34% female, indicating the the run was approximately 53% complete. Based on these data a season shortfall of 241,000 fish was anticipated. Consequently the Port San Juan and the Point Elrington subdistricts were closed to fishing on August 12, to provide additional protection to hatchery returns. The closure of the subdistricts contributed significantly to the hatchery return. On August 19th, with the corporate escapement goal of 1.07 million fish assured, the subdistricts were reopened. Sales harvests and brood collection continued through September 5. At the season's end 988,901 sales and 272,000 brood fish were collected yielding a total terminal return of 1.26 million fish (Table 47). Interception by the commercial fishery at 75 percent would yield a total hatchery return of 5.03 million and 6.6% marine survival of fry to adult. A total 173.4 million pink eggs were taken in 1985, of which 12.5 million were transferred to the Esther Lake Hatchery via Main Bay for incubation to the eyed stage.

The forecast chum salmon return to the AFK hatchery was 129,000 fish. The documented chum return to the hatchery terminal area was 7,900 fish, with 3,600 going to sales and 4,300 to brood stock. Exploitation of hatchery chums by the commercial fishery is unknown. At the season's end 4.4 million chum eggs were taken at the hatchery. An additional 11.9 million eggs were taken from the Sunny River in Port Fidalgo to be incubated at AFK to the eyed stage and then transferred to Esther. The head of Port Fidalgo was closed to commercial fishing on August 19 in part to offer protection to this brood source.

Cannery Creek Hatchery (State of Alaska)

The projected pink salmon return to the State of Alaska's Cannery Creek Hatchery was 1.31 million salmon, from a 1984 fry release of 31.2 million. Terminal harvests of hatchery fish by the commercial fleet commenced on July 30 capitalizing on the male dominance during the early segment of the return. The peak effort in the hatchery THA was 10 vessels. On August 12, when sex ratios were approaching 50% female, a portion of the terminal harvest area was closed to offer protection to hatchery broodstock. Successive reductions in the size of the closed area were made as brood requirements were assured, thus allowing the commercial fleet to cleanup any surplus fish. At the close of the season the total terminal harvest was estimated at 300,000 fish. An additional 170,000 fish were taken for brood stock yielding a total terminal return of 470,000 fish. The exploitation rate outside of the terminal area is estimated at 82.5% bringing the total hatchery return to 2.686 million pink salmon (Table 47). The season's egg take yielded a total of 107.0 million green eggs, of which 35.0 million were transferred to Main Bay completing the brood stock change for that facility.

Main Bay Hatchery (State of Alaska)

In contrast to all other facilities in Prince William Sound, the state's Main Bay hatchery experienced a serious run failure. The facility had a pre-season projected return of 1.0 million pink salmon from a 1984 fry release of 41.9 million. Owing to the change in brood stock, all returning fish to Main Bay were surplus to hatchery needs. Consequently the Main Bay subdistrict was opened to continuous fishing on July 29 to both gear types (drift and set gill nets). Fishing continued at a slow pace through August with the peak daily effort reaching 17 set nets and 12 drift gill nets. The season harvest reached 58,183 pinks, with 57% taken by set net gear. An estimated 15,000 surplus fish were left in front of the hatchery at the season's close, from which 2.5 million eggs were taken for development of the Esther Lake hatchery's brood stock. With an estimated exploitation rate outside the Main Bay subdistrict of 82.5% the total return only amounts to 382,000 fish exhibiting a 0.9% marine survival. A cause for this disappointing return is undetermined at this time.

The Main Bay chum return also came in below the forecast adult return of 25,000. This was due in part to a planning error on the stock composition of three year old fish, the only returning age class. Commercial harvest of chums in the Main Bay subdistrict totaled 2,316 fish, of which only 556 are attributed to hatchery returns, owing to the early run timing of the Main Bay stock. A total 1,677 adults returned to the hatchery yielding 1.26 million eggs. An additional 10.65 million eggs were taken from Wells River, 50% of which will be transferred to Esther.

Gulkana Hatchery (State of Alaska)

The state operated incubation facility at Paxson had a forecasted 1985 return of 55,554 sockeye salmon from fry releases of 5,249,173 and 8,033,217 in 1981 and 1982 respectively based upon an 89% expected five year fish and 11% four year fish age ratio each year. Due to the lack of a terminal harvest potential and the mixed stocknature of the Copper River salmon fishery, an estimated 60% commercial harvest rate totalling 33,333 sockeye was anticipated. Preliminary evaluation of wire coded tag data suggests that the projected catch and total return estimates were reasonably accurate. Significant numbers of wire coded tags were recovered in the commercial fishery, a few in the subsistence fishery and a handful on the spawning grounds above Summit Lake where some of the fry are released. Data from the wire coded tags indicates an altered time distribution that will be extremely important for future management planning. Escapements were at the predicted levels and the latter allowed a 31 million egg take for the Gulkana facility. The estimated harvest by subsistence fishermen was 1-2,000 and the sport harvest approximately 50 sockeye. In addition, over 8,000 salmon carcasses were given away at the Gulkana facility for dog food.

The 1986 anticipated return of sockeye salmon from the Gulkana facility is 82,256 with a commercial harvest of 49,352.

1986 Outlook

Salmon returns are expected to produce a commercial harvest of 25.5 million fish for all species and districts (Table 55). The natural returns of pink salmon are forecasted to produce a surplus of 15.2 million fish above the escapement goal of 1.5 million. The total run is above the long term average of 7.8 million for the even year cycle (Figure 14). All management districts exceeded their escapement goals during the present year so the distribution of the 1986 return should permit fishing in all districts.

The wild stock chum salmon return is expected to be above average with a forecasted harvest of 700,000 fish. As in the recent few years the majority of the return will be bound for the northern half of the Sound with only minimal production expected from other districts. Return timing is expected to be fairly well spread out over the entire commercial season. Supplemental production of chum salmon to area hatcheries is expected to be significant for the first time with an anticipated common property fishery harvest of about 200,000 fish.

Pink salmon returns to both state and private hatcheries are expected to contribute an additional 8.0 million fish to the commercial fishery in excess of brood-stock and cost recovery requirements. This production is exclusive of 2.0 million pink salmon harvested for operational cost recovery by private hatcheries.

Run projections for species and districts with less formal forecasting programs are based on average historic production from brood year escapements that are likely to produce returns in 1986. Data on age composition and average maturity schedules are also considered wherever possible. Optimum environmental conditions have contributed to above average returns in recent years and could continue to exert a positive influence on chinook, sockeye and coho salmon returns in the coming year. These environmental factors are difficult to quantify, however, the upper limits of the projected harvest ranges have been increased somewhat for those species where potential influence exists.

The Copper River is expected to produce an above average return of sockeyes with a harvest of 850,000 and an above average production for chinooks which are taken incidental to the early sockeye fishery. The coho catch is also projected to continue the recent trend of above average with a combined harvest of 500,000 from the Copper River and Bering River districts.

Sockeye salmon harvests in the Coghill and Unakwik districts should be above average with a projected catch of 537,000 fish.

The general Eshamy district is expected to remain closed during the sockeye season but harvests of both chum and pink salmon returning to Main Bay hatchery should permit selected openings for these returns of these species.

MISCELLANEOUS

During the course of each season miscellaneous data are collected on the commercial fisheries in Prince William Sound that do not relate to any particular fishery but provide a valuable reference for information unavailable elsewhere. Items of this nature are discussed briefly in this section.

The 1985 calendar weeks presented in Table 68 were used in reporting catch statistics where fishing was conducted on a schedule with standard weekly fishing periods. The calendar weeks are included here as a reference of those tables in the report that summarize catches by week. Whenever possible, however, catch statistics are summarized by fishing period dates to better reflect the management strategy and catch trends that aren't evident in the more general weekly catches.

Salmon prices in 1985 were record high on sockeyes and kings, however, coho, pink and chum prices were down from previous years (Table 69). There was a record pink and coho run in the history of the fishery and far above the recent ten year average of 14.3 million pinks and 432,000 coho (Table 3). The drift gillnet fishery in 1985 had an all time record harvest of coho salmon in the Bering River district (Table 26).

Prices in the pound spawn on kelp fishery were the highest ever reported. The natural spawn on kelp fishery had two limited openers in 1985. The average prices paid for salmon, shellfish and miscellaneous fish are outlined in Tables 69 and 70.

Average weights by species from the commercial catches are summarized in Table 71. The combined case pack, fresh, frozen and salmon exported to other areas for processing are summarized in Table 72. The list of finfish buyers and processors operating in Prince William Sound are included in Appendix Table A.

HERRING FISHERY

INTRODUCTION

The herring fisheries of the Prince William Sound area include: 1) a purse seine and gillnet sac roe fishery; 2) a natural spawn on kelp fishery; 3) a pound herring spawn on kelp fishery; and 4) a fall and winter bait and food fish fishery. The Northern, Eastern and Montague districts (Figure 16) were initially established for the exclusive management of the sac roe fishery while the bait and food fishery has been restricted to the

general district which includes all waters of the Sound exclusive of the sac roe districts. Shifts in the migration and spawning patterns have necessitated some relocation of both sac roe fisheries to areas within the general district during the past five years. As a result of recent regulatory changes both spawn on kelp harvests can now occur in all districts but until recently only the kelp beds of Valdez Arm and Port Fidalgo had contributed significantly to these fisheries. With the exception of the wild spawn on kelp fishery the overall production and ex-vessel value was above average for all fisheriers during 1985. For the second consecutive season the availability of marketable quality kelp severely limited opportunities for the wild kelp fishery but other than being later than normal the two sac roe fisheries were typical of the pattern observed in recent years. Regulatory guideline harvest levels govern the harvest management for each fishery and collectively amount to an annual harvest equivalent to 8,500 tons of herring (Figure 17). The total value of these fisheries to fishermen in 1985 was approximately \$6.2 million (Table 56). Tables 57 - 60 and Figures 18 - 22 present harvest information for the various Prince William Sound herring fisheries during the past decade.

Stock Status

Pre-season stock assessment commenced in February with hydroacoustic surveys in traditional overwintering areas. No significant stocks were located and failed to provide any insight into the distribution or likely abundance of fish that would eventually show two months later. It is uncertain whether the lack of success with hydroacoustics is due to an inability to find and stay on the fish or whether major spawning stocks are overwintering somewhere outside of the Sound.

Aerial assessment continues to be the most dependable and consistent stock monitoring tool. The general impression from the aerial monitoring program this year is that the stocks are probably in as good a condition as has been observed in recent years in the Sound. This includes a considerable amount of "gut feeling" since aerial surveys are unable at times to observe even half of the fish present. The fish were delayed by an unusually cold spring and tended to come in quickly from deep water and over a broad area which prevented observers from seeing as much as normal. In several other instances fish would trickle in and spawn over a long period of time and would seldom be observed as schooled fish. Weather permitting, surveys were conducted almost daily from late March through the end of the first week of May. Table 2 summarizes the aerial survey biomass estimates along with observations of the timing and extent of spawning. The combined peak pre spawning biomass estimates for the various districts amounted to something just over 20,000 tons. Overall impression based on the special conditions encountered this spring along with a comparison of what has been seen in previous years would place the total biomass at closer to 40-50,000 tons. In addition to this, summer aerial surveys for salmon in the Sound also

revealed an unusually large biomass of herring throughout the area. Herring are normally observed during this time of the year but not as widespread and abundant as what was seen this season. A significant portion of these are juvenile fish but it is assumed many of the adult fish spawned in the Sound this spring and would lend further support to impressions of above average herring abundance.

Approximately 3,200 fish were sampled for age, sex and size composition data during the season. Samples of 600 fish were taken from catches from each fishery, district, gear type and fishing period and test samples of 600 fish were taken prior to opening the pound fishery in the Galena area and the purse seine sac roe fishery in the General District.

In all of the purse seine fisheries catches were predominantly 5 year old and 4 year old fish with smaller but significant numbers of 6 year old and 9 year old fish (Figure 23), however, there were spatial differences between the age compositions of seine catches from the eastern part of the Sound versus catches from more westerly areas which may indicate the presence of more than one stock. Although 5 year old fish were equally predominant in both districts of the sac roe fishery (35%), the 4 year old fish were a much larger portion of the catches in the General District (28%) than in the more westerly Montague District (16%). Conversely, the portions of the catch contributed by fish 6 years old and older were consistently smaller. This trend was particularly evident in 9 year old fish which constituted 18% of the catch in the Montague district but only 10% of the General District catch. The age compositions of the purse seine catches in the pound fisheries (Figure 23) showed a very similar predominance of 4 and 5 year old fish and the same trend of older fish constituting a larger portion of the catches in the more westerly fishery (Naked Island).

The simultaneous presence of two strong age classes in Prince William Sound is somewhat unusual. Since the inception of the sac roe fishery in the late 1960's, periods of above average abundance have been dominated by a single year class, most recently fish from the 1976 brood year. It is interesting that although they are no longer predominant in the fisheries, fish from that brood year are still present in significant numbers as evidenced by the strong showing of 9 year old fish in the purse seine catches.

The catches from both districts of the sac roe fishery were approximately 55% females (Tables 62 and 63) and produced excellent roe recovery. The ratio of males to females in the pound fisheries was approximately 50/50 (Table 65).

Purse Seine Sac Roe

The season was opened for two separate periods on April 28 and 29 in the General and Montague districts, respectively. The openings came over two weeks later than last year and culminated

several weeks of intense aerial monitoring as stocks were scattered over four separate locations in the Sound. The purse seine fleet was placed on 48-hour notice on April 1 but fishing never became imminent until the last week of the month. The advance notice period was reduced to 12-hours effective at noon on April 21 as the show of herring began to increase. Monitoring efforts focused on the northern mainland area of the Sound since the most significant buildup began developing in this area during late April. The advance notice period was reduced to 6 hours on the 27th and further reduced to 2 hours after 6:00 a.m. on the following day. A 3-hour seine opening was permitted from 2-5 p.m. on Sunday April 28 in the Unakwik Inlet and Wells Bay area of the General district. The weather was clear and conditions were perfect for this period and the harvest amounted to 4,817 tons from an 90 boats (Table 56). Roe recovery was consistently above 10% throughout the period with a range of 10-12% for the 15 buyers reporting.

A survey of the Montague district late that same afternoon revealed a major buildup in the Stockdale harbor area with an extensive area of spawning on the northern end of the island. The seine fleet remained on 2-hour notice and activity rapidly shifted to the Montague area by the morning of the 29th. Test fishing indicated roe recovery of 10% or better on fish in the Montague district and a 1-hour opening was permitted from 4-5 p.m. in a restricted area of Stockdale Harbor and Port Chalmers. The fishery was intentionally confined to a relatively small area to limit the catch to less than 2,107 tons and keep the overall harvest within management guidelines for the available stocks. A total of 102 permit holders made at least one delivery during the two periods (Table 56).

Some spotter pilots criticized the timing of this period due to the weather near the start of the fishery. Weather conditions had been variable throughout the day with intermittent snow showers. A clearing trend was apparent just prior to the scheduled 4 p.m. opening and as it turned out weather during the fishery was about the best we had all day. This opening produced an additional 2,107 metric tons with 10-12% roe recovery. The season total was 6,924 tons and the base price for 10% fish was about \$680/short ton. The combined ex-vessel value is estimated to be about \$5.2 million.

Gill Net Sac Roe

This fishery was initially opened in a portion of Montague district for a 24 hour period on April 29. The notice period for the gill net fleet was progressively reduced as the herring began to show in late April and by April 29 was on 2 hours notice. The gill net fishery was opened in the same vicinity of Stockdale harbor as the seine fishery and started only 3 hours after the close of the seine fishery. There were 21 boats participating and by the end of the 24 hour period on the evening of April 30 the harvest was approaching 200 tons and roe recoveries averaged 10-12%. Based on the rate of catch at that time the period was

extended an additional 10 hours until 6:00 a.m. on May 1. A majority of the catch came from a small area along the northern shore of Stockdale Harbor. The final harvest was 413 tons with an average recovery of 11-12% for the four buyers present (Table 56). The ex-vessel value for the gill net catch is estimated to be \$384,000 based on an average price of \$930/short ton.

Roe on Kelp in Pounds

A total of 81 permits were issued for the 1985 season. Of these only 59 individuals actually constructed pounds by the April 1st deadline yielding an individual production limit of 1,500 lbs. of roe on kelp from the 40 tons. Of roe on kelp allocated to this fishery. Fifty pounds were successful in producing roe on kelp product. The season total harvest of 40.2 tons was composed of 12.1 tons of ribbon kelp (Laminaria) and 28 tons of Macrocystis sp. kelp. Prices averaged approximately \$8.00 per pound for Macrocystis sp. and \$5.00 per pound for ribbon kelp, placing the total value of the fishery at approximately \$570,000.

The 1985 pound fishery was initially centered in Galena Bay, which was opened to seining on April 25. Herring abundance at that time was more than adequate to fill the 15 pounds utilizing local ribbon kelp (Laminaria sp.). Individuals committed to using Macrocystis kelp from Southeastern Alaska did not receive their kelp shipments until after a majority of the fish in Galena Bay had either spawned or migrated elsewhere. Additional areas including Boulder, Sawmill and Jack Bays were opened to seining but provided little hope of providing the quantity of fish required to fill the remaining pounds. On May 4 a new area to this fishery was opened at Naked Island. This move was made possible by action at the December 1985 Board of Fisheries meeting, which provided management flexibility to move outside of the traditional area in Valdez Arm and Port Fidalgo. Thirty seven pounds were towed to Naked Island, of which 30 were successful in producing roe on kelp product. A total of 25.2 tons of roe on kelp, (63% of the total production) was produced as a result of the relocation to Naked Island (Table 56).

Wild Roe on Kelp

Two openings were scheduled in 1985 for the wild roe on kelp harvest. On May 6, Valdez Arm and Port Fidalgo were opened for a 6 hour test opening. Divers were encouraged to be selective in their harvest, to minimize waste. Due to poor quality of kelp buyers on the grounds turned down a significant amount of the harvest. During this period 26.5 tons of wild roe on kelp was reported to be harvested by the 79 divers participating (Table 56). On May 8 a second opening was scheduled for 14 hours concurrently at Naked Island and on the north shore around Fairmont and Olsen Islands. Effort decreased and the same problem

with poor kelp quality persisted. An estimated 11.1 tons of roe on kelp was harvested bringing the season total to 37.6 tons composed of 51% ribbon kelp and 49% sieve kelp. Prices to fishermen averaged \$1.25 per pound for ribbon and \$.50 per pound for sieve, bringing the ex-vessel value of the harvest to approximately \$36,300. The poor quality of the 1985 harvest was attributed to a shortage of the desired species of kelp in the areas of dense spawn and a layer of silt from April storms that was embedded between the herring roe on the kelp blades.

Bait and Food Fishery

All of Prince William Sound, except designated sac roe harvest areas, is open after September 1 for the harvest of herring for bait and food markets. This fishery is regulated by a 1,400 ton guideline harvest level. Legal gear for this fishery consists of seines, trawls and gill nets. However, in the past only trawls and seines have been used. Bait markets were weak early in the season due to depressed local and statewide crab fisheries while sales to food markets remained minimal until late in the season.

The season opened by regulation on September 1 which is two weeks earlier than in previous years and was the result of Board of Fisheries action during the fall of 1984. No herring were delivered during this early extension due to sluggish markets and the record coho salmon run that tied up all available processing capacity. The season normally closes by regulation at the end of January but at the request of several fishermen and local processors a two week extension was permitted to allow them to take advantage of some late developing markets. The request for an extension was made only a few days before the scheduled season closure but with more than 600 tons still remaining on the 1,400 ton quota. Concern was expressed by staff regarding an extension due to the need to provide reasonable advance notice for all prospective participants. A 30-day advance notice period is normally provided as a courtesy on this type of extension but due to the small number of fishermen and processors involved in this fishery, direct input from all parties was possible and hearing no major objections the extension was granted.

The herring bait fishery closed on February 15. The harvest for the season was 1,118 tons from 6 purse seine permit holders (Table 56). Of this total over 460 tons were taken during the two week extension period. All harvests came from the same general vicinity of Knowles Head in the eastern portion of the Sound. There were also six local processors involved and for the first time in several years no fish were tendered outside of the area for processing elsewhere. Prices were also down from recent years and with a range of \$.08 - .10/pound the ex-vessel value of the harvest is estimated to be between \$186,000 and \$234,000. Table 57 and Figure 22 present historic catch and effort data for this fishery.

1986 Outlook

As indicated from the 1985 aerial surveys, documented spawning, age analysis studies and current harvest trends it appears that the herring stocks in Prince William Sound are sustaining themselves at an above average level and consistent with the trend observed during the past two years. The stocks should continue to be dominated by a strong show of five and six year age classes from the 1980 and 1981 brood years coupled with indications of a positive recruitment trend for the next few years. If the present stocks maintain similar patterns of abundance that have been exhibited in past cycles all herring fisheries can be expected to produce average to above average catches. Aerial and sonar surveys will be conducted as the sac roe season approaches and should provide additional insight into the relative abundance, distribution and age composition of the spawning stocks present within the Sound prior to the start of the season. As herring are located in the various districts and an assessment can be made, the fishery will be managed on a field announcement basis. Depending on potential allocation changes as a result of Board action and the normal variations in the distribution and intensity of herring spawning there will continue to be changes in the timing, location and relative success of the two spawn on kelp fisheries. Assuming a continuation of the present harvest management scheme with inseason adjustments being made as dictated by observed changes in herring stock abundance, and barring any abnormal natural mortalities, the staff feels that local herring stocks can be sustained at levels similar to what has been observed during recent years.

Table 1. Preliminary salmon catch by district, Prince William Sound Area, 1985.¹

Location	Chinook	Sockeye	Coho	Pink	Chum	Total
General Purse Seine	694	125,041	16,441	23,343,341	1,025,555	24,511,072
Coghill	465	350,053	1,243	520,773	266,154	1,138,688
Unakwik	26	27,670	22	37,401	8,065	73,184
Eshamy	2	4,106	74	58,183	2,316	64,681
Private Hatcheries				1,273,951	3,840	1,277,791 ²
P.W.S. Subtotal	1,187	506,870	17,780	25,233,649	1,305,930	27,065,416
Copper River	42,333	931,132	587,990	19,061	5,966	1,586,482
Bering River	215	26,561	419,276	214	9,642	455,908
Copper/Bering Subtotal	42,548	957,693	1,007,266	19,275	15,608	2,042,390
Area Total	43,735	1,464,563	1,025,046	25,252,924	1,321,538	29,107,806

1 Final Data.

2 Includes cost recovery sales harvests from Port San Juan and Solomon Gulch hatcheries.

Table 2. Preliminary salmon escapement estimates by district or river system Prince William Sound, 1985.¹

District or System	Chinook	Sockeye	Coho ³	Pink	Chum
Eastern District				809,010	98,170
Northern District				228,140	35,080
Coghill District		163,311		299,350	23,290
Northwestern District				199,910	14,040
Eshamy District		26,080		13,530	0
Southwestern District				185,710	640
Montague District				337,450	0
Southeastern District				641,410	4,610
<hr/>					
P.W.S. Subtotal	0	189,391	0	2,714,510	175,830
<hr/>					
Copper River	2	436,313			
Copper River Delta		146,043	105,010		
Bering River		24,300	39,500		

- 1 All estimates are aerial counts of index streams except for Coghill and Eshamy sockeye, which are weir counts, and main Copper River which is a sonar count. Escapements for species not listed are either not available or are insignificant.
- 2 King salmon escapement is included in sonar counts. Aerial index counts indicate below average escapement for this species into the upper Copper River for 1985.

Table 3. Commercial salmon catch by species from all Prince William Sound Districts, 1976 - 1985.¹

Year	Catch by Species					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1976	32,751	1,008,912	160,494	3,022,426	370,657	4,595,240
1977	22,864	943,943	179,417	4,536,459	573,166	6,255,849
1978	30,435	505,509	312,930	2,917,499	489,771	4,256,144 ²
1979	20,078	369,583	315,774	15,615,810	349,615	16,670,860 ³
1980	8,643	208,724	337,123	14,161,023	482,214	15,197,727 ⁵
1981	20,782	784,469	396,163	20,558,304	1,888,822	23,648,540 ⁶
1982	47,871	2,362,328	623,877	20,403,423	1,336,878	24,774,377 ⁷
1983	52,056	903,173	362,888	14,269,062	1,045,366	16,632,545 ⁸
1984 ⁴	39,774	1,303,515	609,484	22,119,309	1,229,185	25,301,267 ⁹
1985	43,735	1,464,563	1,025,046	25,252,924	1,321,538	29,107,806 ¹⁰
10 Year Average	31,899	985,472	432,320	14,285,624	908,721	16,644,036

- 1 Includes catches by all gear types from the General Purse Seine, Coghill, Unakwik, Eshamy, Copper River and Bering River districts.
- 2 Includes 133,648 pinks from hatchery harvests.
- 3 Includes 223,761 pinks from hatchery harvests, 22,448 of those were harvested by beach seine.
- 4 Preliminary.
- 5 Includes 346,828 pinks from hatchery harvests and 6 chum salmon.
- 6 Includes 707,037 pink, 118 chum and 1 sockeye salmon from hatchery harvests.
- 7 Includes 1,355,315 pink salmon from hatchery sales.
- 8 Includes 765,924 pink salmon from hatchery sales.
- 9 Includes 402,825 pink salmon and 4,886 chum salmon from hatchery harvests.
- 10 Includes 1,273,951 pink salmon and 3,840 chum salmon from hatchery harvests.

Table 4. Commercial salmon catch by species in the Copper River District, 1976 - 1985.

Catch by Species						
Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1976	31,479	865,195	111,900	3,392	178	1,012,144
1977	22,089	619,140	131,356	23,185	335	796,105
1978	29,062	249,872	220,338	3,512	2,233	505,017
1979	17,678	80,528	194,885	1,295	107	294,493
1980	8,454	18,908	225,299	3,966	198	256,825
1981	20,178	477,662	310,154	23,952	1,799	833,745
1982	47,362	1,177,632	454,763	7,154	1,177	1,688,088
1983	50,022	633,010	234,243	7,345	2,217	926,837
1984 ¹	38,955	899,776	382,432	32,194	6,935	1,360,292
1985	42,333	931,132	587,990	19,061	5,966	1,586,482
10 Year Average	30,761	595,286	285,336	12,506	2,115	926,003

1 Preliminary.

Table 5. Copper River District Sockeye Salmon Fishery, Anticipated Catch & Escapement vs. Actual Catch & Escapement; Fishing Effort & Fishing Time allowed, 1985.

Date	Week	Fishing Time (Hrs.)	Effort	Actual Catch	Anticipated Catch	Anticipated Cumulative Escapement	Actual Cumulative Escapement
5/12 - 5/18	20	48	366	133,994	48,000	4,110	0
5/19 - 5/25	21	48	414	185,518	224,400	16,440	0
5/26 - 6/01	22	48	382	238,857	200,400	93,297	7,267
6/02 - 6/08	23	48	377	108,392	220,800	161,934	170,597
6/09 - 6/15	24	72	379	95,672	162,000	237,558	254,820
6/16 - 6/22	25	72	172	70,056	114,000	286,056	284,673
6/23 - 6/29	26	48	123	31,075	69,600	323,457	302,404
6/30 - 7/06	27	48	96	25,000	55,200	349,761	322,044
7/07 - 7/13	28	Closed			46,800	369,900	365,036
7/14 - 7/20	29	48	85	12,627	28,800	387,573	405,318
7/21 - 7/27	30	72	63	13,463	19,200	398,258	424,250
7/28 - 8/03	31	72	64	8,726	7,200	406,068	436,313
Season Total		624	931,132 ¹	1,196,400	406,068	436,313	

¹ Total includes 7,752 sockeyes harvested after 8/3/85.

Table 6. Commercial salmon catch by period and species, Copper River District, 1985.

Period Dates	Fishing ¹		Catch by Species					Total
	Time (Hrs.)	Effort (Boats)	Chinook	Sockeye	Coho	Pink	Chum	
5/13-5/14	24	446	3,577	46,386	0	0	10	49,973
5/16-5/17	24	456	3,210	87,608	3	0	42	90,863
5/20-5/21	24	478	3,836	98,329	4	0	214	102,383
5/23-5/24	24	475	6,476	87,189	1	1	194	93,861
5/27-5/28	24	475	7,089	152,676	0	1	2,157	161,923
5/30-5/31	24	254	3,612	86,181	0	0	0	89,793
6/03-6/04	24	417	4,270	57,422	1	1	195	61,889
6/06-6/07	24	489	3,372	50,970	11	3	681	55,037
6/10-6/11	36	435	2,539	47,059	8	4	436	50,046
6/13-6/15	36	392	2,199	48,613	20	20	504	51,356
6/17-6/19	48	273	859	30,330	1	6	85	31,281
6/20-6/22	36	283	682	39,726	257	76	609	41,350
6/24-6/26	48	172	411	31,075	103	56	197	31,842
7/01-7/03	48	108	120	25,000	181	339	344	25,984
7/17-7/19	48	124	28	12,627	1,134	1,585	58	15,432
7/22-7/24	48	80	9	7,620	458	737	43	8,867
7/25-7/27	36	84	10	5,843	2,035	2,497	27	10,412
7/29-7/31	48	94	13	6,232	3,931	6,271	30	16,477
8/01-8/03	36	77	3	2,494	3,132	1,674	29	7,3
8/05-8/08	87	162	5	4,897	14,961	4,213	38	24,111
8/12-8/15	87	252	7	2,013	65,072	1,264	41	68,397
8/19-8/22	87	333	5	632	100,787	297	24	101,745
8/26-8/29	87	334	1	171	158,771	16	8	158,967
9/02-9/05	87	317	0	26	129,585	0	0	129,611
9/09-9/12	87	263	0	11	69,455	0	0	69,466
9/16-9/19	87	190	0	2	30,617	0	0	30,619
9/23-9/26	87	91	0	0	7,438	0	0	7,438
9/30-10/03	87	1	0	0	24	0	0	24
Season Totals			42,333	931,132	587,990	19,061	5,966	1,586,482

¹ Normal weekly fishing periods in the Copper River district are from 6:00 a.m. Monday until 6:00 a.m. Wednesday and from 6:00 p.m. Thursday until 6:00 a.m. Saturday prior to August 7. From August 7 to August 31 the normal weekly period is from 6:00 a.m. Monday until 6:00 p.m. Thursday. During the 1985 season, weekly fishing periods were modified by emergency order prior to July 22 with regular weekly fishing periods permitted for the duration of the season after that date.

Table 7. Copper River daily salmon escapement estimates at Miles Lake Sonar project, 1985.

Date	North Bank		South Bank		----- Actual -----		(in.) Water Level	----- Anticipated -----	
					Daily Total	Cumulative Total		Daily Count	Cumulative Count
5/17	0		0		0	0		589	589
5/18	0		0		0	0		1,201	1,790
5/19	0		0		0	0		1,407	3,197
5/20	0		0		0	0		1,513	4,710
5/21	0		0		0	0		1,593	6,303
5/22	0		0		0	0		1,604	7,907
5/23	0		0		0	0		2,442	10,349
5/24	0		0		0	0		3,862	14,211
5/25	0		0		0	0		3,950	18,161
5/26	0		0		0	0		4,027	22,188
5/27	0		0		0	0		5,868	28,056
5/28	47	(1)	984		1,031	1,031	50	9,391	37,448
5/29	19	(1)	398		417	1,448	52	5,498	42,946
5/30	27	(1)	572		599	2,047	51	8,107	51,053
5/31	80	(1)	1,678		1,758	3,805	46	10,442	61,495
6/01	82	(2)	3,380		3,462	7,267	40	9,965	71,459
6/02	220	(2)	6,506 (2)		6,726	13,993	35	11,154	82,613
6/03	486	(1)	10,205 (2)		10,691	24,684	34	9,319	91,932
6/04	843	(2)	23,429		24,272	48,956	37	9,723	101,655
6/05	147	(1)	30,360		30,507	79,463	46	11,209	112,864
6/06	1,497	(1)	31,456 (2)		32,953	112,416	56	11,181	124,045
6/07	1,238	(1)	26,018		27,256	139,672	53	11,393	135,437
6/08	1,405	(1)	29,520 (2)		30,925	170,597	43	11,223	146,660
6/09	1,350	(1)	28,352 (3)		29,702	200,299	40	10,707	157,367
6/10	546	(1)	11,464 (2)		12,010	212,309	41	10,212	167,579
6/11	1,571	(2)	10,255		11,826	224,135	39	10,008	177,586
6/12	483		7,748		8,231	232,366	39	9,079	186,665
6/13	398		6,431		6,829	239,195	43	9,366	196,031
6/14	193		6,607		6,800	245,995	44	8,351	204,382
6/15	180		8,645		8,825	254,820	45	8,714	213,096
6/16	1,273		8,074		9,347	264,167	44	8,030	221,126
6/17	1,160		5,110		6,270	270,437	44	8,554	229,680
6/18	348		3,390		3,738	274,175	53	7,742	237,422
6/19	477		2,774		3,251	277,426	58	5,995	243,417
6/20	59		2,364		2,423	279,849	58	5,263	248,680
6/21	41		2,020		2,061	281,910	59	5,495	254,174
6/22	25		2,738		2,763	284,673	52	5,258	259,432
6/23	24		3,345		3,369	288,042	54	5,871	265,304
6/24	114		2,836		2,950	290,992	57	5,606	270,910
6/25	182		1,403		1,585	292,577	68	5,287	276,196
6/26	107		2,274		2,381	294,958	70	4,361	280,557
6/27	94		2,941		3,035	297,993	69	3,855	284,412
6/28	89	(2)	2,175		2,264	300,257	77	3,843	288,255
6/29	67	(2)	2,080		2,147	302,404	86	3,897	292,152
6/30	109		2,030		2,139	304,543	95	3,801	296,953
7/01	37		2,583		2,620	307,163	112	4,219	300,172
7/02	92		2,516		2,608	309,771	130	5,128	305,300
7/03	29		1,790		1,819	311,590	139	5,442	310,742
7/04	55		3,481		3,536	315,126	142	5,994	316,736

Continued

Table 7. Continued.

Date	North Bank	South Bank	----- Actual -----		(in.) Water Level	---- Anticipated ----	
			Daily Total	Cumulative Total		Daily Count	Cumulative Count
7/05	55	3,199	3,254	318,380	142	4,983	321,719
7/06	79	4,585	4,664	323,044	144	4,356	326,075
7/07	60	3,567	3,627	326,671	151	3,800	329,875
7/08	28	3,865	3,893	330,564	154	3,406	333,280
7/09	74	6,753	6,827	337,391	147	3,351	336,632
7/10	99	10,508	10,607	347,998	139	3,828	340,460
7/11	155	5,302	5,457	353,455	138	3,894	344,354
7/12	201	6,128	6,329	359,784	135	3,705	348,059
7/13	136	5,116	5,252	365,036	142	2,948	351,007
7/14	103	6,010	6,113	371,149	141	3,494	354,501
7/15	83	4,941	5,024	376,173	139	3,811	358,312
7/16	268	5,071	5,339	381,512	135	4,194	362,506
7/17	440 (4)	5,520	5,960	387,472	134	3,645	366,152
7/18	232 (1)	4,878	5,110	392,582	137	4,718	370,869
7/19	154 (2)	4,406	4,560	397,142	137	5,953	376,822
7/20	64	8,112	8,176	405,318	141	5,392	382,214
7/21	46	4,082	4,128	409,446	153	4,582	386,797
7/22	146	3,012	3,158	412,604	152	3,264	390,061
7/23	79	2,791	2,870	415,474	142	2,763	392,823
7/24	113	2,049	2,162	417,636	132	2,560	395,383
7/25	74	2,375	2,449	420,085	127	2,151	397,534
7/26	80	1,894	1,974	422,059	127	1,682	399,216
7/27	37	2,154	2,191	424,250	117	1,465	400,682
7/28	43	2,796	2,839	427,089	117	1,563	402,245
7/29	161	2,652	2,813	429,902	122	1,314	403,559
7/30	110	2,680	2,790	432,692	127	1,236	404,795
7/31	195	1,653	1,848	434,540	133	1,114	405,909
8/01	151	919	1,070	435,610	139	1,125	407,033
8/02	32 (1)	671	703	436,313	156	1,037	408,070
8/03	0	0	0	436,313	210	834	408,904
8/04	0	0	0	436,313	239	881	409,785
8/05	0	0	0	436,313		471	410,256
8/06	0	0	0	436,313		450	410,706
8/07	0	0	0	436,313		208	410,914
8/08	0	0	0	436,313		35	410,949
8/09	0	0	0	436,313		51	411,000
Total	18,692	417,621		436,313			411,000

Footnotes:

- (1) Whole day count missing due to heavy ice passage rates, debris problems, malfunctions, or other reasons. Missing day counts on the north bank site are estimated using the average percentage of north bank to south bank, 4.60%.
- (2) Some hourly counts missing due to ice passage, debris, water level changes or other reasons. Counts for missing hours estimated by simple interpolation for adjacent time blocks.
- (3) Sonar counter at the south bank site changed from the 1978 model, to modified 1981 model with increased transducer sensitivity and long range capability.
- (4) North bank counting unit moved downstream for one day to evaluate new sites.

Table 8. Copper River delta sockeye salmon escapement estimates, 1976 - 1985.

Stream/Lake	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Eyak Lake	8500	11500	13450	13500	22500	11300	11700	8900	10390	110258
Hatchery Creek	450	600	300	1000	700	4750	1800	2000	1200	850
Power Creek	500	1500	2500	glacial	4500	1100	300	200	500	muddy
Ibek Creek										25
McKinley Lake	6000	15000	18000	25000	27500	10000	9500	12000	11200	19000
Salmon Creek	4000	1000	2819	4000	5000	10800	13500	8500	11000	8000
26/27 Mile Creek	2500	3550	2000	1500	7500	9500	5500	8000	7500	6500
39 Mile Creek	3500	4500	6500	17500	18000	11000	13000	13000	17000	27000
Goat Mountain	1500	150	1000	muddy	150	muddy	3000	100	1500	150
Pleasant Creek	0	650	turbid	muddy	250	muddy	NS muddy	NS muddy	7400	2500
Martin River	1500	1450	3500	8200	3500	5350	1000	3650	5000	
Ragged Pt. River	0		0	0			2000	0	350	6000
Ragged Pt. Lake Outlet		250			5000	1500	4500	1500	600	1500
Ragged Pt. Lake	4000	3500	5500	20000	13000	8000	7000	8500	8000	11000
Martin Lake Outlet				N/C	1500	N/C	20	100	200	
Martin Lake	4000	4094	10500	10000	17650	26050	5300	9000	11350	7000
Martin Lake Feeders	3000	1500	1500	4000	8500	15000	9500	8500	12000	10500
Pothole Outlet					1400	3500	30	1000	250	1500
Pothole Lake	3000	550	1100	5000	800	4500	1200	5500	2300	
L. Martin Lake Outlet				N/C	1500	N/C	20	400	200	
L. Martin Lake	8000	1550	4500	4000	6500	2500	6000	6000	10000	11000
Tokun River					1500	1700	150	200	350	300
Tokun Springs										100
Tokun Lake Outlet	2500	700	4000	10000			300	300	200	
Martin River Slough	2500	3100	6300	4200	10000	15000	9500	11000	14500	8100
Total	66450	60795	92569	133400	188650	153850	111800	119450	153890	146043

1 Weir Count - 7,645

2 Weir Count - 27,203

3 Tokun River totals are included in Tokun Outlet totals; Little Martin Outlet totals included in Little Martin Lake totals; Martin Outlet totals included in Martin Lake totals; Ragged Pt. River totals are included in Ragged Outlet totals; Ragged Outlet totals are included in Ragged Pt. Lake totals.

4 Weir Count

5 All data are aerial survey estimates unless indicated otherwise.

Table 9. Copper River delta coho salmon escapement estimates, 1976 - 1985.1

Stream/Lake	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Eyak Lake	3000	3700	903	6000	9200	2750+	7000	14600	6500	7000
Hatchery Creek	148*	573*	236*	616*	1729*	2500	125	1000	1750	500
Power Creek	191*	739*	304*	795*	2230*	800	1500	1000	1900	1300
Ibek Creek	540*	3500	1575	850	12110	10000	1100	4200	9700	8500
19 Mile Creek										
McKinley Lake	135*	679*	238*	500	2500	1344*	500	5000	500	4000
Salmon Creek	149*	1300	262*	781*	2000	1700	4650	6500	950	7000
26/27 Mile	36*	181*	63*	189*	635*	250	50	0	350	300
39 Mile	342*	3000	4500	600	7100	1900	2000	6500	8000	8000
Goat Mountain	234*	1177*	412*	1230*	800	500	50	NC	600	4000
Pleasant Cr.	185*	1500	325*	970*	500	1837*	400	350	1100	1500
Martin River	347*	2000	150	460	12855	4000	7500	3100	4000	11500
Ragged Pt.	149*	747*	262*	781*	2619*	200	2500	200	200	1500
Ragged Outlet	108*	300	190*	568*	1905*	1000	50	325	120	0
Martin Lake	140*	701*	246*	250	4500	1389*	9000	6100	4800	17600
Little Martin Lake	203*	1019*	357*	1065*	1500	6000	150	1125	300	4100
Tokun River	122*	611*	214*	639*	2200	800	2000	225	200	1900
Tokun Lake	68*	349*	119*	355*	2000	672*	400	125	0	0
Total Season	7651	29402	12151	31649	88483	50042	40575	60175	56595	105000
Katalla R.	200	5000+	3200	muddy	8000	3000	11500	4800	7000	14000
Bering Lake		165		1000	700	0	8000	4000	6500	11000
Dick Creek		500			1625	0	5500	7100	5500	5000
Shepard Cr.					0	600	muddy	muddy	muddy	1500
Nichawak R.					250	muddy	5000	800	1000	3500
Gandil R.					600	muddy	muddy	muddy	muddy	4500
Total Season Index	200	5665	3200	1000	11175	3600	30000	16700	20000	39500

1 Years and streams without counts not surveyed due to weather, high water or turbulence. It should also be noted that counts were made as weather allowed and may or may not have been made during periods of peak abundance.

Table 10. Aerial escapement indices and weir counts by date and location for sockeye salmon returning to the Copper River Delta and Bering River, 1985.

Copper River Delta System/Drainage	Survey Site	Survey Dates									
		13 Jun	19 Jun	25 Jun	27 Jun	05 Jul	11 Jul	18 Jul	31 Jul		
Eyak Lake	West Shore Beaches	0	0	Rain	35	600	675	500	1,300 *		
	Middle Arm Beaches	60	100	Fog/Turb.	200	250	1,000 *	Poor Vis.	Poor Vis.		
	North Shore Beaches	0	0	Fog/Turb.	125 *	Glacial	Glacial	Poor Vis.	Poor Vis.		
	Hatchery Creek Delta	0	200	Fog/Turb.	350	200	350 *	Poor Vis.	Poor Vis.		
	Hatchery Creek	0	0	Fog/Turb.	0	450	600 *	Poor Vis.	Poor Vis.		
	Power Creek Delta	0	0	Fog/Turb.	0	Glacial	Glacial	Poor Vis.	Poor Vis.		
	Power Creek	0	0	Fog/Turb.	0	Glacial	Glacial	Poor Vis.	Poor Vis.		
	Ibek Creek	NS	NS	NS	NS	NS	NS	NS	NS		
Alganik Slough	McKinley Lake	0	0	0	125	3,000 +	8,000	14,000	20,000		
	Salmon Creek - Left Fork	0	0	0	0	0	0	0	2,500		
	Salmon Creek - Right Fork	0	0	0	0	0	0	0	2,200		
26/27 Mile Creek	0	0	0	300	5,500	4,500	6,500 *	3,500			
39 Mile Creek	0	NS	NS	0	8,500	10,500	22,000	27,000 *			
Goat Mountain Creek	NS	NS	NS	0	0	12	0	0			
Pleasant Creek	NS	NS	NS	0	0	2,500 *	1,500	500			
Martin River	NS	NS	1,000	350	4,110	5,500	4,300	3,000			
Ragged Point River	Ragged Point River	NS	NS	NS	NS	NS	NS	NS	9,500		
	Ragged Point Lake Outlet	NS	NS	NS	NS	NS	NS	NS	0		
	Ragged Point Lake	NS	NS	NS	NS	NS	NS	NS	0		
Martin Lake	Martin Lake Outlet	NS	0	120	600	400	3,500	3,000 *	4,000		
	Martin Lake	NS	0	0	3,500	12,000	8,000 +	7,000 *	5,500		
	Martin Lake Feeders	NS	0	0	0	3,500	6,500	10,500 *	8,000		
Pothole Lake	Pothole Lake Outlet	NS	0	0	50	1,100	2,000	1,500 *	300		
	Pothole Lake	NS	0	0	0	0	0	0	0		
Little Martin Lake	Little Martin Lake Outlet	NS	0	0	1,000	600	125	0	0		
	Little Martin Lake	NS	0	250	50	7,000	6,000	10,000	11,000 *		
Tokun River	Tokun River	NS	150	300	200	3,500	150	300	150		
	Tokun Springs	NS	0	0	25	?	?	?	?		
	Tokun Lake Outlet	NS	0	0	1,100	0	0	0	0		
	Tokun Lake Aerial Counts	NS	0	Turb.	0	1,500	NS	?	250		
	Tokun Weir (Cumulative)	592	5,861	7,116	7,690	9,651 *	9,651	9,720	10,441		
Martin River Slough	Martin River Slough	NS	10	1,500	4,000	7,800	8,100 *	6,200	3,500		
Copper River Delta	Daily Survey Totals ⁴	60	460	3,170	12,010	60,010	68,012	87,300	100,200		

Table 10. Aerial escapement indices and weir counts by date and location for sockeye salmon returning to the Copper River Delta and Bering River, 1985 (continued).

Copper River Delta System/Drainage	Survey Site	Survey Dates					07 Oct	Estimated Escapement	
		09 Aug	26 Aug	04 Sep	11 Sep	18 Sep		Site 2	System 3
Eyak Lake	West Shore Beaches	Turb.	750	500	1,350 *	Turb.	2,650	11,875	
	Middle Arm Beaches	Turb.	Muddy	3,000	4,000 *	Turb.	5,000		
	North Shore Beaches	Turb.	Muddy	Silty	400 *	Turb.	525		
	Hatchery Creek Delta	Turb.	Muddy	2,500 *	300	Turb.	2,850		
	Hatchery Creek	Turb.	Muddy	2,250 *	400	Turb.	850		
	Power Creek Delta	Turb.	Muddy	Glacial	Glacial	Turb.	0		
	Power Creek	Turb.	Muddy	Glacial	Glacial	Turb.	0		
	Ibek Creek	0	25 *	0	0	Turb.	25	25	
	Alganik Slough	19,000 *	10,000	5,000	1,500	0	19,000	27,000	
		7,000 *	7,000	8,000	2,500	Turb.	7,000		
	1,000 *	200	1,000	400	0	1,000			
26/27 Mile Creek	0	500	450	150	0	6,500	6,500		
39 Mile Creek	18,000	25,000	1,500	20,000	8,000	27,000	27,000		
Goat Mountain Creek	0	150 *	Turb.	50	0	150	150		
Pleasant Creek	NS	0	Turb.	Muddy	0	2,500	2,500		
Martin River	5,000	100	0	0	0	0	0		
	4,000	6,000 *	Turb.	0	25	6,000	18,500		
	2,500	1,500 *	Turb.	1,000	1,500	1,500			
	3,500	11,000 *	Turb.	12,000	10,000	11,000			
	3,000	3,500	0	3,000	2,500	3,000	20,500		
	3,000	0	0	0	300	7,000			
	1,200	0	0	0	0	10,500			
	1,500	6,000	150	350	400	1,500	1,500		
	4,500	8,500	6,000	7,000	8,000	0	0		
	75	200	0	0	0	0	0		
	?	100 *	0	300 *	Turb.	?	300		
	0	0	0	0	0	?	100		
	1,000	4,500	1,500	7,000 *	Turb.	?	0		
	10,741	10,993	10,993	10,993	Turb.	?	7,000		
	2,500	0	0	0	10,993	10,993	10,993		
Martin River Slough	2,500	0	0	0	Turb.	0	8,100		
	76,775	85,025	36,850	70,700	35,725	12,050	145,043		
Copper River Delta Daily Survey Totals ⁴									

Table 10. Aerial escapement indices and weir counts by date and location for sockeye salmon returning to the Copper River Delta and Bering River, 1985 (continued).

Copper River Delta System/Drainage	Survey Site	Survey Dates									
		13 Jun	19 Jun	25 Jun	27 Jun	05 Jul	11 Jul	18 Jul	31 Jul		
Bering River	Bering Lake	NS	200	0	0	100	10,000	15,500 *	8,500	3,000	
	Dick Creek	NS	0	0	0	0	0	7,000	8,000 *	8,000 +	
	Shepherd Creek	NS	0	50	200	2,000	6,000 +	8,000 *	8,000 *	Silty	
Bering River Area Total	Carbon Creek	NS	NS	NS	NS	0	0	0	?	?	
	Maxwell Creek	NS	NS	NS	NS	0	0	?	?	?	
Bering River Area Total	Trout Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Clear Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Bering River Area Total	Kushtoka Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Shokum Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		0	200	50	300	12,000	21,700	23,500	11,000		
		12,310	72,010	69,712	110,600	111,200					
	660	3,220									

Table 10. Aerial escapement indices and weir counts by date and location for sockeye salmon returning to the Copper River Delta and Bering River, 1985 (continued).

Copper River Delta System/Drainage	Survey Site	Survey Dates						Estimated Escapement	
		09 Aug	26 Aug	04 Sep	11 Sep	18 Sep	07 Oct	Site 2	System 3
Bering River	Bering Lake	350	0	0	0	0	0	15,500	15,700
	Dick Creek	4,000	0	0	0	0	0	200	
	Shepherd Creek	Silty	Silty	Turb.	Silty	?	0	0	8000
	Carbon Creek	?	Silty	Turb.	0	Turb.	NS	0	0
	Maxwell Creek	?	0	Turb.	0	Turb.	NS	0	0
	Trout Creek	?	100 *	Turb.	0	Turb.	NS	100	100
	Clear Creek	?	0	Turb.	0	Turb.	NS	500	500
	Kushtaka Lake	500 *	50	Turb.	Silty	Turb.	NS	0	0
	Shokum Creek	0	3	Turb.	0	Turb.	NS	0	0
	Bering River Area Total	4,850	153	0	0	0	0	24,300	24,300
	Copper River Delta/Bering River Area Total ¹	81,625	85,178	36,850	70,700	35,725	12,050	170,343	170,343

1 The survey sites in this table represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainages. The sites are surveyed regularly through the season (weekly if conditions permit). The surveys are to provide information about strength of escapements among years, and within a given year, the relative escapement contribution among spawning areas. The indices are not intended to provide an actual estimate of escapement for the coastal stocks but we have used them for that purpose because there is presently no other means of making such an estimate.

2 The escapement estimate for each site is the asterisked aerial survey estimate. Where the survey site is a terminal spawning area the peak count was used, however, if the site was a holding area for fish bound for sites further upstream the count which minimizes duplication was selected. In the Martin River system for example, the peak count of 1,000 fish in the lake outlet on 31 August may have included fish destined to spawn in other areas of the lake and which were included in the subsequent lake count on 6 September. By opting to use the 31 August peak count for the outlet and the 6 September peak count for the lake the chance of duplication was minimized.

3 The sum of the estimates by site within a system.

4 Daily totals are only the sum of aerial survey counts for each survey and can't be used to estimate total escapements since the peak spawning timing varies from site to site.

Table 11. Aerial escapement indices and weir counts by date and location for coho salmon returning to the Copper River Delta and Bering River, 1985.

Copper River Delta System/Drainage	Survey Site	Survey Dates											
		13 Jun	19 Jun	25 Jun	27 Jun	05 Jul	11 Jul	18 Jul	31 Jul				
Eyak Lake	West Shore Beaches	0	0	Rain	0	0	0	0	0	0	0	0	0
	Middle Arm Beaches	0	0	Fog/Turb.	0	0	0	0	0	0	0	0	Poor Vis.
	North Shore Beaches	0	0	Fog/Turb.	0	0	0	0	0	0	0	0	Poor Vis.
	Hatchery Creek Delta	0	0	Fog/Turb.	0	0	0	0	0	0	0	0	Poor Vis.
	Hatchery Creek	0	0	Fog/Turb.	0	0	0	0	0	0	0	0	Poor Vis.
	Power Creek Delta	0	0	Fog/Turb.	0	0	0	0	0	0	0	0	Poor Vis.
Power Creek	0	0	Fog/Turb.	0	0	0	0	0	0	0	0	Poor Vis.	
Ibek Creek	Ibek Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Alganik Slough	19 Mile Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	McKinley Lake	0	0	0	0	0	0	0	0	0	0	0	0
	Salmon Creek - Left Fork	0	0	0	0	0	0	0	0	0	0	0	0
	Salmon Creek - Right Fork	0	0	0	0	0	0	0	0	0	0	0	0
26/27 Mile Creek	26/27 Mile Creek	0	0	0	0	0	0	0	0	0	0	0	0
39 Mile Creek	39 Mile Creek	0	NS	NS	0	0	0	0	0	0	0	0	0
Goat Mountain Creek	Goat Mountain Creek	NS	NS	NS	0	0	0	0	0	0	0	0	0
Pleasant Creek	Pleasant Creek	NS	NS	NS	0	0	0	0	0	0	0	0	0
Martin River	Martin River	NS	0	0	0	0	0	0	0	0	0	0	0
	Ragged Point River	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
	Ragged Point Lake Outlet	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
	Ragged Point Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
	Martin Lake Outlet	NS	0	0	0	0	0	0	0	0	0	0	0
	Martin Lake	NS	0	0	0	0	0	0	0	0	0	0	0
	Martin Lake Feeders	NS	0	0	0	0	0	0	0	0	0	0	0
	Pothole Lake Outlet	NS	0	0	0	0	0	0	0	0	0	0	0
	Pothole Lake	NS	0	0	0	0	0	0	0	0	0	0	0
	Little Martin Lake Outlet	NS	0	0	0	0	0	0	0	0	0	0	0
	Little Martin Lake	NS	0	0	0	0	0	0	0	0	0	0	0
	Tokun River	NS	0	0	0	0	0	0	0	0	0	0	0
	Tokun Springs	NS	0	0	0	0	0	0	0	0	0	0	0
	Tokun Lake Outlet	NS	0	0	0	0	0	0	0	0	0	0	0
	Tokun Lake Aerial Counts	NS	0	Turb.	0	0	0	0	0	0	0	0	0
	Tokun Weir (Cumulative)	0	0	Turb.	0	0	0	0	0	0	0	0	0
Martin River Slough	Martin River Slough	NS	10	0	0	0	0	0	0	0	0	0	0
Copper River Delta Daily Survey Totals ⁴		0	10	0	0	0	0	0	0	0	0	0	0

Table 11. Aerial escapement indices and weir counts by date and location for coho salmon returning to the Copper River Delta and Bering River, 1985 (continued).

Copper River Delta System/Drainage	Survey Site	Survey Dates						Estimated Escapement		
		09 Aug	26 Aug	04 Sep	11 Sep	18 Sep	07 Oct	Site 2	System 3	
Eyak Lake	West Shore Beaches	Turb.	0	1,000	0	Turb.	Turb.	0	8,810	
	Middle Arm Beaches	Turb.	Muddy	0	0	Turb.	Turb.	0	0	
	North Shore Beaches	Turb.	Muddy	Silty	0	Turb.	Turb.	0	0	
	Hatchery Creek Delta	Turb.	Muddy	2,500	7,000 *	Turb.	Turb.	7,000	0	
	Hatchery Creek	Turb.	Muddy	0	10	Turb.	Turb.	10	500	
	Power Creek Delta	Turb.	Muddy	Glacial	Glacial	Turb.	Turb.	500 *	500	
	Power Creek	Turb.	Muddy	Glacial	Glacial	Turb.	Turb.	1,300 *	1,300	
	Ibek Creek	0	3,000	8,500 *	8,000	Turb.	Turb.	8,125	8,500	
	Alganik Slough	19 Mile Creek	NS	NS	NS	NS	NS	NS	300 *	11,300
		McKinley Lake	0	300	200	4,000 *	300	900	4,000	11,000
Salmon Creek - Left Fork		0	0	0	2,000 *	Turb.	0	2,000	0	
Salmon Creek - Right Fork		0	0	0	5,000 *	1,500	800	5,000	0	
26/27 Mile Creek	0	0	100	100	300 *	NS	NS	300	300	
39 Mile Creek	0	1,000	4,500	8,000	8,000 *	4,500	8,000	8,000	8,000	
Goat Mountain Creek	0	100	Turb.	2,700	4,000 *	3,000	4,000	4,000	4,000	
Pleasant Creek	NS	0	Turb.	Muddy	1,500 *	0	1,500	1,500	1,500	
Martin River	0	6,700	8,500	11,500 *	11,000	10,500	11,500	11,500	11,500	
Ragged Point River	Ragged Point River	0	0	Turb.	150	400	1,500 *	1,500	1,500	
	Ragged Point Lake Outlet	0	0	Turb.	0	0	0	0	0	
	Ragged Point Lake	0	0	Turb.	0	0	0	0	0	
	Martin Lake Outlet	0	3,000	3,000 *	2,000	2,000	600	3,000	9,100	
Martin Lake	0	3,500	6,100 *	3,000	2,500	0	6,100	6,100		
Martin Lake Feeders	0	0	0 *	0	200	0	0	0		
Pothole Lake Outlet	0	1,500	1,400	4,500 *	350	0	4,500	8,500		
Pothole Lake	0	200	0	4,000 *	1,500	0	4,000	4,000		
Little Martin Lake Outlet	0	0	100 *	2,500	3,000	0	100	4,100		
Little Martin Lake	0	0	4,000 *	1,000	0	0	4,000	4,100		
Tokun River	0	0	200	250	Turb.	1,400 *	1,400	1,900		
Tokun Springs	0	150	50	250	500 *	0	1,500	1,500		
Tokun Lake Outlet	0	0	0	0	Turb.	0	0	0		
Tokun Lake Aerial Counts	0	0	0	0	Turb.	?	0	0		
Tokun Weir (Cumulative)	0	0	0	0	Turb.	0	0	0		
Martin River Slough	Martin River Slough	0	7,000	15,000	26,000 *	Turb.	10,600	26,000	26,000	
Copper River Delta Daily Survey Totals 4		0	26,450	55,150	91,960	37,050	47,125	105,010	105,010	

Table 11. Aerial escapement indices and weir counts by date and location for coho salmon returning to the Copper River Delta and Bering River, 1985 (continued).

Copper River Delta System/Drainage	Survey Site	Survey Dates											
		13 Jun	19 Jun	25 Jun	27 Jun	05 Jul	11 Jul	18 Jul	31 Jul				
Katalla River	Katalla River	NS	NS	NS	NS	NS	0	0	0	0	0	0	0
Bering River	Bering Lake Outlet	NS	0	0	0	0	0	0	0	0	0	0	0
	Bering Lake	NS	0	0	0	0	0	0	0	0	0	0	0
	Dick Creek	NS	0	0	0	0	0	0	0	0	0	0	0
Katalla River	Shepherd Creek	NS	0	0	0	0	0	0	0	0	0	0	0
	Carbon Creek	NS	NS	NS	NS	NS	0	0	0	0	0	0	0
	Maxwell Creek	NS	NS	NS	NS	NS	0	0	0	0	0	0	0
Bering River	Trout Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Clear Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Katalla River	Kushtaka Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Shokum Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Bering River	Nichawak River	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Gandil River	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Katalla River	Controller Bay Stream	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Controller Bay Stream	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Katalla River	Okalee River	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Okalee River	0	0	0	0	0	0	0	0	0	0	0	0
Bering River Area Total		0	0	0	0	0	0	0	0	0	0	0	0
Copper River Delta/Bering River Area Total ⁴		0	10	0	0	0	0	0	0	0	0	0	0

Table 1]. Aerial escapement indices and weir counts by date and location for coho salmon returning to the Copper River Delta and Bering River, 1985 (continued).

Copper River Delta System/Drainage	Survey Site	Survey Dates							Estimated Escapement	
		09 Aug	26 Aug	04 Sep	11 Sep	18 Sep	07 Oct	Site 2	System 3	
Katella River	Katella River	Fog	3,000	14,000 *	6,000	Turb.	3,000	14,000	14,000	
Bering River	Bering Lake Outlet	0	0	11,000	3,000	7,000 *	0	7,000	23,000	
	Bering Lake	0	2,800	1,000	11,000	11,000 *	5,500	11,000		
	Dick Creek	0	2,600	2,500	1,200	5,000 *	2,100	5,000		
	Shepherd Creek	Silty	Silty	Turb.	Silty	?	1,500 *	1500	1500	
	Carbon Creek	?	Silty	Turb.	0	Turb.	NS	0		
	Maxwell Creek	?	Silty	Turb.	0	Turb.	NS	0		
	Trout Creek	?	0	Turb.	0	Turb.	NS	0	0	
	Clear Creek	?	0	Turb.	0	Turb.	NS	0	0	
	Kushtaka Lake	0	0	Turb.	Silty	Turb.	NS	0	0	
	Shokum Creek	0	0	Turb.	0	Turb.	NS	0	0	
Nichawak River	Nichawak River	0	3,500 *	Muddy	Muddy	Turb.	200	3,500	3,500	
Gandil River	Gandil River	0	Muddy	Muddy	Muddy	Turb.	4,500 *	4,500	4,500	
Controller Bay Stream	Controller Bay Stream	0	600	18,565	23,000 *	8,000	0	23,000	23,000	
	Okalee River	0	0	0	11,000 *	Turb.	0	11,000	11,000	
Bering River Area Total		0	12,500	47,065	55,200	31,000	16,800		80,500	
Copper River Delta/Bering River Area Total 4		0	38,950	102,215	147,160	68,050	63,925		185,510	

1 The survey sites in this table represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainages. The sites are surveyed regularly through the season (weekly if conditions permit). The surveys are to provide information about strength of escapements among years, and within a given year, the relative escapement contribution among spawning areas. The indices are not intended to provide an actual estimate of escapement for the coastal stocks but we have used them for that purpose because there is presently no other means of making such an estimate.

2 The escapement estimate for each site is the asterisked aerial survey estimate. Where the survey site is a terminal spawning area the peak count was used, however, if the site was a holding area for fish bound for sites further upstream the count which minimizes duplication was selected. In the Martin River system for example, the peak count of 1,000 fish in the lake outlet on 31 August may have included fish destined to spawn in other areas of the lake and which were included in the subsequent lake count on 6 September. By opting to use the 31 August peak count for the outlet and the 6 September peak count for the lake the chance of duplication was minimized.

3 The sum of the estimates by site within a system.

4 Daily totals are only the sum of aerial survey counts for each survey and can't be used to estimate total escapements since the peak spawning timing varies from site to site.

Table 2. Aerial survey indices of sockeye salmon escapement to the Upper Copper River drainage, 1976 - 1985.

Location	Yearly Survey Indices										10 Year Average
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	
Salmon Creek	300	275	50	450	1,500	250	850	1,550	1,350	575	715
Tonsina Lake	900	432	4	775	650	1,725	1,700	2,850	975	0	1,001
Mahlo Creek	600	5,200	300	450	1,000	1,800	3,300	2,400	4,300	575	1,993
St. Anne Creek	1,700	7,000	1,150	730	5,000	4,700	8,800	9,700	10,300	1,250	5,033
Mendeltna Creek	900	3,900	725	350	1,125	4,830	400	2,850	1,900	2,300	1,928
Keg Creek	125	725	1,050	1,300	2,335	320	495	620	2,505	825	1,030
Dickey Lake	0	650	75	13	250	20	410	135	105	290	195
Swede Lake	10	750	80	155	400	450	1,400	550	2,400	250	645
Paxson Lake Outlet	2,800	3,800	2,500	1,900	3,800	1,500	3,800	3,300	4,100	3,600	3,110
Paxson Inlet to Mud Creek	4,200	6,000	2,700	5,400	8,200	2,200	1,150	7,500	15,700	7,500	6,055
Mud Creek and Lake	1,100	650	150	460	740	810	1,900	470	270	200	675
Mud Creek to Summit Lake	1,900	5,900	800	2,600	3,075	3,400	17,400	5,700	9,600	8,150	5,853
Fish Lake	900	8,000	2,650	1,700	3,175	8,800	22,560	5,500	10,950	3,750	6,799
Bad Crossing #1 and #2	16	8,400	600	650	75	15,000	4,550	2,000	760	1,125	3,318
Fish Creek - Mentasta	250	6,900	1,300	350	900	10,500	1,700	900	900	1,800	2,550
Mentasta Lake	600	3,500	3,600	2,500	3,200	7,400	3,250	6,800	4,850	3,850	3,955
Suslota Lake	100	300	1,200	1,000	1,700	300	1,800	5,600	700	2,200	1,490
Tanada Lake	6,100	9,100	2,625	5,175	13,700	11,200	11,680	10,900	16,100	5,600	9,218
Long Lake	2,450	877	1,425	3,100	2,650	1,325	1,700	5,600	1,360	0	2,049
Tana River	25	404	504	465	2,130	290	1,100	2,485	3,665	1,145	1,221
Totals	24,976	72,763	23,488	29,523	55,605	76,820	89,945	77,410	92,790	44,985	58,831

Table 13. Aerial survey indices of chinook salmon escapement to the Copper River drainage, 1976 - 1985.

Survey Location	Yearly Survey Indices										10 Year Average
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	
East Fork Chistochina River	289	132	137	810	575	120	1,260	575	577	360	484
Gulkana River	777	1,090	921	1,380	718	754	1,656	931	2,189	321	1,074
Mendeltna Creek	35	73	52	5	3	51	70	12	26	26	35
Kiana Creek	37	91	125	279	247	191	200	166	382	91	181
St. Anne Creek	15	10	24	16	8	19	35	87	89	15	32
Manker Creek	6	15	20	16	35	23	49	141	264	22	59
Grayling Creek	17	48	92	153	66	107	127	287	279	58	123
Little Tonsina River	98	35	285	285	70	191	440	330	568	203	251
Indian River	61	20	9	29	24	20	179	41	17	14	41
Total without interpolated counts	1,335	1,446	1,665	2,973	1,746	712	4,016	2,570	4,391	1,110	2,196
Counts Missing		2				2					
Total with interpolated counts	1,335	1,514	1,665	2,973	1,746	1,476	4,016	2,570	4,391	1,110	2,280

Table 14. Prince William Sound Area subsistence fisheries catch, 1985.

Area	Number Permits	Gear	King	Sockeye	Coho	Other ¹	Total
Upper Copper River	4,153	Dip Net	1,218	28,297	331	10	29,856
Upper Copper River	533	Fishwheel	455	22,191	213	18	22,877
Copper River Flats	94	Gill Net	88	261	83	1	433
Prince William Sound ²	17	Gill Net	1	27	16	40	84
	4	Purse Seine					
	1	Set Net					
TOTAL	4,802		1,762	50,776	643	69	53,250

1 Includes catches from pink and chum salmon, whitefish, steelhead, cutthroat, Dolly Varden, lamprey, lingcod and grayling.

2 Catch is from 6 gill net fishermen, 9 gillnet fishermen did not fish, two were unsuccessful, 4 purse seine fishermen & 1 set net fisherman did not fish.

Table 15. Salmon catch and effort in the Copper River District subsistence gillnet fishery, 1960 - 1985.

Year	Permits						Catch			
	Returned			Total			Chinook	Sockeye	Coho	Total
	Issued	Unused	Unsuccessful	Successful	Unknown	No Record				
1960	13	No Record	No Record	Unknown	No Record	60	137	158	158	
1961	14	"	"	"	14	44	135	99	296	
1962	14	"	"	"	No Record	3	13	3	182	
1963	8	0	2	6	8	14	157	173	173	
1964	5	2			3				14	
1965	31	5	2	13	20	12	459	85	556	
1966	45	10	2	19	31	47	175		222	
1967	61	19	9	28	56	83	153		236	
1968	17	8	1	6	15	11	36		47	
1969	49	13	7	13	33	16	63	85	164	
1970	32	3	1	23	27	66	179		245	
1971	29	9	12	5	26	10	32	4	46	
1972	104	5		75	80	149	569	53	771	
1973	94			89	89	153	326	180	659	
1974	9	2	2	1	5	5	4	2	11	
1975	2			2	2	0	5	0	5	
1976	27			14	14	1	10	0	11	
1977	23			22	22	10	71	0	81	
1978	34	19		9	28	37	18	12	67	
1979	49	20	4	17	41	45	26	17	88	
1980	39	17	6	12	35	19	27	17	63	
1981	72	21	4	26	51	48	145	104	297	
1982	108	42	3	45	90	60	634	106	802	
1983	87	42	4	27	73	79	107	57	254	
1984	118	47	14	43	104	68	324	135	549	
1985	94	27	9	58	76	88	261	83	433	

1 Includes 1 pink and 1 chum.
 2 Includes 11 pinks.
 3 Includes 22 pinks.
 4 Includes 1 chum.

Table 16. Salmon catch and effort in the Prince William Sound subsistence fishery, 1960 - 1985.1

Year	Permits		Catch							Total
	Issued	Returned	Chinook	Sockeye	Coho	Pink	Chum	Unknown ²		
1960	50		1	139	505	1292	75	150	2162	
1961	12		3	41	123	732	3		902	
1962	9				119	214	142		475	
1963	9				406	298	24		728	
1964	15			11		900			911	
1965	22	16				179	25		204	
1966	3	3		3	19	20	50		92	
1967	4	3			4	4			8	
1968	4	3			20	156		22	198	
1969	7	3			16				16	
1970	1	1							0	
1971	3	2				46			46	
1972	0								0	
1973	19	16			289				289	
1974	3	1							0	
1975	2	0							0	
1976	0								0	
1977	4	4							0	
1978	3	2							0	
1979	15	2							0	
1980	26	15		7	6				13	
1981	12	8		3	29		2		34	
1982	35	27		84	4	31	24		143	
1983	26	21		22	36	9	79		146	
1984	8	8		10		11	2		23	
1985	22	16	1	27	16	14	26	0	84	

1 Includes only catches from Prince William Sound proper.

2 Catches not reported by species.

Table 17. Copper River subsistence and personal use fisheries data, 1965-1985.

Year	Permits Issued			Reported Catch			Reported Catch by Species				Total Catch
	Dip Net	Fish Wheel	Total	Dip Net	Fish Wheel	Total	Chinook	Sockeye	Coho	Reported	
1965	982	143	1,125	7,215	5,813	13,028	664	12,760	52	13,476	16,816
1966	1,132	138	1,270	7,452	9,188	16,640	555	16,716		17,273	21,896
1967	1,166	154	1,320	6,146	8,360	14,506	419	14,457		14,876	19,007
1968	1,235	143	1,378	8,040	6,071	14,111	644	14,819	233	15,696	20,283
1969	1,415	167	1,582	18,054	6,220	24,274	719	27,604	224	28,547	29,266
1970	3,220	267	3,487	22,700	9,886	32,586	427	36,500	554	37,481	42,757
1971	4,168	374	4,542	28,115	9,370	37,485	1,363	37,517	363	39,243	48,449
1972	3,465	205	3,690	18,996	7,854	26,850	1,501	26,850	2482	28,599	32,4682
1973	3,840	305	4,145	16,407	10,943	27,350	1,846	27,350	513	29,247	29,4283
1974	3,305	288	3,593	15,143	7,657	22,800	1,141	22,800	1634	24,104	26,0014
1975	2,452	350	2,802	7,694	5,626	13,320	1,705	13,320		15,025	15,357
1976	2,512	451	2,963	12,130	8,321	20,451	2,017	20,451	17	22,485	23,623
1977	3,526	540	4,066	22,612	12,751	35,363	2,171	35,363	454	37,988	41,815
1978	3,313	392	3,705	12,569	6,638	19,207	2,050	19,207	633	21,890	22,029
1979	2,730	470	3,200	11,887	10,251	22,138	2,372	22,138	705	25,215	30,963
1980	2,604	399	3,203	14,650	9,805	24,455	2,256	21,437	639	24,332	35,081
1981	3,555	523	4,078	28,872	26,924	55,796	1,913	53,008	849	55,770	68,746
1982	5,475	615	6,090	62,614	38,120	100,734	2,532	96,799	1,246	100,577	110,0065
1983	6,911	630	7,541	72,257	35,971	108,228	5,421	100,995	1,690	108,106	118,728
1984	104	458	562	1,288	20,374	21,662	415	20,999	237	21,651	23,093
	5,311	17	5,328	46,018	223	46,241	1,592	44,079	552	46,223	49,940
	5,415	475	5,850	47,306	20,597	67,903	2,007	65,078	789	67,874	73,0336
1985	4,153	533	5,686	29,856	22,877	52,733	1,673	50,486	544	52,705	64,200

- 1 Last use of Dip Net/Fishwheel combination permits. 6 Through 1/28/85.
- 2 First issue of permits at Chitina. s = subsistence
- 3 Last "Blacklist" used. p = personal use
- 4 Issue of permits at Chitina and Glennallen only. s + p = 1984 total catch
- 5 Return requirement enforced.

Table 18. Estimated age and sex composition of sockeye salmon in the commercial catches from the Copper River District (212) drift gillnet fishery, 1985. 1

	Brood Year and Age Group								Total		
	1982		1981		1980		1979			1978	
	0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	1.5	2.4
Catch Dates: 5/13 - 10/03											
Sample Dates: 5/14 - 7/19											
Sample Size: 4,553											
Female	0.2	0.0	5.2	2.9	0.1	33.9	0.4	0.5	6.7	0.1	0.0
Percent of Catch	2,158	0	48,091	26,691	565	315,936	4,067	4,872	62,050	478	0
Number in Catch											
Male	0.7	.0	5.4	3.1	.0	34.2	0.5	0.5	5.8	0.0	.0
Percent of Catch	6,493	85	49,816	28,444	252	316,360	4,276	4,258	53,816	0	371
Number in Catch											
Total	0.9	.0	10.5	5.9	0.1	68.1	0.9	1.0	12.4	0.1	.0
Percent of Catch	8,651	85	97,907	55,135	817	634,296	8,343	9,130	115,866	478	371
Number in Catch	1,305	82	4,887	3,242	413	7,333	1,457	1,464	5,429	458	341
Standard Error											

1 Based on final catch summaries from fish tickets and age and sex composition data from a stratified systematic sampling program. The stratified sex and age summaries were used to allocate the catch by sex and age in eight time segments of the fishery. This table is the weighted sum of the catch by sex and age across all eight strata.

Table 19. Estimated sex and age composition of the sockeye salmon escapement to the Upper Copper River at the Miles Lake Sonar Project, 1985. 1

	Brood Year and Age Group										Total
	1982		1981		1980		1979		1978		
	0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4	
Female											
Percent of Escapement	0.3	0.1	1.1	5.6	0.0	43.6	2.6	0.3	7.5	0.0	61.1
Number in Escapement	1,396	470	4,866	24,520	0	190,256	11,235	1,131	32,927	0	265,801
Male											
Percent of Escapement	0.2	0.0	0.8	2.3	.0	30.1	1.1	0.4	3.9	0.1	38.8
Number in Escapement	697	0	3,688	10,018	22	131,352	4,680	1,606	17,184	265	169,512
Total											
Percent of Escapement	0.5	0.1	2.0	7.9	.0	73.7	3.7	0.6	11.5	0.1	100.0
Number in Escapement	2,093	470	8,554	34,538	22	321,608	15,915	2,737	50,111	265	435,313
Standard Error	658	1	1,158	2,234	21	3,889	1,657	743	2,957	257	

1 This is the weighted sum of the estimated escapement by sex and age for six time strata and is based on the hydroacoustical estimates of the Upper Copper River escapement past Miles Lake, a time series of age composition data from the stratified sampling program in the subsistence fishery at Chitina and, age composition data from Long Lake. The escapement estimate at the Miles lake sonar project is for all species of salmon but has historically been used as the Upriver escapement of sockeye salmon which are by far the dominant species. Prior to the first week of July and, with the exception of a few minor stocks which spawn at sites between Miles lake and Chitina, the fisheries at Chitina target on the same stocks which are enumerated at Miles Lake and samples from the fishery at Chitina in that time frame are probably representative of most of the Upriver escapement. The time strata for the escapement are similar to the time strata used for sampling the fishery at Chitina with dates for each strata lagged to account for the travel time of fish in transit from Miles Lake to Chitina. After the first week in July, fish which are returning to Long Lake on the Chitina River drainage constitute a significant portion of the Upriver escapement but, because they orient to the river bank opposite where most of the fishing effort occurs, they are probably not represented in the fishery samples. The Upriver escapement by sex and age for this segment of the run was estimated as follows: 1) Escapement counts from a weir at Long Lake were subtracted from the Miles Lake sonar counts from this last time stratum and the Chitina fishery age and sex composition data for that stratum were used to allocate the remainder by age and sex; 2) The Long lake escapement as enumerated through the weir was allocated using age and sex data from fish sampled at the weir; 3) The two estimates of escapement by sex and age were summed.

Figure 20. Estimated age and sex composition of the combined sockeye salmon escapements to the Copper River Delta and Bering River Drainages, 1983-1987.

	Brood Year and Age Group												
	1983		1982		1981		1980		1979				
	0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	3.2	Total
Copper River Delta Escapements 2													
Sample Dates:	07/01 - 8/29												
Sample Size:	8,384												
Female	0.0	0.8	0.1	2.2	11.0	0.0	0.1	23.6	0.2	0.1	0.4	0.0	38.4
Percent of Escapement	0	1,133	197	3,093	15,586	0	96	33,403	293	80	611	0	54,492
Number in Escapement													
Male	0.1	12.4	6.9	1.3	26.0	0.3	.0	14.1	0.3	.0	0.1	0.0	61.6
Percent of Escapement	129	17,610	9,831	1,826	36,848	370	39	19,953	404	69	196	0	87,276
Number in Escapement													
Total	0.1	13.2	7.1	3.5	37.0	0.3	0.1	37.6	0.5	0.1	0.6	0.0	100.0
Percent of Escapement	129	18,743	10,028	4,919	52,434	370	135	53,356	697	149	808	0	141,768
Number in Escapement													
Standard Error	48	476	407	250	750	84	55	697	120	50	124	0	
Bering River Escapements 3													
Sample Dates:	07/08 - 08/15												
Sample Size:	1,921												
Female	0.0	2.3	0.1	1.1	10.3	0.0	0.1	19.5	0.8	0.7	0.5	0.0	35.4
Percent of Escapement	0	597	21	299	2,705	0	16	5,114	221	176	120	0	9,269
Number in Escapement													
Male	0.1	18.4	11.1	0.6	17.1	0.1	0.1	15.5	1.1	0.2	0.4	.0	64.6
Percent of Escapement	16	4,815	2,913	168	4,469	25	16	4,048	282	64	110	5	16,931
Number in Escapement													
Total	0.1	20.7	11.2	1.8	27.4	0.1	0.1	35.0	1.9	0.9	0.9	.0	100.0
Percent of Escapement	16	5,412	2,934	467	7,174	25	32	9,162	503	240	230	5	26,200
Number in Escapement													
Standard Error	13	295	179	101	440	7	36	404	97	5	63	11	

Table 20 Continued

	Brood Year and Age Group											
	1983		1982		1981		1980		1979		Total	
	0.1	0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3		3.2
Combined Delta and Bering River Escapements												
Sample Dates:	07/01 - 08/29											
Sample Size:	10,305											
Female	Percent of Escapement	0.0	1.0	0.1	2.0	10.9	0.1	22.9	0.3	0.4	0.0	38.0
	Number in Escapement	0	1,730	218	3,392	18,291	112	38,517	514	731	0	63,761
Male	Percent of Escapement	0.1	13.4	7.6	1.2	24.6	.0	14.3	0.4	0.1	0.2	62.0
	Number in Escapement	145	22,425	12,744	1,994	41,317	55	24,001	686	306	5	104,207
Total	Percent of Escapement	0.1	14.4	7.7	3.2	35.5	0.1	37.2	0.7	0.6	.0	100.0
	Number in Escapement	145	24,155	12,962	5,386	59,608	167	62,518	1,200	1,038	5	167,968
	Standard Error	51	553	468	263	802	84	770	137	139	5	

1 This is the weighted sum of the escapements by age and sex for the major spawning areas sampled in 1985. With the exception of Tokun Lake where there was a weir operated, the escapements to all of the spawning sites were estimated by aerial surveys. A subset of the surveyed sites has historically been used as an index of the Copper River Delta and Bering River escapements. Because more sites were sampled than are included in this indexed subset, the escapement shown here is not the same as the index escapement.

2 Includes the estimates of escapement by sex and age for Eyak Lake (beach spawners and Hatchery Creek), McKinley Lake (beach spawners and Salmon Creek), 27-Mile Slough, Ragged Point Lake, Martin Lake (beach and stream spawners), Little Martin Lake, Tokun Lake, Martin River Slough and, 39-Mile Creek. The Tokun Lake estimate is from weir counts and data from a systematic stratified sampling program at the weir. The remainder of the escapement estimates are based on aerial survey data and sex composition data from single sampling trips to each spawning site.

3 Includes the estimates of escapement by sex and age for Bering Lake (beach spawners and Dick Creek), Shepherd Creek (includes Maxwell and Carbon Creeks), and Kushtaka Lake (beach spawners and Shokum Creek). The escapement estimates are based on aerial survey data and age and sex composition data from single sampling trips to each spawning site.

Table 22 Estimated age and sex composition of chinook salmon in the commercial catches from the Copper River District (212) drift gillnet fishery, 1985. ¹

	Brood Year and Age Group										Total
	1982		1981		1980		1979		1978		
	0.2	0.3	1.2	1.3	2.2	2.3	1.4	2.3	1.5	2.4	
Catch Dates:	5/13 - 10/03										
Sample Dates:	5/14 - 6/14										
Sample Size:	2,830										
Female	0.1	0.1	3.1	10.4	0.1	30.1	0.1	0.4	0.1	1.0	53.3
Percent of Catch	28	28	1,321	7,769	35	12,742	189	28	427	22,566	
Number in Catch											
Male	0.1	.0	3.5	10.5	0.1	31.0	0.4	0.5	0.5	46.7	
Percent of Catch	28	15	1,495	4,425	35	13,130	155	199	223	19,767	
Number in Catch											
Total	0.1	0.1	6.7	20.9	0.2	61.1	0.8	0.5	1.5	100.0	
Percent of Catch	56	43	2,816	12,194	70	25,872	343	227	650	42,323	
Number in Catch	26	23	200	365	34	392	72	58	94		
Standard Error											

¹ Based on catch summaries from fish tickets and age composition data from a stratified systematic sampling program. The stratified sex and age summaries were used to allocate the catch by sex and age in five time segments of the fishery. This table is the weighted sum of the catch by sex and age across all five strata.

Table 23. Estimated age and sex composition of coho salmon in the commercial catches in the Copper River District (212), 1985.¹

		Brood Year and Age Group				
		1983	1982	1981	1980	Total
		0.1	1.1	2.1	3.1	
Catch Dates:	5/13 - 10/03					
Sample Dates:	8/06 - 9/18					
Sample Size:	1,625					
Female	Percent of Catch	0.0	11.7	22.9	2.2	36.8
	Number in Catch	0	69,018	134,684	12,646	216,348
Male	Percent of Catch	0.2	29.6	31.3	2.1	63.2
	Number in Catch	917	173,912	184,183	12,599	371,611
Total	Percent of Catch	0.2	41.3	54.2	4.3	100.0
	Number in Catch	917	242,930	318,867	25,245	587,959
	Standard Error	723	8,042	8,227	3,191	

¹ Based on catch data from final fish ticket summaries and age and sex composition data for a systematic, temporally stratified catch sampling program.

	Brood Year and Age Group										
	1982		1981		1980		1979		1978		
	0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4	Total
Catch Dates: 6/01 - 9/30											
Sample Dates: 6/07 - 8/10											
Sample Size: 2,731											
Female	0.3	0.1	2.0	4.5	0.0	43.6	2.1	0.3	7.4	0.0	60.4
Number in Catch	155	57	984	2,323	0	21,993	1,002	129	3,730	0	30,453
Male	0.1	0.0	1.4	1.0	.0	31.0	0.9	0.4	3.9	0.1	39.5
Number in Catch	73	0	724	893	12	15,638	458	182	1,964	26	19,970
Total	0.5	0.1	3.4	6.4	.0	74.6	3.1	0.5	11.3	0.1	100.0
Number in Catch	228	57	1,708	3,216	12	37,631	1,540	311	5,694	26	50,423
Standard Error	73	32	152	247	11	431	177	81	323	25	

1 Preliminary catch data are from approximately 67% of the issued subsistence fishwheel permits and 88.1% of the issued subsistence dipnet permits. The season total catch by age and sex reported in this table is the weighted sum of the catches by sex and age for six time segments of the fishery. The catches by sex and age in each of these segments were allocated by age and sex using daily catch data from preliminary permit returns and age and sex composition data from a systematic, temporally stratified catch sampling program at Chitina. Because the catch totals in this table are from daily catch reports they may differ slightly from figures reported in other reports which include catches from unknown or spurious dates. The age composition data from the systematic, temporally stratified sampling program in the dipnet and fishwheel fisheries at Chitina were applied to the entire Upriver subsistence harvest. Although we have assumed that the samples from Chitina are fairly representative of the entire Upriver subsistence harvest it should be pointed out that some of the stocks which migrate past Chitina are subject to further fishing at fishwheel sites further upstream. These stocks may be under-represented in the final age composition data derived from the Chitina samples.

Table 25. Commercial salmon catch by period and species for the nearshore subdistricts adjacent to the Bering River (Inside) and the Kayak Island subdistrict (Kayak Island), 1985.

Dates	Fishing ¹ Time (Hours)	Catch by Species						Total
		Chinook	Sockeye	Coho	Pink	Chum		
INSIDE								
6/10 - 6/11	36	36	1,382	0	0	0	445	1,863
6/13 - 6/15	36	20	2,198	1	0	0	217	2,436
6/17 - 6/19	48	8	711	1	0	0	0	720
6/20 - 6/22	36	6	1,033	0	0	0	20	1,059
6/24 - 6/26	48	0	129	0	0	0	0	129
7/01 - 7/03			NO EFFORT					
7/08 - 7/16			CLOSED					
7/17 - 8/04			NO EFFORT					
8/05 - 8/08	87	0	18	166	80	0	0	264
8/12 - 8/15	87	0	0	772	0	0	0	772
8/19 - 8/22	87	4	98	46,766	28	29	0	46,925
8/26 - 8/29	87	1	17	99,922	1	2	0	99,943
9/02 - 9/05	87	1	0	166,571	0	0	0	166,572
9/09 - 9/12	87	0	0	77,119	0	0	0	77,119
9/16 - 9/19	87	0	1	23,517	0	0	0	23,518
9/23 - 9/26	87	0	0	3,653	0	0	0	3,653
Season Totals		76	5,587	418,488	109	713	424,973	
KAYAK ISLAND								
6/10 - 6/11	36	34	1,850	5	0	684	2,573	
6/13 - 6/15	36	61	8,569	102	81	4,385	13,198	
6/17 - 6/19	48	5	704	2	0	213	924	
6/20 - 6/22	36	28	4,690	271	24	2,547	7,560	
6/24 - 6/26	48	11	5,161	408	0	1,100	6,680	
Season Totals		139	20,974	788	105	8,929	30,935	

Dates	Fishing ¹ Time (Hours)	Effort	Catch by Species						Total
			Chinook	Sockeye	Coho	Pink	Chum		
6/10 - 6/11	36	37	70	3,232	5	0	1,129	4,436	
6/13 - 6/15	36	42	81	10,767	103	81	4,602	15,634	
6/17 - 6/19	48	18	13	1,415	3	0	213	1,644	
6/20 - 6/22	36	40	34	5,723	271	24	2,567	8,619	
6/24 - 6/26	48	18	11	5,290	408	0	1,100	6,809	
7/01 - 7/03				NO EFFORT					
7/08 - 7/16				CLOSED					
7/17 - 8/04				NO EFFORT					
8/05 - 8/08	87	2	0	18	166	80	0	264	
8/12 - 8/15	87	3	0	0	772	0	0	772	
8/19 - 8/22	87	107	4	98	46,766	28	29	46,925	
8/26 - 8/29	87	165	1	17	99,922	1	2	99,943	
9/02 - 9/05	87	217	1	0	166,571	0	0	166,572	
9/09 - 9/12	87	192	0	0	77,119	0	0	77,119	
9/16 - 9/19	87	95	0	1	23,517	0	0	23,518	
9/23 - 9/26	87	24	0	0	3,653	0	0	3,653	
Season Totals			215	26,561	419,276	214	9,642	455,908	

1 Weekly fishing periods in the Bering River district are adjusted to coincide with the periods in the Copper River district. Normal weekly fishing periods are from 6:00 a.m. Wednesday and from 6:00 p.m. Thursday until 6:00 a.m. Saturday prior to August 7. From August 7 to August 31 the normal weekly period is from 6:00 a.m. Monday until 6:00 p.m. Thursday and after August 31 fishing is permitted from 7:00 a.m. Monday until 7:00 p.m. Thursday.

During the 1985 season weekly fishing periods were modified by emergency order prior to July 22 with regular weekly fishing periods permitted within the inside subdistricts for the duration of the season after that date. The Kayak island subdistrict was closed for the duration of the season after July 1 in conformance with an established management plan adopted to protect sockeye salmon returns to the Situk River.

Table 26. Commercial salmon catch by species in the Bering River District, 1976 - 1985.

Catch by Species						
Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1976	228	30,908	42,423	43	1	73,603
1977	127	14,445	47,218	192	221	62,203
1978	331	33,554	91,097	266	2,391	127,639
1979	385	139,015	114,046	6,895	23,094	283,435
1980	0	0	108,872	0	0	108,872
1981	200	55,585	82,626	9,882	8,307	156,600
1982	254	129,667	144,752	47	333	275,053
1983	610	179,273	117,669	851	4,615	303,018
1984 ¹	330	91,784	214,632	309	20,408	327,463
1985	215	26,561	419,276	214	9,642	455,908
10 Year Average ²	268	70,079	138,261	1,870	6,901	217,379

1 Preliminary.

2 Average of years fished. In 1980 the season did not open until August 11.

Table 27. Aerial survey estimates of sockeye salmon escapements in the Bering River District, 1976 - 1985.

Lake/Stream	Years										
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	
Bering Lake*	40,000	8,000	7,000	13,500	12,000	20,000	7,300	26,500	18,000	15,500	
Dick Creek*	2,000	1,500	6,300	11,000	11,000	20,000	9,500	4,000	11,000	200	
Shepherd Creek*	550	glacial	6,000	glacial	7,800	9,000	10,500	9,500	13,000	8,000	
Carbon Creek	muddy	0	0	0	muddy	muddy	2,500	muddy	250	muddy	
Kushtaka Lake*	2,500	0	3,500	2,500	1,000	5,500	1,350	1,200	800	500	
Shokum Creek	Part of Kushtaka Lake	Total	1,000	2,500	2,000	1,000	1,000	1,000	700	NC	
Cleark Creek	muddy	0	0	0	N/C	N/C	3,500	3,500	3,000	100	
All Streams Total	45,050	9,500	22,800	27,000	32,800	57,000	36,650	45,700	46,750	24,300	

Table 28 Estimated age and sex composition of sockeye salmon in the commercial catches from the drift gillnet fishery in the area east of Kayak Island in the Bering River District, 1985. 1

	Brood Year and Age Group									
	1982		1981		1980		1979		1978	
	0.2	0.3	1.2	1.3	2.2	1.4	2.3	3.2	1.5	Total
Catch Dates: 6/10 - 6/26 2										
Sample Dates: 6/10 - 6/26										
Sample Size: 1,682										
Female	0.1	1.0	1.5	31.4	0.6	0.3	4.2	.0	0.0	39.1
Percent of Catch	27	215	311	6,586	121	63	877	10	0	8,210
Number in Catch										
Male	0.2	1.1	3.3	48.5	1.6	0.5	5.5	0.0	.0	60.9
Percent of Catch	49	236	695	10,182	334	110	1,149	0	10	12,764
Number in Catch										
Total	0.4	2.2	4.8	79.9	2.2	0.8	9.7	.0	.0	100.0
Percent of Catch	76	451	1,006	16,768	455	173	2,025	10	10	20,974
Number in Catch	26	85	105	220	73	52	169	10	10	
Standard Error										

1 Based on final fish ticket summaries and age and sex composition data from a stratified systematic sampling program. The stratified age and sex summaries were used to allocate the catch by age and sex in three time segments of the fishery. This table is the weighted sum of the catch by age and sex across all three strata. There were small catches of sockeye salmon in the Controller Bay and Katella Bay area to the west of Kayak Island (5,587 fish) but there were insufficient samples to allocate these catches by sex and age and they are not included in this table.

2 The Bering River District was opened to commercial fishing by emergency order on 10 June. The area to the east of Kayak Island was closed by emergency order on 1 July.

Table 29. Estimated age and sex composition of coho salmon in the commercial catch in the Bering River District, 1985. ¹

		Brood Year and Age Group			
		1982	1981	1980	Total
		1.1	2.1	3.1	
Catch Dates:	6/10 - 9/26				
Sample Dates:	8/27 - 9/11				
Sample Size:	732				
Female	Percent of Catch	11.2	31.5	4.7	47.4
	Number in Catch	47,085	132,117	19,605	198,807
Male	Percent of Catch	13.9	33.9	4.9	52.6
	Number in Catch	58,087	142,045	20,337	220,469
Total	Percent of Catch	25.1	65.4	9.5	100.0
	Number in Catch	105,172	274,162	39,942	419,276
	Standard Error	6,892	7,680	4,919	

¹Based on catch data from final fish ticket summaries and age and sex composition data from a systematic, temporally stratified catch sampling program.

Table 30. Commercial catch of salmon by species, by period, by gear type in the Coghill District, Prince William Sound, 1985.

Drift Gill Net								
Catch by Species								
Period Date(s)	Time (Hrs)	Effort (Boats)	Chinook	Sockeye	Coho	Pink	Chum	Total
6/17-6/20	87 ¹	134	66	20,758	8	747	20,099	41,678
6/24-6/27	87	263	66	71,535	55	2,130	33,756	107,542
7/01-7/06	138 ²	362	101	135,804	200	16,604	60,163	212,872
7/07-7/13	168	348	47	74,790	402	64,196	57,590	197,025
7/14-7/19	141	280	27	24,471	97	91,585	23,504	139,684
7/22-7/26	111	193	35	6,687	81	103,753	21,555	132,111
7/29-8/02	111	142	30	3,443	280	96,078	12,608	112,439
8/05-8/09	111	104	8	1,693	5	71,181	12,656	85,543
8/12-8/16	111	41	0	115	3	8,257	4,893	13,268
Season Totals			380	339,296	1,131	454,531	246,824	1,042,162

Purse Seine								
Catch by Species								
Period Date(s)	Time (Hrs)	Effort (Boats)	Chinook	Sockeye	Coho	Pink	Chum	Total
7/06-7/06 ³	24	19	1	761	0	777	1,564	3,103
7/07-7/13	168	57	30	8,776	54	21,308	9,181	39,349
7/14-7/19	141	9	0	799	0	12,673	3,519	16,991
7/22-7/26	111	4	54	273	45	3,757	2,947	7,076
7/29-8/02	111	1	0	75	8	3,570	145	3,798
8/05-8/09	111	6	0	20	0	15,476	1,281	16,777
8/12-8/16	111	4	0	53	5	11,681	693	12,432
Season Totals			85	10,757	112	69,242	19,330	99,526

Combined Gear								
Catch by Species								
Period Date(s)	Time (Hrs)	Effort (Boats)	Chinook	Sockeye	Coho	Pink	Chum	Total
6/17-6/20	87		66	20,758	8	747	20,099	41,678
6/24-6/27	87		66	71,535	55	2,130	33,756	107,542
7/01-7/06	138		102	136,565	200	17,381	61,727	215,975
7/07-7/13	168		77	83,566	456	85,504	66,771	236,374
7/14-7/19	141		27	25,270	97	104,258	27,023	156,675
7/22-7/26	111		89	6,960	126	107,510	24,502	139,187
7/29-8/02	111		30	3,518	288	99,648	12,753	116,237
8/05-8/09	111		8	1,713	5	86,657	13,937	102,320
8/12-8/16	111		0	168	8	19,938	5,586	25,700
Season Totals			465	350,053	1,243	523,773	266,154	1,141,688

1 The season was opened on June 17 for regular weekly periods from 6:00 a.m. Monday through 9:00 p.m. Thursday.

2 The weekly period was extended to continuous seven day per week fishing after 9:00 p.m. on Friday, July 5. Continuous fishing remained in effect through 9:00 p.m. on Friday, July 19 with regular weekly periods resuming after that date and this schedule remained in effect for the balance of the season.

3 The Coghill district was open to purse seine gear throughout the season commencing on Saturday, July 6.

Table 31. Commercial salmon catch by species in the Coghill District, 1976 - 1985.

Peak Year Effort	Catch by Species						Total
	Chinook	Sockeye	Coho	Pink	Chum		
----- Drift Gillnet -----							
1976	229	138	58,963	206	154,327	110,994	324,628
1977	207	124	154,342	49	332,859	127,476	614,850
1978	420	469	193,899	64	49,527	110,679	354,638
1979	247	543	75,753	1,837	259,372	56,916	394,421
1980	112	107	56,957	1,053	355,684	68,071	481,872
1981	171	152	101,058	1,008	526,739	131,399	760,356
1982	289	127	929,965	213	181,925	252,077	1,364,307
1983	403	340	38,273	1,013	233,263	234,022	506,911
1984 ¹		396	94,956	563	897,496	264,878	1,258,289
1985		380	339,296	1,131	454,531	246,824	1,042,162
10 Year Average		278	204,346	714	344,572	160,334	710,243
----- Purse Seine -----							
1976	111	88	6,942	30	217,696	55,809	280,565
1977	47	40	16,436	50	230,215	37,102	283,843
1978	25	206	9,623	34	13,059	14,007	36,929
1979	29	692	3,047	55	38,560	5,709	48,063
1980	5	0	2,159	0	134,876	4,702	141,737
1981	15	1	1,997	0	34,083	23,378	59,459
1982	11	23	17,466	29	1,006,579	135,553	1,159,650
1983	12	0	175	16	41,048	8,958	50,197
1984 ¹	2	0	21	0	10,911	1,126	12,058
1985		85	10,757	112	69,242	19,330	99,526
10 Year Average		114	6,862	33	179,627	30,567	217,203

Continued

Table 31. Continued.

Year	Peak Effort	Catch by Species					Total
		Chinook	Sockeye	Coho	Pink	Chum	
					Combined Gear		
1976	340	226	65,905	236	372,023	166,803	605,193
1977	254	164	170,778	99	563,074	164,578	898,693
1978	445	675	203,522	98	62,586	124,686	391,567
1979	276	1,235	78,800	1,892	297,932	62,625	442,484
1980	117	107	59,116	1,053	490,560	72,773	623,609
1981	186	153	103,055	1,008	560,822	154,777	819,815
1982	300	150	947,431	242	1,188,504	387,630	2,523,957
1983	415	340	38,448	1,029	274,311	242,980	557,108
1984 ¹	2	396	94,977	563	908,407	266,004	1,270,347
1985	0	465	350,053	1,243	523,773	266,154	1,141,688
10 Year Average		391	211,209	746	524,199	190,901	927,446

1 Preliminary

Table 32. Salmon escapement by species in the Coghill District, 1976 - 1985.

Year	Sockeye ¹	Pink ²	Chum
1976	9,056	50,930	35,750
1977	31,562	338,750	41,640
1978	42,284	75,270	13,550
1979	48,281	66,230	13,150
1980	142,253	182,430	12,610
1981	156,112	444,700	30,740
1982	180,314	264,420	24,150
1983	38,783	311,200	62,800
1984	63,622	468,040	24,460
1985	163,311 ³	299,350	23,290
10 Year Average	87,558	250,132	28,214

- 1 Coghill River only. Total weir count beginning in 1974.
- 2 District totals include the west side of Port Wells.
- 3 Weir Count. Total includes 537 jacks.

Table 33. Salmon escapement through the Coghill River weir, 1985.

Date	Chinook		Sockeye ¹		Pink		Chum	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/14	0	0	75	75	0	0	0	0
6/15	0	0	0	75	0	0	0	0
6/16	0	0	8	83	0	0	0	0
6/17	0	0	0	83	0	0	0	0
6/18	0	0	2	85	0	0	0	0
6/19	0	0	86	171	0	0	0	0
6/20	0	0	0	171	0	0	0	0
6/21	0	0	0	171	0	0	0	0
6/22	0	0	0	171	0	0	0	0
6/23	0	0	0	171	0	0	0	0
6/24	0	0	0	171	0	0	0	0
6/25	0	0	20	191	0	0	0	0
6/26	0	0	6,868	7,059	0	0	0	0
6/27	0	0	2,495	9,554	0	0	0	0
6/28	0	0	13,001	22,555	0	0	0	0
6/29	0	0	11,024	33,579	0	0	0	0
6/30	0	0	11,576	45,155	1	1	0	0
7/01	0	0	17,426	62,581	44	45	0	0
7/02	0	0	10,110	72,691	54	99	0	0
7/03	0	0	20,668	93,359	167	266	0	0
7/04	0	0	4,237	97,596	83	349	1	1
7/05	0	0	3,130	100,726	67	416	0	1
7/06	0	0	4,959	105,685	106	522	0	1
7/07	0	0	4,849	110,534	636	1,158	0	1
7/08	0	0	8,222	118,756	903	2,061	0	1
7/09	0	0	6,070	124,826	1,689	3,750	1	2
7/10	0	0	3,340	128,166	1,425	5,175	1	3
7/11	0	0	5,163	133,329	2,533	7,708	0	3
7/12	0	0	5,036	138,365	1,780	9,488	1	4
7/13	0	0	4,614	142,979	1,253	10,741	2	6
7/14	0	0	4,884	147,863	2,031	12,772	1	7
7/15	0	0	2,559	150,422	4,396	17,168	4	11
7/16	0	0	940	151,362	3,597	20,765	0	11
7/17	1	1	2,641	154,003	15,627	36,392	5	16
7/18	1	2	1,452	155,455	6,613	43,005	5	21
7/19	0	2	2,449	157,904	22,960	65,965	35	56
7/20	1	3	1,403	159,307	17,517	83,482	95	151
7/21	0	3	2,083	161,390	10,410	93,892	29	180
7/22	0	3	944	162,334	6,691	100,583	8	188
7/23	0	3	483	162,817	10,127	110,710	12	200
7/24	1	4	359	163,176	7,330	118,040	8	208
7/25	1	5	135	163,311	2,835	120,875	6	214

¹ Total includes 537 jacks.

Table 34 Estimated age and sex composition of sockeye salmon in commercial catches in the Coghill District drift gillnet fishery and sockeye salmon escapement to Coghill Lake, Prince William Sound, 1985.

	Brood Year and Age Group												
	1982			1981			1980			1979		1978	
	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	3.2	2.4	3.3	Total	
Catch Dates: 6/17 - 8/16													
Sample Dates: 6/21 - 7/17													
Sample Size: 2,455													
Female	0.0	0.1	3.0	0.0	44.5	2.0	0.1	2.5	0.0	0.0	0.3	53.2	
Percent Catch	0	285	10,052	0	150,837	9,577	314	8,458	0	146	954	180,634	
Male	0	0.1	6.2	0	34.5	3.3	0.1	2.3	0	0	0	46.8	
Percent Catch	150	418	21,115	150	117,005	11,167	484	7,873	150	0	150	158,662	
Total	0	0.2	9.2	0	78.9	6.1	0.2	4.8	0	0	0.3	100.0	
Percent Catch	150	704	31,167	150	267,842	20,744	798	16,331	150	146	1,114	339,296	
Standard Error	148	349	2,235	148	3,125	1,876	338	1,579	148	149	416		
Escapement Dates: 6/14 - 7/25													
Sample Dates: 6/26 - 7/19													
Sample Size: 1,592													
Female	0.0	0	9.1	0.0	25.8	6.3	0.1	1.6	0	0.0	0.1	42.9	
Percent Escapement	0	67	14,795	0	42,055	10,274	105	2,642	67	0	105	70,113	
Male	0.0	0.0	27.9	0.3	15.5	12.2	0.1	1.0	0.1	0.0	0.0	57.1	
Percent Escapement	0	0	45,504	418	25,376	19,973	154	1,667	105	0	0	93,198	
Total	0.0	0.0	36.9	0.3	41.3	18.5	0.2	2.6	0.1	0.0	0.1	100.0	
Percent Escapement	0	67	60,308	418	67,431	30,247	260	4,309	173	0	105	163,311	
Standard Error	0	62	2,038	232	2,084	1,633	183	706	132	0	117		
Catch + Escapement: 6/14 - 8/16													
Sample Dates: 6/17 - 7/19													
Sample Size: 4,047													
Female	0.0	0.1	4.9	0.0	38.4	3.9	0.1	2.2	0	0	0.2	49.9	
Percent Catch + Escapement	0	353	24,848	0	192,892	19,851	420	11,100	67	146	1,070	250,747	
Male	0	0.1	13.3	0.1	28.3	6.2	0.1	1.9	0.1	0.0	0	50.1	
Percent Catch + Escapement	150	418	66,619	568	142,361	31,140	638	9,540	256	0	150	251,860	
Total	0	0.2	18.2	0.1	66.7	10.1	0.2	4.1	0.1	0	0.2	100.0	
Percent Catch + Escapement	150	771	91,467	568	335,273	50,991	1,058	20,640	323	146	1,220	502,607	
Standard Error	148	354	3,025	276	3,756	2,527	402	1,729	199	149	432		

1 The estimated catch by sex and age is based on daily catch data from final fish ticket summaries and age and sex composition data from five time strata of a systematic, stratified catch sampling program. Catches of sockeye salmon in the seine fishery in the Coghill District (10,749 fish) were not sampled nor allocated by sex and age and are not included in this table. Estimated escapement by age and sex is based on daily counts of fish through a weir on the lake outlet and age and sex composition data from three time strata of a systematic, stratified sampling program at the weir.

Table 35. Commercial catch of salmon by species, by period, by gear type in the Unakwik District, Prince William Sound, 1985.

Drift Gill Net

Period Date(s)	Time (Hrs)	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
6/17-6/20 ¹	87	11	6	1,454	0	1	23	1,484
6/24-6/27	87	37	10	6,880	1	25	531	7,447
7/01-7/05 ²	111	37	4	10,288	1	76	491	10,860
7/08-7/12	111	32	4	5,003	15	521	1,943	7,486
7/15-7/19	111	18	1	2,315	0	243	320	2,879
7/22-7/26	111	6	0	777	0	379	134	1,290
7/29-8/02	111	2	1	684	5	1,724	216	2,630
8/05-8/09	111	6	0	131	0	6,222	284	6,637
Season Totals			26	27,532	22	9,191	3,942	40,713

Purse Seine

Period Date(s)	Time (Hrs)	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
7/22-7/26 ³	111	3	0	27	0	903	140	1,070
7/29-8/02	111	4	0	105	0	16,482	735	17,322
8/05-8/09	111	2	0	6	0	10,825	3,248	14,079
Season Totals			0	138	0	28,210	4,123	32,471

Combined Gear

Period Date(s)	Time (Hrs)	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
6/17-6/20	87		6	1,454	0	1	23	1,484
6/24-6/27	87		10	6,880	1	25	531	7,447
7/01-7/05	111		4	10,288	1	76	491	10,860
7/08-7/12	111		4	5,003	15	521	1,943	7,486
7/15-7/19	111		1	2,315	0	243	320	2,879
7/22-7/26	111		0	804	0	1,282	274	2,360
7/29-8/02	111		1	789	5	18,206	951	19,952
8/05-8/09	111		0	137	0	17,047	3,532	20,716
Season Totals			26	27,670	22	37,401	8,065	73,184

¹ The season was opened on June 17 for regular weekly periods from 6:00 a.m. Monday through 9:00 p.m. Thursday.

² After June 30 the weekly fishing period is from 6:00 a.m. Monday until 9:00 p.m. Friday and remained in effect throughout the duration of the season.

³ Purse seine gear was legal in the Unakwik district with the opening of the season on June 17 but no effort was reported until after July 22.

Table 36 . Commercial salmon catch by species in the Unakwik District, 1976 - 1985.

Year	Peak Effort	Catch by Species					Total
		Chinook	Sockeye	Coho	Pink	Chum	
<u>Drift Gillnet</u>							
1976	15	4	8,421	0	2,744	331	11,500
1977	16	3	7,912	2	257	141	8,315
1978	22	24	9,116	0	2,082	597	11,819
1979	30	11	9,250	9	2,359	289	11,918
1980	3	0	1,547	6	4,815	727	7,095
1981	7	0	2,445	0	4,152	1,330	7,927
1982	19	1	48,947	0	335	598	49,881
1983	62	3	13,215	0	1,515	1,426	16,159
1984 ¹		2	18,522	0	27,742	7,125	53,391
1985		26	27,532	22	9,191	3,942	40,713
10 Year Average		7	14,691	4	5,519	1,651	21,872
<u>Purse Seine</u>							
1976	4	0	7	0	9,403	231	9,641
1977					NO FISHING		
1978	24	3	268	5	55,115	5,025	60,416
1979					NO FISHING		
1980	3	0	6	0	9,113	355	9,474
1981	5	0	108	0	71,624	17,650	89,382
1982	6	0	2	4	89,137	517	89,660
1983	2	0	6	0	3,344	716	4,066
1984 ¹					NO FISHING		
1985		0	138	0	28,210	4,123	32,471
10 Year Average		0	76	1	37,992	4,088	42,159

Continued

Table 36. Continued

Year	Peak Effort	Catch by Species					Total
		Chinook	Sockeye	Coho	Pink	Chum	
					----- Combined Gear		
1976	19	4	8,428	0	12,147	562	21,141
1977	16	3	7,912	2	257	141	8,315
1978	46	27	9,384	5	57,197	5,622	72,235
1979	30	11	9,250	9	2,359	289	11,918
1980	6	0	1,553	6	13,928	1,082	16,569
1981	12	0	2,553	0	75,776	18,980	97,309
1982	25	1	48,949	4	89,472	1,115	139,541
1983	64	3	13,221	0	4,859	2,142	20,225
1984	0	2	18,522	0	27,742	7,125	53,391
1985	0	26	27,670	22	37,401	8,065	73,184
10 Year Average		8	14,744	5	32,114	4,512	51,383

1 Preliminary.

Table 37. Estimated age and sex composition of sockeye salmon in the catches in the Unakwik District drift gillnet fishery, 1985. 1

	Brood Year and Age Group								Total
	1981		1980		1979		1979		
	0.3	1.2	1.3	2.2	1.4	2.3	3.2	3.2	
Strata Combined: 6/17 - 8/09									
Sample Dates: 6/28 and 7/06									
Sample Size: 1,177									
Female	0.1	1.1	44.8	1.7	0.2	3.6	0.0	51.6	
Percent of Catch	38	315	12,326	472	67	987	0	14,205	
Number in Catch									
Male	0.0	4.4	38.0	2.3	0.2	3.3	0.1	48.4	
Percent of Catch	0	1,214	10,472	646	63	915	17	13,327	
Number in Catch									
Total	0.1	5.6	82.8	4.1	0.5	6.9	0.1	100.0	
Percent of Catch	38	1,529	22,798	1,118	130	1,902	17	27,532	
Number in Catch	37	199	332	185	50	217	15		
Standard Error									

1 Based on catch data from final fish ticket summaries and age and sex composition data from two time strata of a systematic stratified catch sampling program.

Table 38. Commercial catch of salmon by species, by period, by gear type in the Eshamy District, Prince William Sound, 1985.¹

Drift Gill Net								
Period Date(s)	Time (Hra)	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
7/29-8/03	1382	6	0	69	0	1,357	416	1,842
8/04-8/10	168	17	1	455	0	17,793	474	18,723
8/11-8/17	1683	11	0	143	0	5,749	131	6,023
Season Totals			1	667	0	24,899	1,021	26,588

Set Gill Net								
Period Date(s)	Time (Hra)	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
7/29-8/03	138	17	0	246	0	3,536	443	4,225
8/04-8/10	168	19	0	1,018	5	17,814	590	19,427
8/11-8/17	168	18	0	459	12	5,730	121	6,322
8/18-8/24	168	13	0	708	33	5,050	94	5,885
8/25-8/30	141	8	1	1,008	24	1,154	47	2,234
Season Totals			1	3,439	74	33,284	1,295	38,093

Combined Gear								
Period Date(s)	Time (Hra)	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
7/29-8/03	138	23	0	315	0	4,893	859	6,067
8/04-8/10	168	36	1	1,473	5	35,607	1,064	38,150
8/11-8/17	168	29	0	602	12	11,479	252	12,345
8/18-8/24	168	13	0	708	33	5,050	94	5,885
8/25-8/30	141	8	1	1,008	24	1,154	47	2,234
Season Totals			2	4,106	74	58,183	2,316	64,681

- 1 The Crafton Island subdistrict remained closed throughout the season. All catches are from the Main Bay subdistrict.
- 2 The season was opened at 6:00 a.m. on July 29 and remained open to continuous seven day per week fishing throughout the end of the season closure at 9:00 p.m. on Friday, August 30.
- 3 Drift gill net gear was legal throughout the season but no effort was reported after August 17.

Table 39. Commercial salmon catch by species in the Eshamy District, 1976 - 1985.

Year	Peak Effort	Catch by Species					Total
		Chinook	Sockeye	Coho	Pink	Chum	
<u>Drift Gillnet</u>							
1976				CLOSED			
1977	53	22	16,916	49	63,036	8,344	88,367
1978				CLOSED			
1979				CLOSED			
1980	16	0	684	25	3,235	130	4,074
1981				CLOSED			
1982				CLOSED			
1983	34	1	924	8	162,541	3,427	166,901
1984 ¹	86	7	23,490	282	247,326	15,451	286,556
1985	17	1	667	0	24,899	1,021	26,588
10 Year Average		6	8,536	36	100,207	5,675	114,497
<u>Set Gillnet</u>							
1976				CLOSED			
1977	12	9	9,889	2	24,743	4,218	38,861
1978				CLOSED			
1979				CLOSED			
1980	5	0	2,000	38	2,471	134	4,643
1981				CLOSED			
1982				CLOSED			
1983	16	1	1,328	10	167,942	4,463	173,744
1984 ¹	18	5	23,226	98	278,176	3,000	304,505
1985	19	1	3,439	74	33,284	1,295	38,093
10 Year Average		3	7,976	22	101,323	2,622	111,969

Continued

Table 40. Salmon escapement from weir and stream foot survey counts, Eshamy district, 1976 - 1985.

Year	Catch by Species				
	Chinook	Sockeye	Coho	Pink ²	Chum
1976	0	19,376	125	5,500	0
1977	0	11,746	230	32,080	0
1978	0	12,580	20	5,690	0
1979	0	12,169	0	12,860	0
1980	5	44,263	128	13,813	2
1981	0	23,048 ³	249	21,490	13
1982	1	6,782	79	14,080	79
1983	0	10,348	58	9,280	100
1984	2	36,121	881	17,080	0
1985	2	26,178 ¹	96	13,530	0
10 Year Average	1	20,261	187	14,540	19

1 Weir count. Total includes 181 jacks.

2 Number of streams surveyed varies from three to five for pink salmon, (see Technical Data Report No. 35 and Data Report No. 9).

3 Assuming the run was 90% complete, an additional 2,600 sockeye are estimated to have escaped following the removal of the weir.

Table 41. Salmon escapement through the Eshamy Lake weir, 1985.

Date	Sockeye		Pink		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/01	0	0	0	0	0	0
7/02	0	0	0	0	0	0
7/03	0	0	0	0	0	0
7/04	0	0	0	0	0	0
7/05	0	0	0	0	0	0
7/06	71	71	0	0	0	0
7/07	151	222	0	0	0	0
7/08	147	369	0	0	0	0
7/09	46	415	0	0	0	0
7/10	179	594	0	0	0	0
7/11	0	594	0	0	0	0
7/12	0	594	0	0	0	0
7/13	0	594	0	0	0	0
7/14	0	594	0	0	0	0
7/15	0	594	0	0	0	0
7/16	251	845	0	0	0	0
7/17	122	967	0	0	0	0
7/18	98	1,065	1	1	0	0
7/19	63	1,128	3	4	0	0
7/20	72	1,200	7	11	0	0
7/21	41	1,241	7	18	0	0
7/22	97	1,338	5	23	0	0
7/23	68	1,406	1	24	0	0
7/24	122	1,528	5	29	0	0
7/25	319	1,847	10	39	0	0
7/26	74	1,921	7	46	0	0
7/27	82	2,003	5	51	0	0
7/28	53	2,056	2	53	0	0
7/29	89	2,145	2	55	0	0
7/30	185	2,330	7	62	0	0
7/31	141	2,471	18	80	0	0
8/01	15	2,486	11	91	0	0
8/02	43	2,529	17	108	0	0
8/03	81	2,610	23	131	0	0
8/04	102	2,712	15	146	0	0
8/05	77	2,789	27	173	0	0
8/06	118	2,907	19	192	0	0
8/07	102	3,009	63	255	0	0
8/08	49	3,058	55	310	0	0
8/09	303	3,361	31	341	0	0
8/10	1134	4,495	417	758	3	3
8/11	418	4,913	488	1,246	2	5
8/12	530	5,443	162	1,408	0	5

Continued

Table 41. Continued.

Date	Sockeye		Pink		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
8/13	786	6,229	298	1,706	3	8
8/14	707	6,936	267	1,973	2	10
8/15	546	7,482	314	2,287	0	10
8/16	324	7,806	197	2,484	1	11
8/17	349	8,155	184	2,668	1	12
8/18	315	8,470	144	2,812	0	12
8/19	382	8,852	81	2,893	3	15
8/20	346	9,198	93	2,986	4	19
8/21	1985	11,183	510	3,496	11	30
8/22	568	11,751	220	3,716	1	31
8/23	502	12,253	263	3,979	0	31
8/24	976	13,229	117	4,096	3	34
8/25	713	13,942	92	4,188	2	36
8/26	644	14,586	50	4,238	0	36
8/27	1007	15,593	136	4,374	1	37
8/28	1262	16,855	208	4,582	3	40
8/29	1254	18,109	224	4,806	1	41
8/30	922	19,031	206	5,012	2	43
8/31	227	19,258	294	5,306	4	47
9/01	558	19,816	308	5,614	2	49
9/02	242	20,058	168	5,782	1	50
9/03	364	20,422	121	5,903	0	50
9/04	496	20,918	69	5,972	2	52
9/05	314	21,232	49	6,021	0	52
9/06	353	21,585	47	6,068	1	53
9/07	670	22,255	62	6,130	1	54
9/08	1319	23,574	51	6,181	7	61
9/09	889	24,463	24	6,205	3	64
9/10	379	24,842	9	6,214	0	64
9/11	582	25,424	18	6,232	2	66
9/12	266	25,690	14	6,246	1	67
9/13	110	25,800	4	6,250	2	69
9/14	106	25,906	9	6,259	0	69
9/15	110	26,016	2	6,261	7	76
9/16	51	26,067	6	6,267	0	76
9/17	28	26,095	4	6,271	1	77
9/18	13	26,108	0	6,271	1	78
9/19	17	26,125	0	6,271	3	81
9/20	11	26,136	0	6,271	4	85
9/21	3	26,139	0	6,271	4	89
9/22	5	26,144	0	6,271	0	89
9/23	1	26,145	0	6,271	0	89
9/24	8	26,153	0	6,271	0	89
9/25	3	26,156	0	6,271	0	89
9/26	6	26,162	0	6,271	1	90
9/27	5	26,167	0	6,271	2	92
9/28	2	26,169	0	6,271	0	92
9/29	0	26,169	0	6,271	0	92
9/30	1	26,170	0	6,271	0	92
10/01	8	26,178 ¹	0	6,271	4	96

1 Total includes 181 jacks.

Table 42. Estimated age and sex composition of the sockeye salmon escapement to Eshamy Lake, 1985.1

	Brood Year and Age Group						Total	
	1981			1979				
	1.2	2.1	1.3	2.2	2.3	3.2		
Escapement Dates: 7/01 - 7/26								
Sample Dates: 7/16 - 7/20								
Sample Size: 1,530								
Female	Percent of Escapement Number in Escapement	8.8 2,289	0.0 0	7.0 1,833	32.5 8,480	0.2 40	0.0 0	48.5 12,642
Male	Percent of Escapement Number in Escapement	9.2 2,399	0.1 37	7.6 1,992	33.6 8,773	0.9 231	.0 6	51.5 13,438
Total	Percent of Escapement Number in Escapement Standard Error	18.0 4,688 310	0.1 37 34	14.7 3,825 253	66.2 17,253 368	1.0 271 79	.0 6 6	100.0 26,080

1 Based on daily escapement counts through a weir on the lake outlet and age and sex composition data from three time strata of a systematic, stratified escapement sampling program at the weir.

Table 43. Commercial catch of salmon by species, by week in the general purse seine districts, Prince William Sound, 1985.¹

Period Date(s)	Time Hrs.	Effort (Boats)	Catch by Species					Total
			Chinook	Sockeye	Coho	Pink	Chum	
7/01-7/02 ²	39	154	68	5,254	714	512,297	51,508	569,841
7/10-7/12 ³	63	252	117	15,376	1,295	820,119	167,589	1,004,496
7/15-7/19 ⁴	111	263	131	20,625	2,253	1,948,571	169,074	2,140,654
7/22-7/26	111	267	172	21,770	1,470	3,228,247	135,331	3,386,990
7/29-8/02	111	265	71	20,886	2,113	6,335,753	127,157	6,485,980
8/05-8/09	111	264	91	17,059	2,784	6,646,693	186,230	6,852,857
8/12-8/16 ⁵	111	255	19	16,641	3,641	2,797,401	148,202	2,965,904
8/19-8/23	111	170	25	6,675	1,603	930,815	39,346	978,464
8/26-8/30 ⁶	111	19	0	755	568	123,445	1,118	125,886
Season Totals			694	125,041	16,441	23,343,341	1,025,555	24,511,072

- 1 Includes only common property fishery catches from the Eastern, Northern, Northwestern, Southwestern, Montague and Southeastern districts.
- 2 The season opened for a 39-hour period only in the Eastern district from 6:00 a.m. Monday, July 1 until 9:00 p.m. Tuesday, July 2.
- 3 The Eastern, Northern and Southeastern districts were opened from 6:00 a.m. on Wednesday, July 10 until 9:00 p.m. on Friday, July 12. A special closure at the head of Wells Bay in the Northern district remained in effect through the end of the regular weekly period at 9:00 p.m. on Friday, July 26.
- 4 All general purse seine districts were opened on July 15 for regular weekly fishing periods from 6:00 a.m. Monday until 9:00 p.m. Friday and remained in effect until closed by emergency order.
- 5 The Port San Juan and Point Elrington subdistricts were closed for the entire weekly period. The terminal area adjacent to the Cannery Creek hatchery in the Northern District was closed during this period.

The Northern and Northwestern districts along with the Port Fidalgo sub-district were closed for the duration of the season effective with the closure of the weekly period on August 16.
- 6 All remaining purse seine districts were closed for the season after 9:00 p.m. on Friday, August 30.

Table 44. Commercial catch by species in the general purse seine districts, Prince William Sound, 1976 - 1985.¹

Catch by Species						
Year	King	Sockeye	Coho	Pink	Chum	Total
1976	814	38,476	5,935	2,634,821	203,113	2,883,159
1977	450	104,863	691	3,861,972	395,329	4,363,305
1978	340	9,177	1,392	2,660,290	354,839	3,026,038
1979	769	61,990	4,942	15,106,016	263,500	15,437,217
1980	82	126,463	1,830	13,290,035	407,891	13,826,301
1981	198	114,363	3,350	18,056,619	1,273,290	19,447,820
1982	104	58,719	24,116	17,762,931	946,623	18,792,493
1983	439	38,542	9,706	12,711,549	789,808	13,550,044
1984 ²	80	151,740	11,477	20,222,330	905,376	21,291,003
1985	694	125,041	16,441	23,343,341	1,025,555	24,511,072
10 Year Average	397	82,937	7,988	12,964,990	656,532	13,712,845

1 Includes purse seine catches from the Eastern, Northern, Northwestern Southwestern, Montague and Southeastern districts. Also includes troll catches during 1976. Does not include hatchery sales harvests.

2 Preliminary.

Table 45. Commercial salmon catch by all gear, by species, Prince William Sound, 1976 - 1985.¹

Catch by Species

Year	King	Sockeye	Coho	Pink	Chum	Total
1976	1,044	112,809	6,171	3,018,991	370,478	3,509,493
1977	648	310,358	843	4,513,082	572,610	5,397,541
1978	1,042	222,083	1,495	2,913,721	485,147	3,623,488 ²
1979	2,015	150,040	6,843	15,607,620	326,414	16,092,932 ³
1980	189	189,816	2,952	14,157,057	482,016	14,832,030 ⁵
1981	404	251,222	4,383	20,524,470	1,878,716	22,659,195 ⁶
1982	255	1,055,099	24,362	20,396,222	1,335,368	22,811,306 ⁷
1983	1,048	92,111	10,496	14,038,796	1,041,309	15,183,760 ⁸
1984 ⁴	489	311,955	12,420	22,086,806	1,201,842	23,613,512 ⁹
1985	1,104	493,278	19,753	25,056,663	1,280,093	26,850,891 ¹⁰
10 Year Average	824	318,877	8,972	14,231,343	897,399	15,457,415

1 Includes purse seine, drift gill net and set gill net catches from the general purse seine, Coghill, Unakwik and Eshamy districts in Prince William Sound proper. Also includes troll gear catches during 1976.

Includes 133,648 pink salmon from hatchery harvests.

3 Includes 223,761 pink salmon from hatchery harvests, 22,448 of those were harvested by beach seine.

4 Preliminary

5 Includes 356,828 pink salmon and 6 chum salmon from hatchery harvests.

6 Includes 707,037 pink, 118 chum and 1 sockeye salmon from hatchery harvests.

7 Includes 1,355,315 pink salmon from hatchery harvests.

8 Includes 765,924 fish from hatchery harvests.

9 Includes 402,825 pink salmon and 4,886 chum salmon from hatchery harvests.

10 Includes 1,273,951 pink salmon and 3,840 chum salmon from hatchery harvests.

Table 46. Salmon harvests by species from private nonprofit hatcheries, Prince William Sound, 1978 - 1985.¹

Year	Number Hatcheries	Catch by Species			Total.
		Sockeye	Pink	Chum	
1978	1		133,648		133,648
1979	1		223,761		223,761
1980 ²	2		346,928	6	346,934
1981	1	1	707,037	118	707,156
1982	1		1,355,315		1,355,315
1983	2		765,924		765,924
1984 ³	2		402,825	4,886	407,711 ⁴
1985	2		1,273,951	3,840	1,277,791 ⁴
TOTAL	2	1	5,209,389	8,850	5,218,240

1 Includes sales harvests of returns to Prince William Sound Aquaculture Corporation hatchery at Port San Juan, Evans Island; NERKA, Inc. hatchery at Perry Island and Valdez Fisheries Development Association hatchery at Solomon Gulch. Doesn't include estimates of common property interceptions.

2 Includes 100 pink salmon harvested with set net gear at NERKA, Inc. hatchery at Perry Island.

3 Preliminary.

4 Includes harvests from both Port San Juan and Solomon Gulch hatcheries.

Table 47. Estimated Pink Returns to P.W.S. Hatcheries, 1978 - 1985.

Year	V.F.D.A.	P.W.S.A.C.	Main Bay	Cannery Cr.	Total
1978		154,620			154,620
1979		552,955			552,955
1980		1,493,489		90,348	1,583,837
1981		2,264,854		141,328	2,406,182
1982		5,134,363	35,000	760,389	5,929,752
1983	92,000	3,722,502	496,850	469,436	4,780,788
1984	200,000	2,900,000	1,200,000	1,139,000	5,439,000
1985	583,588	5,032,760	383,000	2,686,000	8,520,000

Summary of pink salmon returns to Prince William Sound hatcheries, 1985.

Hatchery	1985		1984 Fry Release (millions)	Estimated Total Return	C.P.F.		Escapement and Brood	Eggs Taken (millions)
	Forecast Return	1984 Fry Release (millions)			Commercial Catch	Sales Harvest		
Solomon Gulch	294,000	8.4	583,588	70,000	285,050	228,538	96.9	
A. F. Koernig	4,068,000	76.8	5,032,760	3,772,346	988,901	271,513	173.4	
Cannery Creek	1,310,000	31.2	2,686,000	2,516,000		170,000	107.0	
Main Bay	1,005,000	41.9	383,000	368,000		15,000	2.5	
	6,677,000	158.3	8,685,348	6,726,346	1,273,951	685,051	379.7	

Table 48. Pink and chum salmon returns to Prince William Sound, 1985.

Pink Salmon

District	Catch	Escapement Goal	Estimated Escapement	Total Run
Eastern		400,000 - 480,000	809,010	
Northern		140,000 - 170,000	228,140	
Coghill		125,000 - 175,000	299,350	
Northwestern		104,000 - 172,000	199,910	
Eshamy		9,000 - 12,000	13,530	
Southwestern		69,000 - 115,000	185,710	
Montague		106,000 - 128,000	337,450	
Southeastern		225,000 - 270,000	641,410	
Total	25,233,6491	1,178,000 - 1,522,000	2,714,510	27,948,159

Chum Salmon

District	Catch	Escapement Goal	Estimated Escapement	Total Run
Eastern		87,000 - 110,000	98,170	
Northern		29,000 - 37,000	35,080	
Coghill		49,000 - 61,000	23,290	
Northwestern		3,000 - 4,000	14,040	
Eshamy		12,000 - 14,000	0	
Southwestern		20,000 - 25,000	640	
Montague			0	
Southeastern			4,610	
Total	1,305,9301	200,000 - 251,000	175,830	1,481,760

1 Catches are preliminary and include 1,273,951 pink salmon from hatchery sales.
 2 Catches are preliminary and include 3,840 chum salmon from hatchery sales.

Table 49. Pink Salmon runs, Prince William Sound, 1960-1985.

ESCAPEMENTS

Year	Northwest				Southwest				Commercial		
	Eastern Northern	Coghill	Eshamy		Montague		Southeastern		Total	Catch	Total Run
			Montague	Southeastern	Montague	Southeastern					
1960	475,073	133,653	203,575	155,788	214,987	167,646	1,350,722	1,841,896	3,192,618		
61	706,790	123,900	448,180	133,990	289,290	496,830	2,198,980	2,298,218	4,497,198		
62	650,300	253,490	417,190	107,950	317,360	271,720	2,018,010	6,742,316	8,760,326		
62	378,050	77,760	354,230	49,760	78,750	417,190	1,355,740	5,295,378	6,651,118		
64	485,470	349,010	353,030	172,800	121,220	360,150	1,841,680	4,206,896	6,048,576		
1965	258,680	54,970	187,760	62,720	77,000	255,930	897,060	2,460,471	3,357,531		
66	489,800	255,710	200,940	110,980	42,050	201,150	1,300,630	2,699,418	4,000,048		
67	321,520	167,300	544,080	109,750	23,800	300,270	1,466,720	2,626,340	4,093,060		
68	360,300	136,630	201,790	165,510	44,100	183,440	1,091,770	2,452,168	3,543,938		
69	328,960	147,880	264,750	132,510	63,470	218,060	1,155,630	4,828,579	5,984,209		
1970	328,730	109,240	170,130	69,260	73,190	139,640	890,190	2,809,996	3,700,186		
71	529,820	161,540	614,530	104,080	337,540	373,900	2,121,410	7,310,964	9,432,374		
72	317,450	91,610	66,270	27,680	28,860	75,550	607,420	54,783	662,203		
73	264,850	44,840	563,510	66,030	106,340	184,340	1,229,910	2,056,878	3,286,788		
74	229,370	186,130	200,520	141,750	11,800	89,170	858,740	448,773	1,307,513		
1975	570,830	44,270	580,170	77,860	110,950	234,210	1,618,290	4,452,805	6,071,095		
76	446,470	123,380	116,730	51,200	12,260	115,560	865,600	3,018,995	3,884,595		
77	465,970	62,150	426,670	226,060	196,970	315,510	1,693,330	4,514,431	6,207,761		
78	268,940	159,870	200,950	220,610	48,680	156,830	1,055,880	2,780,073	3,835,953		
79	782,420	223,580	241,120	264,710	323,490	1,091,970	2,927,290	15,393,223	18,320,513		
1980	515,380	171,410	339,100	134,860	114,170	302,190	1,576,110	13,434,024	15,010,134		
81	768,000	259,850	588,880	193,750	506,140	594,890	2,911,510	19,286,542	22,198,052		
82	566,530	325,890	429,750	189,190	125,870	470,000	2,107,230	18,858,647	20,965,877		
83	504,480	180,040	521,010	182,520	247,260	634,890	2,270,200	13,309,461	15,579,661		
84	1,209,050	591,700	959,160	397,790	193,020	801,540	4,152,260	21,683,076	25,835,336		
1985	809,010	228,140	499,260	199,260	337,450	641,410	2,714,510	23,959,698	26,674,208		

1 Does not include hatchery harvests.
 2 Preliminary.

Table 50. Chum Salmon runs, Prince William Sound, 1960-1985.

ESCAPEMENTS

Year	Northwestern				Commercial				
	Eastern	Northern	Coghill	Southwestern	Montague	Southeastern	Total	Catch	Total Run
1960	92,100	24,729	40,458	4,800	16,782	23,008	201,877	381,858	583,735
61	117,950	50,420	70,940	4,750	34,380	59,910	338,350	224,401	562,751
62	238,660	67,670	96,020	10,610	34,190	39,690	486,940	891,880	1,378,720
62	148,090	68,390	114,250	5,330	15,070	20,030	371,160	942,900	1,314,060
64	176,840	64,750	136,590	3,560	31,650	29,160	442,550	539,047	981,597
1965	69,180	20,980	39,690	1,840	17,500	46,480	195,670	201,043	396,713
66	85,480	39,440	42,150	3,420	32,720	20,160	223,370	426,628	649,998
67	97,420	50,930	15,290	2,360	11,060	10,700	187,760	274,234	461,994
68	99,350	31,530	37,310	5,100	1,590	21,400	196,280	342,939	539,219
69	81,140	9,770	43,390	2,170	1,710	26,310	164,490	320,977	485,467
1970	58,180	6,100	22,000	770	3,370	11,910	114,900	230,561	345,561
71	79,930	16,190	34,570	1,210	25,620	9,260	182,730	574,265	756,995
72	134,780	79,030	50,520	2,850	5,190	29,310	340,950	45,370	386,320
73	267,210	143,420	89,790	1,130	2,930	42,110	501,810	729,839	1,231,649
74	92,840	53,830	45,010	200	90	2,910	190,328	88,544	278,872
1975	28,220	7,820	7,410	580	0	2,760	46,790	100,479	147,269
76	17,870	26,520	38,460	90	0	950	83,890	370,478	454,368
77	53,200	36,360	41,640	4,480	560	8,370	144,610	575,839	720,449
78	102,290	25,410	27,650	500	0	6,030	161,880	485,147	647,027
79	57,450	17,040	18,660	80	0	4,450	97,680	324,040	421,720
1980	32,160	34,250	14,460	40	280	6,230	87,420	412,948 ¹	500,368
81	92,240	39,740	47,590	770	0	21,890	202,230	1,745,869 ²	1,948,099
82	175,950	80,200	42,750	1,670	0	26,090	326,660	1,335,368	1,662,028
83	145,670	91,770	95,850	3,700	0	22,900	359,890	1,030,546 ³	1,390,436
84	131,130	60,400	24,460	10	0	9,160	225,160	1,196,785 ⁴	1,421,945
1985	98,170	35,080	37,330	640	0	4,610	175,830	1,302,090 ⁵	1,477,920

¹ Does not include 6 chums harvested at San Juan hatchery.

² Does not include 118 chums harvested at San Juan hatchery.

³ Preliminary. No chums reported from hatchery sales.

⁴ Preliminary. Does not include 4,886 chums from hatchery sales harvests.

⁵ Preliminary. Does not include 3,840 chums from hatchery sales harvests.

Table 51. Sockeye salmon escapement counts from selected systems in Prince William Sound, 1985. 1

SYSTEM	Stream Number	Weekly Count (Dates)										TOTAL			
		6/30-7/06	7/07-13	7/14-20	7/21-27	7/28-8/03	8/04-10	8/11-17	8/18-24	8/25-31	9/01-7				
Robe River	137			800 ³											800
Billy's Hole	218			300	100	1,200	150								1,200
Red Lake	300	2,800	600	1,500	1,200	1,500	2,000	600							2,800
Halferty Creek	454							300	400						400
Shrode Lake	476			2,500	3,000	4,000	3,500							3,500	4,000
Jackpot Lakes	608			2,500		3,000	15,000	6,000					3,000		15,000
Rainbridge	630				900	1,000	600								1,000
Point Creek	702						200								200
TOTAL															25,400

- 1 All counts are aerial estimates of live fish unless indicated otherwise.
- 2 Peak live count accepted as season escapement.
- 3 Fish schooled in Robe Lake off mouth of Brownie Creek.

Table 54. Estimated age and sex composition of sockeye salmon in the commercial catches in the general purse seine districts of Prince William Sound, 1985. 1

	Brood Year and Age Group												Total		
	1983			1982			1981			1980				1979	
	0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	3.3		
Catch Dates: 7/01 - 8/30	0.0	0.0	.0	0.1	13.2	0.1	15.0	16.1	.0	0.0	2.1	0.1	0.0	46.8	
Sample Dates: 7/11 - 8/21	0	0	59	127	16,469	155	18,703	20,155	33	0	2,680	185	0	56,566	
Sample Size: 2,671															
Female	0.0	0.0	0.7	0.1	14.3	0.3	19.8	15.3	.0	0.1	2.5	0.0	0.1	53.2	
Percent of Catch	0	0	856	87	17,869	384	24,728	19,087	15	87	3,151	0	83	66,475	
Number in Catch															
Male	.0	0.1	0.7	0.2	27.5	0.4	34.7	31.4	.0	0.1	4.7	0.1	0.1	100.0	
Percent of Catch	41	87	915	214	34,338	539	43,431	39,242	48	87	5,831	185	83	125,041	
Number in Catch	40	63	234	111	1,269	202	1,275	1,250	35	63	654	82	81		
Standard Error															

1 Based on the weighted sum of catch by age from six strata in the fishery. The estimates of catch by age and sex in each stratum was based on daily catch data from final fish ticket summaries and age and sex composition data from a systematic, temporally stratified catch sampling program.

Table 54. Estimated age and sex composition of chum salmon in the commercial catches in the Coghill District (223) drift gillnet fishery in Prince William Sound, 1985. 1

	Brood Year and Age Group				
	1983	1982	1981	1980	1979
Catch Dates:	0.1	0.2	0.3	0.4	0.5
Sample Dates:	---	---	---	---	---
Sample Size:	0.1	0.2	0.3	0.4	0.5
Catch Dates:	6/17 - 8/16				
Sample Dates:	6/26 - 7/24				
Sample Size:	1,166				
Female	0.0	1.1	33.4	9.4	0.3
Percent of Catch	0	2,750	82,466	23,200	848
Number in Catch					109,264
Male	0.1	2.1	38.9	14.6	0.0
Percent of Catch	353	5,061	96,035	36,111	0
Number in Catch					137,560
Total	0.1	3.2	72.3	24.0	0.3
Percent of Catch	353	7,811	178,501	59,311	848
Number in Catch	329	1,364	3,346	3,168	435
Standard Error					

1 Based on the weighted sum of the catch by age from three time strata in the fishery. The catch by age and sex in each time stratum was based on daily catch data from final fish ticket summaries and age and sex composition data from a systematic, temporally stratified catch sampling program.

Table 55. Forecasted commercial salmon harvest by district and species, Prince William Sound, 1986.1

COMMERCIAL HARVEST (1,000's of fish)						
District	King	Sockeye	Coho	Pink	Chum	All Species
Copper River	25 - 35	700 - 1,000	325 - 375			1,050 - 1,410
Bering River		20 -	125 - 175			145 - 205
Coghill-Unakwik		350 - 700		500 - 1,300	100 - 300	950 - 2,300
Eshamy			0	100 - 800	20 - 100	120 - 900
General Purse Seine		50 - 70		13,200 - 30,100	300 - 800	13,550 - 30,970
Area Total	25 - 35	1,120 - 1,800	450 - 550	13,800 - 32,200 ²	420 - 1,200 ²	15,815 - 35,785

1 Harvest projections are only made for those species that normally constitute a significant portion of the harvest in those districts.

2 Includes a projected harvest of 2.3 million pink salmon harvested for cost recovery by private non-profit hatcheries in addition to 10-15,000 chum salmon taken incidental to pink harvest.

Table 56. Summary of season, location, effort and harvest by gear type in the Prince William Sound herring fishery, 1985.

Fishery	District	Fishing			Harvest (Tons)
		Date	Duration	Effort	
Sac Roe Seine	Northern + General	4/28	3 hours	90	4,817.3
	Montague	4/29	1 hour	61	2,107.5
	Total			102 ¹	6,924.8
Sac Roe Gillnet	Montague	4/29-5/01	34 hours	21	413.3
Spawn on Kelp	Northern	5/06	6 hours	79	26.5
	General	5/08	14 hours	38	11.1
	Total			107 ²	37.6 ³
Pound Kelp	Northern ⁴	4/25-5/07	12 days	20	15.0 ⁵
	General ⁶	5/04-5/07	3 days	30	25.2 ⁷
	Total			50 ⁸	40.2
Bait/Food	General	9/01-1/31 ⁹		31 ⁰	1,118.1

- 1 103 boats participated, 62 made deliveries in the Montague district and 90 made deliveries in the Northern District.
- 2 Divers that made at least one delivery.
- 3 Total harvest consisted of approximately 51% ribbon kelp and 49% sieve kelp.
- 4 Several areas of the district were opened at different periods during season including Galena Bay, Boulder Bay and upper Valdez Arm.
- 5 Includes processed weights and consisted of 81% ribbon kelp and 19% macro kelp.
- 6 Areas opened included selected waters in the vicinity of Storey, Peak and Naked Islands.
- 7 Includes processed weights and consisted entirely of macro kelp.
- 8 Number of pounds actually producing spawn on kelp out of a total of 59 pounds participating.
- 9 Fishing season opened by regulation on September 1 and was extended after the regulation January 31 closure due to the fact the quota had not been met and the fishermen had markets available after that date. Season closed by emergency order on 2/15.
- 10 Effort consisted of three purse seiners.

Table 57. Herring sac roe fisheries effort and harvests by gear and the peak aerial survey estimates in Prince William Sound, 1969 - 1985.1

Year	Seine Fishery		Gillnet Fishery		Combined Fisheries	
	Effort (Boats)	Harvest (Tons)	Effort (Boats)	Harvest (Tons)	Peak Aerial Estimate (Tons)	Harvest (Tons)
1969	6	355.7				355.7
1970						
1971	12	919.3				919.3
1972	16	1,772.6				1,772.6
1973	28	6,984.4				6,984.4
1974	72	6,368.2	3	3.8		6,372.0
1975	76	6,081.5			1,323.0	6,081.5
1976	66	2,584.5			8,809.0	2,584.5
1977	60	2,282.9	1	1.6	18,643.3	2,284.5
1978	75	1,329.6	38	61.7	9,227.9	1,391.4
1979	89	4,138.6			31,630.7	4,138.6
1980	74	6,043.2 ²	16	264.5	49,844.0	6,307.7
1981	101	13,770.6	18	234.6	51,089.9	14,005.1
1982	95	7,148.3	18	393.9	34,861.1	7,542.2
1983	103 ³	2,724.2	22	105.4	33,802.7	2,829.6
1984	105 ⁴	5,836.9	24	342.9	45,654.5	6,179.8
1985	103 ⁵	7,080.3	21	413.3	26,162.3	7,493.6

1 1983 - 1985 data preliminary.

2 350 - 500 tons dead loss.

3 103 boats participating but only 72 actually made deliveries.

4 105 boats participating but only 101 actually made deliveries.

5 103 boats participating; 62 made deliveries at Montague and 90 made deliveries in the Northern district.

Table 58. Herring eggs - on - kelp harvests from natural spawning, Prince William Sound, 1969 - 1985.

Year	Effort (Boats)	Harvest		Herring ² Utilized
		Pounds ¹	Tons	Tons
1969	3	5,300	2.7	20.9
1970	29	190,300	95.2	751.7
1971	34	769,300	384.7	3,038.7
1972	397	599,300	299.7	2,367.2
1973	176	306,300	153.2	1,209.9
1974	166	552,100	276.1	2,180.8
1975	437	917,100	458.6	3,622.5
1976	357	484,900	242.5	1,915.4
1977	164	417,000	208.5	1,647.2
1978	66	140,900	70.5	556.6
1979	198	473,200	236.6	1,869.1
1980	469	612,300	306.2	2,418.6
1981	214	122,400	61.2	483.5
1982	151	309,600	154.8	1,222.9
1983	186	303,200	151.6	1,197.6
1984	225 ³	SEASON CLOSED		
1985	95	41,300	20.7	163.1

1 Rounded to nearest 100 pounds.

2 Indicates the annual removal of reproductive capacity from the population based on the assumption that average fish roe recovery is 10% and 79% of spawn on kelp harvest weight consists of eggs.

3 Permits issued.

Table 59. Herring eggs on kelp produced in pounds, Prince William Sound, 1979-1985.

----- PRODUCTIONS -----

Year	No. Permits Issued ¹	No. Pounds Constructed ²	No. Producing Pounds ³	Herring Utilized (Tons) ⁴	Ribbon		Macrocyctis		Total Tons
					lbs.	Tons	lbs.	Tons	
1979	2	0	-	-					
1980	14	4	2	27 - 45	1,771	0.9	880	0.4	2,651
1981	18	18	7	110 - 157	17,217	8.6	2,100	1.16	19,317
1982	25	20	18	260 - 385	50,165	25.1	900	0.5	51,065
1983	47	38	26	200 - 303	35,364	17.7	20,100	10.1	55,464
1984	65	45	37	260 - 360	12,839	6.4	37,572	18.8	50,411
1985	81	59	50	450 - 550	24,199	12.1	56,131	28.1	80,262

1 Permits issued to applicants on register prior to the March 1 deadline.

2 Number of individual pounds constructed by the April 1 deadline, and consequently the number of individuals receiving an equal allocation of the guideline harvest.

3 Number of pounds that were successful in producing roe on kelp product. Due to the group cooperation in this fishery production is frequently reported for a few individuals whose pounds did not produce roe on kelp product.

4 Tonnage expressed as a range since herring are estimated visually and are not actually weighed.

5 Production figures represent processed weights as reported on fish tickets.

Table 60. Herring for bait and food harvested in Prince William Sound in tons, 1970 - 1985.¹

Year	Seine		Pair Trawl		Mid-Water Trawl		Otter Trawl		Total Tons
	Effort	Harvest Tons	Effort	Harvest Tons	Effort	Harvest Tons	Effort	Harvest Tons	
1970	1	5.6							5.6
1971	2	20.0							20.0
1972	1	4.9							4.9
1973	1	8.5							8.5
1977-782	2	17.0	2	145.3	1	90.4			252.7
1978-793	2	195.4	2	988.8	1	103.2	1	2.5	1,289.9
1979-804	1	510.9	2	145.1					656.0
1980-815	3	1,030.5	3	386.0					1,416.5
1981-826	6	1,189.5	2	73.1					1,262.6
1982-83	5	883.2							883.2
1983-84	2	273.6							273.6
1984-85	2	187.4							187.4
1985-867	3	1,118.1							1,118.1

- 1 No harvest in years not listed.
- 2 From 1977 to present bait herring season includes portions of two calendar years.
- 3 Fishery opened by emergency order on 10/16/79 and extended on 1/7/80. Deliveries made through March 2.
- 4 Fishery season opened by emergency order 9/15, closed 12/31, and reopened by emergency order from 2/16-28.
- 5 Fishing season opened by regulation on September 15 and closed by emergency order on 11/7.
- 6 Fishing season opened by regulation on September 15 and closed by emergency order on 9/30.
- 7 Fishing season opened by regulation on September 1 and was extended after the regulation January 31 closure due to the fact the quota had not been met and the fishermen had markets available after that date. Season closed by emergency order on 2/15.

Table 61. Summary of aerial survey estimates of herring biomass and spawning, Prince William Sound, 1985.

Location/ District	Biomass Estimates		Spawning Observations				Total	
	Dates	Peak Date (TONS)	Duration	Peak Date	Spawning (mile-days)	Spawn		
EASTERN	3/31-4/21	3/31 220	4/20-25	4/20	4.6			
NORTHERN								
Port Fidalgo	4/18-27	4/27 340	3/31-4/26	4/19	12.8			
Valdez Arm	3/31-5/04	4/26 3,300	4/22-5/06	4/28	41.0			
GENERAL								
North Shore	4/22-5/04	4/28 6,520	4/27-5/04	4/30	33.0			
Naked Island	4/22-5/05	4/28 1,750	4/27-5/07	5/04	22.6			
Hawkins Is.	4/27	4/27 170						
MONTAGUE	4/24-5/04	4/28 7,940	4/27-5/05	4/28	26.7			

Table 62. Estimated age, sex, and size composition of Pacific herring in the sac roe purse seine fishery in the Fairmont Bay, Wells Bay, and Unekwik Inlet areas of Prince William Sound, 1985.

Age	Year Class	Age Composition						Size Data						
		Males		Females		Total		Weight		Length		Mean	S.D.	Number
		Number	Percent	Number	Percent	Number	Percent	Mean	S.D.	Mean	S.D.			
2	1983	1	0.2	0	0.0	1	0.2	48	7.8	2	163	3.5	2	
3	1982	19	3.4	11	2.0	30	5.4	84	15.8	30	191	10.9	30	
4	1981	70	12.6	83	15.0	153	27.6	106	16.8	154	206	11.8	154	
5	1980	88	15.9	110	19.8	198	35.7	121	19.0	201	213	12.3	201	
6	1979	30	5.4	37	6.7	67	12.1	137	21.6	68	219	9.2	68	
7	1978	11	2.0	18	3.2	29	5.2	159	19.4	29	229	8.8	29	
8	1977	8	1.4	13	2.3	21	3.7	171	30.7	21	235	13.9	21	
9	1976	28	5.0	27	4.9	55	9.9	181	20.9	55	236	14.8	55	
10	1975	1	0.2	0	0.0	1	0.2	170	-	1	232	-	1	
11	1974	0	0.0	0	0.0	0	0.0	-	-	0	-	-	0	
Total		256	46.1	299	53.9	555	100.0	127	32.4	561	214	16.6	561	

Table 63. Estimated age, sex, and size composition of Pacific herring in the sac roe purse seine fishery in the Montague Island area of Prince William Sound, 1985.

Age	Year Class	Age Composition						Size Data						
		Males		Females		Total		Weight		Length		Mean	S.D.	Number
		Number	Percent	Number	Percent	Number	Percent	Mean	S.D.	Number	Mean			
2	1983	2	0.4	0	0.0	2	0.4	46	0.0	2	156	0.7	2	
3	1982	4	0.7	3	0.5	7	1.2	84	7.7	7	184	7.7	7	
4	1981	45	8.0	45	8.0	90	15.9	107	15.7	90	200	8.3	90	
5	1980	77	13.6	123	21.7	200	35.3	129	18.7	200	210	9.6	200	
6	1979	41	7.3	46	8.2	87	15.5	142	21.7	87	215	8.9	87	
7	1978	27	4.8	18	3.2	45	8.0	163	19.4	45	223	7.4	45	
8	1977	9	1.6	20	3.5	29	5.1	182	15.3	29	230	7.1	29	
9	1976	43	7.6	56	9.9	99	17.5	189	20.5	99	231	8.1	99	
10	1975	2	0.3	3	0.5	5	0.8	192	19.9	5	230	7.7	5	
11	1974	2	0.3	0	0.0	2	0.3	182	23.3	2	226	0.7	2	
Total		252	44.5	314	55.5	566	100.0	143	34.7	566	215	14.5	566	

Table 64. Estimated age, sex, and size composition of Pacific herring in the sac roe gillnet fishery in the Montague Island area of Prince William Sound, 1985.

Age	Year Class	Age Composition						Size Data						
		Males		Females		Total		Weight		Length		Mean	S.D.	Number
		Number	Percent	Number	Percent	Number	Percent	Mean	S.D.	Number	S.D.			
2	1983	0	0.0	0	0.0	0	0.0	-	-	-	-	-	-	-
3	1982	0	0.0	0	0.0	0	0.0	-	-	-	-	-	-	-
4	1981	6	1.2	13	2.5	19	3.7	130	21.2	19	217	11.6	19	140
5	1980	43	8.4	98	19.3	141	27.7	140	12.7	140	220	7.2	140	96
6	1979	47	9.2	51	10.0	98	19.3	149	14.6	96	225	7.6	96	48
7	1978	25	4.9	24	4.7	49	9.6	163	21.7	48	231	9.2	48	54
8	1977	27	5.3	27	5.3	54	10.6	172	16.7	54	234	7.1	54	146
9	1976	66	13.0	68	13.4	134	26.3	179	22.6	146	234	9.5	146	12
10	1975	5	1.0	7	1.4	12	2.4	172	32.9	12	232	15.4	12	2
11	1974	1	0.2	1	0.2	2	0.4	164	20.5	2	231	6.4	2	503
Total		220	43.2	289	56.8	509	100.0	158	24.7	503	228	10.4	503	503

Table 65. Estimated age, sex, and size composition of Pacific herring in the pound fishery in the Galena Bay area of Prince William Sound, 1985.

Age	Year Class	Age Composition						Size Data						
		Males		Females		Total		Weight		Length		Mean	S.D.	Number
		Number	Percent	Number	Percent	Number	Percent	Mean	S.D.	Number	Mean			
2	1983	2	0.4	0	0.0	2	0.4	43	9.2	2	159	13.4	2	
3	1982	28	4.9	34	6.0	62	11.0	74	11.6	63	184	10.4	63	
4	1981	88	15.5	88	15.5	176	31.1	103	17	179	203	11.4	179	
5	1980	101	17.9	100	17.7	201	35.5	119	20.4	201	211	9.6	201	
6	1979	22	3.9	36	6.4	58	10.2	133	29.2	58	217	13.9	58	
7	1978	7	1.2	6	1.1	13	2.3	148	30.2	13	223	13.8	13	
8	1977	12	2.1	7	1.2	19	3.4	176	22.5	19	235	8.4	19	
9	1976	20	3.5	13	2.3	33	5.8	178	22.1	35	234	8.5	35	
10	1975	0	0.0	0	0.0	0	0.0	-	-	0	-	-	0	
11	1974	2	0.4	0	0.0	2	0.4	192	6.4	2	242	15.6	2	
Total		282	49.9	284	50.2	566	100.0	116	33	572	208	16.6	572	

Table 66. Estimated age, sex, and size composition of Pacific herring in the pound fishery in the Naked Island area of Prince William Sound, 1985.

Age	Age Composition										Size Data					
	Year Class	Males			Females			Total			Weight		Length			
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Mean	S.D.	Mean	S.D.	Number		
2	1983	0	0.0	1	0.2	1	0.2	74	0.2	179	1	179	1			
3	1982	12	2.3	11	2.1	23	4.4	88	4.4	182	23	182	23			
4	1981	66	12.7	76	14.7	142	27.4	109	27.4	203	142	203	142			
5	1980	104	20.0	96	18.5	200	38.5	119	38.5	210	201	210	200			
6	1979	29	5.6	27	5.2	56	10.8	144	10.8	220	56	220	56			
7	1978	3	0.6	9	1.7	12	2.3	147	2.3	221	12	221	12			
8	1977	10	1.9	17	3.3	27	5.2	171	5.2	232	27	232	27			
9	1976	29	5.6	28	5.4	57	11.0	173	11.0	232	58	232	58			
10	1975	1	0.2	0	0.0	1	0.2	170	0.2	235	-	235	-			
11	1974	0	0.0	0	0.0	0	0.0	-	0.0	-	-	-	-			
Total		254	48.9	265	51.1	519	100.0	127	100.0	212	520	212	519			

Table 67. Estimated age, sex, and size composition data for Pacific herring captured in the bait/food fishery in Prince William Sound, 1984-1985.

Age Composition										Size Data				
Year Age Class	Males		Females		Total		Weight			Length				
	Number	Percent	Number	Percent	Number	Percent	Mean	S.D.	Number	Mean	S.D.	Number		
1 1984	0	0.0	3	0.5	3	0.5	83	11.8	3	180	7	3		
2 1983	1	0.2	0	0.0	1	0.2	52	0	1	151	0	1		
3 1982	36	5.9	34	5.6	70	11.5	71	14.8	70	173	10.6	70		
4 1981	132	21.6	129	21.1	261	42.7	90	18.4	258	184	10.7	260		
5 1980	69	11.3	95	15.5	164	26.8	93	17.8	164	186	10.8	164		
6 1979	31	5.1	44	7.2	75	12.3	96	16	75	190	9.4	75		
7 1978	10	1.6	11	1.8	21	3.4	113	16.5	21	200	9.5	21		
8 1977	7	1.1	1	0.2	8	1.3	111	27	7	197	9.5	8		
9 1976	4	0.7	4	0.7	8	1.3	118	19.4	8	204	11.6	8		
10 1975	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0	0		
11 1974	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0	0		
Total	290	47.5	321	52.5	611	100	90	19.7	607	185	12.1	610		

Table 68. Calendar weeks used in reporting catch statistics in 1985.

Weeks		From		Through	Weeks		From		Throug
1	Jan.	01		05	29	July	14	July	20
2		06		12	30		21		27
3		13		19	31		28	Aug.	03
4		20		26	32	Aug.	04		10
5	Jan.	27	Feb.	02	33		11		17
6	Feb.	03		09	34		18		24
7		10		16	35		25		31
8		17		23	36	Sept.	01	Sept.	07
9		24	March	02	37		08		14
10	March	03		09	38		15		21
11		10		16	39		22		28
12		17		23	40		29	Oct.	05
13		24		30	41	Oct.	06		12
14	March	31	April	06	42		13		19
15	April	07		13	43		20		26
16		14		20	44		27	Nov.	02
17		21		27	45	Nov.	03		09
18	April	28	May	04	46		10		16
19	May	05		11	47		17		23
20		12		18	48		24		30
21		19		25	49	Dec.	01	Dec.	07
22		26	June	01	50		08		14
23	June	02		08	51		15		21
24		09		15	52		22		28
25		16		22	53		29		31
26		23		29					
27	June	30	July	06					
28	July	07		13					

Table 69. Average price paid to fishermen for salmon and herring in Prince William Sound, 1978-1985.1

Species	1978	1979	1980	1981	19826	19836	19846	1985
King Salmon	\$1.39	\$1.62	\$1.40	\$1.657	\$1.40	\$1.05	\$1.30	\$1.65
Sockeye Salmon	1.23	1.40	.85	1.407	1.01	.95	1.15	1.50
Copper River					.80	.95	1.00	1.55
Bering River					.80	.85	.95	1.10
Coghill/Unakwik Districts							.90	1.20
Eshamy							.85	1.10
General Purse Seine								
Coho Salmon	1.10	1.10	.95	.95	.8610	.7513	1.10	.85
Copper-Bering Rivers	.39	.39	.39	.39	.40	.30	1.10	.40
Prince William Sound								
Pink Salmon	.37012	.37773	.42294	.44	.23	.24	.26	.2218
Chum Salmon	.4258	.53	.50	.50	.38	.24	.26	.2919
Herring								
Sac Roe	.363	.625	.1625	.208	.18411	.3114	.1916	.4120
Spawn on Kelp	1.247	1.74	1.095	1.009	1.2912	2.1015	3.5017	4.9921
Bait	.189	.15	.15	.125	.109	.125	.125	.125

Continued

Table 69. Continued.

- 1 Source: Processors Annual Reports and fish ticket data. Prices are per pound unless indicated.
- 2 The egg recovery adjustment paid was .007 percent.
- 3 The egg recovery adjustment paid was \$.07275 per pound.
- 4 The egg recovery adjustment paid was \$.0642 per pound.
- 5 Based on average prices of \$.85 for sieve kelp (40% of production) and \$1.25 for ribbon kelp (60% of production).
- 6 Preliminary.
- 7 Contract price was \$1.25 for sockeyes and \$1.40 for kings, but payments from cash buyers raised the average price to approximately this level.
- 8 Based on estimated \$400/ton for 9% recovery seine caught fish while gill net recoveries were about 13% and prices ranged \$550 - \$600/ton.
- 9 Based on average price of \$.85 for sieve kelp (60% of production), \$1.25 for ribbon kelp (38% of production) and \$.60 for hair kelp (2% of production).
- 10 The settlement price reached for coho salmon caught in Prince William Sound was \$.30 and \$.90 for Copper River and Bering River before September 5 and \$.75 after that date.
- 11 Prices ranged from \$325-425/ton for seine caught fish while gill net prices ranged from \$590-705/ton.
- 12 Based on average price of \$.95 for sieve kelp (11% of production), \$1.42 for ribbon kelp (83% of production) and \$.74 for hair kelp (6% of production).
- 13 The price reached for coho salmon caught in Prince William Sound was \$.30 and \$.60-.85 for Copper River and Bering River districts.

Continued

- 14 Prices ranged from \$500-600/ton for 10% roe recovery from seine caught fish while gillnet prices ranged from \$950-1,000/ton for 10% roe recovery. Actual roe recovery averaged about 11% from both purse seine and gillnet.
- 15 Based on average price of \$1.50-1.70 for sieve kelp (35% of production), \$2.00-2.45 for ribbon kelp (51% of production) \$1.00-1.25 for hair kelp (1% of production) and \$3.00 for Macrocyctis sp. (13% of production).
- 16 Prices averaged about \$350/ton for 10% roe recovery from seine caught fish while gillnet prices averaged about \$650/ton for 10% roe recovery. Actual roe recovery averaged slightly over 10% for purse seine while it ranged from 8-14% for gillnet.
- 17 No wild spawn on kelp fishery this season. Figure indicated is from pound spawn on kelp fishery and prices varied widely for the various grades of the two species of kelp used.
- 18 Pink salmon prices varied amongst buyers and do not reflect possible post season bonuses. Prices averaged \$.22 in the general purse seine and Eshamy districts, \$.23 in the Coghill-Unakwik districts, and \$.20 in the Copper and Bering River districts.
- 19 Chum salmon prices varied widely but averaged \$.29 in the general purse seine districts, \$.40 in the Coghill-Unakwik districts and \$.20 in the Copper-Bering River districts and \$.45 in the Eshamy district.
- 20 Prices averaged about \$680/ton for 10% roe recovery from seine caught fish while gillnet prices averaged about \$800/ton for 10% roe recovery. Actual roe recovery averaged 10-12% for purse seine while it ranged from 11-12% for gillnet.
- 21 Prices for pound produced product ranged from an average of \$5.00/lb. for ribbon kelp to \$8.00/lb. for macrocyctis kelp while prices for wild product averaged \$.50/lb. for sieve kelp and \$1.25/lb. for ribbon kelp.

Continued

ble 70. Average price paid per pound for salmon, shellfish and miscellaneous fish in the Prince William Sound Area, 1985.1

SALMON

King	Sockeye	Coho	Pink	Chum
\$1.20-1.65 ²	\$1.10-1.55 ³	\$.40-.85 ⁴	\$.20-.23 ⁵	\$.20-.45 ⁶

SHELLFISH

King Crab	Dungeness Crab	Tanner Crab	Shrimp Trawl	Pot	Razor Clams (bait & food)
\$2.00 ⁷	\$1.00-1.25	No fishing	.18	\$4.00-8.00	\$.75-1.00

MISCELLANEOUS FISH

Herring Sac Roe	Natural Herring Spawn on Kelp	Pound Herring Spawn on Kelp	Herring (Bait)	Haibut	Octopus (Bait)
\$.41 ⁸	\$.50-1.25 ⁹	\$5.00-8.00 ¹⁰	\$.10-.125	\$.60-.65	\$.40

Continued

Table 70. Continued

- 1 Average prices based on fish tickets and are not weighted by the poundage of fish purchased at the different price ranges nor do they reflect post season settlements on fish tickets that did not show price information.
- 2 King salmon prices varied widely throughout the season but averaged \$1.65 in the Copper River and Bering River districts, \$1.20 in the Coghill, Unakwik and General Purse seine districts and \$1.30 in the Eshamy district.
- 3 Sockeye salmon prices varied widely throughout the season but averaged about \$1.50 for Copper River, \$1.55 for Bering River, \$1.10 for Coghill-Unakwik, \$1.20 for Eshamy and \$1.10 for general purse seine districts.
- 4 The price for coho salmon caught in Prince William Sound averaged about \$.40 and averaged \$.85 for Copper and Bering River districts.
- 5 Pink salmon prices varied amongst buyers and do not reflect a possible post season bonus. Prices averaged \$.22 in the general purse seine and Eshamy districts \$.23 in the Coghill-Unakwik districts, and \$.20 in the Copper and Bering River districts.
- 6 Chum prices varied widely but averaged \$.29 in the general purse seine districts, \$.40 in the Coghill-Unakwik districts, \$.20 in the Copper-Bering River district and \$.45 in the Eshamy district.
- 7 Brown king crab only.
- 8 Prices averaged about \$680/ton for 10% roe recovery from seine caught fish while gillnet prices averaged about \$800/ton for 10% roe recovery. Actual roe recovery averaged 10-12% for purse seine while it ranged from 11-12% for gillnet.
- 9 Prices ranged from an average of \$.50 for sieve kelp and \$1.25 for ribbon kelp.
- 10 Prices ranged from an average of \$5.00 for ribbon kelp to \$8.00 for macrocystis kelp.

Table 71. Average weight in pounds of salmon in commercial catches from the Prince William Sound area, 1976-1985.1

Year	King	Sockeye	Coho	Pink	Chum
COPPER RIVER DISTRICT					
1976	28.4	6.9	10.1	4.4	7.4
1977	28.5	7.3	10.7	4.6	7.2
1978	27.5	6.1	9.5	4.3	6.7
1979	27.6	6.8	9.2	4.5	7.1
1980	29.2	6.7	9.9	4.8	7.1
1981	26.1	6.4	10.4	4.7	7.1
1982	26.2	6.5	9.7	4.6	7.1
1983	26.0	6.1	9.8	4.7	7.4
1984	29.3	6.4	10.6	4.3	7.8
1985	27.9	5.9	10.2	4.0	7.4
10 Year Average	27.7	6.5	10.0	4.5	7.2
BERING RIVER DISTRICT					
Year	King	Sockeye	Coho	Pink	Chum
1976	32.7	6.5	10.9	5.1	10.0
1977	24.2	7.4	10.6	4.4	7.6
1978	14.2	7.0	9.2	4.3	7.3
1979	19.7	7.2	9.1	4.4	7.9
1980 ²			9.7		
1981	17.0	6.9	10.1	4.8	7.7
1982	18.7	6.9	9.6	3.8	7.3
1983	15.8	6.5	9.3	4.1	7.0
1984	20.5	6.6	10.4	4.0	7.3
1985	20.9	6.0	10.3	4.3	6.8
10 Year Average	18.4	6.1	9.9	3.9	6.9

Continued

Table 71. Continued

Year	King	Sockeye	Coho	Pink	Chum
COGHILL DISTRICT ³					
1976	13.7	7.5	8.0	4.7	9.2
1977	13.8	8.3	7.7	5.1	9.3
1978	11.8	8.2	6.1	4.2	9.3
1979	10.6	7.4	7.5	4.3	9.0
1980	10.7	7.2	7.5	3.8	8.8
1981	9.1	6.5	6.2	4.7	8.6
1982	14.0	7.8	7.0	4.4	9.2
1983	10.2	6.7	6.1	4.3	9.8
1984	16.9	6.8	8.4	4.2	8.9
1985	14.6	6.3	7.8	4.1	8.0
10 Year Average	12.5	7.3	7.2	4.4	9.0
PURSE SEINE DISTRICTS					
Year	King	Sockeye	Coho	Pink	Chum
1976	10.9	7.4	8.5	4.2	9.1
1977	15.1	7.9	8.2	4.5	9.0
1978	12.6	7.7	8.6	3.6	8.4
1979	11.1	6.7	8.1	3.6	9.1
1980	19.7	6.7	8.7	3.4	8.2
1981	15.9	6.3	7.3	4.2	8.7
1982	14.2	6.8	7.3	3.5	9.0
1983	17.9	5.8	8.1	3.2	9.1
1984	16.7	6.2	5.8	3.6	8.6
1985	16.1	6.1	8.3	3.4	9.1
10 Year Average	15.0	6.8	7.9	3.7	8.8

Continued

Table 71. Continued

Year	King	Sockeye	Coho	Pink	Chum
ESHAMY DISTRICT ⁴					
1976		CLOSED			
1977	16.2	8.0	8.7	4.8	8.8
1978		CLOSED			
1979		CLOSED			
1980		6.7	8.9	4.1	8.9
1981		CLOSED			
1982		CLOSED			
1983 ⁵	35.0	6.4	10.2	3.2	7.4
1984	8.5	6.4	7.1	3.7	8.5
1985 ⁵	8.5	6.2	8.8	3.6	7.5
10 Year ⁶ Average	17.1	3.4	8.7	3.9	8.2

- 1 Data from fish ticket computer summaries.
- 2 No sockeye and king salmon weight data available because district closed prior to start of coho season.
- 3 Includes drift gill net catches only.
- 4 Includes both drift and set gill net gear.
- 5 General district remained closed throughout the season. Weight data from catches in the Main Bay terminal harvest area.
- 6 Average based only on those years when data was available.

Table 72. Prince William Sound Area case pack and pounds of frozen, fresh, cured and exported salmon by species, 1976 - 1985.

Cases

Year	King	Sockeye	Coho	Pink	Chum	Total
1976	151	99,436	5,564	121,762	2,302	229,215
1977	253	41,860	2,420	178,151	38,850	261,534
1978	139	15,664	4,482	117,863	39,376	177,524
1979	158	3,669	3,970	474,084	24,347	506,228
1980	215	46,716	3,059	384,353	42,813	477,156
1981	167	65,067	3,202	776,515	181,714	1,026,665
1982	128	7,919	2,669	512,046	15,847	538,609
1983	158	25,974	5,649	466,579	36,416	534,776
1984	196	2,043	2,010	443,928	25,461	473,638
1985	82	2,178	3,470	354,147	13,551	373,428

Frozen

1976	758,172	1,294,110	918,509	351,944	514,854	3,837,589
1977	356,567	2,741,166	861,761	1,232,766	931,911	6,124,171
1978	581,353	2,518,147	1,690,871	229,744	705,796	5,725,911
1979	302,419	1,466,938	1,782,175	1,769,191	305,315	5,628,038
1980	176,124	347,049	865,893	76,891	433,536	1,899,493
1981	404,325	2,721,666	1,786,850	398,519	1,255,362	6,566,722
1982	794,168	8,617,152	3,505,937	14,362,966	5,117,228	32,397,451
1983	925,157	4,165,433	2,276,977	2,496,825	3,744,843	13,609,235
1984	667,407	10,216,140	3,685,295	12,061,184	5,526,998	32,157,024
1985	826,841	5,283,559	9,589,893	16,251,412	3,860,282	35,811,987

Fresh

1985	332,332	2,617,400	1,314,567	5,277,101	3,022,076	12,563,476
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Cured

1985		800	400		800	2,000
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Exported

1985	40,887	476,550	390,589	31,845,307	2,373,996	35,127,329
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Case pack on the basis of 48 one pound cans per case. Frozen, fresh and exported salmon in round weight 1976-1977. From 1978-1982 fresh and frozen salmon reported in processed weight, in 1984 reported in round weight. Cured and salmon exported to other areas for processing were reported in round weight for all years.

ACKNOWLEDGEMENTS

The finfish operations for the Commercial Fisheries Division, Prince William Sound Area, employed 9 permanent and 14 permanent seasonal employees in 1985 who participated in various area management programs.

Thanks is extended to all personnel for a successful 1985 fisheries season. Special acknowledgement is given to Peter J. Fridgen and Michael McCurdy for their contribution in preparation of the contents of this report. Also to Marnee Bowden for editorial comments and the task of typing and collating this report.

Permanent Employees

Richard C. Randall	Area Management Biologist
Peter J. Fridgen	Asst. Area Management Biologist
James Brady	Asst. Area Management Biologist
Michael McCurdy	Research Biologist, Project Leader
Kenneth Roberson	Research Biologist, Project Leader
John M. Jackson	Fisheries Technician V
Samuel Sharr	Fisheries Biologist II
Marnee Bowden	Clerk Typist III
Maxine Holliday	Clerk Typist III

Permanent Seasonal Employees

Scott Bell	Alevin Index	3/18 - 3/29
John Burns	Eshamy Weir	7/01 - 8/30
Bill Busher	Miles Lake Sonar	5/15 - 7/15
Evelyn Chisum	Miles Lake Sonar	6/03 - 9/20
Steve Ehrman	Eshamy Weir	7/01 - 9/15
Bob Gaylor	Alevin Index	3/16 - 3/28
	Herring Sampling	3/29 - 6/02
	Coghill Weir	6/03 - 7/31
Wayne Lonn	Herring Pound Operator	4/08 - 6/02
	Coghill Weir	6/03 - 7/31
	Data Entry	6/06 - 9/07
Cheryl Mala	Data Control	3/16 - 12/12
Carol Maxwell	Miles Lake Sonar	5/13 - 6/14
John Murk	Miles Lake Sonar	5/17 - 8/09
Randy Phipps	Alevin Index	3/18 - 3/29
Robert Ritchie	Miles Lake Sonar	5/16 - 6/04
Russell Scribner	Miles Lake Sonar	6/18 - 8/09
Thomas Willette		

Appendix A. A sequential listing of finfish processors, location of operation, size of cans, lines of machinery and type of product processed in 1985.

Names, Executive, Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
Alaska Fresh Catch, LTD 1902 Sunrise Dr. Anchorage, AK 99504 Joe Banta		Salmon
Alaska Fresh Seafoods Box 647 Kodiak, AK Dave Woodruff		Salmon
American Eagle Seafoods Box 71129 Seattle, WA		Salmon
American Salmon Co. Box 10-2996 Anchorage, AK 99510 Del Molencamp		Salmon
ANPAC 3605 Arctic Blvd. Bldg. 430 Anchorage, AK 99503 Jack Gadwill		Salmon
Blakes Fancy Smoked Salmon Box 94 Cordova, AK 99574 Margaret Blake		Salmon
Blue Pacific 701 Roeder Ave. Bellingham, AK 98225		Herring
Bonanza Co. 2341 E 66th Ave. Anchorage, AK 99507		Salmon
Bristol Monarch 121 South River St. Seattle, WA 98108		Herring Salmon
Chugach Alaska Fisheries Box 120 Cordova, AK 99574	(2) 1-lb. Tall 1/2 lb. 1/4 lb.	Herring Herring Bait Salmon

Continued

Appendix Table A. (continued)

Names, Executive, Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
Copper River Fishermen's Coop Box 90 Cordova, AK 99574		Herring Herring Eggs on Kelp Herring Bait Salmon
Copper River Products Box 835 Cordova, AK 99574 Tom Johnson		Salmon
Dragnet Fisheries Box 3992 Kenai, AK 99611		Salmon
Dominish Fisheries 211 Circle Kodiak, AK 99615		Salmon
Eyak Packing Co. Box 1131 Cordova, AK 99574 Gerald Masolini		Salmon
Glacier Packing Box 294 Cordova, AK 99574 Barbara Jensen	6 1/2 oz. hand pack 7 1/2 oz. hand pack	Salmon
Hightide Seafoods Box 1556 Valdez, AK 99686		Salmon
JX Fisheries 9420 Whitney Pl. N.W. Seattle, WA 98117		Herring
Kodiak AK Seafoods 180 Nickerson St. #305 Seattle, WA 98106		Salmon
Kodiak King Crab P.O. Box C-70739 Seattle, WA 98107		Herring
Lafayette Inc. 1959 N.W. Dock Place Seattle, Wa 98107		Herring Salmon

Continued

Appendix Table A. (continued)

Names, Executive, Address Location of Operations	Sizes of Cans Lines of Machinery	Type of Product
MSP Corporation Box 1249 Cordova, AK 99574 Mullins/Ochs		Herring Eggs on Kelp
Mystic Way Inc. 1415 N.W. 49th St. Seattle, WA 98107 Jerry Marx		Salmon
New West Fisheries, Inc. 1100 11th Street Bellingham, WA 98225 Bob Seidel		Herring Salmon
North Coast Seafood Processors Box 17538 Seattle, WA 98107 Jim Nagai		Salmon
North Pacific Processors Box 1040 Cordova, AK 99574		Herring Salmon
Oceanic Seafoods 8221 44th Ave. W. Bldg. A Mukilteo, WA 98273		Herring
Pelican Seafoods Box 601 Pelican, AK 99832		Herring
Phoenix Fisheries Box 716 Whittier, AK 99693		Salmon
Polmar Box 3092 Seattle, WA 98114		Salmon
Royal Pacific Box 4100 Kenai, AK 99611		Herring
Salamatof Drawer 4220 Kenai, AK 99611		Herring

Continued

Appendix Table A. (continued)

Names, Executive, Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
Sea Alaska Box 380 Cordova, AK 99574		Salmon
Seahawk Seafoods, Inc. Box 151 Valdez, AK 99686 Ray Cessarini		Herring Herring Bait Salmon
Seward Marine Services Box 335 Seward, AK 99664 Margaret Anderson		Herring
Seward Fisheries Box 8 Seward, AK 99664	1-lb. Tall 1/2 lb.	Herring Bait Salmon
St. Elias Ocean Products Box 548 Cordova, AK 99574	1-lb. Tall 1/2 lb. 4 lb.	Herring Herring Bait Salmon
Taylor Aquatic Enterprise Box 112241 Anchorage, AK 99511 Gary Taylor		Herring Eggs on Kelp
Trident Seafoods 653 Northwest 41st St. Seattle, WA 98107		Herring
Ursin Seafoods 150 Nickerson St. #203 Seattle, WA 98109		Herring
Watercrest, Inc Box 690 Valdez, AK 99686		Salmon
W/P Limited 2335 Eastlake Ave. E. Seattle, WA 98102 Denton Sherry		Salmon
Western Fish Producers Box 1159 Point Roberts, WA 98281		Salmon

Continued

Appendix Table A. (continued)

Names, Executive Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
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Westward Seafoods
8615 Eastview
Everett, WA 98204

Salmon

Appendix Table B. Aerial survey estimates, ground survey estimates and, weir counts of Copper River sockeye, chinook and, coho salmon escapements, 1985. ¹

Location	Survey Conditions ²	Date ³	Method ⁴	Sockeye	Chinook	Coho
Bremner River						
Peninsula Lake		8/06	A	16	0	
Little Bremner River		N/S				
Steamboat Lake		8/26	A	55	0	
Eagle Creek		7/18	A	5	0	
Salmon Creek		7/18	A	575	0	
Price Creek		8/06	A	5	0	
Unnamed Creek #1		8/06	A	4	0	
Unnamed Creek #2		8/06	A	0	0	
Taanuna River						
		8/06	A	5	0	
Whiting Falls Creek						
		8/06	A	10	0	
Unnamed Tributary						
		Various	A	0	0	
Tiekel Lake						
		8/06	A	20	0	
Swan Lakes						
Lake #1		8/06	A	10	0	
Lake #2		8/06	A	650	0	
Lake #3		8/06	A	50	0	
Lake #4		8/06	A	75	0	
Tonsina River *						
Lower Tonsina Creek		8/05	A	150	0	
Little Tonsina River		8/05	A	0	203	
Fourth of July Creek		N/S				
Tonsina Lake		10/24	A	290		
Bernard Creek		8/05	A	0	21	
Greyling Creek		8/05	A	0	58	
Dust Creek		8/05	A	0	5	
Unnamed Creek						
Klutina River *						
Manker Creek		8/05	A	0	22	
Mahlo Creek		8/06	A	575	0	
Island Lake		8/06	A	3,600	0	
1884 Lake		9/11	A	4	0	
Hallet Slough Beach		8/26	A	330	0	
Curtis Creek						
St. Anne Creek		8/06	A	1,250	15	
Klutina Inlet		9/11	A	15	0	
Tazlina River						
Upper Mendeltna Creek		7/03	A	75	0	
Mendeltna Creek		8/26	A	2,300	26	
Kiana Creek		8/05	A	10	91	
Tazlina Lake		8/05	A	19	0	

-continued-

Appendix Table B. Aerial survey estimates, ground survey estimates and, weir counts of Copper River sockeye, chinook and, coho salmon escapements, 1985 (continued). 1

Location	Survey Conditions 2	Date 3	Method 4	Sockeye	Chinook	Coho
Gulkana River						
Mouth to West Fork						
West Fork		7/19	A	945	30	
Moose Creek		7/19				
Keg Creek		7/19	A	825	0	
Victor Creek		7/19	A	650	0	
West Fork to Middle Fork		7/15	A	4,350	139	
Middle Fork		7/15	A	125	101	
Dickey Lake		7/15	A	290	0	
Swede Lake		8/15	A	250	0	
Hungry Hollow Creek		7/19	A	0	32	
East Fork						
East Fork to Paxson Lake		8/17	A	3,600	19	
Paxson Lake		7/26	A	0	0	
Paxson Lake Inlet		8/26	A	3,900	0	
Inlet to Mud Creek		7/26	A	7,500	0	
Mud Creek and Lake		7/26	A	200	0	
Mud Creek to Summit Lake		9/25	A	8,150 5	0	
Fish Lake		7/19	A	3,750	0	
Summit Lake		8/17	A	100	0	
Gunn Creek		10/04	A	4,080 6	0	
Gunn Lake Creek		7/26	A	575	0	
Gakona River						
Spring Creek		7/19	A	0	47	
Alder Creek		7/26	A	35	0	
Drop Creek		7/26	A	0	8	
Tributary near Boulder Creek		7/22	A	0	2	
Sinona Creek						
Bear Creek		7/26	A	0	2	
Chistochina River						
East Fork		7/26	A	0	360	
Eagle Creek		7/26	A	12	11	
Mankomen Lake						
Slana River *						
Mentasta Lake		7/22	A	3,850	0	
Fish Creek		7/26	A	1,800	0	
Bad Crossing #1		7/22	A	600	0	
Bad Crossing #2		7/26	A	525	0	
Granite Creek		7/26	A	0	0	
Bone Creek		7/26	A	70	10	
Slana Sloughs		7/22	A	200	0	
Suslota Lake		7/22	A	2,200	0	

-continued-

Appendix Table B. Aerial survey estimates, ground survey estimates and, weir counts of Copper River sockeye, chinook and, coho salmon escapements, 1985 (continued). 1

Location	Survey Conditions 2	Date 3	Method 4	Sockeye	Chinook	Coho
Indian River		7/22	A	0	14	
Ahtell Creek		7/22	A	0	8	
Tanada Creek						
Tanada Lake		9/25	A	5,600	0	
Tanada Lake Outlet		9/25	A	6,100	0	
Copper Creek						
Copper Lake		9/25	A	23	0	
Tebay River		8/06	A	0	19	
Chokosna River		N/S				
Lakina River						
Long Lake		9/11	A	590		
Nizina River						
Spruce Point Creek						
Trumpeter Lake						
Lake Creek						
Clear Creek (Chitina River)						
Tana River	*					
Tana River Clear Channels		8/26	A	555	0	
Tana Lake Inlet	*	8/06	A	350	0	
West Fork Channels		8/26	A	240	0	
Chakina River						
Monahan Creek		8/06	A	0	5	
Totals				73,363	1,248	0

1 Escapement refers to peak survey for the area, or units, when areas overlap temporally or spatially.

2 * Denotes glacial.

3 Date refers to peak sockeye salmon escapements; it may or may not apply to peak chinook or coho counts.

4 A = aerial survey; W = weir count; G = Ground survey

5 Counts are influenced by returns to the Gulkana Hatchery.

6 Returns from Gulkana Hatchery releases.

Appendix Table C. Coghill River field camp climatological and stream observations, 1985.

Temperatures								
Date	Air (F)		Water (F)		Precip. 0900	Cloud 1 Cover		Gauge (Ft.) 0900
	Min.	Max.	0900	2100		0900	2100	
6/05	35	72		1.5	0	3	3	2.025
6/06	36	55	2.0	2.5	0	3	4	
6/07	36	52	2.0	2.5	0.25	3	3	
6/08	34	54	3.0	2.5	0.01	3	3	
6/09	40	73	3.0	3.5	0.03	3	1	
6/10	32	68		3.0	0	1	2	
6/11	36	64	3.0	3.0	0.06	4	3	
6/12	39	61	3.0	3.0	0.02	3	3	
6/13	38	59	3.0		0.07	3	3	
6/14	38		3.0		0.1	3	3	1.6
6/15		61			0	3	4	1.6
6/16	39	58	3.5	3.5	0.16	4	1	1.6
6/17	33	49	3.0	3.0	0.08	4	4	1.6
6/18	39	51	3.0	3.5	1.13	4	4	1.7
6/19	40	61	3.0	4.0	0.05	3	3	1.75
6/20	40	52	3.0	3.0	0.08	4	4	1.75
6/21	40	72	3.0	4.0	0.1	3	2	1.75
6/22	41	69	4.0	5.0	0	1	1	1.7
6/23	34	58	4.0	4.0	0	2	4	1.7
6/24	40	59	3.0	4.5	0.19	4	3	1.7
6/25	38	57	4.0	5.0	0.16	4	4	1.75
6/26	40	64	5.0	5.5	0.11	4	1	1.8
6/27	34	73	5.5	6.0	0	1	2	1.75
6/28	35	67	6.0	6.0	0	1	2	1.75
6/29	36	75	6.0	6.0	0	1	2	1.75
6/30	34	78	6.0	8.0	0	3	3	1.8
7/01	41	70	6.0	6.0	0	4	4	1.95
7/02	44	60	6.0	6.0	0.06	4	4	2
7/03	42	56	6.0	7.0	0.57	4	4	2
7/04	43	65	7.0	7.0	0.21	3	2	1.95
7/05	44	72	8.0	8.0	0	1	1	1.95
7/06	37	73	8.0	8.0	0	1	1	1.95
7/07	46	59	6.0	7.0	0.02	4	4	2
7/08	46	64	7.0	8.0	0.27	3	4	2
7/09	46	66	7.0	8.0	0	3	3	2
7/10	48	71	7.0	8.5	0.03	2	2	2
7/11	46	65	7.0	8.0	0	4	4	2
7/12	44	60	7.0	8.5	0.02	4	4	1.9
7/13	44	64	8.0	8.0	0.35	4	4	1.95
7/14	44	66	8.0	8.0	0.3	4	3	1.9

Continued

Temperatures

Date	Air (F)		Water (F)		Precip. 0900	Cloud ¹ Cover		Gauge (Ft.) 0900
	Min.	Max.	0900	2100		0900	2100	
7/15	46	64	8.0	8.0	0	4	3	1.9
7/16	34	70	8.0	9.0	0	1	2	1.85
7/17	34	70	8.0	9.0	0	4	2	1.8
7/18	34	64	8.5	8.5	0	1	4	1.8
7/19	38	62	8.0	10.0	0	4	4	1.8
7/20	46	58	9.0	11.0	0.8	4	4	1.95
7/21	44	64	10.0	11.0	0.15	3	4	2.0
7/22	42	62	10.0	10.0	0.02	4	4	2
7/23	44	62	8.0	9.0	0.2	4	4	2
7/24	48	64	9.0	10.0	0.26	4	4	2.05
7/25	46		9.0		0	3		2

1 Cloud Cover

- 1 = Clear
- 2 = Less than 1/2 cloud cover.
- 3 = Greater than 1/2 cloud cover.
- 4 = Complete cloud cover.

Appendix Appendix Table D. Eshamy River field camp climatological and stream observations, 1985.

Date	Air (F)		Water (F)		Precip. 0900	Cloud ¹ Cover		Gauge (Ft.) 0900
	Min.	Max.	0900	2100		0900	2100	
	7/02	47	54	11.0			0.62	
7/03	47	54	11.0		0.22	4	4	0.64
7/04	48	58	11.0		0	3	1	0.58
7/05	56	64	12.0		0	1	1	0.56
7/06	56	68	12.0		0	1	3	0.55
7/07	48	53	12.0		0.4	4	4	0.53
7/08	48	56	12.0		0	4	4	0.52
7/09	49	58	12.0		0	4	4	0.48
7/10	49	68	13.0		0	2	2	0.5
7/11	49	61	13.0		0	4	4	0.48
7/12	48	56	14.0		0.05	4	4	0.48
7/13	50	56	14.0		0.02	4	4	0.44
7/14	50	58	15.0		0	4	4	0.4
7/15	50	58	15.0		0.01	4	4	0.38
7/16	50	64	15.0		0	2	3	0.34
7/17	54	66	15.0		0	4	2	0.3
7/18	54	64	14.0		0	2	3	0.28
7/19	52	60	15.0		1.6	4	4	2.5
7/20	52	58	15.0		0.17	4	4	4
7/21	52	58	15.0		0.07	4	3	0.43
7/22	48	54	15.0		0.55	4	4	0.45
7/23	50	54	14.0		0.56	4	4	0.47
7/24	50	58	14.0		0.03	4	4	0.48
7/25	54	62	14.0		0	4	3	0.46
7/26	55	60	14.0		0.06	4	4	0.4
7/27	52	60	14.0		0	4	3	0.38
7/28	52	59	15.0		0	4	4	0.34
7/29	50	60	15.0		0.21	4	3	0.3
7/30	52	61	15.0		0.12	4	4	0.29
7/31	50	62	15.0		0	3	4	0.25
8/01	50	60	15.0		0.07	2	4	0.23
8/02	49	59	15.0		0.12	4	4	0.22
8/03	46	61	15.0		0.04	4	3	0.2
8/04	46	64	15.0		0	2	1	0.18
8/05	48	60	15.0		0.07	4	4	0.14
8/06	46	62	15.0		0	4	1	0.12
8/07	16	56	15.0		0.5	4	4	0.1
8/08	44	56	15.0		0.13	3	4	0.1
8/09	44	52	15.0		1	4	4	0.1
8/10	46	60	14.0		0	4	3	0.12
8/11	44	52	14.0		0.6	4	4	0.12

Continued

Appendix Table D. Continued

Date	Air (F)		Water (F)		Precip. 0900	Cloud Cover		Gauge (0900)
	Min.	Max.	0900	2100		0900	2100	
	Temperatures							
8/12	44	52	14.0		7.5	4	4	0.16
8/13	46	56	14.0		0.33	4	4	0.2
8/14	46	54			0.3	4	4	0.24
8/15	46	58	13.0				4	0.24
8/16	44	62	13.0			3	1	0.22
8/17	45	64	13.0			1	1	0.2
8/18	47	60			0	4	4	0.2
8/19	46	54			0.6	4	4	0.2
8/20	44	54			1.25	4	4	0.23
8/21	44	54			0.3	4	4	0.28
8/22	47	54			0.2	4	3	0.3
8/23	46	60	13.0			1	1	0.3
8/24		58	13.0		0.3	2	4	0.25
8/25	46	58	13.0		0	4	4	0.22
8/26	47	60	13.0		0	1	1	0.2
8/27	49	62	13.0		0	1	1	0.18
8/28	49	62	14.0		0	1	4	0.14
8/29	46	58	14.0		0.1	4	4	0.12
8/30	48	60	14.0		0.13	3	2	0.1
8/31	49	56	14.0		0	4	4	0.8
9/01	50	57	14.0		0.81	4	4	0.1
9/02	47	61			0.15	1	1	0.1
9/03	48	62			0.02	4	2	0.
9/04	46	56			0.05	2	1	0.8
9/05	44	64			0	1	2	0.04
9/06	42	58	13.0		0	3	2	0.2
9/07	44	56	12.0		0	1	4	0
9/08	48	56	13.0		0.46	4		0
9/09	48	56	13.0		0.15	2	2	0
9/10	44	58	13.0		0	2	4	0.1
9/11	43	55	12.0		0.04	3	1	0
9/12	42	53	12.0		0.01	4	4	0
9/13	41	55	12.0		0	1	3	0
9/14	50	55	12.0		0.7	4	4	0
9/15	49	59	11.0		0.24	3	1	0
9/16	50	61	10.0		0	1	1	0
9/17	49	59	10.0		0	1	1	0
9/18	42	50	9.0		0.02	4	4	0
9/19	46	54	9.0		1.75	4	4	0.01
9/20	46	55	8.0	0.22	0.22	1	1	0.04
9/21	36	55	8.0		0.01	1	2	0.02
9/22	42	48	8.0		0.5	4	4	0.08
9/23	40	51	8.0		0.47	3	4	0.08
9/24	42	50	8.0		0.81	4	4	0.1
9/25	45	52	8.0		0.22	1	2	0.1
9/26	41	49	7.5		0	4	4	0.12

Continued

Appendix Table D. Continued

Date	Air (F)		Water (F)		Precip. 0900	Cloud Cover		Gauge (Ft.) 0900
	Min.	Max.	0900	2100		0900	2100	
	9/27	48	51	8			3	
9/28	45	50	7.5		2.75	4	4	0.98
9/29	45	49	7			4	4	1
9/30	46	51	7		2.65	4	4	1.2
10/01	44	49	7		0.19	4	4	0.92
10/02	40	50	7		0.7	3	3	0.9
10/03	38	45	7		0.04	4	4	0.82
10/04	36	46	7		0.7	1	1	0.7
10/05	34	44	7		0	1	2	0.61
10/06	40	45	6.5		0	4	4	0.52
10/07	38	46	6		0.64	2	4	0.48
10/08	38	45	6		0.99	4	4	0.46
10/09	42	48	6		0.74	4	4	0.46
10/10	38	46	6		0.08	2	1	0.5
10/11	38	44	6		0	4	4	0.46
10/12	42	48	6		0.07	4	2	0.38

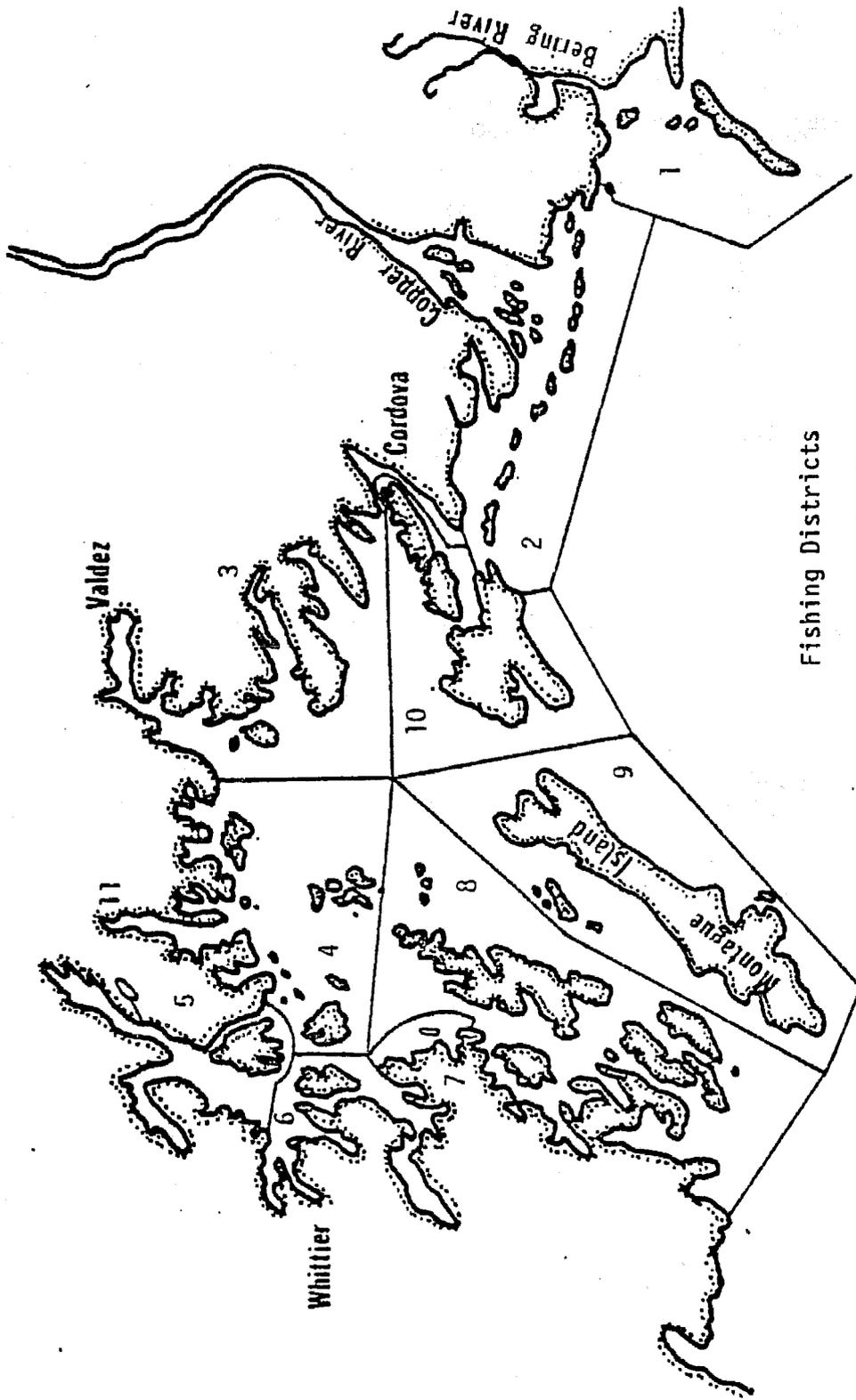
Cloud Cover

1 = Clear

2 = Less than 1/2 Cloud cover

= Greater than 1/2 Cloud cover

= Complete Cloud cover



Fishing Districts

- 1. Bering River
- 2. Copper River
- 3. Eastern
- 4. Northern
- 5. Coghill
- 6. Northwestern
- 7. Eshamy
- 8. Southwestern
- 9. Montague
- 10. Southeastern
- 11. Unakwik

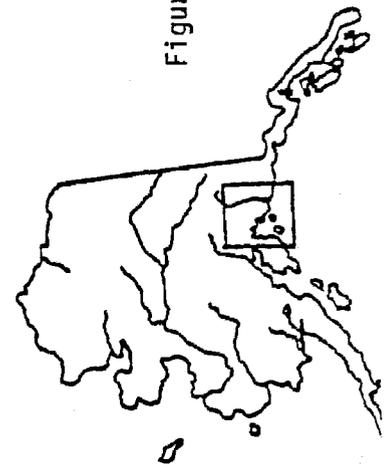


Figure 1. Prince William Sound Area commercial fisheries salmon management areas.

ALL SPECIES SALMON CATCH PRINCE WILLIAM SOUND

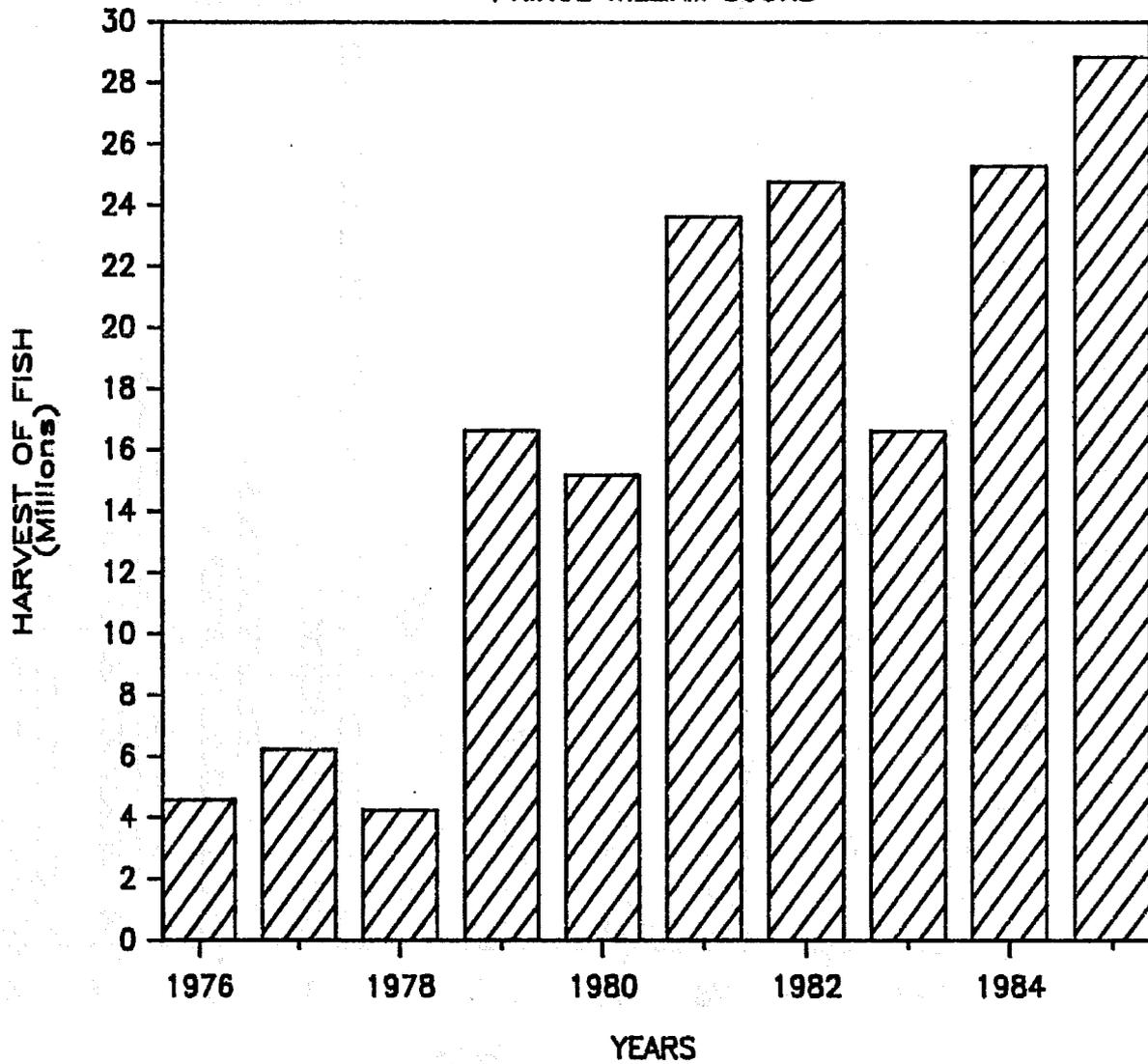


Figure 2. All species salmon catch, Prince William Sound, 1976 - 1985.

COPPER RIVER DISTRICT

SOCKEYE SALMON CATCH & ESCAPEMENT

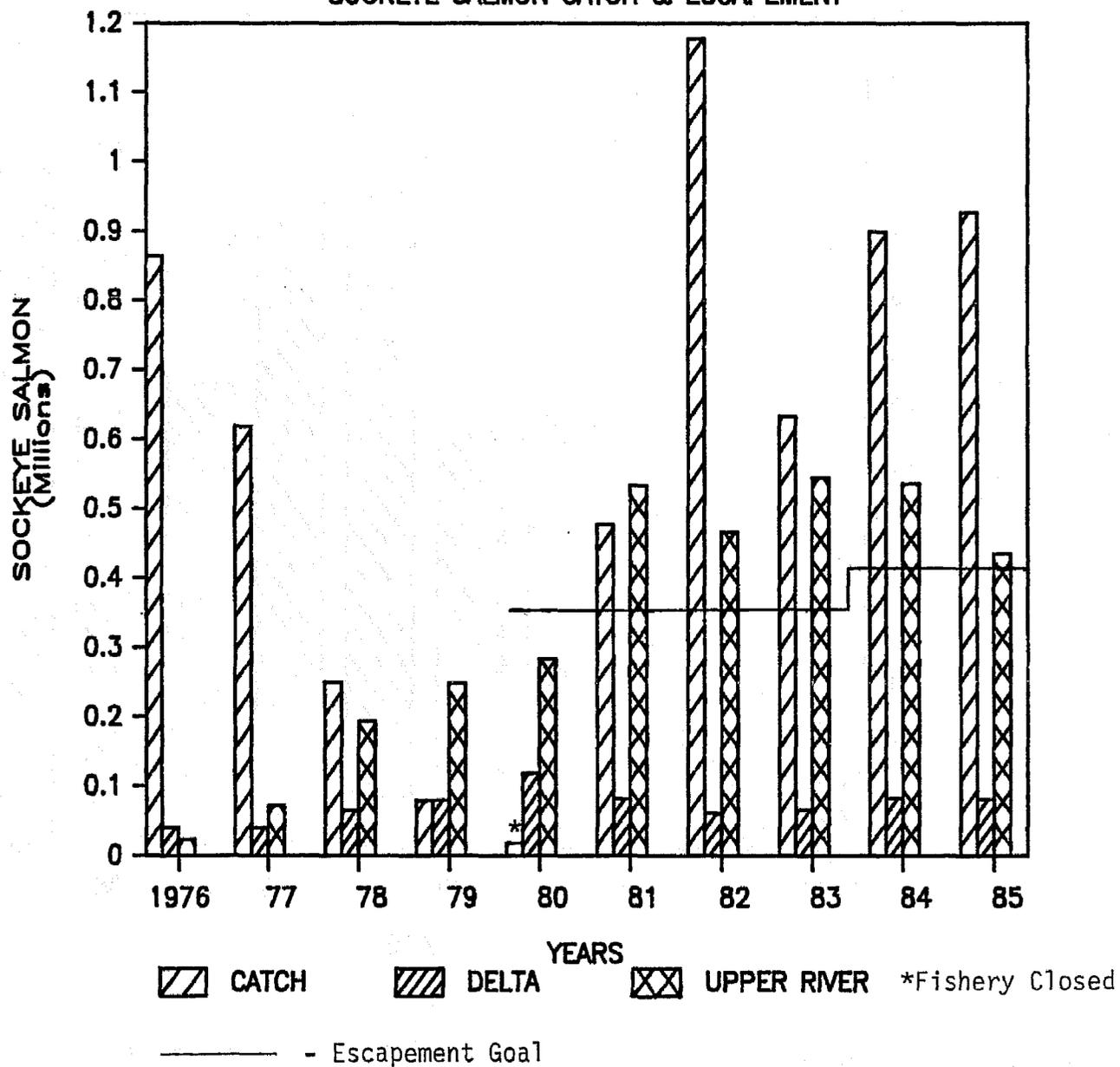
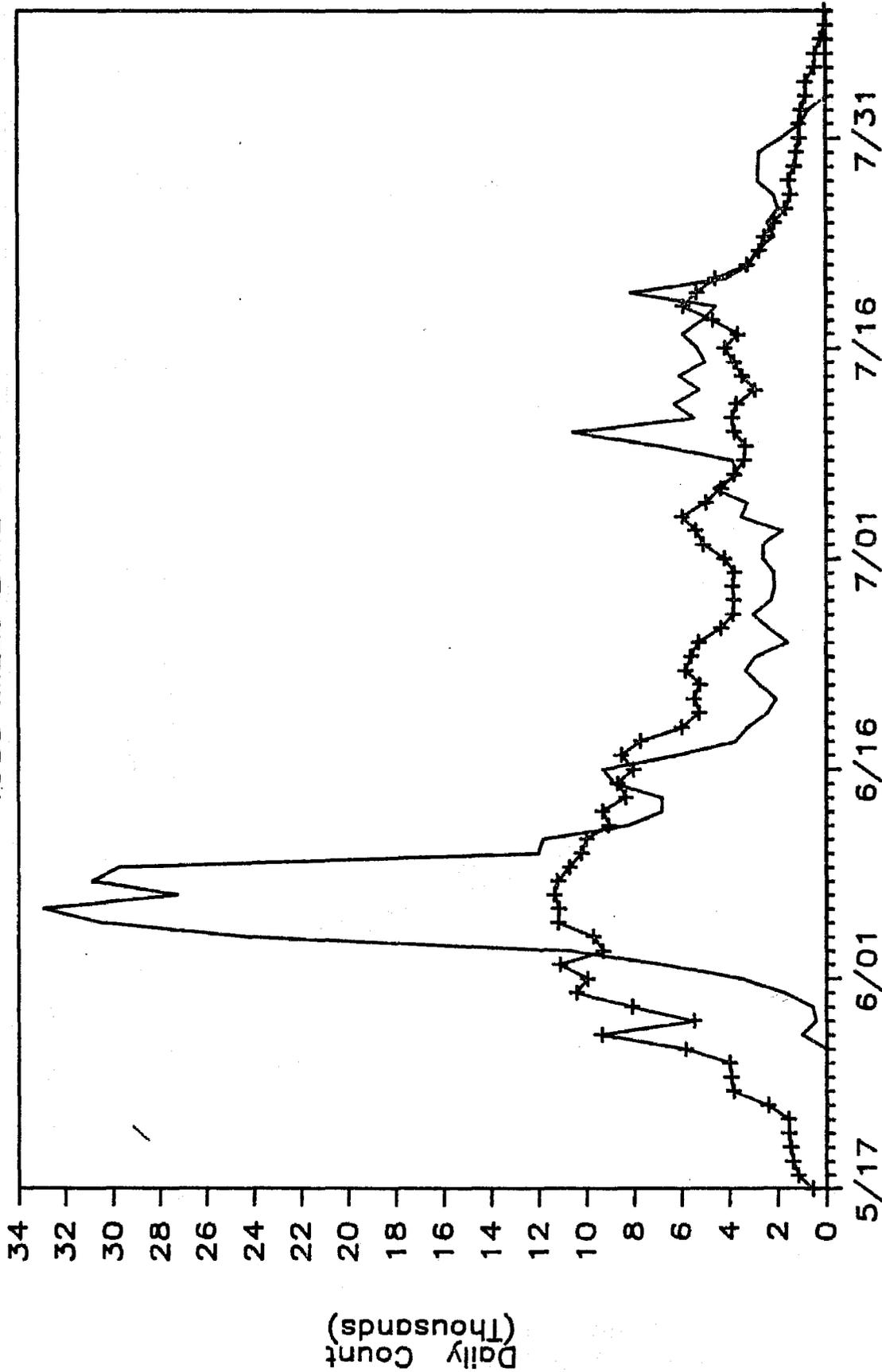


Figure 3. Sockeye salmon catch & escapement, Copper River district, 1976 - 1985.

ACTUAL VS. ANTICIPATED DAILY COUNT

1985 MILES LAKE SONAR



— Actual Daily Count + Anticipated Count
Date

Figure 4. Actual vs. anticipated daily counts at the Miles Lake Sonar, 1985.

ACTUAL VS. ANTICIPATED CUM. COUNT

1985 MILES LAKE SONAR

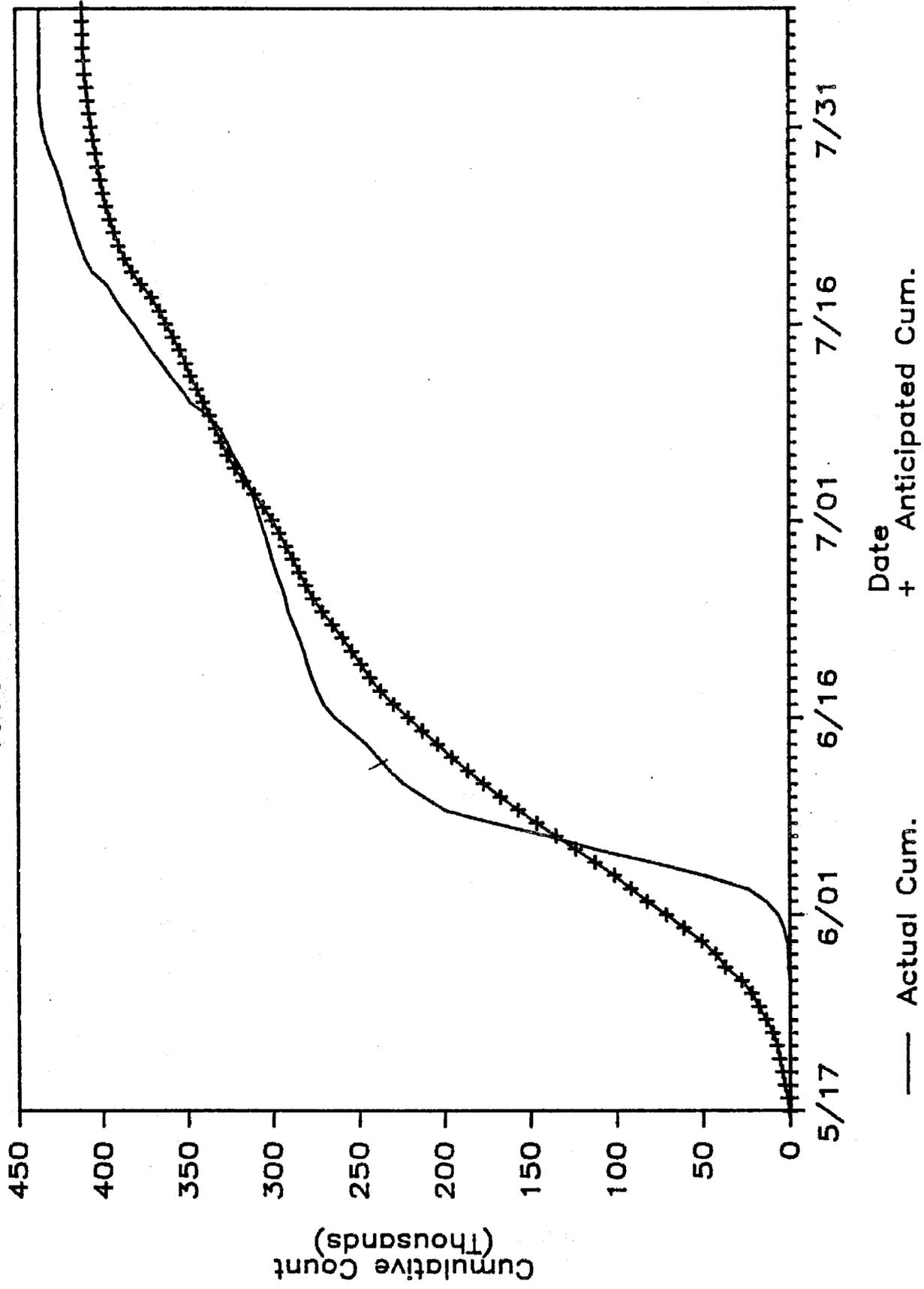


Figure 5. Actual vs. anticipated cumulative count at Miles Lake Sonar, 1985.

WEEKLY SONAR COUNTS BY STAT WLEK

1985 MILES LAKE SONAR

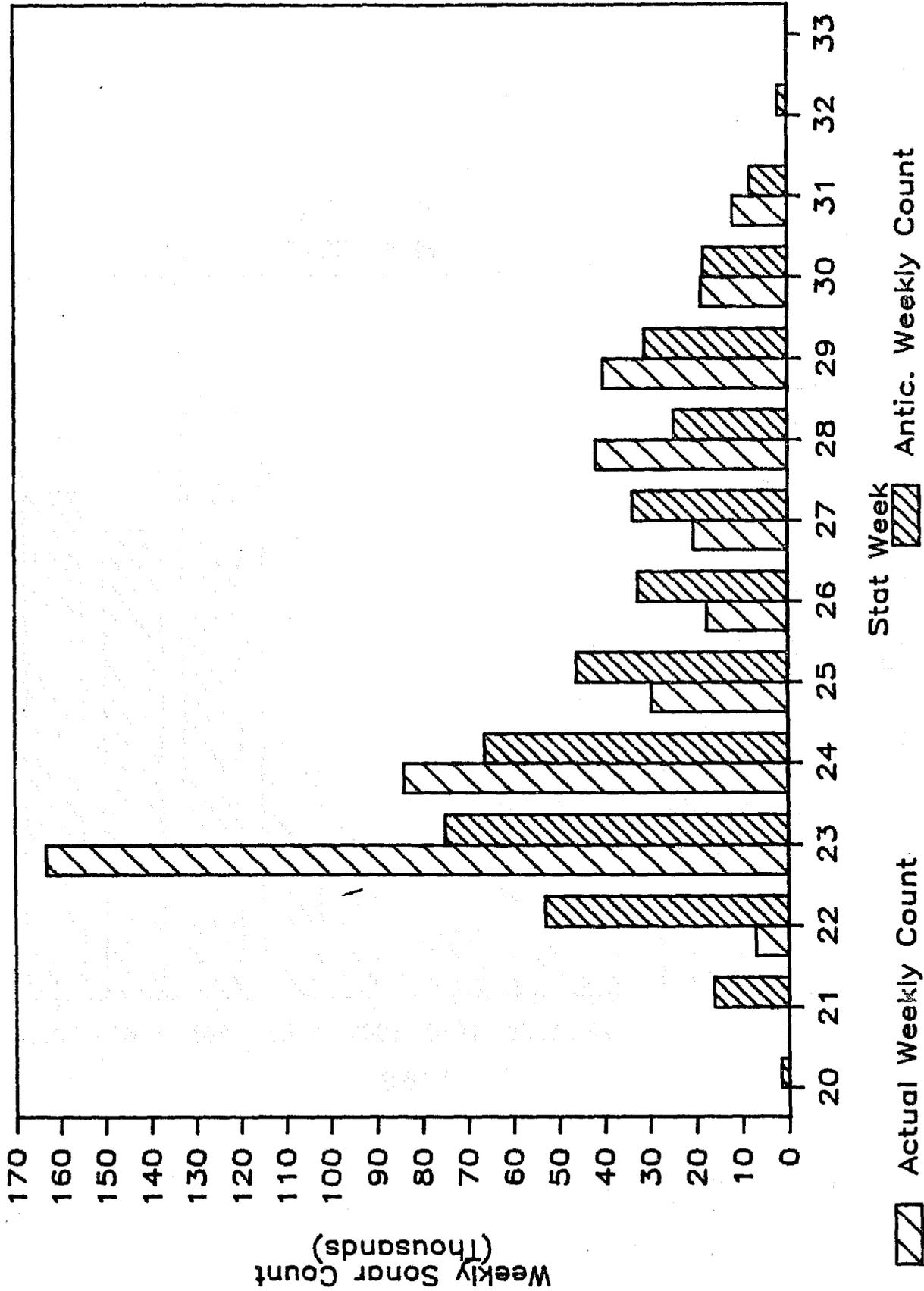


Figure 6. Weekly sonar counts by statistical week, Miles Lake Sonar, 1985.

CHINOOK SALMON CATCH, COPPER RIVER DISTRICT

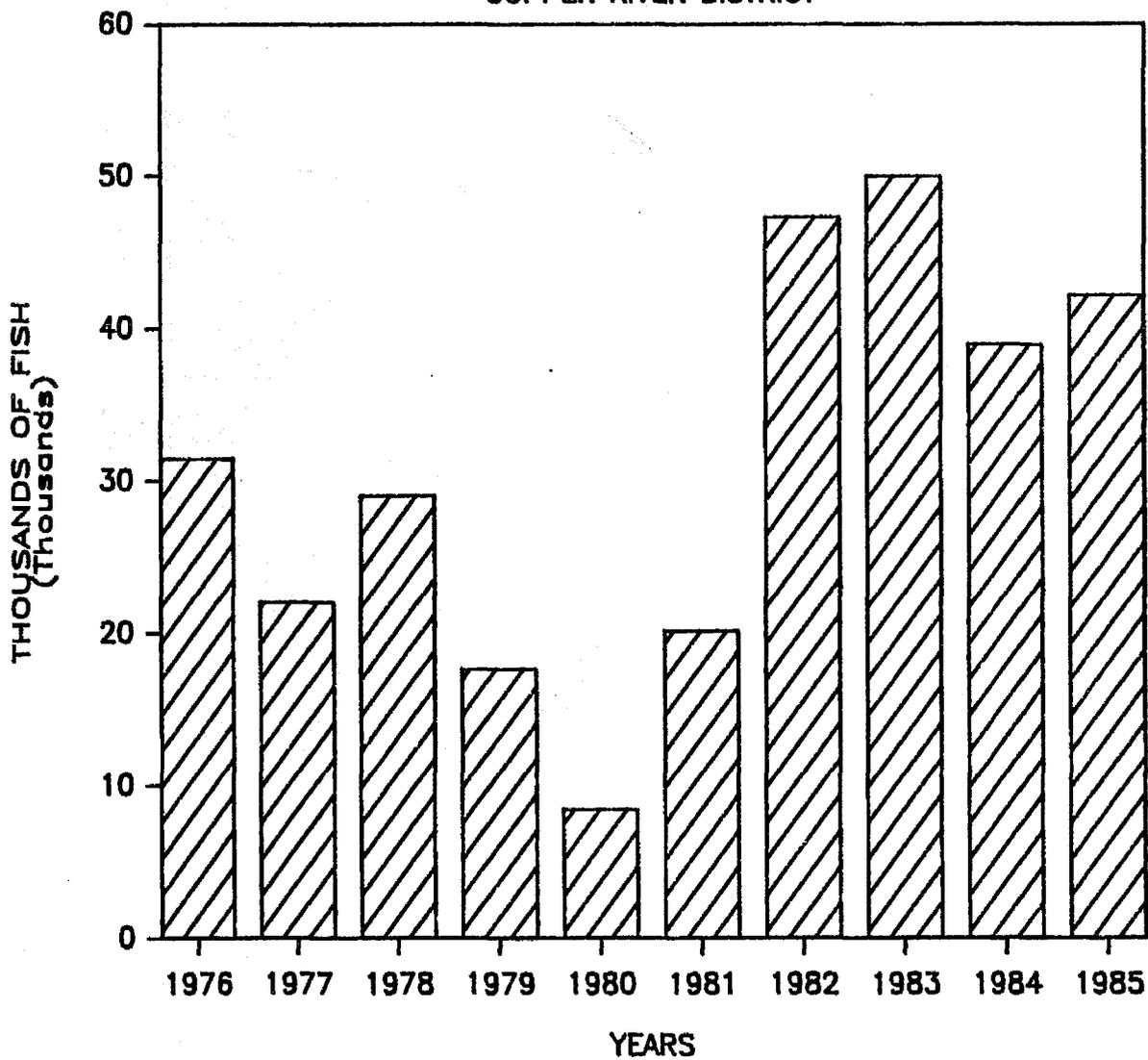


Figure 7. Chinook salmon catch, Copper River district, 1976 - 1985.

COHO SALMON CATCH, COPPER RIVER DISTRICT

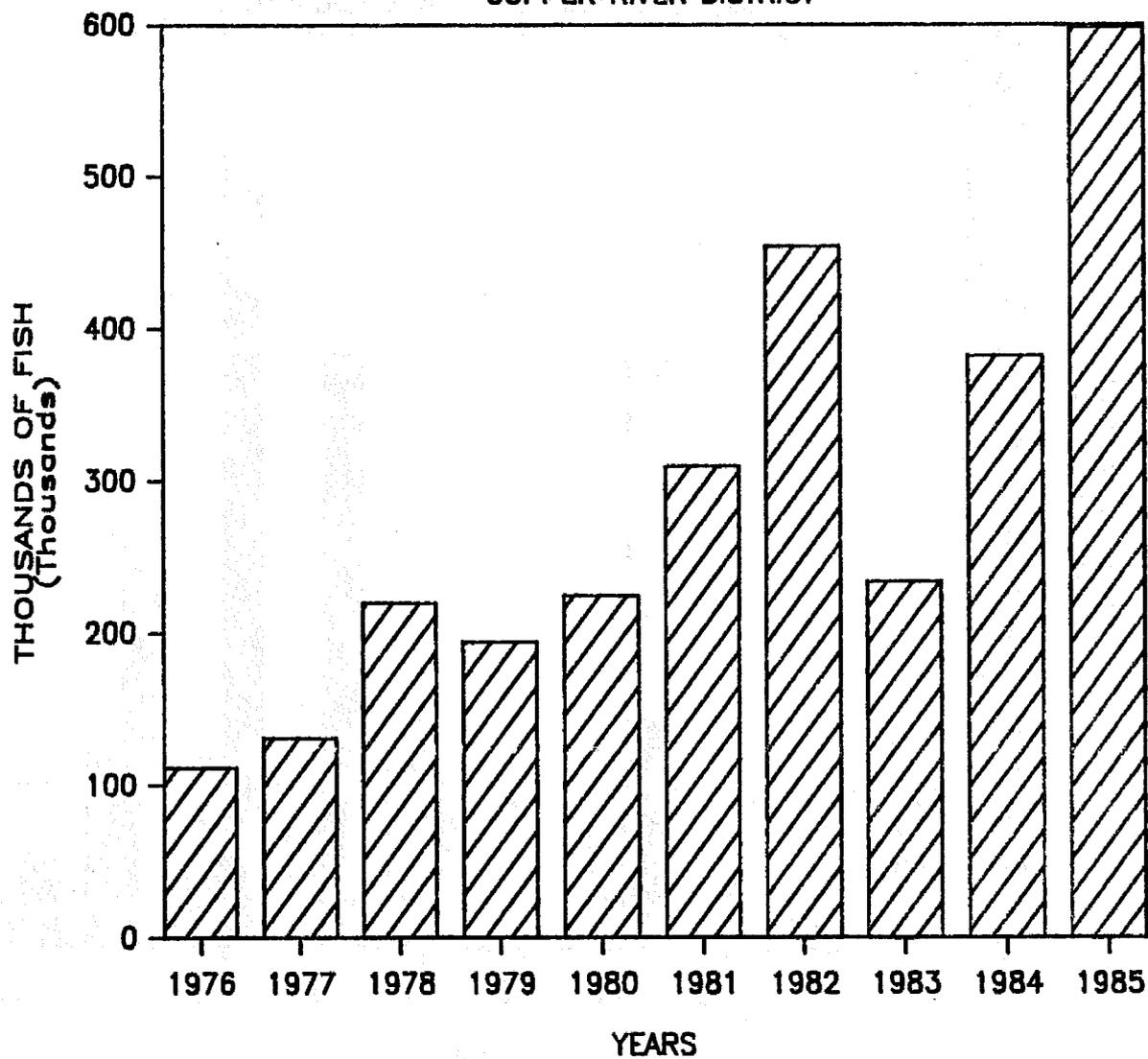


Figure 8. Coho salmon catch, Copper River district, 1976 - 1985.

BERING RIVER DISTRICT

SOCKEYE SALMON CATCH & ESCAPEMENT

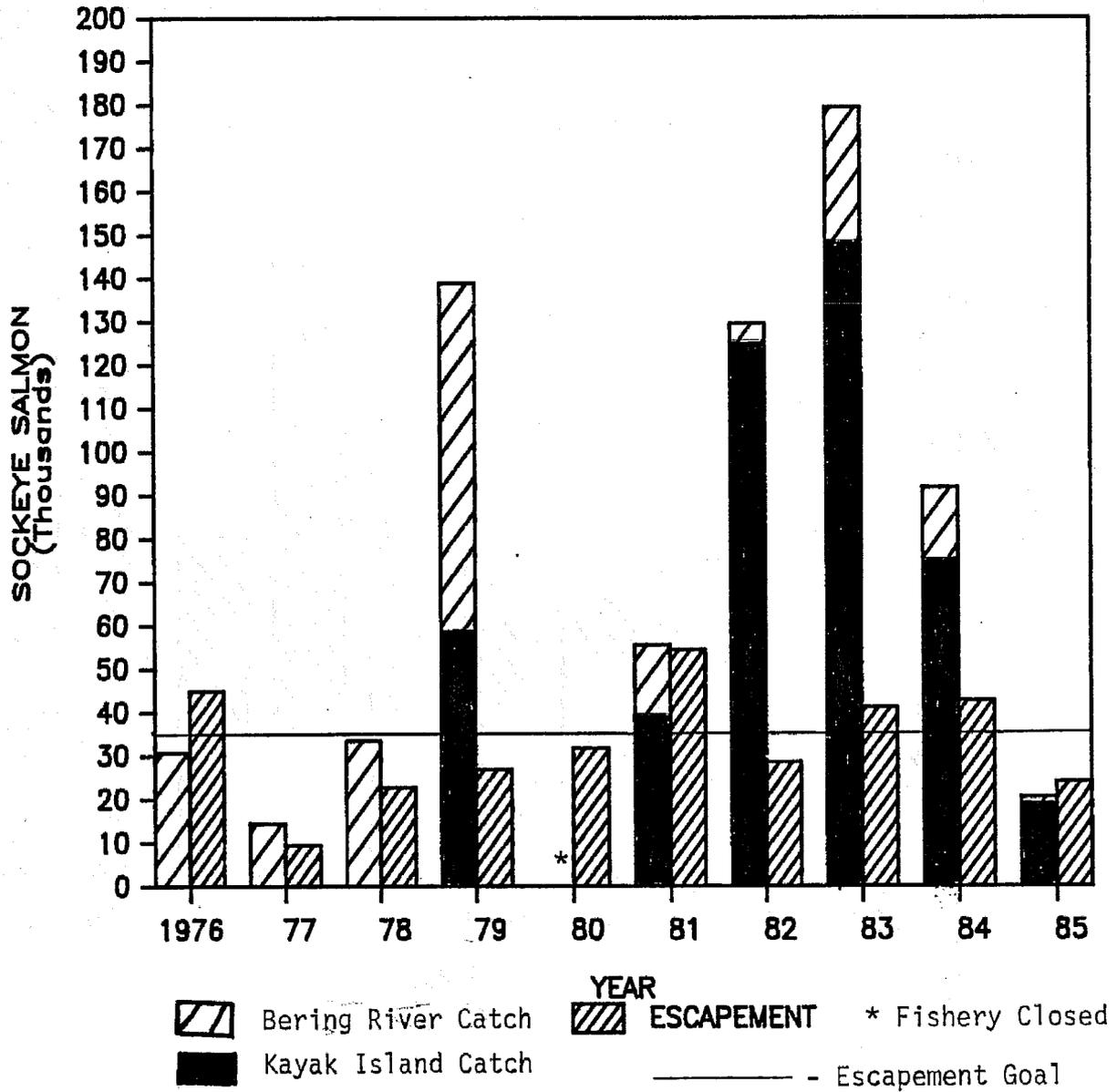


Figure 9. Sockeye salmon catch & escapement, Bering River district, 1976 - 1985.

COHO SALMON CATCH, BERING RIVER DISTRICT

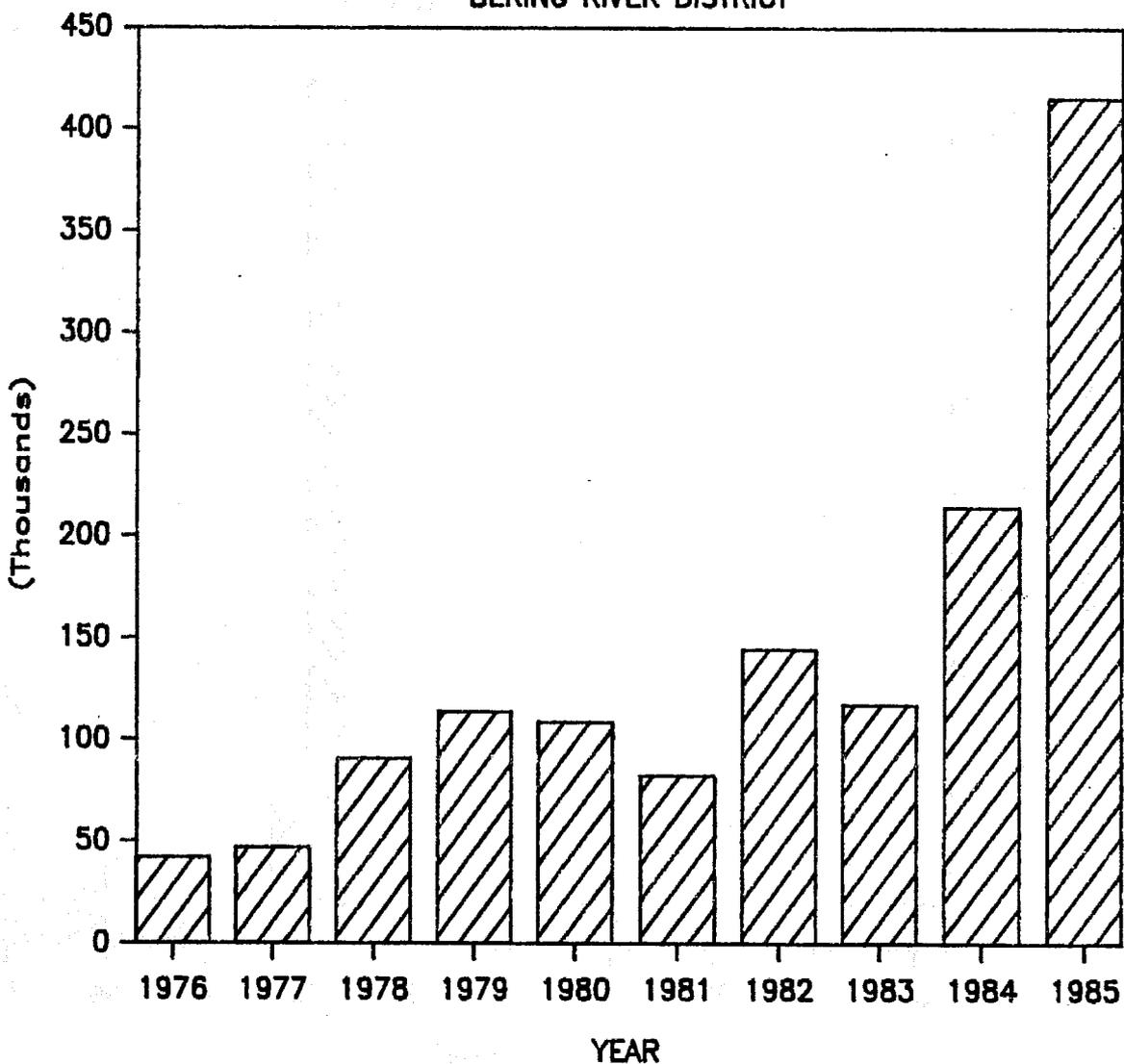


Figure 10. Coho salmon catch, Bering River district, 1976 - 1985.

SOCKEYE SALMON CATCH and ESC.

COGHILL DISTRICT

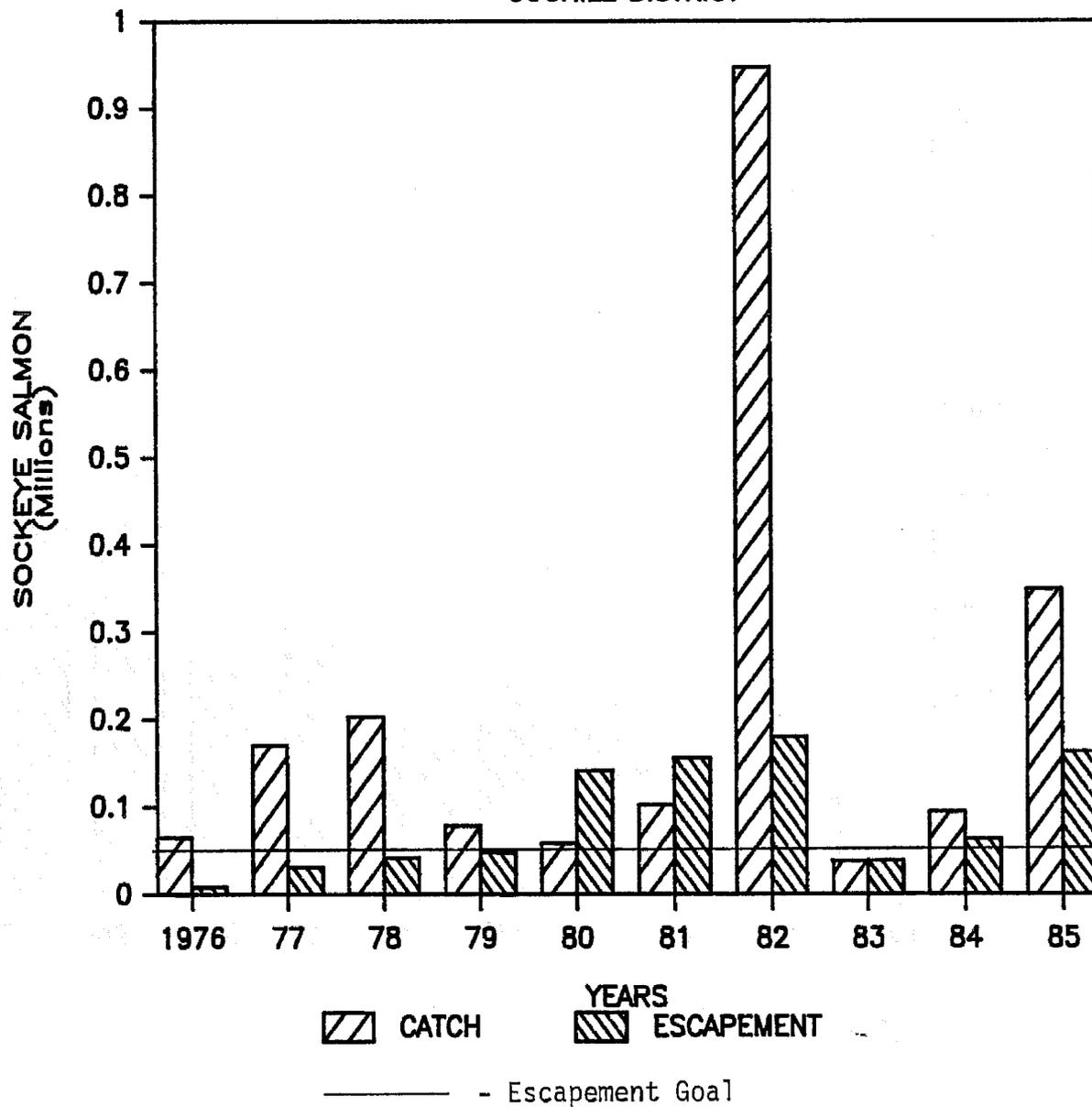


Figure 11. Sockeye salmon catch & escapement, Coghill district, 1976 - 1985.

SOCKEYE SALMON CATCH & ESC.

ESHAMY DISTRICT

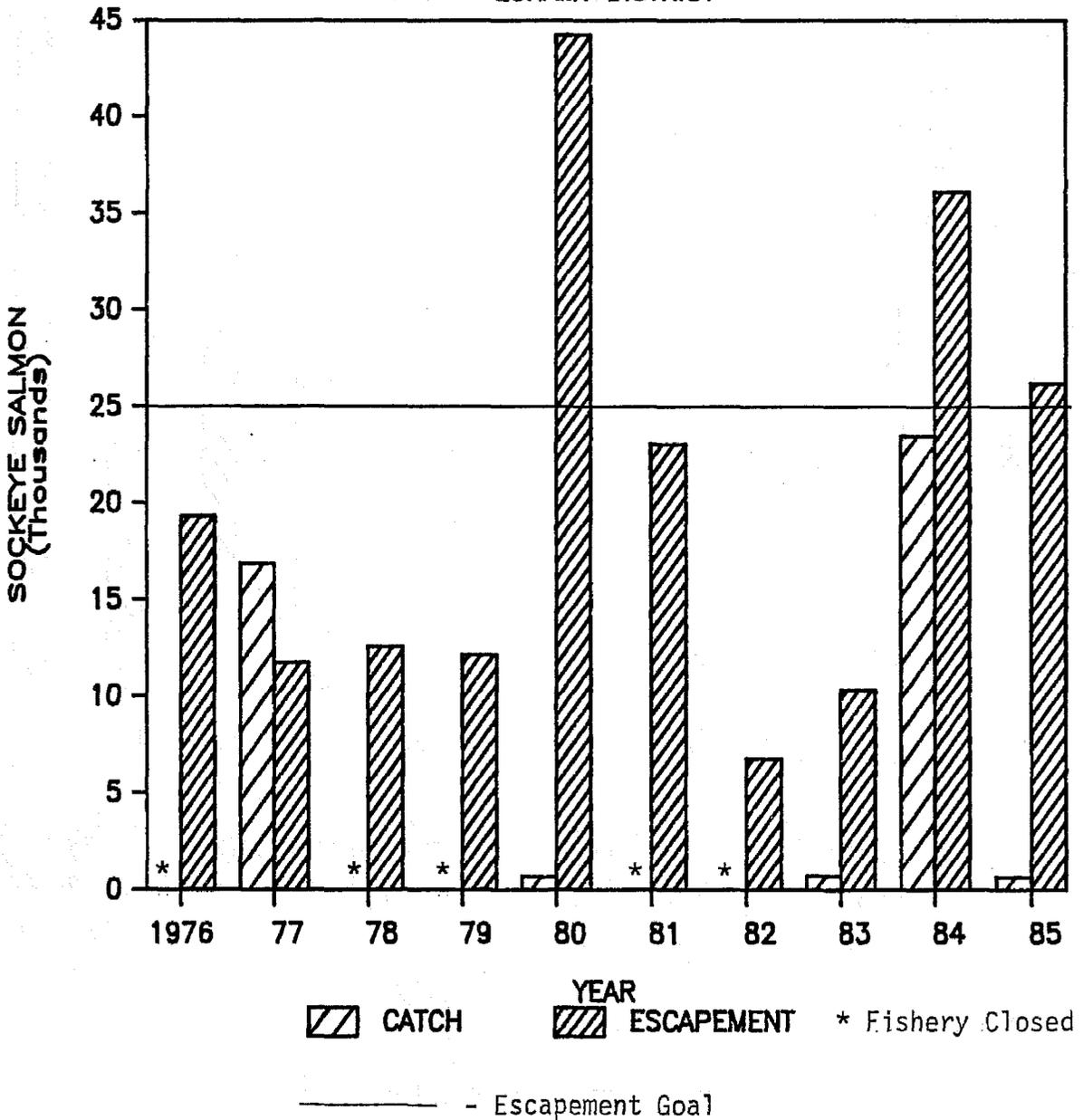


Figure 12. Sockeye salmon catch & escapement, Eshamy district, 1976 - 1985.

ODD YEAR CATCH AND ESCAPEMENT

PRINCE WILLIAM SOUND PINK SALMON

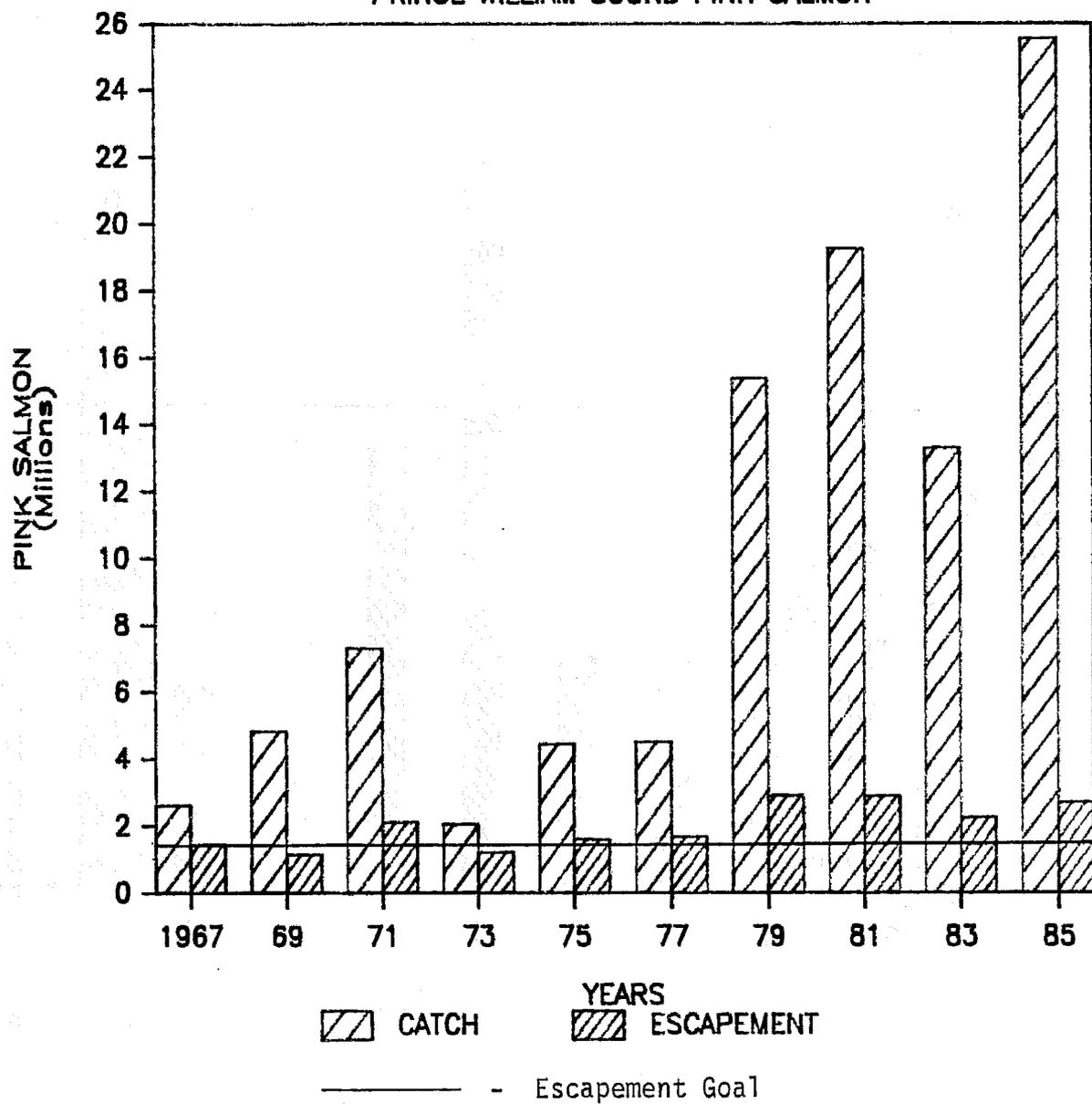
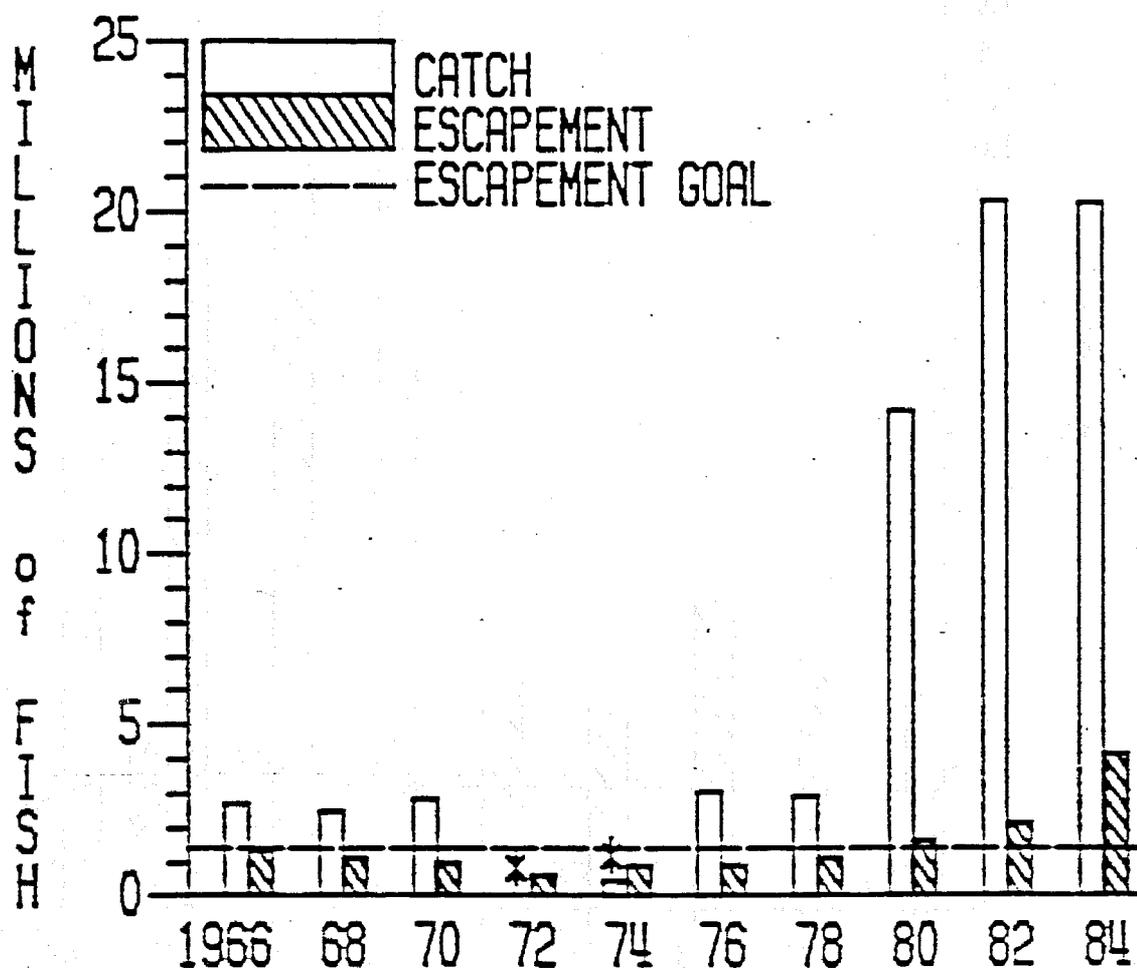


Figure 13. Pink salmon catch and escapement, odd years, Prince William Sound, 1967 - 1985.

PINK SALMON CATCH and ESCAPEMENT, EVEN YEARS PRINCE WILLIAM SOUND



* general purse seine season closed

Figure 14. Pink salmon catch and escapement, even years, Prince William Sound, 1966 - 1984.

CHUM SALMON CATCH AND ESC.

PRINCE WILLIAM SOUND

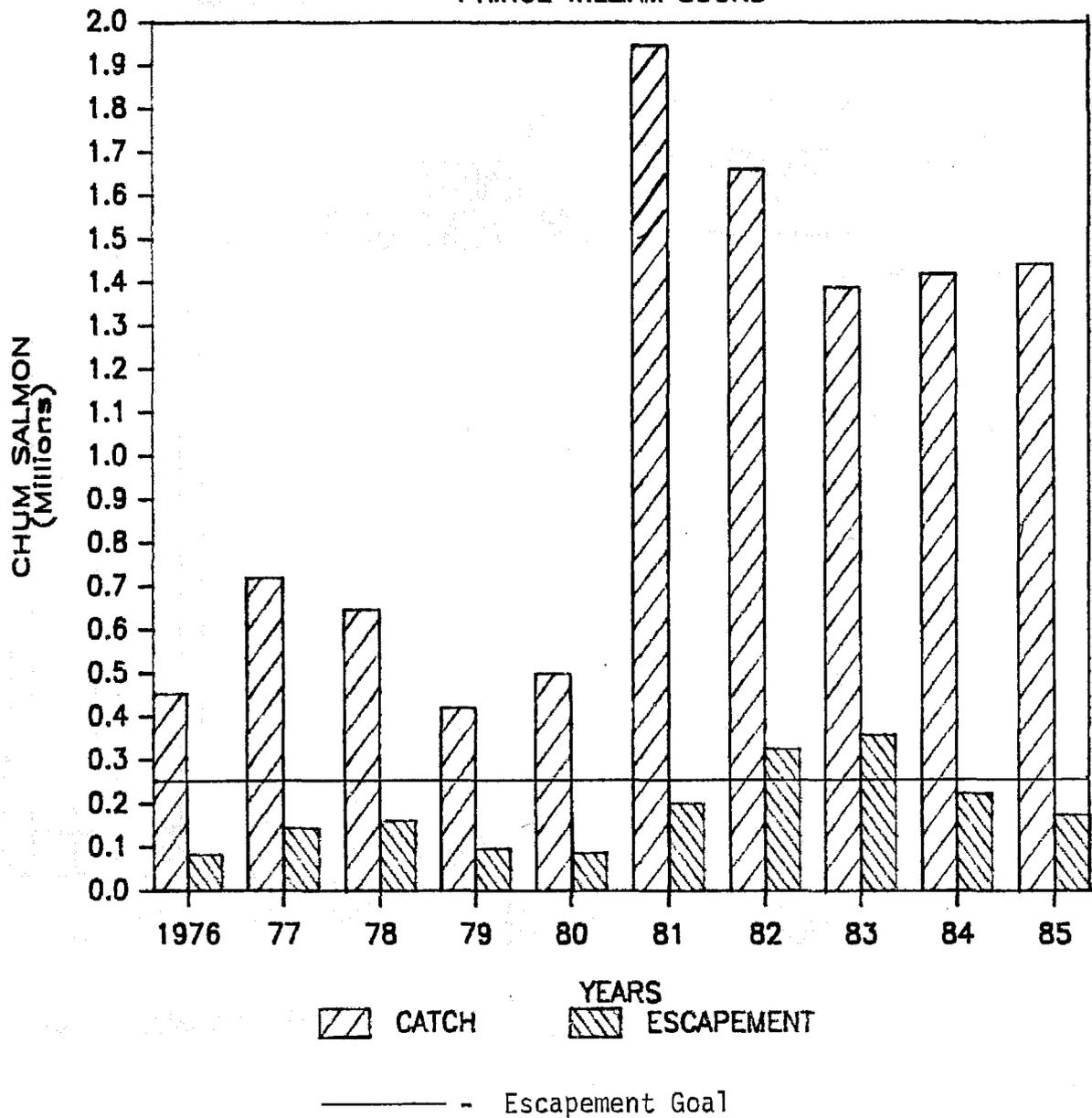


Figure 15. Chum salmon catch and escapement, Prince William Sound, 1976 - 1985.

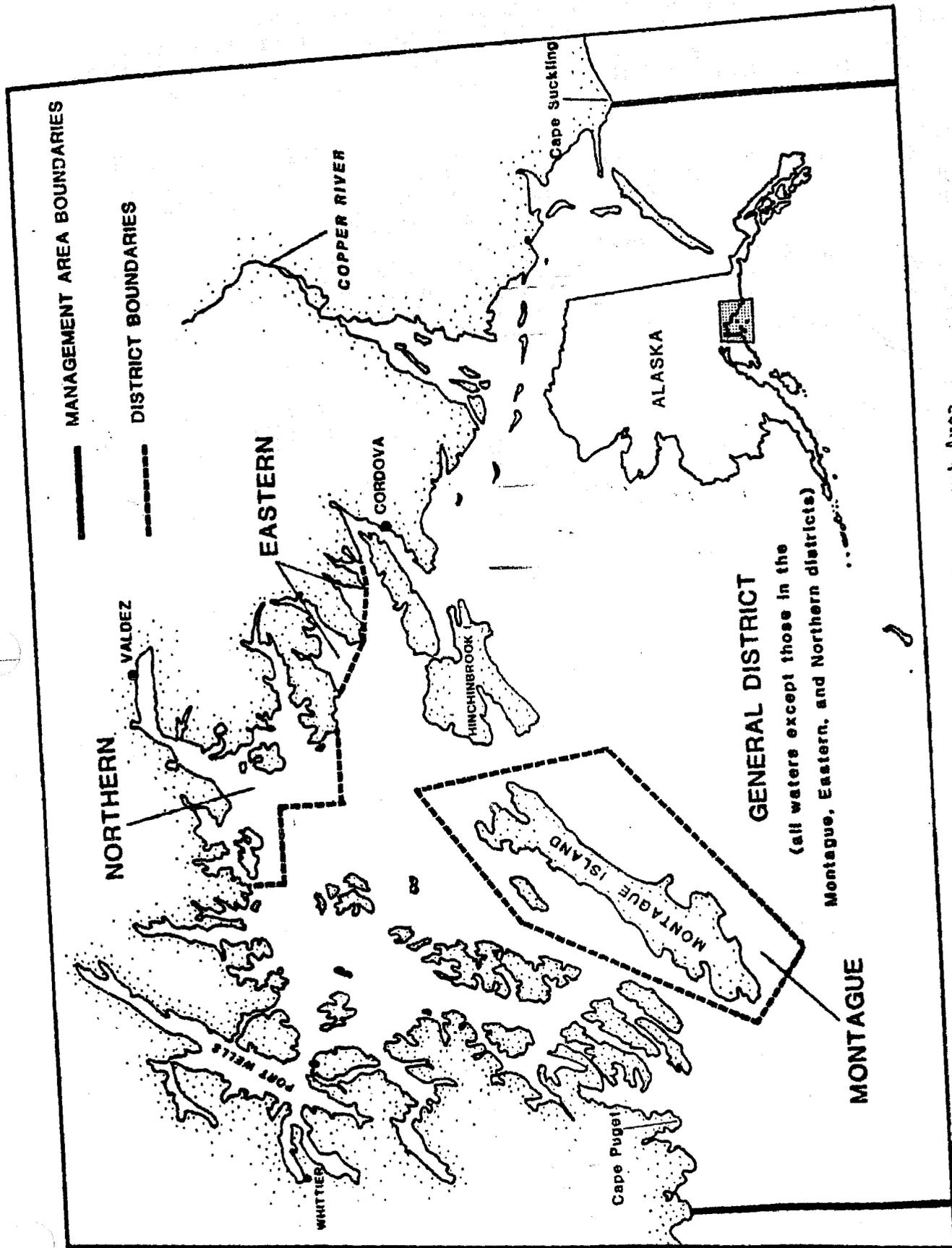


Figure 16. Herring commercial fishing districts of the PWS Management Area.

FISHING DISTRICTS
PRINCE WILLIAM SOUND AREA

5 AAC 27.305. FISHING DISTRICTS, SUBDISTRICTS AND SECTIONS. (a) General District: all waters of Alaska between the longitude of Cape Fairfield ($148^{\circ} 40'$ W. long.), and the longitude of Cape Suckling ($143^{\circ} 53'$ W. long.) exclusive of the Montague, Northern and Eastern districts as defined in (b), (c) and (d) of this section.

(b) Montague District: all waters encompassed by a line from $60^{\circ} 35'$ N. lat., $146^{\circ} 58' 30''$ W. long., to $60^{\circ} 09' 30''$ N. lat., $146^{\circ} 42'$ W. long. to $59^{\circ} 42' 30''$ N. lat., $147^{\circ} 40'$ W. long., to $59^{\circ} 47'$ N. lat., 148° W. long., to $60^{\circ} 15' 30''$ N. lat., $147^{\circ} 32'$ W. long. to the point of beginning.

(c) Northern District: all waters encompassed by a line from a point on Knowles Head at $60^{\circ} 41'$ N. lat., $146^{\circ} 37' 30''$ W. long., to $60^{\circ} 41'$ N. lat., $146^{\circ} 58' 30''$ W. long., to $60^{\circ} 50'$ N. lat., $146^{\circ} 58' 30''$ W. long., to $60^{\circ} 50'$ N. lat., $147^{\circ} 20'$ W. long., to a point on the Mainland at $60^{\circ} 53' 45''$ N. lat., $147^{\circ} 20'$ W. long.

(d) Eastern District: all waters of Alaska enclosed by a line from Bomb Point ($60^{\circ} 36' 50''$ N. lat., $145^{\circ} 54'$ W. long.) to Sheep Point ($60^{\circ} 37'$ N. lat., $146^{\circ} 0' 15''$ W. long.) to Gravina Point ($60^{\circ} 37' 20''$ N. lat., $146^{\circ} 15' 10''$ W. long.,) to Red Head ($60^{\circ} 40' 15''$ N. lat., $146^{\circ} 30'$ W. long.).

ALL FISHERIES HERRING HARVEST PRINCE WILLIAM SOUND

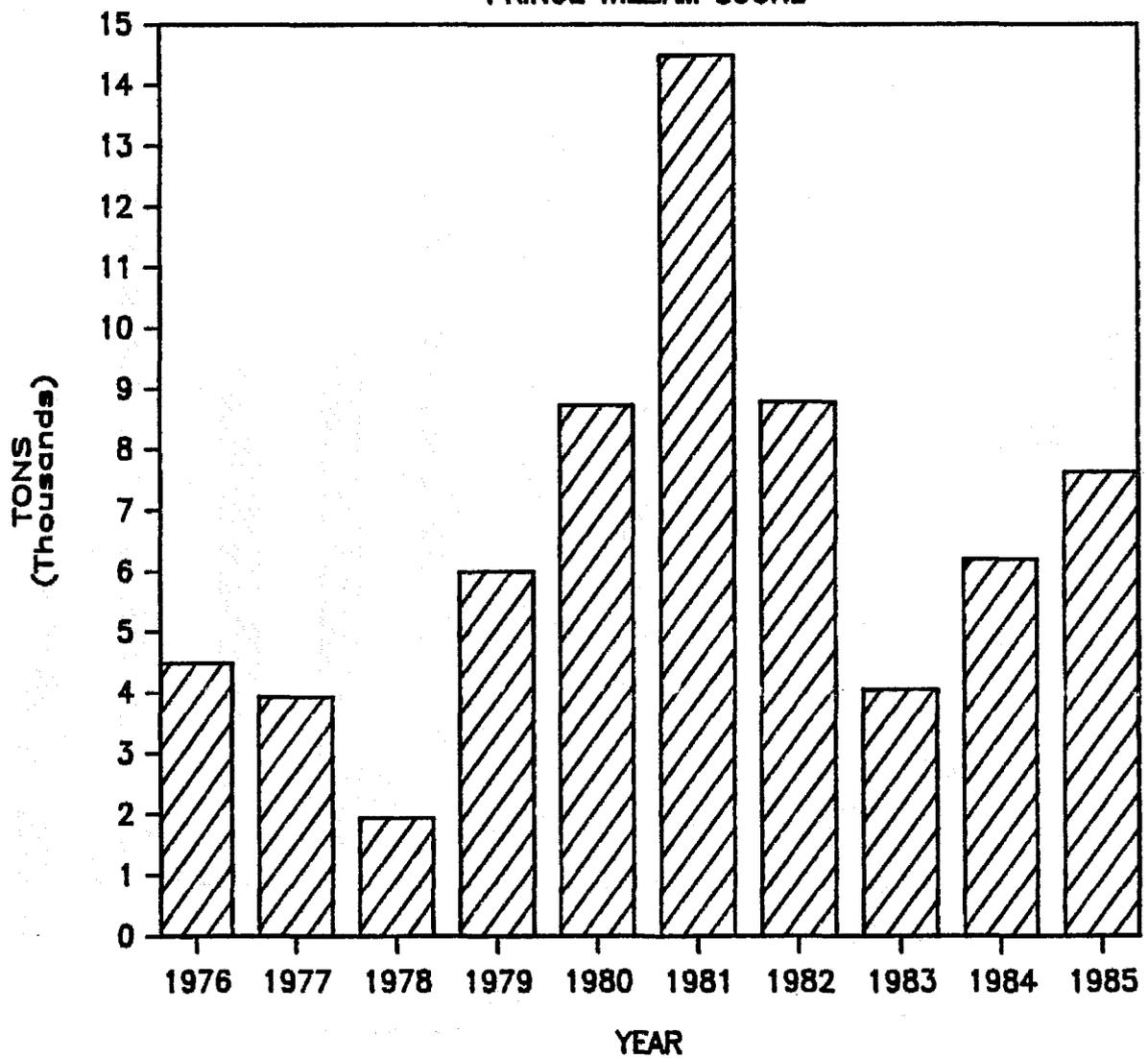


Figure 17. All fisheries herring harvest, Prince William Sound, 1976-1985.

SAC ROE HARVEST & PEAK AERIAL ESTIMATE

PRINCE WILLIAM SOUND

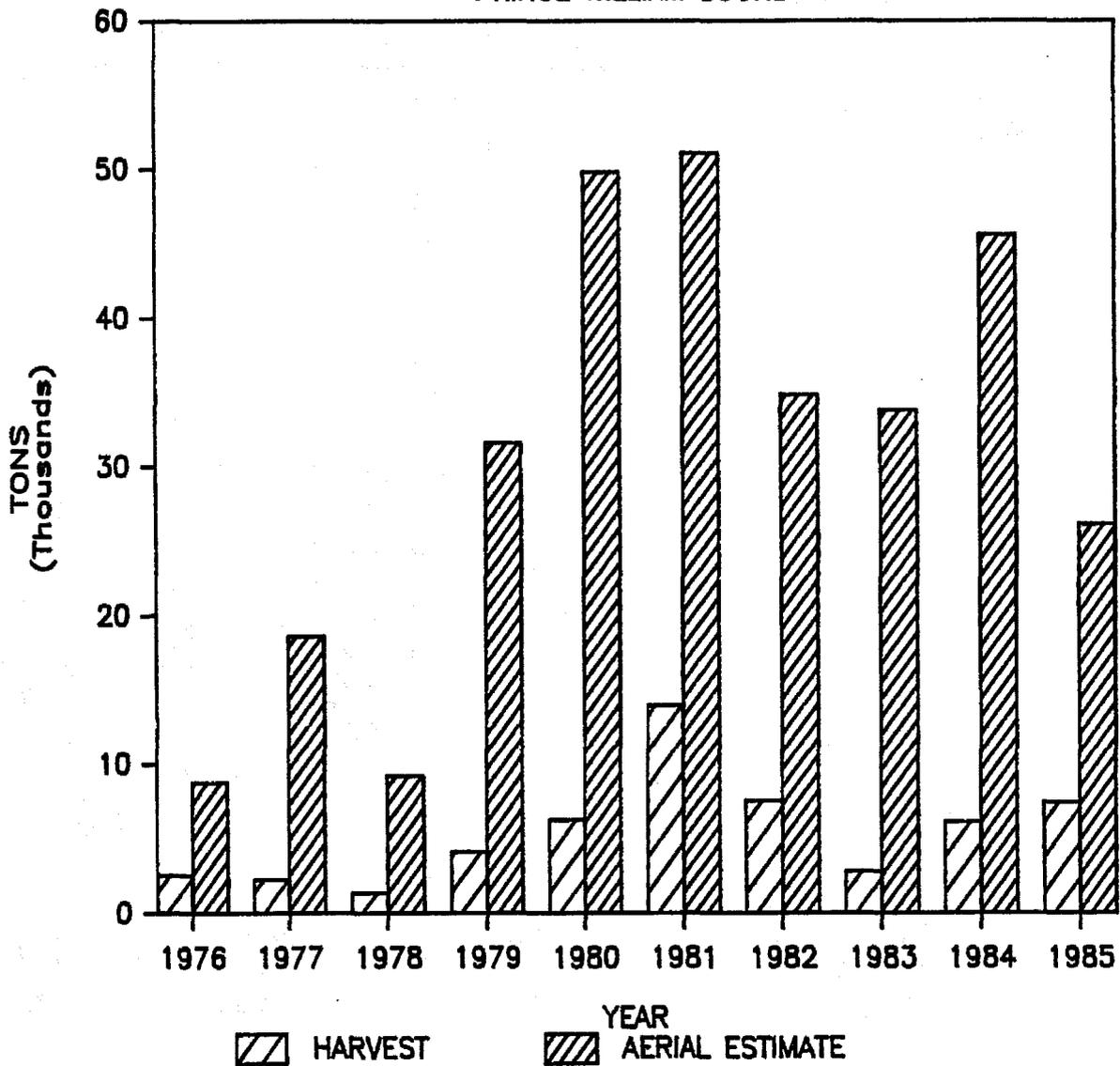


Figure 18. Sac Roe Harvest & Peak Aerial Estimate, Prince William Sound, 1976-1985.

SAC ROE PURSE SEINE HARVEST

PRINCE WILLIAM SOUND

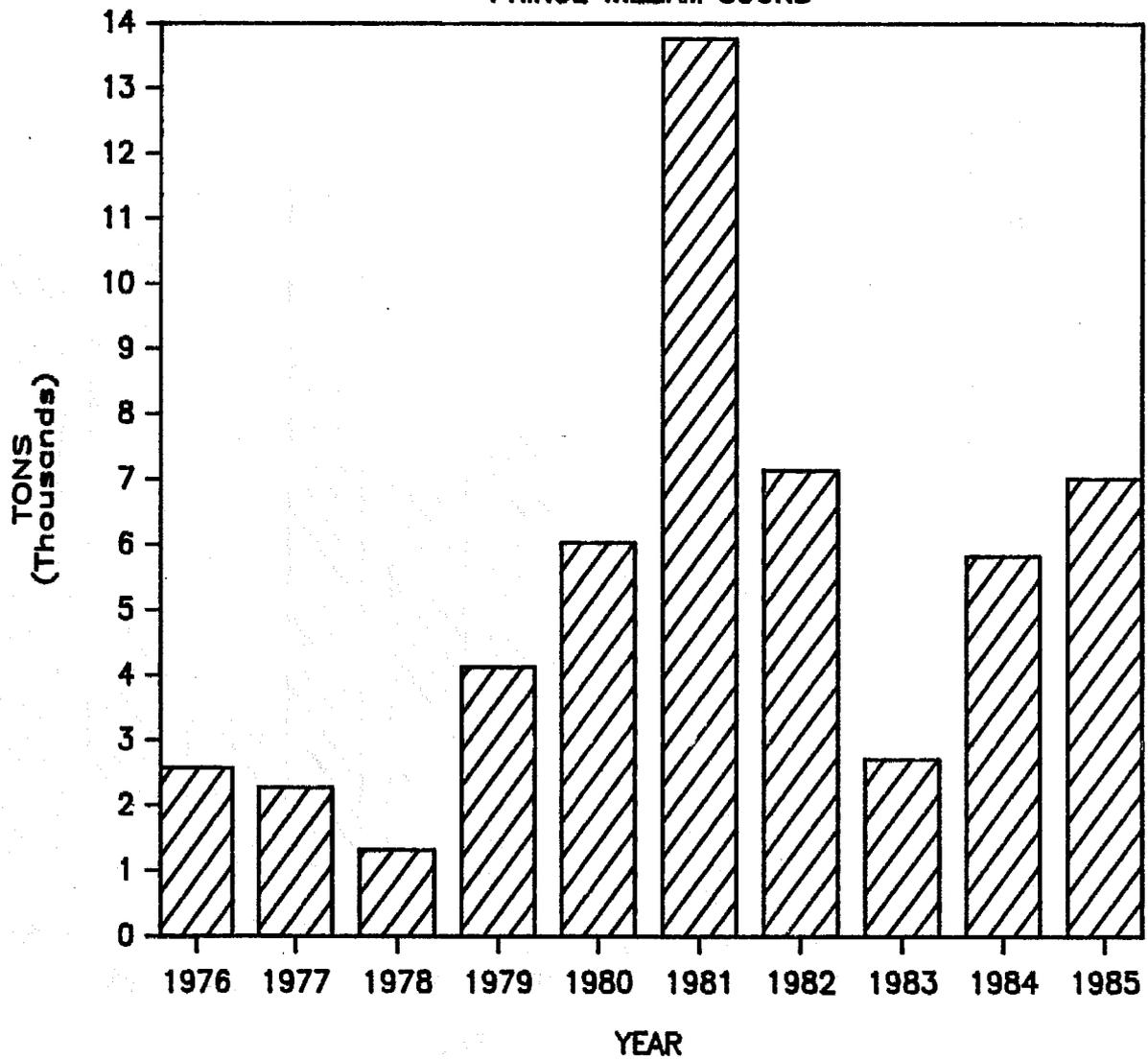


Figure 19. Sac roe purse seine harvest, Prince William Sound, 1976-1985.

SAC ROE GILLNET HARVEST PRINCE WILLIAM SOUND

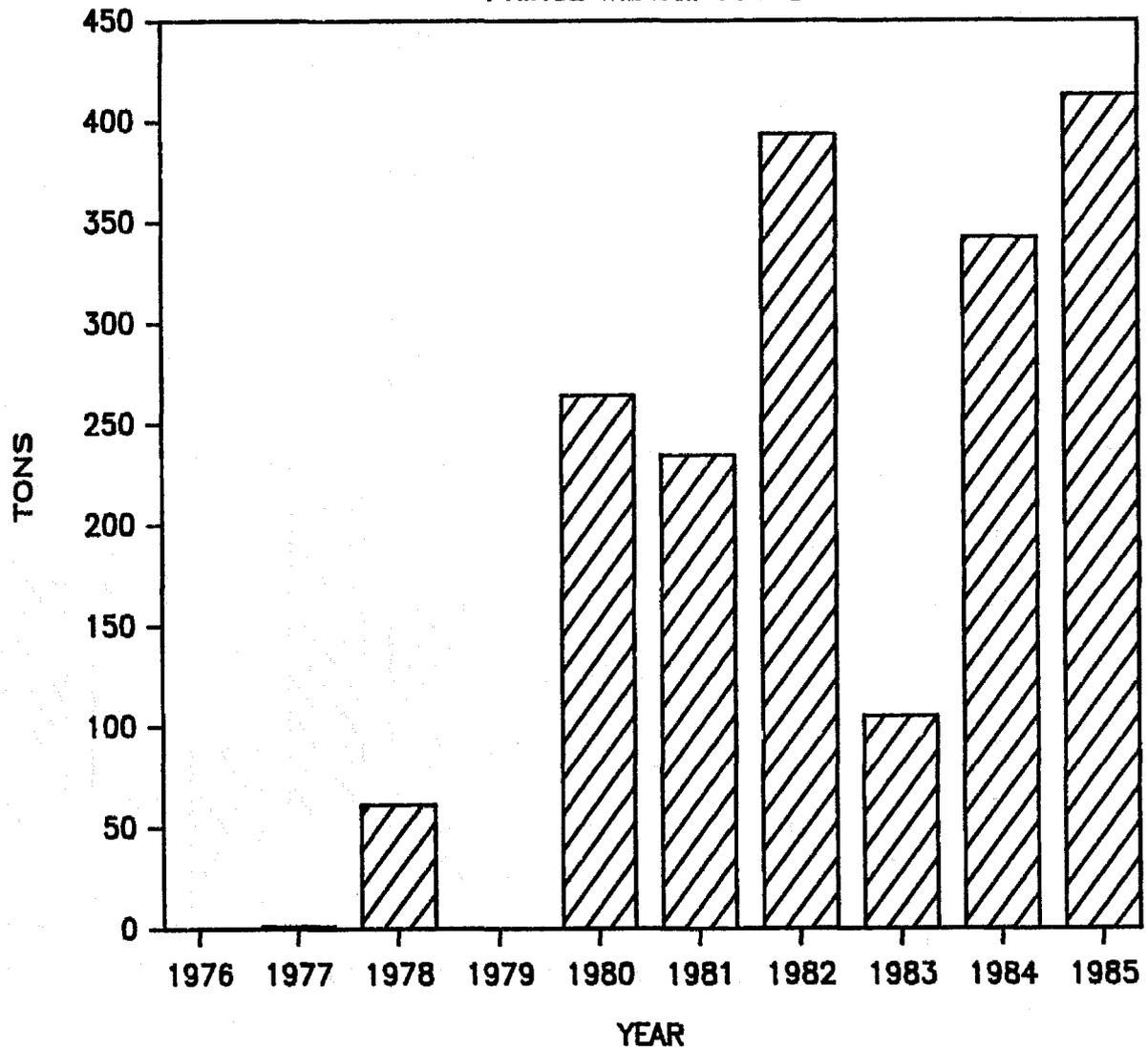


Figure 20. Sac roe gillnet harvest, Prince William Sound, 1976-1985.

HERRING SPAWN ON KELP HARVEST

PRINCE WILLIAM SOUND

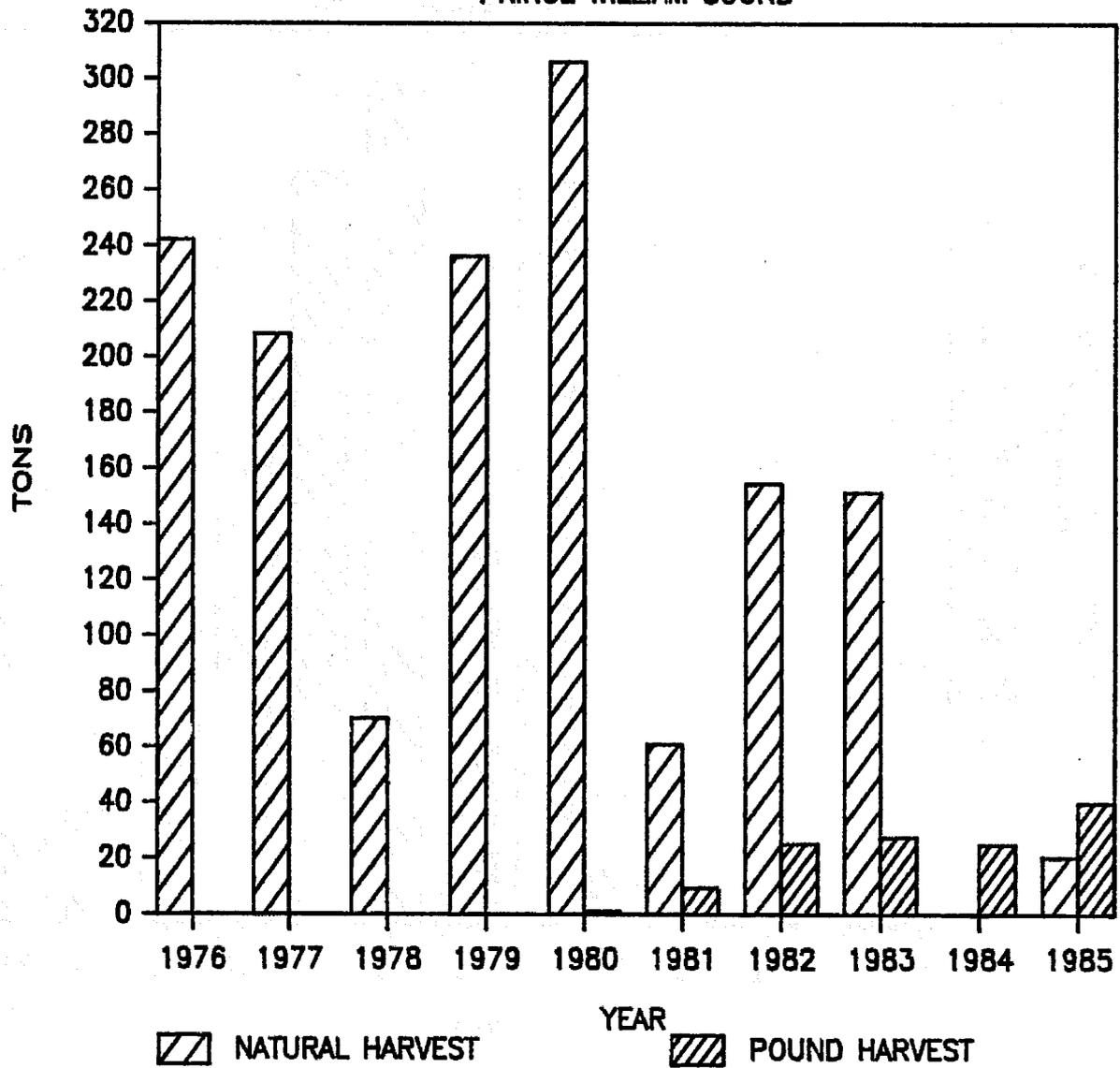


Figure 21. Herring spawn on kelp harvest, Prince William Sound, 1976-1985.

BAIT HERRING HARVEST, PRINCE WILLIAM SOUND

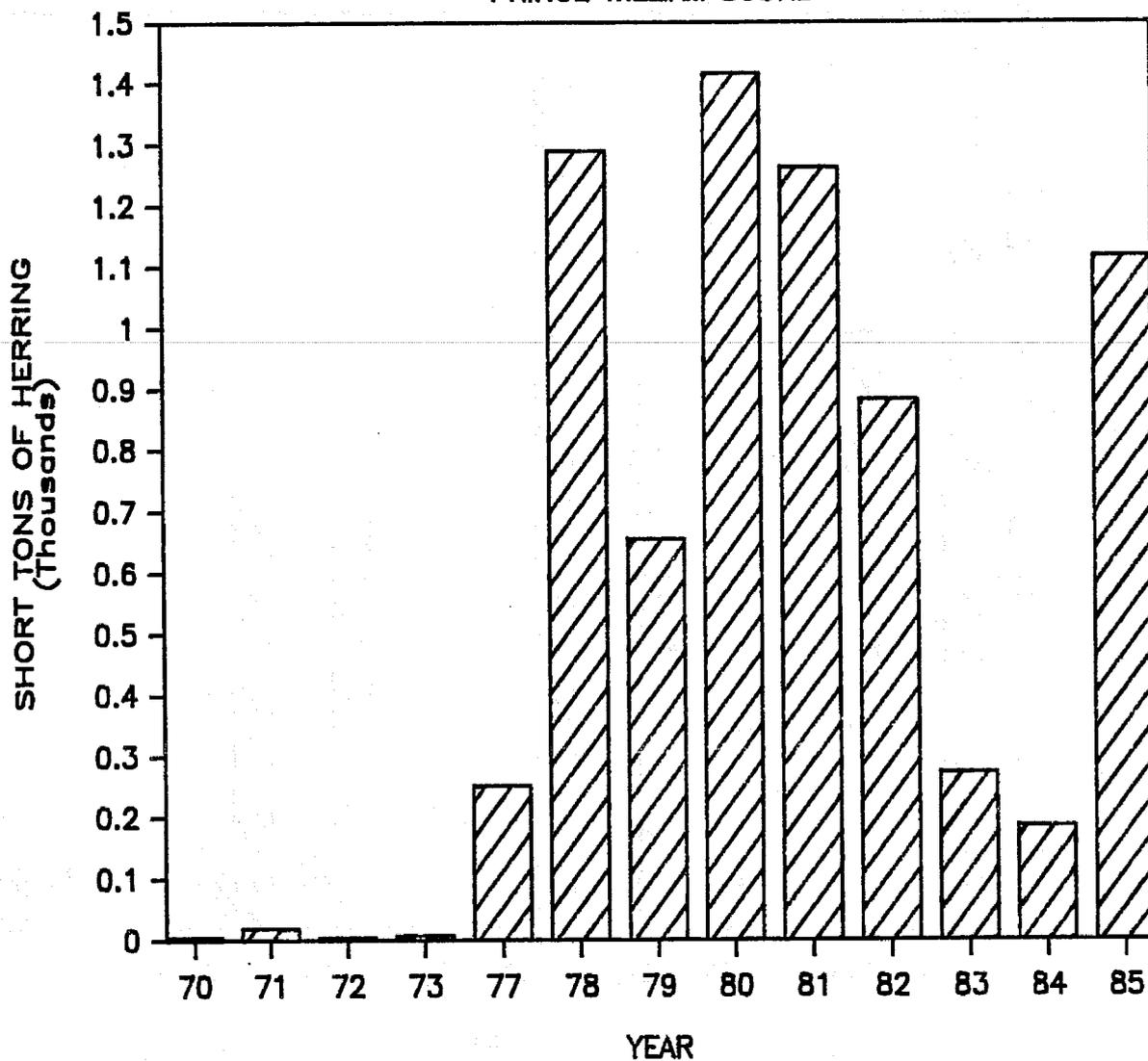


Figure 22. Bait herring harvest, Prince William Sound, 1970-1985.

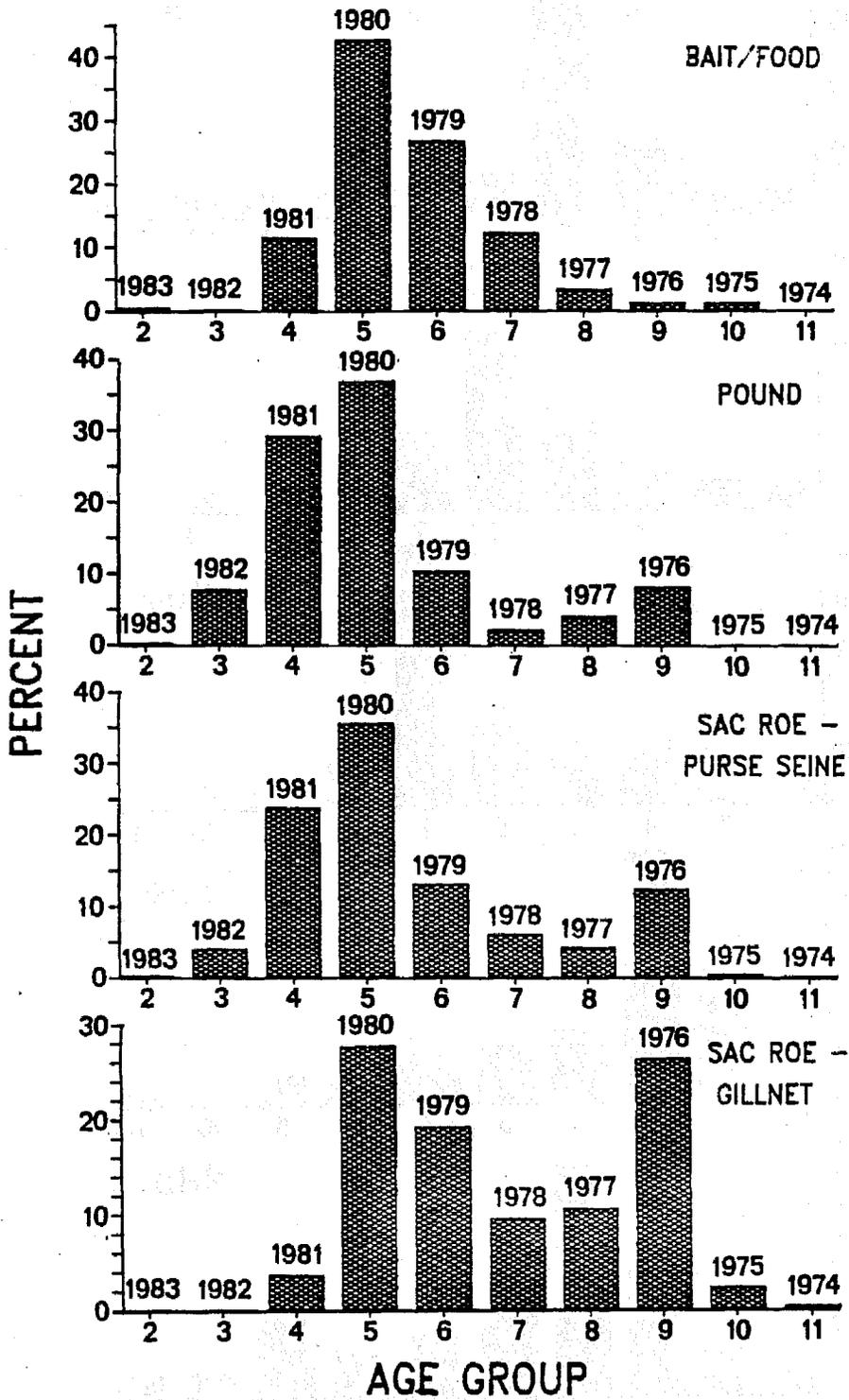


Figure 23. Estimated age composition of Prince William Sound herring by fishery, 1985.

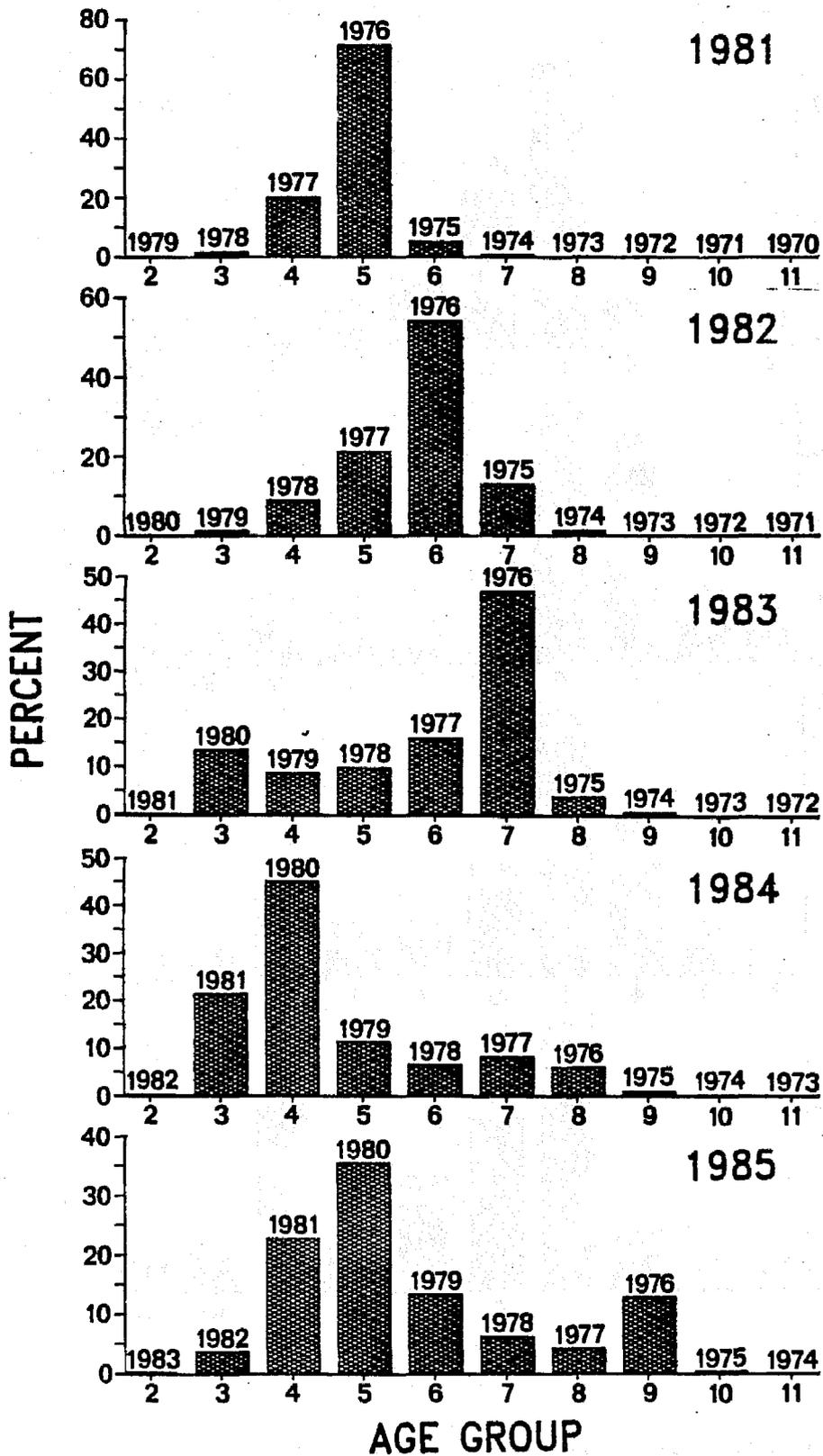


Figure 24. Prince William Sound herring seine sac roe fishery. Percent contribution by age class, 1981 - 1985.

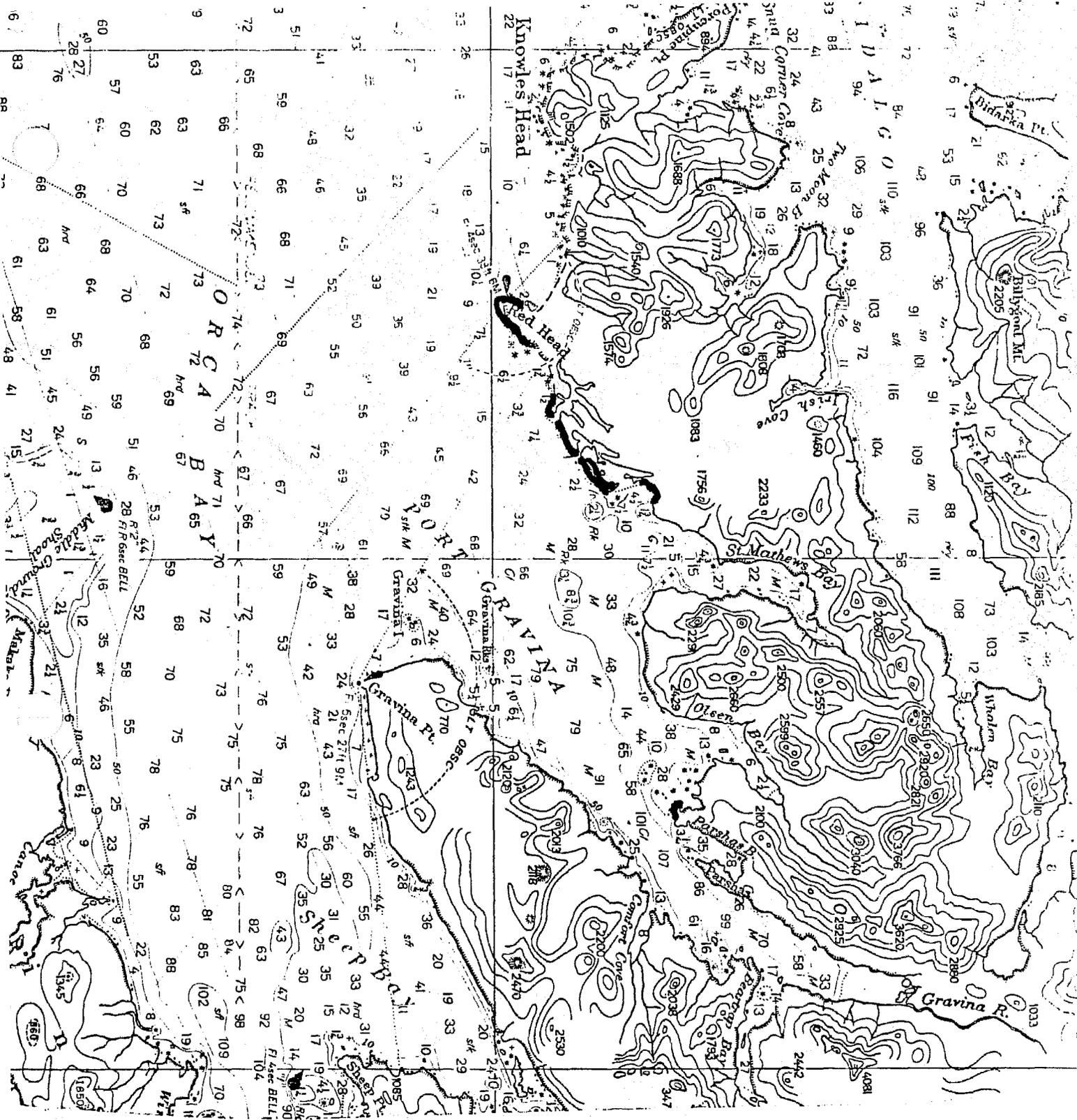
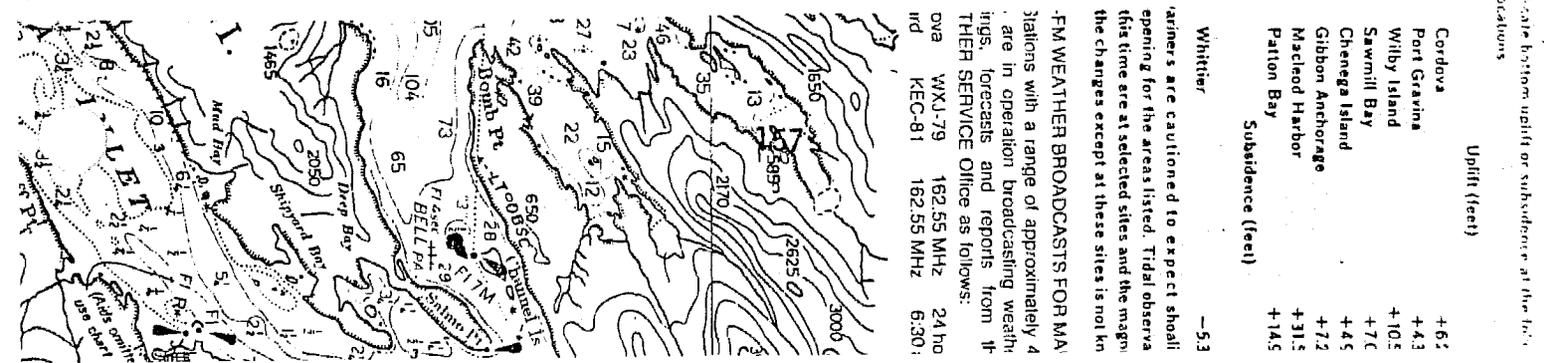


Figure 25 . Areas of herring spawning, Eastern district, Prince William Sound, April 20, 1985.



Uplift (feet)

- Cordova +6.2
- Port Gravina +4.3
- Willy Island +10.5
- Sawmill Bay +7.0
- Chenequa Island +4.5
- Gibbon Anchorage +7.2
- Mashead Harbor +3.15
- Patton Bay +14.5

Subsidence (feet)

Whittier -5.3

fishers are cautioned to expect shoal opening for the areas listed. Tidal observa this time are at selected sites and the magn the changes except at these sites is not kn

-FM WEATHER BROADCASTS FOR MA

stations with a range of approximately 4 are in operation broadcasting weath rips, forecasts and reports from IT THER SERVICE Office as follows:

ova WXJ-79 162.55 MHz 24 ho rd KEC-81 162.55 MHz 6:30:

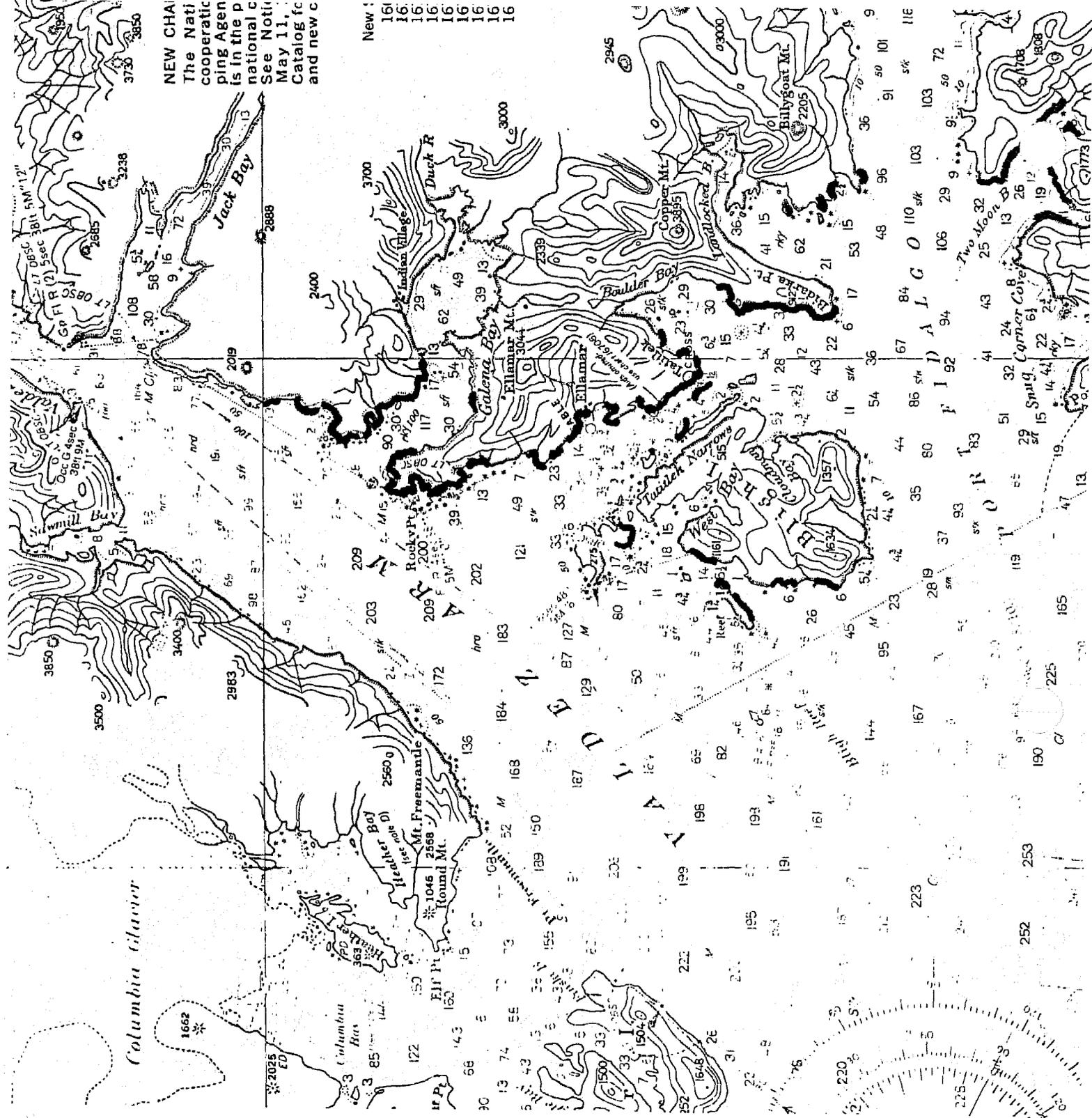
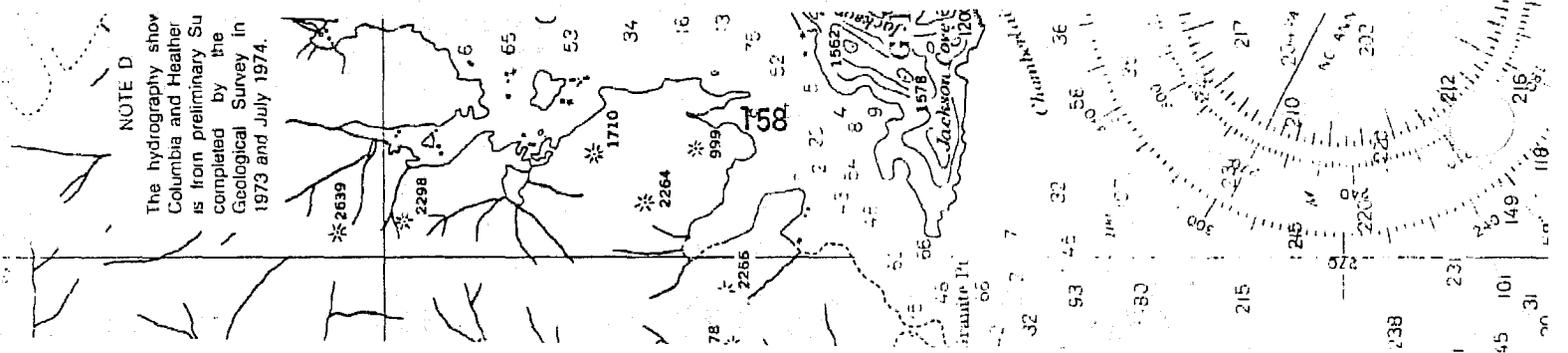


Figure 26. Areas of herring spawning, Northern district, Prince William Sound, April 20 - May 6, 1985.



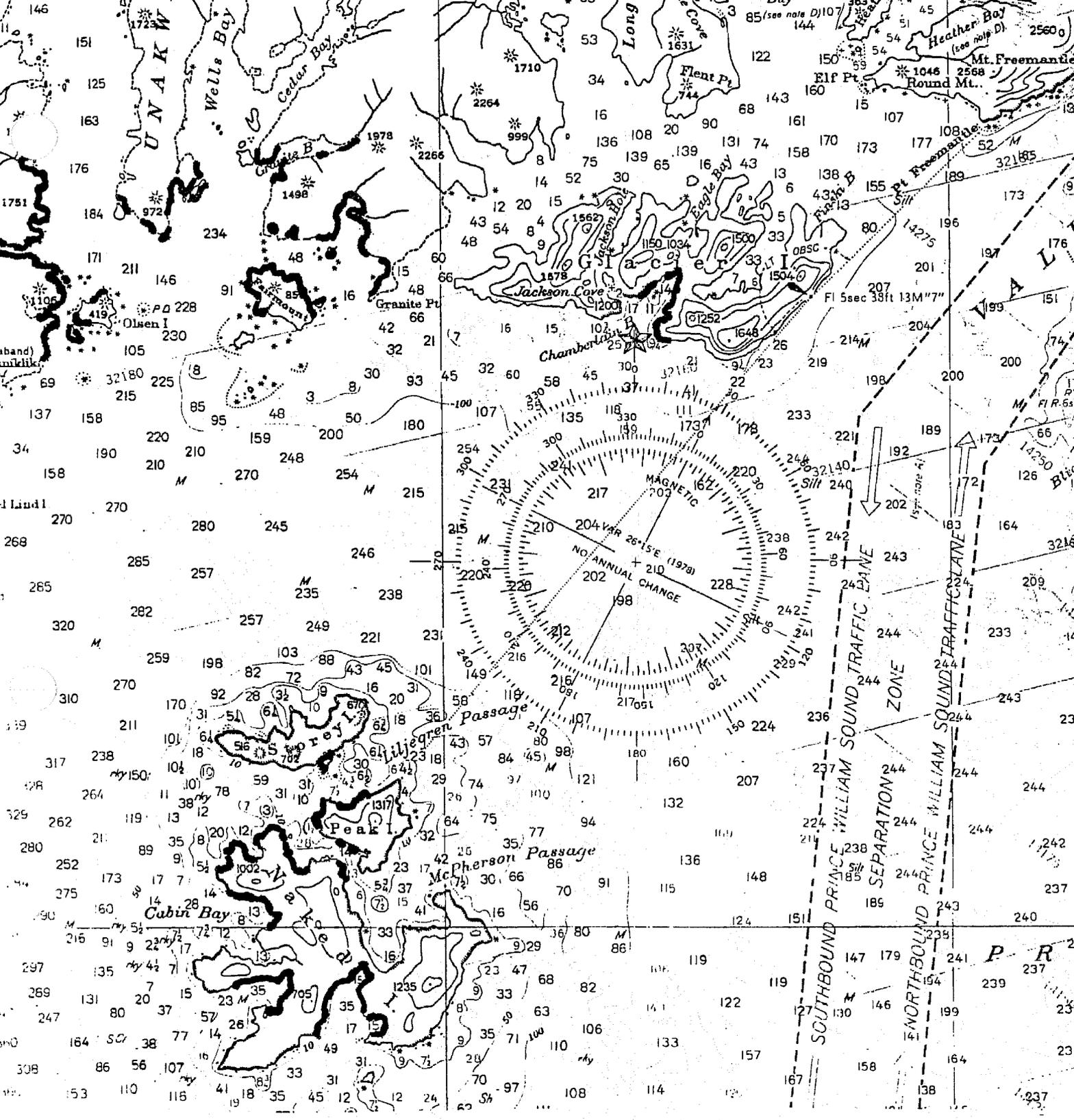
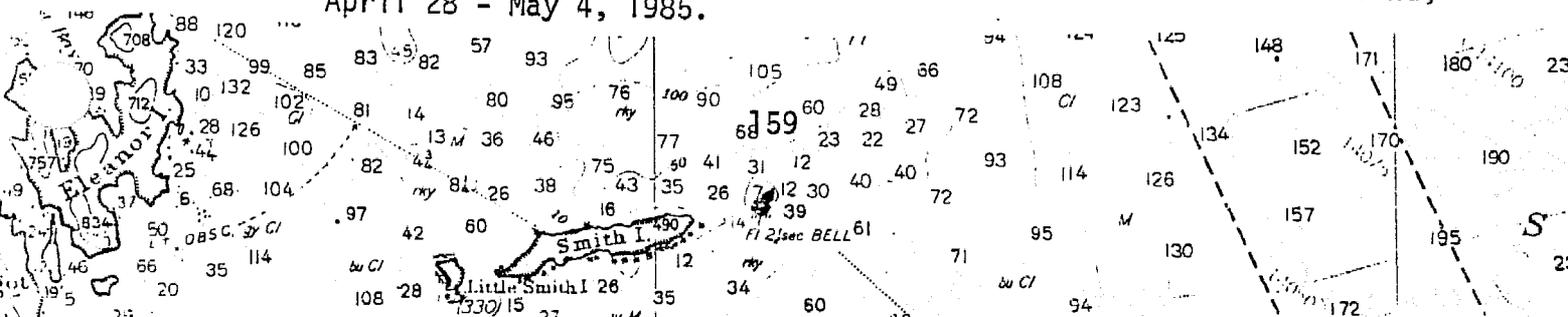


Figure 27. Areas of herring spawning, General district, Prince William Sound, April 28 - May 4, 1985.



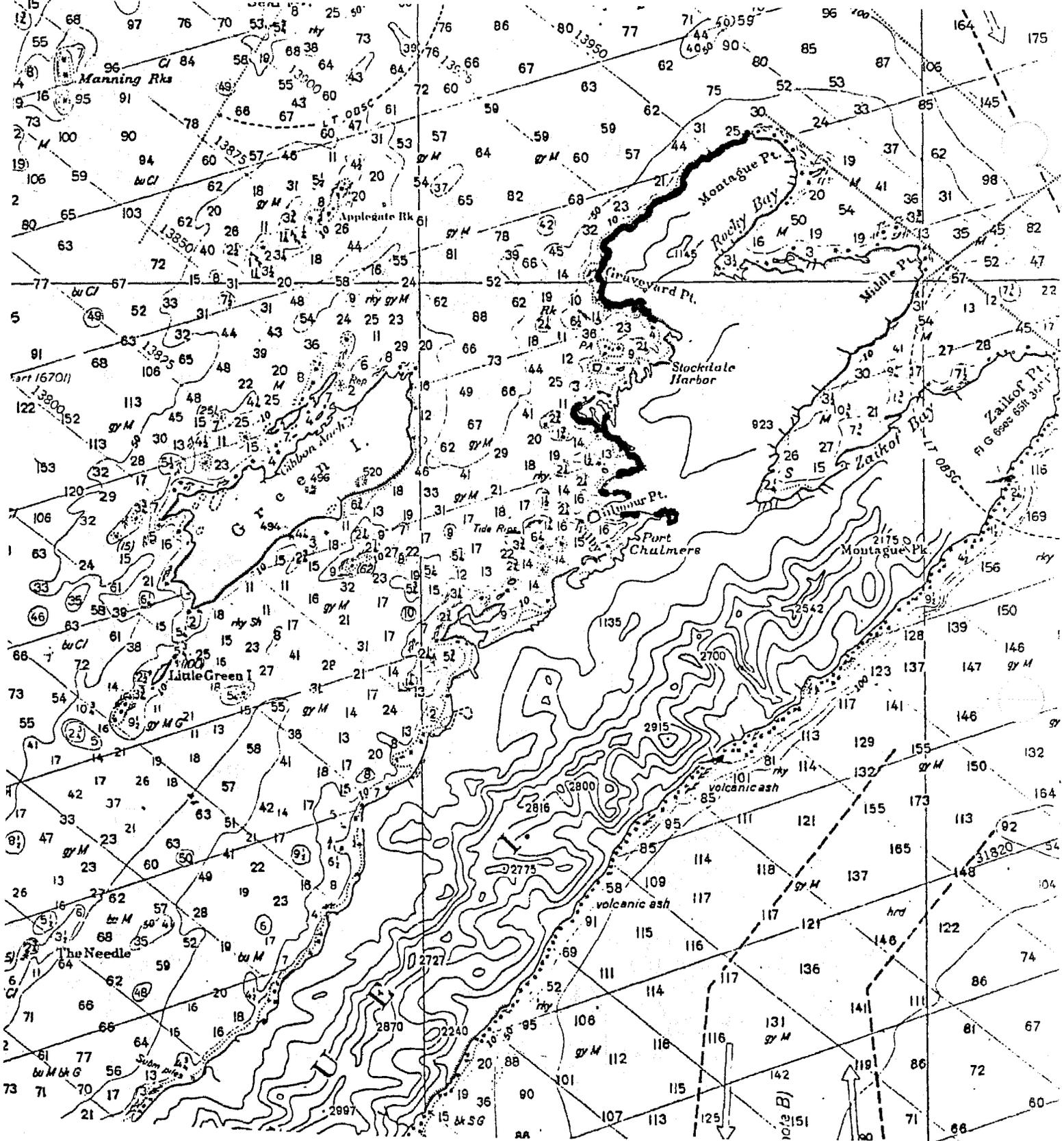


Figure 28. Areas of herring spawning, Montague district, Prince William Sound, April 27 - May 5, 1985.

