

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

PRINCE WILLIAM SOUND AREA
ANNUAL FINFISH MANAGEMENT REPORT

1984

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April 1985

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PREFACE

This is the twenty-fifth annual management report prepared since the State assumed control of the fisheries from the federal government in 1960. The 1983 and 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 1984 fishery and summarizes recent historical catch, escapement and related data on each species harvested by the commercial and subsistence salmon and herring fisheries.

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INTRODUCTION

The commercial fisheries 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 1984 season harvest amounted to 25.3 million fish with an ex-vessel value of over \$39 million (Table 1). This establishes a new record for a combined species harvest and compares to an average annual harvest of approximately 14.2 million fish during the past decade (Table 1 and Figure 2). Catches were at or above forecasted levels for all districts and species and included two new records for pink salmon and cohos in the Bering River district. Early season price disputes delayed fishing during the seine season but peak processing capacity was exceeded for only a short time and fishermen were never placed on extended limits.

Escapements are monitored through a variety of weir, sonar, aerial and ground enumeration programs. Escapements were optimum or above for all species except the distribution of chum salmon escapements in the Coghill and North-western districts were somewhat below desired levels (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. In 1984, 511 drift gill net permit holders participated at least some time during the season. Set gill net gear is legal only in the Eshamy district and with an opening of the district for the first time in four years 18 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 262 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 1984 production is remarkable for not only the 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 brighter with an ex-vessel value nearly double that of last season and is the third most valuable harvest to the fishermen since the inception of the commercial fishery.

SEASON SUMMARY

Copper River District

The pre-season outlook suggested an above average sockeye salmon harvest of 600-800,000 fish after allowing for a desired escapement of 411,000 fish in the upriver spawning areas. This is considerably above the recent ten year average harvest of 536,000 sockeyes (Table 4 and Figure 3). Despite the fact that the parent year escapement was slightly below desired levels, 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. Several changes in the Copper River Management Plan were made by the Board of Fisheries including an increase in the upriver escapement goal of 411,000 fish. Management strategy in 1984 included a May 14 season opening with a maximum of two fishing periods per week depending on the development of the run. In anticipation of possible weakness in the early segment of the run, management of the first few weeks of the season was expected to be conservative. 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 coupled 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.

The opening period was 36 hours long and a timely price settlement allowed the entire fleet to make it out. An estimated 430 boats managed a catch of 33,600 sockeye which was near the upper end of the predicted harvest range for the first week and no additional fishing time was permitted (Tables 5 and 6 and Figure 4). Weather conditions and tidal cycles were optimum for the season opener but catches appeared to be moderate with no major buildup of sockeyes apparent at anytime during the period. The king salmon catch of 8,900 fish was above average and some effort was concentrated on this species with larger mesh gear.

The sonar counter at Miles Lake was placed in the river and operational by May 15 after being delayed by ice conditions. A significant number of fish were present from the beginning with an increasing rate observed during the first few days (Table 7). The sonar was installed only on the south bank at first due to the combination of unfavorable ice conditions there and the fact that a minimal number of fish are normally present on the opposite bank at this time. When the north bank unit was finally installed on May 30 it was discovered that an unprecedented number of fish were migrating on that side of the river. Due apparently to the extremely low water conditions in the Copper River this year the velocity barrier and influence of Childs Glacier were minimized allowing the fish to use the north bank. Estimates for the north bank escapements were made for the days missed based on the observed patterns and after accounting for an additional 17,000 fish altered somewhat the apparent pattern in the early escapement trend. The sonar was operational in time to enumerate the first significant escapements but due to the normal delay in migration of fish through the fishery to Miles Lake, the escapement trend was not clear until the first week in June (Figure 5).

A single 36-hour period was allowed during each of the next two weeks. The period starting on May 21 produced an additional 175,000 sockeye salmon which was above the upper end of the range of anticipated weekly catch and no additional fishing was permitted until the following Monday. The peak king catch of over 11,200 fish also occurred this period. The third period on May 27 was also 36 hours and produced an additional 137,000 sockeye salmon (Table 6). This catch was also near the top of the anticipated weekly harvest for this segment of the run (Table 5). Weather conditions remained stable throughout May and never significantly reduced fishing effort. Daily and cumulative escapements at Miles Lake started out at optimum levels but appeared to lag behind during late May. Daily escapements declined sharply for four consecutive days in late May and produced temporary concerns over the escapement trend. Although the catch for the third week was within expected levels the catch per unit of effort dropped and was surprising considering the rapidly building pattern of the previous two weeks. Faced with a lagging escapement pattern and a higher than anticipated season harvest through the end of May the fourth period was delayed one day later than the normal Monday opener and was shortened to only 24-hours (Figure 6). The peak effort of 464 boats participated but the period produced only a moderate catch of 62,000 sockeyes (Table 6). The escapement pattern showed a dramatic improvement midway through the first week in June and by the end of the week had surpassed desired daily rates (Figure 7). In an effort to maximize the harvest of fish surplus to peak escapement needs a 48-hour period was announced starting on Saturday, June 9. This was followed shortly by a second 48-hour period on June 14-16. The weekend opener proved unpopular with some fishermen and local businessmen but this period along with the period later in the week produced an additional 188,000 sockeye salmon which was nearly double the expectations for this week.

The daily escapements remained above average until June 14 and supported by better than forecasted commercial catches during the same period, two 48-hour openings were permitted during the week of June 18-23. From the week of June 25 through the end of the sockeye season two periods were allowed each week for a total of 84 hours each week. During this period the effort declined to about 150 boats as the fleet dispersed to other districts or participated in other fisheries. Catches during the summer season remained consistently above normal levels despite the reduced effort and the escapement continued at desired levels until the sonar was pulled on August 7. Aerial assessments of Copper River delta escapements revealed sockeyes were above average there also and on par with the large escapements observed there during the 1979-81 seasons when the fishery was restricted (Tables 8 through 10 and Figure 3).

The season harvest of 899,776 sockeye was above the top end of the range of pre-season projections and above the previous ten year average of 536,000 fish (Figure 3). Fishing time was increased throughout the season as catch and escapement data warranted it with good distribution experienced over all segments of the run. Escapements into the Upper Copper River were nearly 126,000 fish above optimum levels with only the first few weeks of the season falling behind desired levels (Table 5).

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 through 18.

King salmon are harvested incidental to the sockeye salmon with a small percentage of the fleet fishing large mesh king gear during the early periods. The king salmon run was also unexpectedly strong and continued later in the season than normal. The season catch of 38,955 king salmon was the third largest historical harvest for this species in the Copper River district and recent ten year average of almost 28,500 fish (Table 4 and Figure 8). King salmon escapements into the main Copper River were above average and well distributed (Table 11). 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. Competitive markets existed from the onset of the season and encouraged full fishing effort for the season opener on August 6. Fishing effort was above average throughout the year due to a combination of large return, high prices and good weather there was a peak effort of 311 boats (Table 6). The season continued uninterrupted until buying was discontinued and effort ceased. The total catch of 382,432 fish was far above average and the second largest catch made since dependable records were available for this fishery (Table 4 Figure 9). Age-length data of coho salmon sampled from the commercial catch are summarized in Table 20.

Aerial surveys of coho spawning systems provide an index to the escapement. Inclement weather and muddy streams make comparable annual escapement estimates difficult. However, indications from surveys suggest above average coho escapements in almost all spawning systems (Table 10).

Subsistence and Personal Use Fisheries

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. Catches for both fisheries 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. 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 13 and 14.

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 1984, with a fully adequate escapement anticipated including sufficient numbers to provide for an unrestricted subsistence 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 while acknowledging that sonar counts during the

season might necessitate adjustments in fishing time. Sonar counts during the season might necessitate adjustments in fishing time. Sonar counts ultimately verified that the sockeye return was stronger than anticipated, thus no restrictions were applied to the subsistence fishery, and it opened June 1 as scheduled. Throughout the majority 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 536,806 fish (Table 7 and Figure 6) support the lack of restriction in the fishery.

In 1984 there were 104 dip net and 458 fishwheel permits issued for the upper Copper River subsistence fishery. The number of permits was significantly changed from past years due to the creation of a personal use fishery. Preliminary figures show individuals fishing subsistence permits harvested 21,333 sockeye, 480 chinook, and 372 coho salmon (Table 12). The reported catch was consistent with expectations based upon past years and the revised management plan.

A personal use fishery in the Copper River was created by action of the Alaska Board of Fisheries in 1984 which moved nearly all participants of the upper Copper River subsistence fishery into the new category. Only residents of the Copper River Basin plus those persons residing in Tok, Tanacross, Tetlin, Northway or Dot Lake qualified for subsistence salmon permits, thus all others are now qualified only for personal use permits.

The personal use fishery was designated for both dip net and fishwheel gear types in the Chitina subdistrict with a limited area set aside for fishwheel use. Most of the regulations governing the personal use fishery are near copies of the subsistence fishery rules with a few major exceptions. The personal use fishery does not have the same use priority (at least by implication) that the subsistence fishery enjoys. The Copper River Salmon Management Plan was altered so that allocations or guideline harvest levels are established for both subsistence and personal use consumers.

The overall escapement goal past the sonar station was increased to 411,000 and a provision for hatchery brood stock made. Weekly personal use 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 three weeks of the fishery saw fishing periods 36 to 60 hours long with intensive effort. As the season progressed, however, effort decreased rapidly and weekly catches dropped also. By mid-June it was clear that sonar counts indicated run strength adequate to increase fishing time and by early July continuous fishing was allowed until the end of the season (September 30).

In 1984, there were 5,311 dip net and 17 fishwheel permits issued for the Copper River personal use fishery. The number of permits issued comparable to the 1983 participation level showed a significant decline in both fishwheel and dip net permittees (Table 15). Preliminary figures show that persons fishing personal use permits harvested 44,079 sockeye, 1,592 chinook and 552 coho salmon. The reported catch was below expectations and reflected lack of significant effort after the first three 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 21.

Bering River District

The pre-season outlook indicated average returns for sockeye salmon with a projected catch in the range of 40,000-60,000 fish. The Board of Fisheries adopted a new management plan for the portion of the district offshore of Kayak Island. This fishery has developed in recent years and has been contested by fishermen from the Yakutat area farther to the South. The new strategy for the Kayak Island area called for a slightly earlier season opening date with a maximum season sockeye harvest of 93,000 fish. The objective of the plan was to continue management of the entire district to obtain desired escapements to Bering River, to prevent any increase in harvest from outside waters and to reduce the potential interception of stocks of non local origin. The season was opened on June 14 for a 48-hour fishing period which coincided with an opening in the Copper River district to assure better distribution of effort between the two districts (Table 22). An aerial survey of the system on June 7 revealed an escapement of 1,500-2,000 fish already in the Bering River above the fishery and appeared to be near average for that date (Table 8). Peak effort during the sockeye season didn't occur until the second week when 96 boats fished the district (Table 22). Effort remained fairly stable during the remainder of the month of June and both effort and catches declined throughout the remainder of the sockeye season. The peak sockeye catch occurred during the 48 hour period on June 21-23 with a catch of over 24,200 fish. Peak effort of 92 boats occurred during the 48 hour period on June 18-20. Effort and weekly catches were below levels observed in recent years. Sockeye returns to the Situk River near Yakutat were also poor this season and all local fisheries were closed to increase escapement there. Based on stock separation studies in 1983 which indicated that Situk River fish may migrate through the Kayak Island fishery and that Copper-Bering stocks can be harvested in more terminal locations, the Kayak Island fishery was closed after Monday July 9 to help protect escapements into the Situk River. The Kayak Island area remained closed for the duration of the season. The inside area continued on regular periods for the duration of the season but no catches were reported from there.

The total catch for the season amounted to nearly 92,000 sockeyes with over 74,000 of the total taken from the Kayak Island area Table 22 and Figure 10. Catch and effort data for the 1984 season is preliminary at this time but it appears that peak effort in the Cape area occurred during the period on June 25-27 when 80 vessels fished the outside area. Accurate reporting of catches from outside waters and violations of offshore closed areas were two topics

of concern addressed in the recently adopted management plan for the Kayak Island fishery. Aerial surveys of effort distribution appear to corroborate with the reported catches from inshore and offshore waters and there were only minimal problems with offshore boundary violations this season. The peak catch from the inside waters near Bering River occurred during the first week of the season when 52 boats harvested 8,900 sockeye. The average sockeye harvest in this district during the past ten years is 69,587 fish (Table 23). In addition to the 74,000 sockeye taken from the outside waters there were 19,900 chum salmon and 2,800 coho salmon reported from that area prior to the closure on July 9.

Age-length data for sockeye salmon sampled from the commercial catch from the area east of Kayak Island are summarized in Table 25. 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, no discrete sample was 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 salmon escapements into Bering River district index streams and lakes were above average this year with good distribution into major spawning areas. The peak escapement into index streams in 1984 amounted to 42,800 (Table 24 and Appendix Table 3). The general status of sockeye salmon stocks in the Bering River district has remained above average in recent years.

Escapements into index streams and lakes have averaged 30,950 fish during the past five years and remain at or above desired levels for this district despite the increase in outside fishing effort and above average catches since 1979 (Table 23 and Figure 10).

The coho season opened on August 6, but it was not until the middle of August that effort shifted to this district. Pre-season projections suggested an above average harvest of coho salmon from the Bering River district. Early coho season catches were strong and by the close of the period on September 6 had surpassed the previous record harvest held since 1982. The total season harvest of 214,632 cohos exceeded the previous record by nearly 70,000 fish and is more than double the recent 10-year average (Table 23 and Figure 11).

Late season aerial surveys, although hindered by poor visibility, indicated that escapements were above average in most all Bering River district coho salmon index streams (Table 10). Based on the record harvests and the above average escapement estimates, 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 26.

Coghill and Unakwik Districts

An average return of sockeye salmon was forecasted for these districts with an anticipated combined harvest of 70-110,000 fish. The season opening date and weekly fishing periods in these adjacent districts traditionally coincide to maintain stable distribution of fishing effort. The return was close to preseason projections with a season harvest of nearly 113,500 for both areas (Tables 27 and 34).

The Coghill River weir was operational by June 6 but the first significant escapement didn't pass the weir until June 11. By the time the season opened on June 18 the cumulative escapement was nearly 5,800 with daily escapements running ahead of normal for that date (Table 30). The season opened for regular Monday through Thursday periods and the first period produced a catch of 18,900 from the Coghill district which was at the upper end of the range of expected catches for this stage of the run (Table 27). There were an additional 4,700 sockeyes delivered from the Unakwik district (Table 34).

Above average catch and escapement continued into the following week and led to a decision to reduce the size of the closed waters adjacent to the mouth of Coghill River at noon on June 27 and the extension of the weekly fishing period by an additional day until June 29. Both districts remained open for regular Monday through Friday periods for the duration of the sockeye season and the total catch from the Coghill district amounted to nearly 95,000 sockeye salmon with an additional 18,500 reported from the Unakwik district. The peak period of the season was July 2-6 when nearly 32,000 sockeye were harvested from both districts. Virtually all sockeyes harvested from the Coghill district were taken by drift gill net gear with only 21 fish reported by purse seine gear. The season sockeye harvests were below the long term average for both the Coghill and Unakwik districts (Table 28 and Figure 12). The weir on the Coghill River remained in operation through July 24 and the final escapement count of 63,622 was the fourth largest escapement ever and above optimum goal of 40-50,000 fish (Table 29). Evaluation of escapement and total return data since the weir began in 1974 suggests the optimum escapement goal for this system may be less than the present goal of 50,000. If future return information bears out this trend the goal may be reduced even lower than the previous advertised range of 40-60,000 fish.

The pink and chum harvests were also near record levels in the Coghill district. The sockeye harvest of 18,500 from the Unakwik district was above the long term average (Table 35). The pink catch of 908,000 fish along with the chum harvest of 266,000 fish in the Coghill district were second only to record harvests reported during 1982 (Table 28). Estimated age and sex composition of chum salmon in the combined drift gillnet fisheries are presented in Table 53. The peak catch for these two species occurred during the week of July 16-20. Although no catches were reported after August 4, fishing time was extended until further notice in both districts after August 3 and continuous fishing remained in effect until August 10. The extension was based on the large pink salmon escapements in the area but most effort had shifted to the Copper River and a building coho salmon run was there. The pink salmon escapement into the Coghill district was over 468,000 fish and was well over the optimum level for this species (Table 47). The chum salmon escapement of 24,460 was disappointing compared to minimum desired levels of 49,000 fish for this species.

Coghill River climatological and stream observation data along with age composition information of escapement and the commercial catch are summarized in Tables 31-33 and Appendix Table C.

Eshamy District

The pre-season outlook for the sockeye return to Eshamy Lake suggested the likelihood of a general district opening for the first time in four years. The commercial harvest was expected to amount to 20,000 fish in excess of the spawning requirements of 20-30,000 fish.

The Main Bay section of the district was opened for continuous fishing on July 16 to harvest a forecasted surplus of over 900,000 pink salmon returning to the nearby hatchery. A separate discussion of the management of the returns to the Main Bay hatchery are covered under the hatchery section below.

The sockeye salmon return was much stronger than expected. The weir on Eshamy River was operational by June 22 and the first fish were passed on June 26 (Table 40). The early season escapement trend was close to desired levels and the season was opened for regular Monday through Friday periods starting on July 23. By that time the weir count had reached 10,600 sockeyes which was at the upper end of the optimum escapement range for that date. Fishing continued for regular weekly periods through Friday August 3 when the entire district was opened for continuous fishing along with all other gill net and purse seine districts in Prince William Sound. The decision to allow extended fishing throughout the area was related more to the large pink salmon returns but the sockeye escapements into Eshamy were still ahead of optimum levels at that time. Regular weekly periods were reinstated after August 10. The entire district remained open until all buyers and fishermen had departed the area. The last catches were reported from the district during the period ending August 24. The peak catch occurred during the week of August 5-11 with combined drift and set net deliveries of 13,400 sockeye (Table 37). The total season harvest amounted to 46,716 sockeye salmon which was the largest catch since 1972 and far higher than the recent ten year average (Table 38 and Figure 13). The peak effort for drift gear occurred during the season opener in late July when 86 boats delivered fish while a peak set net effort of 18 occurred later on during the second week of August. The distribution of the harvest between drift and set gear was nearly equal (Table 37). The pink salmon catch of over 525,000 fish establishes a new record for this species in the Eshamy district and is due primarily to the returns to the state hatchery at Main Bay. That portion of the district catch reported from within Main Bay amounted to 303,300 pink salmon. The peak weekly catch of pinks occurred a week later than the sockeyes and set net gear managed 31,000 fish edge over the drift gear harvest. There were also 18,400 chum salmon taken during the season and the peak catch for this species came much earlier during the last week of July (Table 37).

The final escapement of sockeyes into Eshamy Lake was 36,121 when counting was terminated on September 5 (Table 40). An interesting feature of the escapement pattern this year was the fact that 37% of the total count came in a brief five day period with a peak daily count of 5,149 fish on August 19. This was due in part to the unusually long dry spell experienced during July and August which reduced runoff from Eshamy Lake and resulted in the fish holding in the lagoon until heavy rain started on August 18 (Appendix Table D). This year's total count was the second largest escapement during the past ten years, surpassed only by the parent year count of 44,263 in 1980 (Table 39).

The pink, coho and chum escapements into Eshamy district streams were also above average this year.

Age composition data from sockeye salmon sampling of the catch and escapement are summarized in Tables 41 and 42. The climatological and stream observations recorded at the Eshamy River weir are presented in Appendix Table D.

General Purse Seine Districts

The outlook for the general purse seine districts indicated above average returns for both pink and chum salmon. The midpoint of the forecasted return of wild stocks of pink salmon suggested a likely harvest of 10.3 million fish from a total run of 11.8 million. The return of pink salmon was expected to be strong in all management districts since all districts had exceeded their escapement goals during the brood year. Early run pink salmon have not normally produced harvestable returns during even year cycles so an opening of the general seine season in 1984 was not expected until early July. The chum return was expected to produce a harvest of 613,000 fish consisting of predominantly middle and late run stocks bound for streams in the Northwestern to Eastern areas of the Sound. The salmon markets remained depressed as the season approached and with fishermen and processors highly polarized over price negotiations, the prospects for a timely price settlement were poor.

Aerial surveillance of the early buildup of pink and chum salmon began on June 21. The numbers of fish observed during these surveys were larger than expected and were ahead of what had been observed for comparable dates in recent even year cycles. Based on the observed buildup and the large forecast the season was opened on July 2 in all general purse seine districts (Table 43). The only exception included a special closure of Wells Bay in the Northern district to provide additional protection for chum salmon required for hatchery broodstock. A special opening of the northern half of Eaglek Bay in the Northern district also went into effect starting on July 9 and continued throughout the season. This area has been closed during most years to bolster pink salmon escapements to several streams at the head of the bay. The opening was prompted by an aerial survey on July 3 which revealed a buildup of fish within the closed area that indicated a harvestable return would be available this season. A majority of the fishermen and processors remained deadlocked over prices when the season opened and although the fishing effort for these first three weeks remained minimal (30-60 boats), the daily catches progressed at a rate close to forecasted levels for this stage of the run. The catches reported during the first period amounted to nearly 438,000 pink salmon and were indicative of a major buildup of fish in the area. The weekly catches continued to increase despite the reduced effort and the pink salmon harvest during the second and third weeks were 1.1 million and 1.8 million, respectively. The cumulative catch through July 20 was 3.3 million pink salmon or 20% of the season harvest projection. The special closure at the head of Wells Bay in

the Northern district was imposed through July 6 after it was determined that the number of chum salmon there were adequate to satisfy both hatchery requirement and minimum escapement needs.

A price settlement was reached in time for the entire fleet to make the start of the regular weekly period on July 23. Daily pink salmon catches remained at or above expected levels throughout the week and by the close of the period on Friday, July 27 the cumulative harvest was over 7.8 million. The strongest show was in the Eastern, Northern and Southwestern areas with only moderate catches reported from the Southeastern district. Chum salmon catches were much larger than expected and the weeks catch amounted to 210,000 fish or over one third of the season projection.

The peak period catch occurred during the week of July 23-27 and coincided with the price settlement by a majority of the fleet. The largest daily catches came immediately after the settlement and were probably due more to a clean-up of the large buildup of fish throughout the Sound than to a real ~~large buildup of fish throughout the Sound than to a real~~ peak in the run of fish. There was no definite peak observed this and the weekly pink salmon catch remained at or above 3.4 million for four consecutive weeks. The chum salmon catches remained above forecasted levels throughout the season and the projected season harvest of 613,000 was surpassed by early August. Aerial surveys revealed a rapid buildup of pink salmon in the northern half of the Sound and the mainland districts. The Montague and Southeastern districts escapements built at above expected levels but lagged behind the mainland districts. Aerial surveys indicated escapements for both pinks and chums were progressing at above desired levels in all areas through the end of July.

Processing capacity was never a major concern during the season and with the exception of a one day suspension of buying by one major company on July 26 there were no prolonged limitations placed on the fleet. Despite the presence of the full fleet after July 23 the escapements continued to build above desired levels throughout the area and finally led to a decision to open all districts to continuous fishing after August 3 (Table 43). Regular weekly periods resumed on August 13 following a 12 day period of extended fishing. Daily catches declined rapidly after August 17 but due to the large size and excellent distribution of the escapement the fishery was allowed to continue until all companies had terminated buying. The season was not officially closed until September 14 but no catches were reported after the end of August. There were only a few selective closures imposed during the season and these were directed primarily at managing hatchery returns to Cannery Creek in the Northern district and the San Juan hatchery in the Southwest district. This was the first season that significant restrictions have been placed on the common property fishery beyond the terminal harvest areas at any of the hatcheries. These closures were intended to increase escapements to hatcheries for either broodstock or cost recovery needs. A detailed explanation of the management related to each hatchery during the season are covered in the next section. The only other selective adjustments made in the purse seine fishery was in the Port Fidalgo sub-district which was closed for the season on August 20 to provide necessary protection for late chum salmon escapements in that area.

The season harvest of all species of salmon in the purse seine districts amounted to nearly 21.3 million fish which is the second largest harvest on record and nearly double the recent ten year average (Tables 44 and 45). This was highlighted by a record harvest of 20.2 million pink salmon. The total return for this species in all Prince William Sound districts was nearly 25.3 million fish and was the largest run on record (Table 48 and Figures 14 and 15). Pink salmon escapements were above optimum levels in all districts (Table 47). Unusually dry weather prevailed throughout most of July and August and led to low water conditions in many area streams. Some early season spawners were lost due to a combination of stream blockages, elevated water temperatures and low oxygen levels. Some fish mortality of unspawned fish was observed in widely scattered areas during aerial and ground surveys conducted through mid August. Heavy rain came in late August and quickly reversed the situation.

The total run of chum salmon amounted to 1.4 million fish (Table 49 and Figure 16). The total run was the third largest on record and the estimated season escapement of nearly 225,000 fish was near the midpoint of the desired escapement goal for this species. Escapements were at or above desired levels for only the Eastern and Northern districts (Table 47). The return was better than forecasted but the poor escapements in the Northwestern and Southeastern districts were due in part to the low escapements in these areas in the parent year. Due to a loss of spawning and rearing areas on Montague Island as a result of the 1964 earthquake, desired escapements are no longer possible here through time and area management of the commercial fishery. Age composition data for chum salmon samples from the commercial catch is summarized in Table 52. The unusually large number of 3 and 4 year old fish contributed to the return that more than doubled pre-season expectations.

The sockeye catch in the general purse seine districts was 151,740 (Table 43). This compares to a ten year average of almost 69,000 sockeye salmon (Table 44). Aerial escapement estimates of sockeye salmon into various systems scattered throughout the Sound are summarized in Table 50 and age and sex composition of sockeye salmon from commercial catches in the general purse seine districts are summarized in Table 51.

Hatchery Management

The two state operated and two private non profit hatchery facilities in Prince William Sound produced a total estimated 6.5 million pink salmon in 1984, falling slightly short of the preseason point estimate of 7.0 million (Table 46). All except the Port San Juan facility experienced returns in excess of preseason projections. Over 270 million pink eggs were placed in Prince William Sound hatcheries this year. With four facilities now reaching full production capacity, management activities are requiring more than simple monitoring of their returns. In anticipation of potential conflicts with wild stock management and considerations for economic escapement for P.N.P. facilities, run timing data is being collected and monitored for each facility. Several inseason adjustments of fishing times and areas adjacent to hatcheries were required of the management staff in 1984. The complexity of managing for hatchery stocks is likely to continue to increase for some time.

1984 Prince William Sound Pink Salmon Hatchery Returns:
(all numbers x 1000)

Hatchery	1983 Fry Released	Estimated Total Return	C.P.F. Catch	Sales Harvests	Esc. and Brood	Eggtake
Solomon Gulch	5,500	194	25	30	139	71,700
San Juan	87,400	2,737	2,127	387	223	120,000
Cannery Creek	30,000	1,764	1,668		96	78,800
Main Bay	26,000	1,818	1,518		300	
		6,513	5,338	417	758	270,500

Adult returns of hatchery produced chum salmon are insignificant at this time as broodstock development is still in progress. An estimated 47.7 million green chum eggs were taken in 1984 for incubation in Prince William Sound hatcheries. The majority of these are being held in the state facility at Main Bay.

Solomon Gulch

The Valdez Fisheries Development Association's hatchery at Solomon Gulch was forecasted to produce a total return of 160,000 pink salmon. Only a small sales harvest was anticipated. When it became apparent that the brood requirement could be met, seining by the hatchery in the special harvest area on July 16-17 produced about 31,000 fish to offset operational costs. Of these, approximately 8% were too dark to be marketable. Additional surplus fish were available but were not harvested because of poor quality. Due to the early timing of this stock and the nature of the terminal area it will continue to be difficult to manage for quality sales fish while protecting wild stocks and insuring brood requirements. It is estimated that the common property fisheries harvested 25,000 of the hatcheries' fish, of which 5,000 were taken by sports fishermen. The expanded egg take goal was reached with a final take of 71.7 million. An estimated 62,000 surplus fish were left to spawn in Solomon Gulch Creek. The total return to the facility was approximately 194,000.

Port San Juan

The Prince William Sound Aquaculture Corporation (PWSAC) hatchery at Port San Juan had a forecasted adult pink return of 4.9 million from a reported fry release of 87.4 million in 1983. To recover their operational costs through fish sales and to provide for brood requirements, the facility had a preseason terminal area harvest goal of 1.3 million. The actual return to the facility was 610,000 falling far short of the preseason expectations.

Sales harvests and brood collection were monitored by Department staff through the season. Based on historical run timing, it was apparent at an early date that the sales harvest goals would not be met at the observed rate of entrance. The cumulative sales harvest and brood holding on August 3rd was only 41% of the projected figure for that date. In light of this an Emergency Order was issued on August 4th closing the Port San Juan sub-district to offer protection to the hatchery returns. This action did not yield any significant improvement in the daily entrance pattern. To address this a meeting was held with PWSAC representatives and Department staff in Cordova. It was generally agreed that some undetermined number of hatchery fish were being intercepted at the Point Elrington entrance areas of the Southwestern district, however, to instigate a closure of these waters went beyond present guidelines related to management of the common property fishery to achieve economic escapement to hatcheries. As a result two teleconferences were held with a few Board of Fisheries members and Department staff on August 9th and August 13th. These discussions concluded that a closure of the cape areas to protect the hatcheries economic escapement dealt with allocative and economic concerns which could have precedent setting statewide implications.

At the season's close Port San Juan had harvested 387,500 sales fish, nearly one million short of preseason expectations. They collected 223,800 brood fish which enabled them to reach their egg take goal of 120 million. The common property fishery interception rate for wild stocks in the northern and western half of the Sound was estimated at 78%. Assuming the same exploitation rate on San Juan returns, the hatchery contributed 2.19 million fish to the common property fishery and the total return is estimated at 2.8 million.

Cannery Creek

The state operated hatchery at Cannery Creek had a forecasted return of 885,000 pink salmon from a release of 22.1 million fry. The majority of the return was expected to be available for commercial harvest after meeting broodstock and creek escapement requirements. On July 16 the terminal harvest area in front of Cannery Creek was opened to commercial fishing. The buildup of early returning hatchery fish are predominantly males, and are surplus to hatchery needs. On August 3 the terminal area was closed to commercial fishing to provide a sanctuary for collecting brood fish. The commercial harvest in the terminal area reached nearly 300,000 by the time the area was closed. Following the closure escapement of brood fish into the hatchery holding area was below desired levels. On August 9, to bolster escapement and insure that Cannery Creek could reach their egg take goal of 70 million, the closure was extended down the eastern shoreline of Unakwik Inlet to Unakwik Point. The brood requirements were eventually met with a season egg take of 78.8 million. Based on an exploitation rate of 78% the total adult return was estimated at 1.8 million including a commercial harvest of 1.7 million.

Main Bay

The state hatchery at Main Bay was forecasted to produce a return of 1.03 million pink salmon from a fry release of 25.8 million. Because a decision was made this year to convert Main Bay to Cannery Creek broodstock, all returning fish to the facility were surplus to hatchery needs and available for commercial harvest. A barrier seine was placed at the head of the bay to prevent fish from entering into the facility. The waters of Main Bay were opened to continuous fishing on July 16, prior to any significant build-up of fish. Although the Main Bay harvest area remained on continuous fishing through the remainder of the season, a majority of the effort moved outside the Bay to other areas of the Eshamy District. Effort inside Main Bay declined later in the season, and by late August all fishermen and processors had pulled out of the area. Surplus hatchery fish, in addition to an estimated 100,000 already in the bay, continued to move in after the fleet departed. At the close of the season, an estimated 300,000 unutilized fish were left in the head of the bay. The commercial harvest within the bay totaled 306,000 of which 195,000 (64%) was taken by set net gear, the balance being taken by drift gill net fishermen. Conflicts surrounding the access to the small terminal area at the head of the bay have developed between these two gear types. A significant portion of the Main Bay return was also intercepted by the purse seine fleet. Using exploitation rates seen in the wild stocks, the total return is estimated at 1.48 million. No pink eggs were taken at Main Bay, however, 28.5 million eggs taken at Cannery Creek were transferred to Main Bay in initiation of the stock change.

1985 OUTLOOK

Salmon returns are expected to produce a commercial harvest of nearly 22.1 million fish for all species and districts (Table 54).

The natural returns of pink salmon are forecasted to produce a surplus of 12.8 million fish above the escapement goal of 1.5 million. The total run is above the average of 8.8 million for the odd year cycle (Figure 15). All management districts exceeded their escapement goals during the parent year so the distribution of the 1985 return should permit fishing in all districts.

The chum salmon return is expected to be one of the largest in history with a forecasted harvest of 1.7 million 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 Hinchinbrook Island. 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 small.

Pink salmon returns to both state and private hatcheries are expected to contribute an additional 5.4 million fish to the commercial fishery in excess of broodstock and cost recovery requirements.

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 1984. 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 a near double the average for sockeyes with a harvest of 1.2 million and an above average production for chinooks which are taken incidental to the early sockeye fishery. The coho catch is also projected to be somewhat above average with a combined harvest of 475,000 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 180,000 fish.

The Eshamy district is expected to be open for only the second time in five years and in addition to harvests of pink salmon returning to Main Bay hatchery should include incidental harvests of chums as well as sockeyes bound for Eshamy Lake.

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 1984 calendar weeks presented in Table 70 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.

A fair to good economic condition prevails supported by near record harvests in recent years and which has included a continuing trend of upgrading the area's fishing fleet and the addition of a number of new fishing vessels. Salmon prices increased in 1984 as a result of a harvest that was the largest in the history of the fishery and far above the recent ten year average of 14.3 million fish for all species and districts (Table 3). This was highlighted by a record pink salmon harvest of 22.1 million fish. The situation has been diminished somewhat by record returns of salmon statewide in recent years which have contributed to depressed markets. The drift gill net fishery was above average in 1984 with all time record harvests of coho salmon in the Bering River district.

Prices for all species of salmon were up from the previous year and helped bolster the relative value of the record harvest reported this season. Due to a combination of a large carry-over in inventory, a continued depressed canned market impacted by recent canned salmon recalls, and a strong dollar, price negotiations were difficult. The higher relative value of the harvest has been somewhat offset by continuing high interest rates which has impacted all phases of the fishing and processing industry in recent years. Prices for sac roe herring were down considerably from the previous season, but harvests were above average levels. Prices in the pound spawn on kelp fishery were the highest ever reported. The natural spawn on kelp fishery remained closed during 1984. The average prices paid for salmon, shellfish and miscellaneous fish are outlined in Table 71 and 72.

Average weights by species from the commercial catches are summarized in Table 73. Fish weights tended to be near or above the long term average and further contributed to the higher value of the harvest compared to last years. The combined case pack, fresh, frozen and salmon exported to other areas for processing are summarized in Table 74. The list of finfish buyers and processors operating in Prince William Sound are included in Appendix Table A.

Special projects or management issues that developed during the past year also resulted in reports that were published under separate cover. These included a special report on the Pt. Elrington purse seine fishery and the results of a herring spawn deposition study which contain additional information on area fisheries.

HERRING SUMMARY

Introduction

The herring fisheries of the Prince William Sound area include: 1) a sac roe fishery; 2) a natural spawn on kelp fishery; 3) a pound spawn on kelp fishery; and 4) a fall and winter bait and food fish fishery. The Northern, Eastern and Montague districts (Figure 17) were originally established for the exclusive harvest of sac roe herring while fish for bait and food markets have been restricted to the general district which includes all waters of the Sound exclusive of the sac roe districts. Natural spawn on kelp harvests can occur in all districts but with the exception of a fishery on Naked Island in 1983 only the kelp beds of Valdez Arm and Port Fidalgo had contributed significantly to this fishery. During the 1984 season the marketable quality of the kelp was never suitable to justify a commercial harvest due to the long duration and widespread distribution of spawning. In an effort to minimize conflicts with the natural spawn on kelp fishery the pound spawn on kelp fishery was originally limited to isolated sites in the Valdez Arm/Port Fidalgo areas of the Northern district. During the past two years this fishery has been relocated when herring failed to return to traditional pounding areas. Guideline harvest levels regulate the harvest for each fishery and collectively amount to an annual harvest equivalent to 8,500 metric tons of herring (Figure 18). The total value of these fisheries to fishermen in 1984 was approximately \$2.5 million (Table 55). Tables 56-59 and Figures 18-21 present harvest information for the combined Prince William Sound herring fisheries during the past decade.

STOCK STATUS

The herring stock monitoring program includes a combination of aerial, hydro-acoustic and spawning ground surveys in addition to biological sampling of commercial catches. Aerial assessment continues to be the most dependable and consistent monitoring tool for major spawning stocks. Aerial surveys are flown throughout the spawning season in all fishing districts to determine distribution, movement patterns, relative abundance and extent of spawning. Data collection methods have been standardized and include a herring school surface area to tonnage conversion to estimate the biomass within all districts. Peak prespawning biomass estimates were made for five widely separated spawning areas during 1984 and the cumulative estimate for all districts amounted to 42,000 tons (Tables 60-62). This estimation indicates the first upward trend in stock size since 1981 when the most recent cycle appears to have peaked. Although significant shifts in the distribution of spawning have occurred in recent years there appears to be one major spawning stock in the Sound with several other smaller stocks. As a result of variations in local environmental conditions and differing maturity rates of separate groups of fish, the spawning is normally widespread throughout the Sound extending over a four to six week period. Established sac roe and kelp fisheries target on only the major stock within the Sound that spawns during the mid April to early May period.

Stock assessment activities also include the biological sampling of preseason test catches and commercial catch sampling during the open periods to monitor overall population condition and year class recruitment into the fishery. Age analysis from catch samples revealed a dominance of the 1980 and 1981 year classes (Tables 63-69 and Figures 29 & 30). The three and four year old fish comprised 67% of the purse seine catch and is consistent with the results of the aerial survey estimates that revealed a significant increase in area stocks (Table 63).

Monitoring efforts also include preseason hydroacoustic and trawl surveys of traditional over wintering areas. Hydroacoustic biomass estimates were possible in only the Eastern district this year but were consistent with the spawning biomass eventually observed in the area which appears to be a discrete spawning stock. Hydroacoustic estimates were not possible for other districts but helped to locate prespawning concentrations of herring and to monitor their movements prior to the sac roe season.

Stock assessments also included diver surveys of the spawning grounds to estimate biomass based on the density of spawning. This is the second year using this approach and was expanded in 1984 to include over 26 miles of spawning area in the Montague district and the Naked Island group in the General district (Figures 25-28). Surveys were conducted between April 24 and May 8 with transects placed at 1/2 mile intervals along each spawning area. Using observed average fish weights, female fecundities, sex ratios, age composition along with assumptions on egg loss factors the average density of spawn observed was used to calculate the total biomass of spawning herring. Coverage of all spawning areas was not possible due to time and budget constraints but assuming similar spawn density for unsurveyed areas

the total spawning biomass estimate for all districts amounts to 54,000 tons. This approach is still in a developmental phase and needs further refinement but supports the apparent increase in stock size over last year's surveys and are considerably above aerial survey estimates.

SEASON SUMMARY

Sac Roe Seine Fishery

The management strategy developed for the 1983 sac roe seine season was again used in 1984. Rather than open portions of the area to exploratory fishing in early April, all fisheries were managed on a field announcement basis. Pre-season stock assessment commenced in January with hydroacoustic and trawl surveys in traditional over wintering areas. Major stocks were located in the Eastern and Montague districts during late winter and samples obtained from test trawling revealed an age composition dominated by three and four year fish indicating a strong, new recruitment entering the fishery (Table 66). Assuming that the pattern of recruitment of younger fish would continue this season all herring fisheries were expected to produce average to above average catches.

Aerial assessment continues to be the most consistent stock monitoring tool available and surveys were conducted on almost a daily basis throughout the season (Table 62). Cumulative prespawning estimates for all species amounted to approximately 42,000 tons including harvest during the purse seine and gillnet fishery. The historic sac roe harvest and peak aerial biomass estimate for each of the major districts are illustrated in Figures 22-24. This estimation represents the first upward trend since 1981 when the past cycle appeared to have peaked, (Tables 60 & 61). Aerial surveys located the first significant show of fish in the Eastern district during the first week of April. Test fishing revealed a high incidence of male herring which lowered roe recovery to a percentage that was unacceptable to processors and in combination with the relatively small biomass observed in the area eventually led to the elimination of this stock from any consideration for a commercial harvest this season.

The largest concentration of herring for the season was observed in the Montague district where a peak estimate of 20,520 tons of herring was observed and the season was opened for two separate periods on April 14 (Tables 55 and 60 and Figure 24). The openings culminated a week of intense aerial monitoring of stocks and test fishing to evaluate the progress of roe maturity. The advance notice period was reduced from 24 hours to two hours just prior to the season opener. The initial period was for two hours followed later in the day by a one hour period. The weather conditions were ideal for the season opener and in order to spread out the fishing effort both openings included most of the northern half of the district. The first period produced an estimated 2,224 metric tons of herring most of which came from the Port Chalmers and Stockdale Harbor areas. The fleet remained on two hour notice after the closure and after a mid-afternoon aerial assessment of the stocks remaining in the area the second one hour period was announced. This second period produced an additional 3,071 metric tons which brought the total

for both openings to 5,294 metric tons. During the season 105 boats participated in the fishery of which 101 made at least one delivery. This harvest was above the long term average of 4,050 metric tons since the inception of the sac roe fishery in 1969 (Table 56). Average recovery for this year was about 10-11% for the 17 buyers present. The purse seine fishery remained closed for the duration of the season and the combined biomass assessment of all area stocks revealed the harvest was compatible with current harvest guidelines.

Sac Roe Gillnet Fishery

As a result of recent Board action the gillnet fishery is no longer restricted to the Northern district and this flexibility proved beneficial during the past season. The season was opened in the Montague district on April 18, four days after the seine opener and in the same location following aerial surveys that revealed adequate herring stocks and light spawning prompting the opening of that district to gillnetting. Although the season opener on Montague was scheduled for an initial twenty four hour period, the fishery was closed by emergency order after five hours due to an extremely high incidence of male herring in early deliveries and lowered roe recovery. Most of the low recovery fish were purchased at reduced prices but it became obvious that the season would have to be delayed until either roe recoveries improved or the fishery could be relocated. Aerial surveys continued and a buildup of herring was observed in the vicinity of Naked, Peak and Storey Islands. Test fishing eventually located fish in the vicinity of Storey Island with a near even sex ratio and roe recoveries above ten percent. Uncertain whether the high roe recovery percentage would hold up over an extended period of time an announcement was made opening the season for six hours, on April 20, but confining the fishing area to the waters adjacent to Storey Island (Table 55). Early reports indicated that roe recoveries varied between ten and twelve percent, and the season was extended an additional twenty four hours. Catches were limited due to weather and an additional twenty four hour extension was announced on April 21. By noon of the following day when the season was closed, the harvest amounted to a total of 235 metric tons of herring from the Storey Island area. The 24 fishermen caught a total of approximately 311 metric tons from both the Montague District and the Storey Island area (Tables 55 and 56). Roe recovery from the Storey Island fishery, as reported by three processors present varied between eight-fourteen percent and an ex-vessel value is estimated to be \$170,000.

Natural spawn on kelp fishery

The wild spawn on kelp fishery remained closed throughout the season (Tables 55 and 57). Due to the distribution and long duration of the spawn the egg coverage was never of suitable quantity and marketable quality to justify a commercial harvest. Spawn was first sighted during late March in the Eastern district and with the exception of a few days in April there was spawning observed almost continuously in some location until surveys were terminated in the second week of May. Spawning stocks tended to be a mixture of mat-

urities and were so scattered throughout the Sound that spawn was never intense enough over an extensive area or on marketable species of kelp. Isolated pockets of marketable coverage were located on Naked Island in mid May but the main body of fish had not yet spawned by that time and it was assumed that the major spawn was yet to come. Small isolated pockets of spawn were never considered for openings because of the potential for wastage and the likelihood of completely denuding of local kelp substrates. There were 16.4 linear miles of spawn on Montague Island, for instance, but was deposited on eelgrass, elephant ear kelp and other unmarketable kelps and was not suitable for an opening (Figure 28). Before cumulative spawn was available in some isolated spots that might have been marketable, portions of this spawn were gradually eliminated as the eggs eyed out and were no longer saleable. This is the first season since the inception of the fishery that a harvest was not possible but continues a trend toward a shift in the distribution of the spawn from traditional kelping areas (Table 57). The recent evolution of the pound kelp fishery was prompted by quality and consistency problems that have plagued the wild kelp fishery over the years.

There was also a significant increase in the amount of *Macrocystis* kelp imported into the Sound. This development was anticipated prior to the season and guidelines on the use of the imported kelp for production of spawn on kelp were added to the kelp harvest permits issued from Southeastern area offices. There were 45 permits issued for Macro. and 61.5 tons were checked in through the Cordova office. Approximately 16.5 tons was used in "closed pounding" operations. Most of the closed pounders that used Macro. had to make two shipments because their first shipment spoiled before they were able to put herring into their pounds. The remaining 45 tons of Macro. was brought in for "open pounding" which would be part of the wild harvest quota. At least 20 tons was lost to shipping, poor handling and bad timing. About 25 tons was actually placed out in open pounds. These typically consisted of weighted lines stretched between two buoys with 6 to 12 foot long Macro. stipes tied at one foot intervals. Such strings ranged from 100 to 300 feet in length and contained anywhere from 1,000 to 5,000 fronds of kelp each. Kelp was spread over an area from Valdez Arm west to Esther Island. As already discussed above the wide distribution of this year's spawn (both spatially and temporally), did not warrant a wild kelp opening (Figures 25-28). None of the open pounded Macro. was harvested and most of the strings were abandoned or stripped, leaving the kelp adrift.

Pound spawn on kelp fishery

A total of 65 permits were issued this season, continuing the pattern of rapid growth in participation for this new fishery (Tables 55 and 58). Of these only 45 participants actually constructed pounds by the April 1 deadline. Pounds were initially constructed in Landlocked, Boulder and Galena Bays. By the season's end the majority of the effort was concentrated in Galena Bay where 93% of the harvest was produced. The remainder of the harvest was produced in Boulder Bay and Jack Bay. Seining of herring for introduction into pounds was opened on April 24 in designated areas of Galena, Boulder and Landlocked Bays. The areas open to seining were modified during the season to protect kelp beds that had received spawn and to open new areas where herring had been observed, including Tatitlek Narrows and Jack Bay. Due to a shift in the normal migratory pattern

and timing of the herring stocks, a flexible approach to opening harvest areas was necessary to provide fishermen with ample opportunity to capture the 325 M.T. guideline. This continues a recent trend in the expansion of the area open to the pounds from the original site in Landlocked Bay. At the close of seining on May 8th, a total of 37 pounds had produced a total estimated unprocessed harvest weight of 62,736 lbs. (28.5 M.T.). Imported *Macrocystis* kelp comprised 64% of the harvest (18.1 M.T.), with local ribbon filling in the remainder (10.4 M.T.). Fish ticket data, which generally represents processed weight and excludes stipes, pneumatocysts and trimmings, indicates a harvest of 22.9 M.T. (17.3 Macro and 5.8 Ribbon) (Table 58). Processed weights are approximately 82% of gross harvest weights and this difference is not accounted for in fish ticket reports. The guidelines for this fishery are complicated and precise management is difficult. Because permit specifications pertain to aspects of handling the kelp and herring resources over a long period of time, the demands on monitoring the fishery are high. Enforcement of the permit conditions is difficult and as a result of accountability of harvest data reported by individual pounds is limited. The potential exists to greatly exceed the existing guideline harvest. To address these concerns some changes to the permit specifications are being made. These include limiting the amount of kelp that can be placed into the pounds, requiring that the roe-on-kelp product be weighed at the time that it is harvested from the pound, and implementing a formalized activity reporting system for the pound operators. With some streamlining of the monitoring program and stricter enforcement of the new permit conditions the manageability of this fishery can be improved. The total value of the fishery is difficult to measure since most pound operators market their own product, but would probably be in the neighborhood of \$270,000.

Bait and Food Fishery

All of Prince William Sound, except designated sacroe harvest areas, is open after September 15 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 throughout the season. As a result of some aggressive marketing and improved winter bait demands the bait fishing activity increased near the close of the season. By the time the season closed at the end of January three seine boats harvested 949 metric tons of bait herring and of this total approximately 140 tons were taken after the first of January. Table 59 and Figure 21 present historic catch and effort data for this fishery.

1985 OUTLOOK

As indicated from the 1984 aerial surveys, spawning ground surveys, age analysis studies and current harvest trends, it appears that the herring stocks in Prince William Sound Area are beginning an upward trend in their cycle with a dominance of strong, three and four year age classes which indicates 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 above average catches. Sonar and aerial surveys will be conducted during late winter and early spring prior to the opening of the sac roe season. These surveys will provide a better impression of the likely abundance distribution and age composition of the spawning stocks in traditional sac roe districts. As herring are located in the three sac roe districts and an assessment can be made, the fishery will be managed on a field announcement basis. If funding is available spawning ground surveys will be conducted over as much of the area as possible and will be further evaluated as a potential stock assessment tool. A cyclic pattern will also impact the spawn on kelp fishery in a similar fashion. Due to fluctuations in herring abundance, changes in timing, location and density of spawning in traditional harvest areas, there will be continued variations in the amount and quality of harvest in the spawn on kelp fishery. The seaweed crop is maintaining an annual harvestable surplus. With the present rate of harvest, as dictated by observed changes in herring stock levels, and barring any abnormal natural mortalities, the staff feels that the herring stocks can be monitored at levels similar to what has been observed over the past ten years.

Table 1. Preliminary salmon catch by district, Prince William Sound Area, 1984.¹

District	Chinook	Sockeye	Coho	Pink	Chum	Total
General Purse Seine	80	151,740	11,477	20,222,330	905,376	21,291,003
Coghill	396	94,977	563	908,407	266,004	1,270,347
Unakwik	2	18,522	0	27,742	7,125	53,391
Eshamy	12	46,716	380	525,502	18,451	591,061
P.W.S. Subtotal	489	311,955	12,420	22,086,806 ²	1,201,842 ³	23,613,512
Copper River	38,955	899,776	382,432	32,194	6,935	1,360,292
Bering River	330	91,784	214,632	309	20,408	327,461
Area Total	39,774	1,303,515	609,484	22,119,309	1,229,185	25,301,265

¹ Preliminary figures as of 1/18/85. Copper River figures are final.

² Includes 402,825 fish from hatchery sales.

³ Includes 4,886 fish from hatchery sales.

Table 2. Preliminary salmon escapement estimates by district or river system, Prince William Sound, 1984.¹

District or System	Chinook	Sockeye	Coho ³	Pink	Chum
Eastern District				1,209,050	131,130
Northern District				591,700	60,400
Coghill District		63,622		468,040	17,400
Northwestern District				491,120	7,060
Eshamy District		36,094		17,080	0
Southwestern District				380,710	10
Montague District				193,020	0
Southeastern District				801,540	9,160
<hr/>					
P.W.S. Total		99,716		4,152,260	225,160
<hr/>					
Copper River	²	536,806			
Copper River Delta		145,893		54,700	
Bering River		39,000		12,600	

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 estimates. Aerial index counts indicate an above average escapement for this species into the upper Copper River for 1984.

³ Preliminary estimates through 10/15/84.

Table 3 . Commercial salmon catch by species from all Prince William Sound districts, 1975 - 1984.¹

Catch by Species						
Year	King	Sockeye	Coho	Pink	Chum	Total
1975	22,325	546,937	83,806	4,453,041	101,286	5,207,395
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	23,649,540 ⁶
1982	47,871	2,362,328	623,877	20,403,423	1,336,878	24,774,377 ⁷
1983 ⁴	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	25,301,265 ⁹
10 Yr. Avg.	29,578	893,709	338,196	12,205,635	1,124,892	14,254,094

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.

Table 4 . Copper River district salmon catch by species, 1975-1984.

Catch by Species						
Year	King	Sockeye	Coho	Pink	Chum	Total
1975	19,644	335,687	53,502	236	807	409,876
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 ¹	50,022	633,010	234,243	7,345	2,217	926,837
1984	38,955	899,776	382,432	32,194	6,935	1,360,292
10 Year Average	28,492	535,741	231,887	10,623	1,599	808,342

¹1983 data is Preliminary

Table 5. Copper River District Sockeye Salmon Fishery, Anticipated Catch & Escapement vs. Actual Catch & Escapement; Fishing effort & fishing time allowed, 1984.

Date	Week	Fishing Time (Hrs.)	Effort	Actual Catch	Anticipated Catch	Anticipated Cumulative Escapement	Actual Cumulative Escapement
5/13 - 5/19	20	36	430	33,591	28,000	23,050	725
5/20 - 5/26	21	36	466	175,360	130,900	23,050	27,052
5/27 - 6/ 2	22	36	486	136,757	116,900	88,416	71,240
6/ 3 - 6/ 9	23	24	482	62,241	128,800	161,529	193,901
6/10 - 6/16	24	48	324	187,903	94,500	222,267	294,393
6/17 - 6/23	25	72	140	96,605	66,500	264,116	362,378
6/24 - 6/30	26	84	137	56,976	40,600	294,527	404,861
7/ 1 - 7/ 7	27	84	166	57,456	32,200	327,799	451,888
7/ 8 - 7/14	28	84	163	44,131	27,300	353,018	480,974
7/15 - 7/21	29	84	72	25,721	16,800	386,239	512,674
7/22 - 7/28	30	84	60	12,471	11,200	402,048	527,876
7/29 - 8/ 4	31	84	71	6,023	6,300	411,000	536,806
Season Total		794 (Hrs.)		899,776 ¹	700,000	411,000	536,806

¹Total does not include 4,541 sockeyes harvested after 8/4/84.

Table 6. Commercial salmon catch by period and species, Copper River district, 1984.

Dates	Fishing Time (Hrs.)	Effort	Catch by Species					Total
			King	Sockeye	Coho	Pink	Chum	
5/14-5/15	36	430	8,896	33,591	0	0	9	42,496
5/21-5/22	36	410	11,264	175,360	0	1	6	186,631
5/27-5/28	36	463	7,352	136,757	4	0	370	144,483
6/05-6/06	24	464	4,505	62,241	9	0	77	66,832
6/09-6/11	48	451	3,491	95,261	106	1	441	99,300
6/14-6/16	48	399	1,888	92,642	26	2	591	95,149
6/18-6/20	48	230	752	47,576	41	89	413	48,871
6/21-6/23	36	240	338	49,029	83	1,086	820	51,356
6/25-6/27	48	154	176	33,315	50	91	372	34,004
6/28-6/30	36	172	92	23,661	153	641	1,619	26,166
7/02-7/04	48	152	81	35,691	314	1,329	616	38,031
7/05-7/07	36	149	28	21,765	239	1,849	162	24,043
7/09-7/11	48	127	20	25,049	354	1,967	231	27,621
7/12-7/14	36	121	16	19,082	182	1,405	75	20,760
7/16-7/18	48	87	9	16,879	257	2,654	277	20,076
7/19-7/21	36	93	6	8,842	727	5,496	341	15,412
7/23-7/25	48	51	5	8,238	947	4,406	290	13,886
7/26-7/28	36	52	6	4,233	2,320	2,195	32	8,786
7/30-8/01	48	61	5	3,692	4,709	3,466	94	11,966
8/02-8/04	36	70	1	2,331	5,077	2,410	43	9,862
8/06-8/09	84	140	13	4,034	29,138	2,664	45	35,894
8/13-8/16	84	238	9	373	57,618	391	6	58,397
8/20-8/23	84	289	1	51	77,878	43	5	77,978
8/27-8/30	84	311	1	4	73,741	8	0	73,754
9/03-9/06	84	285	0	78	81,198	0	0	81,276
9/10-9/13	84	286	0	0	30,109	0	0	30,109
9/17-9/20	84	182	0	1	10,811	0	0	10,812
9/24-9/27	83	99	0	0	6,341	0	0	6,341
Totals			38,955	899,776	382,432	32,194	6,935	1,360,292

Table 7. 1984 Miles Lake Daily Sonar Counts.

Date	North Bank	South Bank	Daily Total	Cumulative Total	Water Level
5/19	389 *	336	725	725	-8.5
5/20	954 *	970	1,924	2,649	-7.0
5/21	778 *	1,208	1,986	4,635	1.5
5/22	1,807 *	3,317	5,124	9,759	7.0
5/23	1,732 *	3,310	5,042	14,801	8.5
5/24	1,454 *	3,032	4,486	19,287	11.8
5/25	987 *	2,133	3,120	22,407	13.5
5/26	1,381 *	3,264	4,645	27,052	17.5
5/27	1,696 *	4,140	5,836	32,888	19.0
5/28	1,575 *	3,403	4,978	37,866	13.5
5/29	2,348 *	4,778	7,126	44,992	11.0
5/30	1,716 *	3,235	4,951	49,943	8.0
5/31	2,290	1,988	4,278	54,221	7.5
6/01	2,840	5,696	8,536	62,757	5.8
6/02	2,124	6,359	8,483	71,240	4.8
6/03	4,317	5,413	9,730	80,970	7.3
6/04	4,351	8,145	12,496	93,466	13.5
6/05	5,659	11,069	16,728	110,194	18.8
6/06	5,555	12,542	18,097	128,291	30.3
6/07	3,843 *	14,672	18,515	146,806	42.0
6/08	5,444 *	21,175	26,619	173,425	43.0
6/09	4,188 *	16,288	20,476	193,901	43.0
6/10	3,785 *	15,490	19,275	213,176	45.8
6/11	1,979	15,258	17,237	230,413	50.8
6/12	1,480	20,226	21,706	252,119	55.5
6/13	739	11,333	12,072	264,191	62.0
6/14	837 *	5,144	5,981	270,172	67.0
6/15	161	10,130	10,291	280,463	71.0
6/16	1,848 *	12,082	13,930	294,393	70.0
6/17	2,917 *	16,892	19,809	314,202	64.0
6/18	1,797 *	11,053	12,850	327,052	67.0
6/19	430	7,044	7,474	334,526	74.0
6/20	264	8,994	9,258	343,784	80.5
6/21	612	6,547	7,159	350,943	94.0
6/22	395 *	5,127	5,522	356,465	98.0
6/23	318 *	5,595	5,913	362,378	107.0
6/24	185 *	6,556	6,741	369,119	121.5
6/25	62 *	6,441	6,503	375,622	131.0
6/26	94 +	4,291	4,385	380,007	137.0
6/27	103 +	7,121	7,224	387,231	130.5
6/28	172 *	6,556	6,728	393,959	122.0
6/29	188 *	4,265	4,453	398,412	113.0
6/30	397 *	6,052	6,449	404,861	103.0
7/01	474 *	7,752	8,226	413,087	105.0
7/02	452 *	7,102	7,554	420,641	104.0
7/03	511 *	8,070	8,581	429,222	104.0
7/04	363 *	6,152	6,515	435,737	106.0
7/05	423 *	6,239	6,662	442,399	102.0
7/06	261 *	5,188	5,449	447,848	110.0
7/07	64	3,976	4,040	451,888	119.0
7/08	35	3,871	3,906	455,794	128.0
7/09	48	3,162	3,210	459,004	136.0
7/10	22 *	2,905	2,927	461,931	132.0
7/11	66 *	3,542	3,608	465,539	126.0
7/12	125 *	4,155	4,280	469,819	120.0
7/13	176 *	4,406	4,582	474,401	115.0
7/14	1,252	5,321	6,573	480,974	114.0
7/15	734	4,787	5,521	486,495	110.0
7/16	576	6,179	6,755	493,250	106.0
7/17	128	4,827	4,955	498,205	101.0
7/18	141	4,595	4,736	502,941	106.0
7/19	65	3,075	3,140	506,081	107.0
7/20	144	3,245	3,389	509,470	98.0
7/21	57	3,147	3,204	512,674	93.0
7/22	64	3,716	3,780	516,454	92.0
7/23	113	3,092	3,205	519,659	94.0
7/24	50	2,148	2,198	521,857	102.0
7/25	93	1,844	1,937	523,794	110.0
7/26	162	1,525	1,687	525,481	115.0
7/27	83	1,308	1,391	526,872	119.0
7/28	28	976	1,004	527,876	119.0
7/29	21	870	891	528,767	123.0
7/30	33	905	938	529,705	121.0
7/31	102	991	1,093	530,798	123.0
8/01	84	963	1,047	531,845	120.0
8/02	107	981	1,088	532,933	121.0
8/03	83	1,130	1,213	534,146	121.0
8/04	85	1,033	1,118	535,264	124.0
8/05	51	958	1,009	536,273	133.0
8/06	25	508	533	536,806	144.0
8/07			0	536,806	154.0
Total	83,492	453,314	536,806		

* North Bank count estimated from regression equation.
+ North Bank count estimated from expanded test net C.P.U.E.

Table 8. Aerial survey estimates, Copper River & Bering River Delta, 1984.

Lake/Stream	6/07		6/15		6/20		5/28		7/05		7/12 ¹		7/19 ²		8/03		8/16		8/24		8/31		9/6		9/13		9/17		10/4			
Eyak Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
W. Shore	1000	400	0	0	400	300	500	100	3500	60	4190	40	3500	200	3500	1000	2775	2000	2775	2000	NC-Turb.	600	4500	1780	5000	600	NC-Turbulent	1000	2000	2500	2500	2500
Middle Arm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NC-Turb.	4000	NC-Silly	5000	5000	1000	NC-Turbulent	1000	3000	3000	3000	3000
N. Shore	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NC-Turb.	1000	NC-Silly	50	50	NC-Turbulent	1000	1000	1000	1000	1000	
Hatchery Creek	0	250	0	100	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	NC-Turb.	0	NC-Silly	500	500	NC-Turbulent	1000	1000	1000	1000	1000	
Hatchery Creek Delta	150	400	0	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	NC-Turb.	0	NC-Silly	500	500	NC-Turbulent	1000	1000	1000	1000	1000	
Power Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NC-Turb.	0	NC-Silly	0	0	NC-Turbulent	0	0	0	0	0	
Power Creek Delta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NC-Turb.	0	NC-Silly	0	0	NC-Turbulent	0	0	0	0	0	
Ugak Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NC-Turb.	0	NC-Silly	0	0	NC-Turbulent	0	0	0	0	0	
McKinley Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6000	1000	3500	3500	3500	3500	Turbulent	250	400	400	400	400
Salmon Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8000	4000	5000	5000	5000	5000	Pair Count	450	450	450	450	450
Lert Fork	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	1000	1600	1600	1600	1600	NC-Turbulent	400	400	400	400	400
Right Fork	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	1000	1600	1600	1600	1600	NC-Turbulent	400	400	400	400	400
28-21 Mile Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3000	1000	1600	1600	1600	1600	NC-Turbulent	400	400	400	400	400
39 Mile Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2000R	1000	2000	2000	2000	2000	NC-Turbulent	400	400	400	400	400
Boat Mt. Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2000R	1000	2000	2000	2000	2000	NC-Turbulent	400	400	400	400	400
Pleasant Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2000R	1000	2000	2000	2000	2000	NC-Turbulent	400	400	400	400	400
Tokun Lake (Weir Counts)	1200	2000	0	0	4500	0	23656 ³	0	26800 ⁴	0	8000	0	4000	0	4000	0	2500	0	2500	0	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Tokun Lake	50	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Tokun Outlet	150	1100	0	0	600	600	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Tokun River	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
L. Martin Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
L. Martin Outlet	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Martin Lake	3000	10000	0	0	16000	0	15000	0	11350	0	5000	0	2500	0	2500	0	2500	0	2500	0	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Martin L. Outlet	150	6000	0	0	3000	0	2100	0	12000	0	1000	0	3000	0	3000	0	3000	0	3000	0	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Martin Feeders	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Martin Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Pothole Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Pothole Outlet	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Martin River	900	3175	0	0	2000	0	4000	0	6000	0	3200	0	4000	0	4000	0	4000	0	4000	0	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Bagged Pt. Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Bagged Pt. Outlet	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Ragweed Pt. River	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Martin R. Slough	6200	NS	0	0	10500	0	13500	0	7000	0	8500	0	15000	0	15000	0	15000	0	15000	0	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400
Tokun Springs	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0	0	0	NC-Turbulent	400	400	400	400	400

(16600) (30075) (43300) (76951) (99735) (85480) (112750)

Table 8 • Continued

Lake/Stream	6/07		6/15		6/20		6/28		7/05		7/12		7/19		8/03		8/16		8/24		8/31		9/06		9/13		9/17		10/04		
Bering Lake	1650*	2500	26000*	16000*	18000	12000	13000	13000	4500	2300	350	125	600	600	125	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	
Dick Creek		0	0	0	11000	8000	11000	11000	11000	5500	3000	0	5500	5500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shepherd Creek		1000	5000	6000	8500	9000	13000	13000	9000	500	MC Silty	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Katella R.		NS	NS	NS	2000*	8000*	8000*	8000*	12000*	500	MC Silty	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Kushitaka Lake		NS	NS	NS	NS	NS	NS	NS	800	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Shokum Creek		NS	NS	NS	NS	NS	NS	NS	700	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Trout Creek		NS	NS	NS	NS	NS	NS	NS	0	0	MC Turbulent																				
Clear Creek		NS	NS	NS	NS	NS	NS	NS	3500	0	MC Turbulent																				
Carbon Creek		NS	NS	NS	NS	NS	NS	NS	0	0	MC Turbulent																				
Maxwell Creek		NS	NS	NS	NS	NS	NS	NS	250	75	MC Turbulent																				
Gandell River		NS	NS	NS	NS	NS	NS	NS	0	0	MC Silty																				
Nichawak River		NS	NS	NS	NS	NS	NS	NS	NS	NS	MC Silty																				
Control Bay System	(1650)	(3500)	(31000)	(22000)	(37500)	(29100)	(39000)	(39000)																							

* Outlet

** Outlet 3000

1 Poor Survey Conditions

2 Overcast, Some fog, bad glare, poor visibility.

3 Weir Count

4 Chum Salmon

5 Pink Salmon

Tal 9. Copper River sockeye salmon aerial escapement estimates, Delta Streams, 1975-1984.

Stream/Lake	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Eyak Lake*	17500	8500	11500	13450	13500	22500	11300	11700	8900	10390
Hatchery Creek	700	450	600	300	1000	700	4750	1800	2000	1200
Power Creek	2000	500	1500	2500	glacial	4500	1100	300	200	500
McKinley Lake*	8000	6000	15000	18000	25000	27500	10000	9500	12000	11200
Salmon Creek	2600	4000	1000	2819	4000	5000	10800	13500	8500	11000
26/27 Mile Creek	1200	2500	3550	2000	1500	7500	9500	5500	8000	7500
39 Mile Creek*	2500	3500	4500	6500	17500	18000	11000	13000	13000	17000
Goat Mt. Creek	600	1500	150	1000	muddy	150	muddy	3000	100	1500
Pleasant Creek	25	0	650	turbid	muddy	250	muddy	NS	NS	7400
Tokun Lake*	1200	8500	4201	6600	5500	17000 ³	8500 ³	7000	6500 ¹	9000 ²
Tokun Outlet*	350	2500 ³	700	4000 ³	10000 ³	1500	1700	300	300	200
Tokun R								150	200	350
L. Martin Lake	2000	8000 ³	1550 ³	4500 ³	4000	6500	2500	6000	6000	10000
L. Martin Out.					N/C	1500	N/C	20	100	200
Martin Lake*	460	4000	4094	10500	10000 ³	17650	26050	5300 ³	9000	11350
Martin Outlet*	1500	2500	1450	3500	4000	9000	3800	9500	5000	12000
Martin Feeders	150	3000	1500	1500	4000	8500	15000	9500	8500	12000
Martin River*	1500	1500	1450	3500	8200	3500	5350	1000	3650	5000
Pothole Lake*	3000 ³	3000 ³	550 ³	1100 ³	5000 ³	8000	4500	1200	5500	2300
Pothole Outlet*						1400	3500	30	1000	250
Ragged Pt. L.*	2500	4000 ³	3500	5500 ³	20000 ³	13000	8000	7000	8500	8000
Ragged Out.	500	0	250 ³	0	0	5000 ³	1500	4500	1500	600
Ragged River								2000	0	350
Martin R. Sl.*	400	2500	3100	6300	4200	10000	15000	9500	11000	14500
*Index Streams Total	40910	54500	51595	83450	122900	152650	103850	71500	90494	129143
All Streams Total	48685	66450	60795	92569	133400	168650	153850	111800	119450	153890

¹ Weir Count - 7,645

² Weir count - 27,203

³ Included in above total

Table 1. Copper River Delta, Bering River, aerial survey estimates, coho salmon, 1964¹- 1984.

System	1964	1965	1968	1969	1971	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Eyak Lake	4000	3500	150	416*	2070*	2000	175	7350	3000	3700	903*	6000	9200	2750+	7000	14600	6500
Hatchery Cr.	300	400	3	93*	600*	237*	523*	579*	148*	573*	236*	616*	1729*	2500	125	1000	1750
Power Creek	1151*	319*	100*	120*	774*	306*	675*	747*	191*	739*	304*	795*	2230*	800	1500	1000	1900
Ibek Creek	1950	2000	327*	250	2179*	1065*	4500	3500	540*	3500	1575	850	12110	10000	1100	4200	9700
19 Mile Creek	50	300	33*	44*	218*	107*	267*	200	54*	35	95	500	100	1500	250	125	125
McKinley Lake	1050*	287*	82*	110*	545*	266*	15	740*	135*	679*	238*	500	2500	1344*	500	5000	500
Salmon Creek	800	500	90*	350	599*	293*	733*	814*	149*	1300	262*	781*	2000	1700	4650	6500	950
26/27 Mile Cr.	280*	76*	22*	29*	145*	71*	178*	197*	36*	181*	63*	189*	635*	250	50	0	350
39 Mile Creek	400	300	300	300	1380*	2950	6500	2500	342*	3000	4500	600	7100	1900	2000	6500	8000
Goat Mt. Cr.	5300	497*	142*	500	944*	461*	1155*	1500	234*	1177*	412*	1230*	800	500	50	NC	600
Pleasant Cr.	8000	900	25	350	745*	500	550	100+	185*	1500	325*	970*	500	1837*	400	350	1100
Tokun Lake	200	200	450	150	272*	150	125	370*	68*	340*	119*	355*	2000	672*	400	125	0
Tokun River	945*	258*	74*	99*	490*	150	333*	500	122*	611*	214*	639*	2200	800	2000	225	200
L. Martin L.	1575*	430*	123*	300	817*	115	700	350	203*	1019*	357*	1065*	1500	6000	150	1125	300
Martin River	2695*	735*	300+	100	1160	1532	5500	525	347*	2000	150	460	12855	4000	7500	3100	4000
Martin Lake	1085*	50	85*	350	563*	50	750	765*	140*	701*	246*	250	4500	1389*	9000	6100	4800
Ragged Point	1155*	315*	90*	121*	2000	293*	733*	814*	149*	747*	262*	781*	2619*	200	2500	200	200
Ragged Outlet	840*	229*	66*	88*	436*	213*	1800	150	108*	300	190*	568*	1905*	1000	50	325	120
Martin Slough	14000	1400	1500	1000	15000	1425	1600	8000	1500	7300	1700	14500	22000	10900	1350	9700	15500
Total Season	46087	12786	3961	4807	30937	12184	26812	29559	7651	29402	12151	31649	88483	50042	40575	60175	56595
Katalla R.					17000	1200	4200	2500	200	5000+	3200	muddy	8000	3000	11500	4800	7000
Bering Lake					500	52	1000	50		165		1000	700	0	8000	4000	6500
Dick Creek					1600	650	60	1200		500			1625	0	5500	7100	5500
Shepard Cr.												0	0	600	muddy	muddy	muddy
Gandil R.												600	600	muddy	muddy	muddy	muddy
Nichawak R.												250	250	muddy	5000	800	1000
Total Season					19100	1902	5260	3750	200	5665	3200	1000	11175	3600	30000	16700	20000

¹Years 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.

* Interpolated.

Table 11. King salmon escapement index - Copper River.

Area	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
East Fork Christochina R.	71	289	132	137	810	575	120	1,260	575	577
Gulkana River	741	777	1,090	921	1,380	718	754*	1,656	931	2,189
Mendeltna Creek	38*	35	73	52	5	3	51	70	12	26
Kaina Creek	123*	37	91	125	279	247	191	200	166	382
St. Anne Creek	26*	15	10	24	16	8	19	35	87	89
Manker Creek	19*	6	15	20	16	35	23	49	141	264
Grayling Creek	48*	17	48*	92	153	66	107	127	287	279
Little Tonsina R.	161	98	35	285	285	70	191	440	330	568
Indian River	6	61	20	9	29	24	20*	179	41	17
Total without interpolated counts	979	1,335	1,446	1,665	2,973	1,746	712	4,016	2,570	4,391
Counts missing	(5)		(2)				(2)			
Total with interpolated counts	1,233	1,335	1,514	1,665	2,973	1,746	1,486	4,016	2,570	4,391

* Interpolated.

Table 12. Prince William Sound Area subsistence and personal use fisheries, 1984.

Fishery	Area	Number Permits Issued	Type of Gear	King	Sockeye	Coho	Other ²	Total
<u>Subsistence</u>	Upper Copper River ¹	104	Dip Net	51	1,119	117	1	1,288
	Upper Copper River ¹	458	Fishwheel	364	19,380	120	10	20,374
	Copper River Flats ³	118	Gill Net	68	324	135	22	549
	Prince William Sound ⁴	8	Gill Net	10			13	23
Subtotal		688		483	21,333	372	46	22,234
<u>Personal Use</u>	Upper Copper River ¹	5,311	Dip Net	1,590	43,858	552	18	46,018
	Upper Copper River ¹	17	Fishwheel	2	221	0	0	223
Subtotal		5,328		1,592	44,079	552	18	46,241
Total		6,016		2,075	65,412	924	64	68,475

1 Compiled from reports received through 1/28/85.

2 Includes pink and chum salmon, whitefish, steelhead, cutthroat, Dolly Varden, lamprey, lingcod and grayling.

3 Catch from 43 fishermen; 47 did not fish; 14 permits were not returned; and 14 fishermen were unsuccessful.

4 Catch from 2 fishermen; 5 did not fish; and 1 fisherman was unsuccessful.

Table 13. Copper River Delta gill net salmon subsistence catch and effort, 1960 - 1984.

Year	P E R M I T S					C A T C H				
	Issued	Unused	Returned		Total	King	Sockeye	Coho	Total	
			Unsuccessful	Successful						
1960	13	No Record	No Record	Unknown	No Record				158	
1961	14	"	"	"	14	60	137	99	296	
1962	14	"	"	"	No Record	44	135	3	182	
1963	8	0	2	6	8	3	13	157	173	
1964	5	2			3	14			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 ¹	
1983	87	42	4	27	73	79	107	57	254 ²	
1984	118	47	14	43	104	68	324	135	549 ³	

¹ Includes 1 pink and 1 chum.

² Includes 11 pinks.

³ Includes 22 pinks.

Table 14. Prince William Sound salmon subsistence catch and effort, 1960 - 1984.¹

Year	P E R M I T S		C A T C H							Total
	Issued	Returned	King	Sockeye	Coho	Pink	Chum	Unknown ²		
1960	50		1	139	505	1,292	75	150	2,161	
1961	12			41	123	732	3		900	
1962	9		3		119	214	142		475	
1963	9				406	298	24		731	
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									
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	

¹ Includes only catches from Prince William Sound proper.

² Catches not reported by species.

Table 15. Copper River subsistence and personal use fisheries data, 1960-1984.

Year	Reported Catch		Permits Issued		Reported Catch by Species			Estimated Total Catch
	Dip Net	Fishwheel	Dip Net	Fishwheel	Sockeye	Chinook	Coho	
1960	1,179	5,660	44	33	6,739	136	25	8,803
1961	1,777	12,419	307	82	15,472	388	550	18,206
1962	3,203	11,101	435	117	14,543	848	381	18,486
1963	2,124	12,395	361	140	14,055	464	558	18,287
1964	4,133	7,749	794	200	11,915	725	103	16,340
1965	7,215	5,813	982	143	12,760	664	52	16,818
1966	7,452	9,188	1,132	138	16,718	555		21,896
1967	6,146	8,360	1,166	154	14,457	419		19,007
1968	8,040	6,071	1,235	143	14,819	644	233	20,283
1969	18,054	6,220	1,415	167	27,604	719	224	29,266
1970	22,700	9,886	3,220	267 ¹	36,500	427	554	42,757
1971	28,115	9,370	4,168	374 ¹	37,517	1,363	363 ²	48,449
1972	18,996	7,854	3,485	205	26,850	1,501	248 ²	32,468 ²
1973	16,407	10,943	3,840	305	27,350	1,846	51 ³	29,428 ³
1974	15,143	7,657	3,305	288	22,800	1,141	163 ⁴	26,001 ⁴
1975	7,694	5,626	2,452	350	13,320	1,705		15,357
1976	12,130	8,321	2,512	451	20,451	2,017	17	23,623
1977	22,612	12,751	3,526	540	35,363	2,171	454	41,815
1978	12,569	6,638	3,313	392	19,207	2,050	633	22,029
1979	11,887	10,251	2,730	470	22,138	2,372	705	30,963
1980	14,650	9,805	2,804	399	21,437	2,256	639	35,081
1981	28,872	26,924	3,555	523	53,008	1,913	849	68,746 ⁵
1982	62,614	38,120	5,475	615	96,799	2,532	1,246	110,006 ⁵
1983	72,257	35,971	6,911	630	100,995	5,421	1,690	118,728
1984 a	1,288	20,374	104	458	20,999	415	237	23,093
b	46,018	223	5,311	17	44,079	1,592	552	49,940
a + b	47,306	20,597	5,415	475	65,078	2,007	789	73,033 ⁶

1 Last use of Dip Net/Fishwheel combination permits.

2 First issue of permits at Chitina.

3 Last "Blacklist" used.

4 Issue of permits at Chitina and Glennallen only.

5 Return requirement enforced.

6 Through 1/28/85.

a = subsistence

b = personal use

a + b = 1984 total catch.

Table 16. Estimated age and sex composition of the sockeye salmon in the commercial catches from the drift gillnet fishery in the Copper River District, 1984. 1/

	Brood Year and Age Group														Total
	1980				1979				1978				1977		
	0.2	0.3	1.2	0.4	1.3	2.2	1.4	2.3	3.2	2.4	3.3	2.4	3.3		
Female	315	2,737	22,527	175	386,372	3,521	540	52,569	283	283	490	283	490	52.2	
Male	315	3,776	31,932	0	38.5	4,583	840	40,414	283	0	238	0	238	47.8	
Total	630	6,513	54,459	175	733,955	8,104	1,380	92,983	566	283	728	283	728	100.0	
Percent of Catch	411	1,193	3,222	154	4,970	1,230	556	3,709	365	259	355	259	355		
Number in Catch															
Standard Error															

Strata Combined: 5/13 - 9/20
 Sample Dates: 5/14 - 7/14
 Sample Size: 5,880

1/ Based on preliminary 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 seven time segments of the fishery. This table is the weighted sum of the catch by sex and age across all seven strata.

Table 17. Estimated sex and age composition of the sockeye salmon escapement to the Upper Copper River at the Miles Lake Sonar Project, 1984. 1/

	Brood Year and Age Group											
	1981			1980			1979			1978		
	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	Total			
Female												
Percent of Escapement	0.1	0.1	4.4	0.0	45.5	1.1	.0	3.9	54.9			
Number in Escapement	491	328	23,380	0	244,110	5,834	54	20,767	294,964			
Male												
Percent of Escapement	0.0	.0	2.3	.0	39.3	0.1	0.1	3.2	45.1			
Number in Escapement	0	21	12,371	21	211,018	639	567	17,205	241,842			
Total												
Percent of Escapement	0.1	0.1	6.7	.0	84.8	1.2	0.1	7.1	100.0			
Number in Escapement	491	349	35,752	21	455,128	6,473	621	37,971	536,806			
Standard Error	477	302	2,853	23	4,272	1,227	367	3,167				

Strata Combined: 5/19 - 8/06
 Sample Dates: 6/01 - 7/25
 Sample Size: 2,979

1/ This is the weighted sum of the estimated escapement by sex and age for six time strata and is based on the daily hydroacoustical estimates of the Upper Copper River escapement past Miles Lake, a time series of age composition data from a stratified sampling program in the subsistence and personal use fisheries at Chitina and, age composition data from Long Lake. The escapement estimate at the Miles Lake sonar project is for all salmon species but has historically been used as the Upriver escapement of sockeye salmon which are by far the dominant species. Prior to the first week in July and with the exception of a few minor stocks which are enumerated at Miles Lake and samples Lake and Chitina the fisheries at Chitina target on the same stocks which are enumerated at Miles Lake and samples taken from the fisheries at Chitina in that time period are representative of most of the Upriver escapement. After the first week of July, fish which are returning to Long Lake on the Chitina River drainage constitute a significant portion of the Upper Copper River escapement but, because they orient to the river bank opposite the one where most of the fishing at Chitina occurs, they are probably not represented in in the samples from that fishery. The Upriver escapement by sex and age for this segment of the escapement was estimated as follows: 1) Counts and samples from a weir at the Long Lake outlet are used to estimate the escapement by sex and age for that stock; 2) The Long Lake counts weir counts are subtracted from the sonar counts in the last strata and fishery samples are used to apportion the remainder by sex and age and; 3) The two estimates of escapement by sex and age are summed.

Table 18. Estimated age and sex composition of the combined sockeye salmon escapements to the Copper River Delta and Bering River drainages, 1984. 1/

	Brood Year and Age Group										
	1981			1980			1979			1978	
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	Total	
Copper River Delta Escapements 2/											
Sample Dates:	6/04 - 8/12										
Sample Size:	7,273										
Female	0.1	0	2.0	7.2	0.0	41.5	0.1	0	0.9	51.8	
Number in Escapement	102	61	3,221	11,279	0	65,379	184	53	1,634	81,634	
Male	1.7	1.2	1.0	26.0	0	17.6	0.2	0	0.3	48.2	
Number in Escapement	2,686	1,967	1,499	40,996	35	27,716	386	44	528	75,857	
Total	1.8	1.3	3.0	33.2	0	59.1	0.3	0.1	1.2	100.0	
Number in Escapement	2,788	2,028	4,720	52,275	35	93,095	570	97	1,903	157,491	
Standard Error	207	244	280	512	40	951	106	46	203		
Bering River Escapements 3/											
Sample Dates:	7/05 - 8/12										
Sample Size:	2,085										
Female	0.2	0.0	9.4	0.8	0.0	42.6	0.2	0.0	0.4	53.6	
Number in Escapement	87	0	4,219	367	0	19,170	75	0	198	24,116	
Male	0.9	0.4	9.5	4.5	0	30.6	0.2	0.0	0.2	46.4	
Number in Escapement	406	170	4,277	2,043	6	13,785	97	0	100	20,884	
Total	1.1	0.4	18.9	5.4	0	73.2	0.4	0.0	0.7	100.0	
Number in Escapement	493	170	8,496	2,410	6	32,955	172	0	298	45,000	
Standard Error	138	38	487	274	4	537	45	0	65		
Combined Delta and Bering River Escapements											
Sample Dates:	9,358										
Sample Size:	9,358										
Female	0.1	0	3.7	5.9	0.0	41.8	0.1	0	0.8	52.2	
Number in Escapement	189	61	7,440	11,646	0	84,549	239	53	1,573	105,750	
Male	1.5	1.1	2.9	21.3	0	20.5	0.2	0	0.3	47.8	
Number in Escapement	3,092	2,137	5,776	43,039	41	41,501	483	44	628	96,741	
Total	1.6	1.1	6.5	27.0	0	62.2	0.4	0	1.1	100.0	
Number in Escapement	3,281	2,198	13,216	54,685	41	126,050	722	97	2,201	202,491	
Standard Error	249	247	562	953	40	1,092	115	46	213		

1/ This is a weighted sum of the escapements by age and sex for major spawning areas sampled in 1984. With the exception of Tokun Lake where a weir was operated, the escapement to all the spawning sites were estimated by aerial survey. A subset of the surveyed sites has historically been used as an index of the Copper River Delta and Bering River escapement. Because more sites were sampled than are included in this subaet, the escapement shown here is not the same as the index of 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 systematic stratified samples taken at the weir. The remainder of the escapement estimates are based on aerial survey data and sex and age composition data from a single sampling trip to each site.

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

Table 19. Estimated age and sex composition of chinook salmon in the commercial catches from the Copper River District drift gillnet fishery, 1984. 1/

	Brood Year and Age Group													Total
	1980			1979			1978			1977				
	0.3	1.2	2.1	1.3	2.2	1.4	2.3	1.5	2.4	3.3	3.3	3.3	Total	
Female	Percent of Catch Number in Catch	0.0 15	1.6 631	0 9	19.6 7,621	0.2 88	24.3 9,480	2.7 1,048	0 9	1.5 567	0.1 41	50.1 19,509		
Male	Percent of Catch Number in Catch	0.0 0	0.7 256	0.0 0	13.9 5,430	0.2 80	31.9 12,434	1.5 565	0 9	1.7 654	0 18	49.9 19,446		
Total	Percent of Catch Number in Catch Standard Error	0 15 15	2.3 887 124	0 9 8	33.5 13,051 405	0.4 168 52	56.2 21,914 425	4.2 1,613 158	0 18 12	3.2 1,221 137	0.2 59 32	100.0 38,955		

Strata Combined: 5/13 - 9/20
 Sample Dates: 5/14 - 6/11
 Sample Size: 2,387

1/ Based on preliminary 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 five time segments of the fishery. This table is the weighted sum of the catch by sex and age across all five strata.

Table 20. Estimated age and sex composition of coho salmon in the commercial catch in the Copper River District, 1984.

	Brood Year and Age Group				Total			
	1982	1981	1980	1979				
	1.0	1.1	2.0	2.1	1.3	2.2	3.1	Total
Strata Combined: 5/14 - 8/18	0.0	14.4	0.0	26.7	.0	0.1	0.5	41.6
Sample Dates: 8/06 - 8/09	0	55,606	0	102,287	34	303	1,937	160,167
Sample Size: 1,738								
Female	0.0	23.7	.0	34.2	0.0	0.0	0.4	58.4
Percent of Catch	34	90,248	34	130,235	0	0	1,714	222,265
Number in Catch								
Male	.0	38.1	.0	60.9	.0	0.1	0.9	100.0
Percent of Catch	34	145,854	34	232,522	34	303	3,651	382,432
Number in Catch	37	4,962	37	4,985	37	326	964	
Standard Error								

1/ Based on preliminary 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 four time segments of the fishery. This table is the weighted sum of the catch by sex and age across all four strata.

Table 21. Estimated age and sex composition of the sockeye salmon catches in the subsistence and personal use fisheries at Chitina, 1984. 1/

	Brood Year and Age Group						Total	
	1981	1980			1979			1978
	1.1	0.3	1.2	1.3	2.2	1.4	2.3	
Percent of Catch Number in Catch	0.1 37	0.1 38	4.2 2,715	42.5 27,262	1.1 696	.0 24	4.2 2,687	52.2 33,459
Percent of Catch Number in Catch	0.0 0	0.0 0	2.2 1,433	41.0 26,269	0.2 152	0.1 80	4.3 2,750	47.8 30,684
Percent of Catch Number in Catch	0.1 37	0.1 38	6.5 4,149	83.5 53,531	1.3 848	0.2 104	8.5 5,437	100.0 64,144
	36	35	327	490	152	53	369	

Combined Strata: 6/01 - 9/30
 Sample Dates: 6/01 - 7/25
 Sample Size: 2,547

1/ Preliminary catch data are from approximately 59% of the issued subsistence permits and approximately 93% of the issued personal use permits. Age and sex composition data stratified across six time segments of the combined catches at Chitina were applied to the daily catch data for the estimate of catch by sex and age in each strata. This table is the weighted sum of the catch by sex and age in each strata. The catch samples from Chitina are from both gear types and are probably representative of most the Upriver personal use dipnet catch but may not be representative of the subsistence catch. The personal use fishery on the Upper Copper River is restricted to Chitina but the subsistence catch is from fishwheels located at various sites from Chitina to Slane and, in 1984 approximately 85% of the Upriver subsistence catch was from sites upstream of Chitina (Roberson, Alaska Department of Fish and Game, Glennallen, Alaska, personal communication). These sites are closer to some Upriver spawning areas and upstream of others; they may fish on a small subset stocks in the total Upriver escapement and; the age composition of the catch from these sites may be different than in the composite sample from Chitina.

Table 22. Commercial salmon catch by period, species & subdistrict, Bering River district, 1984.

Date	Fishing Time Hrs.	Effort ¹	Catch by Species					Total
			King	Sockeye	Coho	Pink	Chum	
<u>INSIDE</u>								
6/14-6/16	36	52	34	8,942	0	0	0	8,976
6/18-6/20	48	21	0	1,084	0	0	0	1,084
6/21-6/23	36	--	19	4,855	3	19	13	4,909
6/25-6/27	48	10	0	1,983	0	0	0	1,983
6/28-6/30	36	2	0	0	0	0	0	0
7/ 2-7/ 4	48	2	0	795	460	30	466	1,751
7/ 5-7/ 7	36	0	0	0	0	0	0	0
7/ 8-8/11	N O E F F O R T							
8/13-8/16	48		0	0	4,593	0	0	4,593
8/20-8/23	72		1	1	32,871	16	0	32,887
8/27-8/30	72		0	0	40,214	0	0	40,214
9/ 3-9/ 6	72		0	0	74,506	0	0	74,506
9/10-9/13	72		0	0	45,606	0	0	45,606
9/17-9/20	72		0	0	11,909	0	0	11,909
9/24-9/27	72		0	0	1,671	0	0	1,671
Total Inside			54	17,660	211,833	65	479	230,089
<u>KAYAK ISLAND</u>								
6/14-6/16	36	38	20	11,528	0	3	3,152	14,703
6/18-6/20	48	71	52	17,087	54	100	3,027	20,320
6/21-6/23	36	--	153	19,379	176	55	3,425	23,188
6/25-6/27	48	80	15	6,360	0	1	2,510	8,886
6/28-6/30	36	45	26	9,019	726	73	6,558	16,402
7/ 2-7/ 4	48	28	8	8,254	412	12	1,047	9,733
7/ 5-7/ 7	36	18	2	2,497	1,431	0	210	4,140
Total Kayak Is.			276	74,124	2,799	244	19,929	97,372

Continued

Table 22. Continued

Date	Fishing Time Hrs.	Effort ¹	Catch by Species					Total
			King	Sockeye	Coho	Pink	Chum	
<u>COMBINED AREAS</u>								
6/14-6/16	36	90	54	20,470	0	3	3,152	23,679
6/18-6/20	48	92	52	18,171	54	100	3,027	21,404
6/21-6/23	36	--	172	24,234	179	74	3,438	28,097
6/25-6/27	48	90	15	8,343	0	1	2,510	10,869
6/28-6/30	36	47	26	9,019	726	73	6,558	16,402
7/ 2-7/ 4	48	30	8	9,049	872	42	1,513	11,484
7/ 5-7/ 7	36	18	2	2,497	1,431	0	210	4,140
7/ 8-8/11			N O E F F O R T					
8/13-8/16	48		0	0	4,593	0	0	4,593
8/20-8/23	72				32,871	16	0	32,887
8/27-8/30	72		0	0	40,214	0	0	40,214
9/ 3-9/ 6	72		0	0	74,506	0	0	74,506
9/10-9/13	72		0	0	45,606	0	0	45,606
9/17-9/20	72		0	0	11,909	0	0	11,909
9/24-9/27	72		0	0	1,671	0	0	1,671
Area Total			330	91,784	214,632	309	20,408	327,461

¹ Effort for periods June 14-20 were taken from fish ticket data while estimate of effort during remainder of season was from aerial surveys. Effort data after July 7 is unavailable.

Table 23. Bering River district salmon catch by species, 1975-1984.

Year	Catch by Species					Total
	King	Sockeye	Coho	Pink	Chum	
1975	162	21,637	24,162	0	0	45,961
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 ¹	610	179,273	117,669	851	4,615	303,018
1984 ¹	330	91,784	214,632	309	20,408	327,461
Average ²	263	69,587	98,750	1,849	4,101	176,385

¹ Preliminary

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

Table 24. Bering River district, sockeye salmon aerial survey estimates 1975-1984.

Stream/Lake	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Bering Lake*	4,000	40,000	8,000	7,000	13,500	12,000	20,000	7,300	26,500	18,000	
Dick Creek*	1,981	2,000	1,500	6,300	11,000	11,000	20,000	9,500	4,000	11,000	
Shepard Creek*	150	550	glacial N/C	6,000	glacial N/C	7,800	9,000	10,500	9,500	13,000	
Carbon Creek	0	muddy N/C	0	0	0	muddy N/C	muddy N/C	2,500	muddy N/C	250	
Kushtaka Lake*	75	2,500	0	3,500	2,500	1,000	5,500	1,350	1,200	800	
Shokum Creek		Included in Kushtaka Lake Total (1975-1979)									
Clear Creek	muddy N/C	muddy N/C	0	0	0	N/C	N/C	3,500	3,500	3,000	
*Index Streams Total	6,206	45,050	9,500	22,800	27,000	31,800	54,500	28,650	41,200	42,800	
All Streams Total	6,206	45,050	9,500	22,800	27,000	32,800	57,000	36,650	45,700	46,750	

Table 25. Estimated age and sex composition of sockeye salmon in the commercial catches from the drift gillnet fishery in the area of the Bering River District east of Kayak, 1984. 1/

	Brood Year and Age Group									
	1982		1981		1980		1979		1978	
	0.1	0.2	0.3	1.2	1.3	2.2	1.4	2.3	3.2	
Female	0.1	0.0	2.1	4.2	46.3	1.2	0.1	2.2	0.0	56.3
Number in Catch	109	0	1,568	3,145	34,345	879	73	1,600	0	41,719
Male	0.0	0.1	1.3	5.3	34.0	0.9	0.0	2.1	.0	43.7
Number in Catch	0	95	952	3,924	25,227	652	0	1,524	31	32,405
Total	0.1	0.1	3.4	9.5	80.4	2.1	0.1	4.2	.0	100.0
Number in Catch	109	95	2,520	7,069	59,572	1,531	73	3,124	31	74,124
Standard Error	82	70	335	488	679	236	67	338	28	

Strata Combined: 6/10 - 7/07 2/
 Sample Dates: 6/14 - 7/07
 Sample Size: 2,363

1/ Based on preliminary 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 four time segments of the fishery. This table is the weighted sum of the catch by sex and age across all four strata. There were sockeye salmon catches in the Controller Bay and Katella Bay areas to the west of Kayak Island (17,660 fish) but they could not be sampled and are not included in the catches which are apportioned by sex and age in this table.

2/ On 7 July the area to the east of Kayak Island was closed for the season on by emergency order.

Table 26 Estimated age and sex composition of coho salmon in the commercial catch in the Bering River District, Controller Bay, 1984. 1/

	Brood Year and Age Group					Total
	1981		1980		1979	
	1.1	2.0	1.2	2.1	3.1	
Strata Combined: 7/01 - 9/28						
Sample Dates: 8/27 - 9/13						
Sample Size: 868						
Female	17.0	0.0	0.0	23.6	0.5	41.1
Percent of Catch						
Number in Catch	35,911	0	0	49,995	1,069	86,975
Male	26.1	0.1	0.1	31.9	0.6	58.9
Percent of Catch						
Number in Catch	55,369	305	305	67,511	1,365	124,855
Total	43.1	0.1	0.1	55.5	1.1	100.0
Percent of Catch						
Number in Catch	91,280	305	305	117,506	2,434	211,830
Standard Error	3,892	327	327	3,904	882	

1/ Based on preliminary 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 two time segments of the fishery. This table is the weighted sum of the catch by sex and age across the two strata. The incidental catch of coho salmon in the earlier sockeye salmon fishery are included. The small coho salmon catch in the area east of Kayak Island was probably composed of fish which did not originate in the Copper/Bering River area and they are not included.

Table 27. Commercial catch of salmon by species, by period, by gear type in the Coghill district, Prince William Sound, 1984.

Period	Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
6/18-21 ¹		90	18,897	2	8,387	10,828	38,204
6/25-29 ²		95	21,477	73	49,395	22,392	93,432
7/02-06 ³		38	23,190	23	132,764	33,563	189,578
7/09-13		63	14,170	101	142,972	64,777	222,083
7/16-20		32	7,843	210	271,220	81,547	360,852
7/23-27		25	1,996	67	152,198	36,761	191,047
7/30-8/04		53	7,383	87	140,560	15,010	163,093
8/05-10	N O E F F O R T						
Total Gill Net		396	94,956	563	897,496	264,878	1,258,289
<u>Purse Seine</u>							
7/02-06 ⁴		0	21	0	10,911	1,126	12,058
Total Purse Seine		0	21	0	10,911	1,126	12,058
<u>Combined Gear</u>							
6/18-21		90	18,897	2	8,387	10,828	38,204
6/25-29		95	21,477	73	49,395	22,392	93,432
7/02-06		38	23,211	23	143,675	34,689	201,636
7/09-13		63	14,170	101	142,972	64,777	222,083
7/16-20		32	7,843	210	271,220	81,547	360,852
7/23-27		25	1,996	67	152,198	36,761	191,047
7/30-8/04		53	7,383	87	140,560	15,010	163,093
8/05-10	N O E F F O R T						
Total All Gear		396	94,977	563	908,407	266,004	1,270,347

¹ The season was opened on June 18 for regular weekly periods from 6 a.m. Monday through 9 p.m. Thursday.

² The weekly fishing period was extended 24 hours from 9 p.m. Thursday, June 28 until 9 p.m. Friday June 29. The size of the closed waters area adjacent to Coghill River was also reduced for the duration of the season after 12 noon on Wednesday, June 27.

³ Regular weekly periods from 6 a.m. Monday until 9 p.m. Friday continued in effect for the duration of the season.

⁴ Coghill district was open to purse seine gear throughout the season after Monday July 2, but no catches were reported after July 6.

Table 28. Coghill district salmon catch by species and gear, 1975 - 1984.

Year	Peak Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
1975	311	525	142,864	357	99,492	32,438	275,676
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 ¹	303	596	37,986	752	243,359	234,555	517,248
1984 ¹		396	94,956	563	897,496	264,878	1,258,289
10 Year Average		318	184,674	610	310,078	138,948	634,628
<u>Purse Seine</u>							
1975	45	246	4,985	30	145,155	2,561	152,977
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 ¹	9	0	169	16	40,326	8,598	49,109
1984 ¹	2	0	21	0	10,911	1,126	12,058
10 Year Average		130	6,285	24	187,146	28,855	222,439
<u>Combined Gear</u>							
1975	356	771	147,849	387	244,647	34,999	428,653
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	289	150	947,431	242	1,188,504	387,630	2,523,957
1983 ¹	312	596	38,155	768	283,685	243,153	566,357
1984 ¹		396	94,977	563	908,407	266,004	1,270,347
10 Year Average		447	190,959	635	497,224	167,803	857,068

¹ Preliminary

Table 29. Salmon escapement by species in the Coghill district, 1975 - 1984.

<u>Year</u>	<u>Sockeye¹</u>	<u>Pink²</u>	<u>Chum²</u>
1975	34,855	570,950	7,100
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 ³	444,700	30,740
1982	180,314 ³	264,420	24,150
1983	38,783 ³	311,200	62,800
1984	63,622	468,040	24,460
10 Year Average	69,950	255,962	27,786

¹ Coghill River only. Total weir count beginning in 1974.

² District totals include the west side of Port Wells.

³ Includes jacks.

Table 30. Coghill River weir salmon counts, 1984.

Date	Sockeye		Pink		Chum		King	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/6	0							
6/7	8	8						
6/8	0	8						
6/9	0	8						
6/10	0	8						
6/11	110	118						
6/12	0	118						
6/13	109	227						
6/14	0	227						
6/15	273	500						
6/16	1,504	2,004						
6/17	1,604	3,608						
6/18	1,870	5,478						
6/19	2,045	7,523						
6/20	708	8,231						
6/21	1,153	9,384					1	1
6/22	1,211	10,695	2	2			0	1
6/23	2,432	13,027	0	2			0	1
6/24	4,176	17,203	2	4			1	2
6/25	3,708	20,911	33	37			0	2
6/26	1,465	22,376	16	53	1	1	0	2
6/27	1,412	23,788	37	90	0	1	1	3
6/28	1,499	25,287	69	159	2	3	0	3
6/29	2,395	27,682	122	281	2	5	1	4
6/30	1,413	29,095	96	377	5	10	1	5
7/1	1,690	30,785	157	534	7	17	0	5
7/2	2,463	33,248	124	658	3	20	2	7
7/3	1,562	34,810	104	762	5	25	1	8
7/4	1,283	36,093	111	873	2	27	1	9
7/5	3,700	39,795	455	1,328	3	30	2	11
7/6	3,474	43,269	457	1,785	4	34	0	11
7/7	1,591	44,860	377	2,162	1	35	0	11
7/8	3,159	48,019	935	3,097	34	69	0	11
7/9	4,238	52,257	619	3,716	25	94	0	11
7/10	904	53,161	129	3,845	12	106	0	11
7/11	1,222	54,383	751	4,596	24	130	0	11
7/12	414	54,797	257	4,853	14	144	2	13
7/13	686	55,483	947	5,790	34	177	2	15
7/14	403	55,886	645	6,445	16	193	0	15
7/15	2,189	58,075	2,057	8,502	95	288	3	18
7/16	2,856	60,931	3,175	11,677	192	480	3	21
7/17	1,341	62,272	5,114	16,791	543	1,014	2	23
7/18	482	62,754	2,294	19,085	165	1,179	1	24
7/19	221	62,975	812	19,897	147	1,327	0	24
7/20	207	63,182	804	20,701	136	1,463	3	27
7/21	146	63,428	652	21,353	285	1,748	0	27
7/22	117	63,445	491	21,847	87	1,835	1	28
7/23	130	63,575	471	22,318	86	1,921	0	28

continued

Table 30. (Continued)

Date	Sockeye		Pink		Chum		King	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/24 ²	47	63,622 ¹	187	22,505	28	1,949	0	28

¹ Total includes 1,955 jacks.

² At the time the weir was pulled the estimated number of fish behind the weir was 4,000 pinks, 300 chums and 150 sockeye.

Table 31. Estimated age and sex composition of the sockeye salmon in the commercial catches in the Coghill District drift gillnet fishery, Prince William Sound, 1984. 1/

	Brood Year and Age Group						
	1981	1980			1979		1978
	0.2	0.3	1.2	1.3	2.2	2.3	3.2
Strata Combined: 6/17 - 9/15							
Sample Dates: 6/18 - 7/13							
Sample Size: 2,285							
Female	0.2 183	0.4 411	5.3 5,011	43.6 41,370	1.5 1,430	2.9 2,768	.0 46
Male	0.1 81	0.2 170	8.9 8,441	32.0 30,363	2.0 1,923	2.9 2,759	0.0 0
Total	0.3 264	0.6 581	14.2 13,452	75.5 71,733	3.5 3,353	5.8 5,527	.0 46
Standard Error	107	153	709	872	377	471	42

1/ Catch data are from preliminary fish ticket summaries. Age and sex composition data from a systematic sampling program together with weekly catch data were used to estimate the catch by sex and age in four time strata. This table is the weighted sum of the estimates for each strata.

Table 32. Estimated age and sex composition of the sockeye salmon escapement to Coghill Lake, 1984. 1/

	Brood Year and Age Group									
	1981		1980		1979		1978		Total	
	0.2	1.1	0.3	1.2	1.3	2.2	1.4	2.3		
Strata Combined: 6/01 - 7/24										
Sample Dates: 6/20 - 7/14										
Sample Size: 1,067										
Female	Percent of Escapement	0.0	0.0	0.0	10.9	32.2	2.0	0.2	1.1	46.4
	Number in Escapement	0	0	0	6,915	20,512	1,264	127	693	29,511
Male	Percent of Escapement	0.3	0.7	0.2	27.5	20.3	2.6	0.0	2.0	53.6
	Number in Escapement	204	449	116	17,491	12,936	1,663	0	1,252	34,111
Total	Percent of Escapement	0.3	0.7	0.2	38.4	52.6	4.6	0.2	3.1	100.0
	Number in Escapement	204	449	116	24,406	33,448	2,927	127	1,945	63,622
	Standard Error	104	168	79	940	966	400	87	339	

1/ Age and sex composition data for two time strata in the escapement were applied to daily weir counts to estimate the escapement by sex and age for the first and second halves of the run. This table is the weighted sum of these two estimates.

Table 33. Coghill River sockeye salmon catch and escapement sex and age composition, Prince William Sound, 1984.

	Brood Year and Age Group										Total				
	1978					1979						1980		1981	
	1.4	2.3	3.2	1.3	2.2	0.3	1.2	0.2	1.1	0.2		1.1			
Catch: 18 Jun-04 Aug															
Males	0.00	2.81	0.00	32.15	2.09	0.16	8.72	0.08	0.00	0.00	46.01				
Catch	0	2,667	0	30,526	1,991	151	8,283	72	0	0	43,690				
Females	0.00	2.92	0.04	43.45	1.50	0.47	5.42	0.19	0.00	0.00	53.99				
Catch	0	2,772	39	41,257	1,421	444	5,145	187	0	0	51,266				
Sexes Combined	0.00	5.73	0.04	75.60	3.59	0.63	14.14	0.27	0.00	0.00	100.00				
Catch	0	5,439	39	71,783	3,412	595	13,428	259	0	0	94,956 1/				
Escapement: 06 Jun-24 Jul															
Males	0.00	2.00	0.00	20.31	2.59	0.18	27.45	0.36	0.69	0.69	53.58				
Escapement	0	1,272	0	12,930	1,646	114	17,461	228	436	436	34,087				
Females	0.19	1.05	0.00	32.32	2.03	0.00	10.83	0.00	0.00	0.00	46.42				
Escapement	119	670	0	20,562	1,293	0	6,891	0	0	0	29,535				
Sexes Combined	0.19	3.05	0.00	52.63	4.62	0.18	38.28	0.36	0.69	0.69	100.00				
Escapement	119	1,942	0	33,492	2,939	114	24,352	228	436	436	63,622				
Catch + Escapement: 06 Jun-04 Aug															
Males	0.00	2.48	0.00	27.40	2.29	0.17	16.24	0.19	0.28	0.28	49.05				
Catch + Escapement	0	3,939	0	43,456	3,637	265	25,744	300	436	436	77,778				
Females	0.08	2.17	0.02	38.98	1.71	0.28	7.59	0.12	0.00	0.00	50.95				
Catch + Escapement	119	3,442	39	61,820	2,714	444	12,036	187	0	0	80,800				
Sexes Combined	0.08	4.65	0.02	66.38	4.00	0.45	23.83	0.31	0.28	0.28	100.00				
Catch + Escapement	119	7,381	39	105,276	6,351	709	37,780	487	436	436	158,578				

1/ Strata catch totals are preliminary and are based on verbal processor reports, not on fish ticket data.

Table 34. Commercial catch of salmon by species, by period, by gear type in the Unakwik district, Prince William Sound, 1984.

Catch by Species							
Period	Effort	King	Sockeye	Coho	Pink	Chum	Total
<u>Drift Gill Net</u>							
6/18-21 ¹		0	4,735	0	24	7	4,766
6/25-29 ²		1	3,540	0	1,162	501	5,204
7/02-06 ³		0	8,497	0	2,376	725	11,598
7/09-13		0	1,182	0	597	237	2,016
7/16-20		0	272	0	4,752	1,716	6,740
7/23-27		0	150	0	8,910	2,154	11,214
7/30-8/04		0	137	0	9,043	1,614	10,794
8/05-10		1	9	0	878	171	1,059
Total Gill Net		2	18,522	0	27,742	7,125	53,391

Purse Seine

NO EFFORT WAS REPORTED DURING THE 1984 SEINE SEASON

Total Purse Seine	0	0	0	0	0	0	0
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¹ The season was opened on June 18 for regular weekly periods from 6 a.m. Monday through 9 p.m. Thursday.

² The weekly fishing period was extended 24 hours from 9 p.m. Thursday, June 28 until 9 p.m. Friday June 29.

³ Regular weekly periods from 6 a.m. Monday until 9 p.m. Friday continued in effect for the duration of the season.

Table 35. Unakwik district salmon catch by species and gear, 1975 - 1984.

Year	Peak Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
1975	14	4	11,922	0	84	70	12,080
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 ¹	37	8	13,275	0	1,517	1,423	16,223
1984 ¹		2	18,522	0	27,742	7,125	53,391
10 Year Average		6	13,136	2	4,609	1,263	19,015
<u>Purse Seine</u>							
1975			NO FISHING				
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 ¹	1	0	6	0	2,460	693	3,159
1984 ¹			NO FISHING				
10 Year Average ²		0	40	0	23,685	2,447	26,173
<u>Combined Gear</u>							
1975	14	4	11,922	0	84	70	12,080
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 ¹	38	8	13,281	0	3,977	2,116	19,382
1984 ¹		2	18,522	0	27,742	7,125	53,391
10 Year Average		6	13,175	3	28,294	3,710	45,188

¹ Preliminary

² Average of years fished

Table 36. Estimated age and sex composition of sockeye salmon in the commercial catch from the Unakwik District drift gillnet fishery, 1984.

	Brood Year and Age Group							
	1980	1979	1978	1977				
	1.2	1.3	2.2	1.4	2.3	3.2	3.3	
Female	1.8 339	44.9 8,313	1.2 215	0.1 17	9.0 1,666	0.1 20	0.2 31	57.3 10,601
Male	2.8 527	32.1 5,938	0.2 41	0.1 17	7.3 1,352	0.1 17	0.1 20	42.7 7,912
Total	4.7 866	77.0 14,251	1.4 256	0.2 34	16.3 3,018	0.2 37	0.3 51	100.0 18,513
	116	228	65	22	201	24	30	

Strata Combined: 6/17 - 8/04
 Sample Dates: 6/18 - 7/06
 Sample Size: 1,160

1/ Catch data are from preliminary fish ticket summaries. Temporally stratified age and sex composition data were used to estimate the catch by sex and age in two time segments of the fishery. This table is the weighted sum of the estimate catch by sex and age in the two strata.

Table 37. Eshamy district salmon catch by species and gear, 1984.

Period	Effort ¹	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
<u>Drift Gill Net</u>							
7/16-21 ²	86	0	235	11	4,414	404	5,064
7/22-28 ³		1	6,548	55	63,574	7,760	77,938
7/29-8/4 ⁴		0	6,549	62	69,703	4,473	80,787
8/5-11		6	7,040	71	54,308	2,577	64,002
8/12-18		0	3,099	83	54,620	222	58,024
8/19-25 ⁵		0	19	0	707	15	741
Total Drift Gill Net		7	23,490	282	247,326	15,451	286,556
<u>Set Gill Net</u>							
7/16-21 ²		0	597	11	9,079	388	10,075
7/22-28 ³		0	2,278	0	21,584	917	24,779
7/29-8/4 ⁴		1	5,449	19	44,218	948	50,635
8/5-11	18	4	6,391	29	45,121	566	52,111
8/12-18		0	7,312	36	79,611	160	87,119
8/19-25 ⁵		0	1,199	3	78,563	21	79,786
Total Set Gill Net		5	23,226	98	278,176	3,000	304,505
<u>Combined Gear</u>							
7/16-21		0	832	22	13,493	792	15,139
7/22-28		1	8,826	55	85,158	8,677	102,717
7/29-8/4		1	11,998	81	113,921	5,421	131,422
8/5-11		10	13,431	100	99,429	3,143	116,113
8/12-18		0	10,411	119	134,231	382	145,143
8/19-25		0	1,218	3	79,270	36	80,527
Total Combined Gear		12	46,716	380	525,499	18,451	591,061

¹ Peak season effort.

² The Main Bay area adjacent to the state hatchery was opened for continuous seven day per week fishing throughout the season after 6:00 a.m., Monday, July 16.

³ The entire district was opened for regular weekly periods from 6:00 a.m. Monday through 9:00 p.m. Friday after July 23.

⁴ The entire district was opened to continuous seven day per week fishing from 9:00 p.m. Friday, August 3 until 9:00 p.m., Friday August 10. Regular weekly periods resumed thereafter.

⁵ No catches were reported after August 25, however, the district was not officially closed until the end of the regular weekly period at 9:00 p.m. on Friday, Sept. 14.

Table 38. Eshamy district salmon catch by species and gear, 1975 - 1984.

Year	Peak Effort	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
		<u>Drift Gill Net</u>					
1975							
1976							
1977	53	22	16,916	49	63,036	8,344	88,367
1978							
1979							
1980	16	0	684	25	3,235	130	4,074
1981							
1982							
1983 ¹	24	1	724	9	164,856	2,754	168,344
1984 ²	86	7	23,490	282	247,326	15,451	286,556
10 Year Average ³		7	10,454	91	119,613	6,670	136,835
		<u>Set Net</u>					
1975							
1976							
1977	12	9	9,889	2	24,743	4,218	38,861
1978							
1979							
1980	5	0	2,000	38	2,471	134	4,643
1981							
1982							
1983 ¹	13	1	1,328	13	190,153	3,429	194,924
1984 ²	18	5	23,226	98	278,176	3,000	304,505
10 Year Average ³		4	9,111	38	123,886	2,695	135,733
		<u>Combined Gear</u>					
1975							
1976							
1977	65	31	26,805	51	87,779	12,562	127,228
1978							
1979							
1980	21	0	2,684	63	5,706	264	8,717
1981							
1982							
1983 ¹	37	2	2,052	22	355,009	6,183	363,268
1984 ²	104	12	46,716	380	525,502	18,451	591,061
10 Year Average ³		11	19,559	129	243,499	9,365	272,568

-Continued-

Table 38. (Continued)

- ¹ General district remained closed throughout the season. All catches are from Main Bay hatchery terminal fishery which was open to continuous fishing from July 25 until September 2.
- ² Preliminary.
- ³ Only the four years open to fishing during this period were used to calculate averages.

Table 39. Salmon escapement from weir and stream foot survey counts, Eshamy district, 1975-1984.

Year	King ¹	Sockeye ¹	Coho ¹	Pink ²	Chum ¹
1975		1,724	41	5,720	440
1976		19,367	125	5,500	
1977		11,746	230	32,080	
1978		12,580	20	5,690	
1979		12,169		12,860	
1980	5	44,263	128	13,813	2
1981		23,048 ³	249	21,490	13
1982	1	6,782	79	14,080	79
1983		10,348	58	9,280	100
1984	2	36,121	881	17,080	
10 Year Average		17,815	181	13,759	63

¹ Weir count.

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 40. Eshamy River weir salmon counts, 1984.

Date	Sockeye		Pink		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/22	0					
6/23	0					
6/24	0					
6/25	0					
6/26	2	2				
6/27	20	22				
6/28	196	218				
6/29	20	238				
6/30	0	238				
7/ 1	20	258				
7/ 2	201	459	1	1		
7/ 3	129	588	3	4		
7/ 4	263	851	1	5		
7/ 5	615	1,466	0	5		
7/ 6	811	2,277	9	14		
7/ 7	162	2,439	1	15		
7/ 8	271	2,710	6	21		
7/ 9	291	3,001	14	35		
7/10	132	3,133	5	40		
7/11	1,624	4,757	66	106		
7/12	201	4,958	4	110		
7/13	257	5,215	3	113		
7/14	206	5,421	7	120		
7/15	120	5,541	42	162		
7/16	1,557	7,098	57	219		
7/17	621	7,719	43	262		
7/18	664	8,383	63	325		
7/19	752	9,135	159	484		
7/20	230	9,365	20	504		
7/21	353	9,718	51	555		
7/22	373	10,091	87	642		
7/23	486	10,577	101	743		
7/24	157	10,734	35	778		
7/25	341	11,075	69	847		
7/26	906	11,981	169	1,016		
7/27	983	12,964	271	1,287		
7/28	146	13,110	105	1,392		
7/29	237	13,347	82	1,474		
7/30	531	13,878	93	1,567		
7/31	328	14,206	59	1,626		

(Continued)

Table 40. (Continued)

Date	Sockeye		Pink		Coho	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
8/ 1	320	14,526	56	1,682		
8/ 2	176	14,702	47	1,729		
8/ 3	46	14,748	17	1,746		
8/ 4	193	14,941	29	1,775		
8/ 5	141	15,082	33	1,808		
8/ 6	342	15,424	16	1,824		
8/ 7	193	15,617	33	1,857		
8/ 8	212	15,829	50	1,907		
8/ 9	118	15,947	17	1,924		
8/10	132	16,079	21	1,945		
8/11	75	16,154	9	1,954		
8/12	83	16,237	28	1,982		
8/13	269	16,506	7	1,989		
8/14	191	16,697	10	1,999	1	1
8/15	228	16,925	9	2,008	1	2
8/16	218	17,143	15	2,023	2	4
8/17	111	17,254	7	2,030	0	4
8/18	245	17,499	29	2,059	6	10
8/19	5,149	22,648	525	2,584	287	297
8/20	2,918	25,566	402	2,986	132	429
8/21	1,090	26,656	119	3,105	55	484
8/22	2,418	29,074	81	3,186	70	554
8/23	1,874	30,948	112	3,298	69	623
8/24	694	31,642	26	3,324	40	663
8/25	995	32,637	135	3,459	15	678
8/26	719	33,356	73	3,532	27	705
8/27	768	34,124	78	3,610	64	769
8/28	539	34,663	54	3,664	40	809
8/29	309	34,972	27	3,691	23	832
8/30	590	35,562	61	3,752	30	862
8/31	259	35,821	41	3,793	13	875
9/ 1	68	35,889	21	3,814	3	878
9/ 2	61	35,950	43	3,857	1	879
9/ 3	69	36,019	26	3,883	0	879
9/ 4	42	36,061	36	3,919	0	879
9/ 5	33	36,094	51	3,970	2	881
TOTAL ¹		36,121		3,970		881

¹ An estimated 25 sockeye below the weir is included in the total count. The total also includes 2 kings; and 2 jack sockeye that were included in the daily count.

Table 4]. Estimated age and sex composition of the sockeye salmon in commercial catches in the Eshamy District set and drift gillnet fisheries, Prince William Sound, 1984. 1/

		Brood Year and Age Group								
		1981	1980			1979		1978		
		0.2	0.3	1.2	2.1	1.3	2.2	3.1	2.3	Total
Female	Percent of Catch	0.0	0.1	45.8	.0	1.1	4.7	0.0	.0	51.7
	Number in Catch	0	29	21,382	23	510	2,195	0	19	24,158
Male	Percent of Catch	.0	0.0	43.6	.0	0.9	3.4	0.1	0.2	48.3
	Number in Catch	19	0	20,378	23	431	1,587	27	93	22,558
Total	Percent of Catch	.0	0.1	89.4	0.1	2.0	8.1	0.1	0.2	100.0
	Number in Catch	19	29	41,760	46	941	3,782	27	112	46,716
	Standard Error	18	22	298	29	131	265	24	47	

Strata Combined: 7/15 - 9/15
 Sample Dates: 7/23 - 9/15
 Sample Size: 2,328

1/ Catch data are from preliminary fish ticket summaries. Age and sex composition data from a systematic sampling program together with weekly catch data were used to estimate the catch by sex and age in four time strata. This table is the weighted sum of the estimates for each strata.

Table 42. Estimated age and sex composition of the sockeye salmon escapement to Eshamy Lake, 1984. 1/

	Brood Year and Age Group							
	1980		1979			1978		Total
	1.2	2.1	1.3	2.2	2.3	3.2		
Strata Dates:	6/22 - 9/05							
Sample Dates:	7/15 - 8/24							
Sample Size:	2,073							
Female	Percent of Escapement Number in Escapement	45.0 16,250	0.0 0	0.4 162	3.0 1,089	0.1 38	0.0 0	48.6 17,539
Male	Percent of Escapement Number in Escapement	47.8 17,256	0.5 190	0.1 38	2.8 1,026	.0 5	0.1 38	51.4 18,553
Total	Percent of Escapement Number in Escapement Standard Error	92.8 33,507 274	0.5 190 84	0.6 200 80	5.9 2,116 248	0.1 43 38	0.1 38 38	100.0 36,096

1/ Age and sex composition data for four time segments of the escapement were applied to daily weir counts. This table is the weighted sum of the escapement by sex and age for these four strata.

Table 43. Commercial salmon catch by species, by week in the general purse seine districts, Prince William Sound, 1984.¹

Period	Effort ²	Catch by Species					Total
		King	Sockeye	Coho	Pink	Chum	
7/ 2- 6 ³	33	4	4,705	19	437,698	73,504	515,930
7/ 9-13 ⁴	52	25	13,832	674	1,064,240	79,464	1,158,235
7/16-20	65	8	15,228	114	1,762,032	102,457	1,879,839
7/23-27	263	22	23,086	1,035	4,553,956	209,953	4,788,052
7/30-8/4 ⁵ ⁶ ⁷ 262		13	30,039	2,031	4,422,164	190,139	4,644,386
8/ 5-10 ⁸	261	5	29,316	3,728	3,837,412	130,052	4,000,513
8/13-17	234	3	25,959	2,841	3,343,040	108,380	3,480,223
8/20-24 ⁹	120	0	9,059	796	697,042	10,952	717,849
8/27-31 ¹⁰	12	0	516	239	104,746	475	105,976
Total		80	151,740	11,477	20,222,330	905,376	21,291,003

¹ Includes common property fishery catches from the Eastern, Northern, North-western, Southwestern, Montague and Southeastern districts only.

² Effort was reduced until July 23 because of unresolved fish prices.

³ The season opened in all general purse seine districts at 6:00 a.m. on Monday July 2 and continued for regular weekly periods from 6:00 a.m., Monday through 9:00 p.m., Friday. The only exception was a special closure of Wells Bay in the Northern district.

⁴ The Northern half of Eaglek Bay along with the head of Wells Bay in the Northern district were opened with the start of the regular weekly period at 6:00 a.m. on July 9.

⁵ Fishing was extended until further notice after 9:00 p.m., Friday August 3 and remained in effect through 9:00 p.m., Friday August 10. Regular Monday through Friday periods resumed after Monday August 13.

⁶ One mile area near Cannery Creek in the Northern district closed for the season after 6:00 a.m., Saturday August 4.

⁷ A portion of the San Juan subdistrict was closed for the duration of the season after 9:00 p.m., Saturday August 4.

⁸ The eastern half of Unakwik Inlet in the Northern district was closed for the duration of the season after 9:00 a.m., August 9.

⁹ Port Fidalgo subdistrict in the Eastern district was closed for the duration of the season effective at 6:00 a.m., Monday August 20.

¹⁰ Although no catches were reported after the last week in August the remainder of the general purse seine districts were officially closed for the season after 9:00 p.m., Friday September 14.

Table 44. Commercial salmon catch by species in the general purse seine districts, Prince William Sound, 1975 - 1984.¹

Year	Catch by Species					Total
	King	Sockeye	Coho	Pink	Chum	
1975	1,744	29,842	5,753	4,208,074	65,410	4,310,823
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 ²	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
Average	502	73,417	6,919	11,051,464	560,518	11,692,820

¹ Includes purse seine catches from the Eastern, Northern, Northwestern, Southwestern, Montague and Southeastern districts. Also includes troll catches during 1975-1976. Does not include hatchery sales harvests.

² Preliminary.

Table 45. Commercial salmon catch by all gear, by species, Prince William Sound, 1975 - 1984.¹

Year	Catch by Species					Total
	King	Sockeye	Coho	Pink	Chum	
1975	2,519	189,613	6,140	4,452,805	100,479	4,751,556
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 ⁴	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
10 Year Average	965	288,511	7,611	12,170,957	779,438	13,247,481

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 1975-1976.

² 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.

Table 46. Salmon harvests by species from private nonprofit hatcheries, Prince William Sound, 1978 - 1984.¹

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 ²	6	346,934
1981	1	1	707,037	118	707,156
1982	1		1,355,315		1,355,315
1983 ³	2		765,924		765,924
1984 ³	2		402,825	4,886	407,711 ⁴
<hr/>					
TOTAL					

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. Pink and chum salmon returns to Prince William Sound, 1984.

Pink Salmon				
District	Catch	Escapement Goal	Estimated Escapement	Total Run
Eastern		400,000 - 480,000	1,209,050	
Northern		140,000 - 170,000	591,700	
Coghill		125,000 - 175,000	468,040	
Northwestern		104,000 - 172,000	491,120	
Eshamy		9,000 - 12,000	17,080	
Southwestern		69,000 - 115,000	380,710	
Montague		106,000 - 128,000	193,020	
Southeastern		225,000 - 270,000	801,540	
Total	22,085,901 ¹	1,178,000 - 1,522,000	4,152,260	
Chum Salmon				
District	Catch	Escapement Goal	Estimated Escapement	Total Run
Eastern		87,000 - 110,000	131,130	
Northern		29,000 - 37,000	60,400	
Northwestern & Coghill		49,000 - 61,000	24,460	
Southwestern & Eshamy		3,000 - 4,000	10	
Montague		12,000 - 14,000	0	
Southeastern		20,000 - 25,000	9,160	
Total	1,201,671 ²	200,000 - 251,000	225,160	

¹ Catches are preliminary and include 402,825 pink salmon from hatchery sales.

² Catches are preliminary and include 4,886 chum salmon from hatchery sales.

Table 48. Pink salmon runs, Prince William Sound, 1960-1984.

Year	ESCAPEMENTS										Commercial Catch	Total Run		
	Northwestern					Southwestern								
	Eastern	Northern	Coghill	Eshamy	Montague	Southeastern	Total	Eastern	Northern	Coghill			Eshamy	Montague
1960	475,073	133,653	203,575	155,788	214,987	167,747	1,350,823	1,841,896	3,192,719					
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					
63	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	309,270	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	5,984,208					
1970	328,730	109,240	170,130	69,260	73,190	139,640	944,190	2,809,996	3,754,186					
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	3,206,798					
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	3,018,994	3,884,594					
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	1,055,610	2,780,073 ¹	3,835,683					
79	782,420	223,580	241,120	264,710	323,490	1,091,970	2,927,290	15,393,223 ¹	18,320,513					
1980	515,380	171,410	338,100	134,860	114,170	302,190	1,576,110	13,434,024 ¹	15,010,134					
81	768,000	259,850	588,880	193,750	506,140	594,890	2,911,510	19,286,542 ¹	22,198,052					
82	566,530	325,890	429,750	189,190	125,870	470,000	2,107,330	18,858,647 ¹	20,965,977					
83	504,480	180,040	521,010	182,520	247,260	634,890	2,270,200	13,309,461 ^{1,2}	15,579,661					
84	1,209,050	591,700	959,160	397,790	193,020	801,540	4,152,260	21,683,076 ^{1,2}	25,835,336					

¹ Does not include hatchery harvests

² Preliminary

Table 9. Chum salmon runs, Prince William Sound, 1960-1

Year	ESCAPEMENTS										Total	Commercial Catch	Total Run
	Northwestern		Southwestern		Southeastern		Total		Commercial Catch	Total Run			
	Eastern	Northern	Coghill	Eshamy	Montague	Southeastern	Total						
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	486,840	891,880	1,378,720				
63	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	102,330	230,661	332,991				
71	79,930	16,190	34,570	1,210	25,620	9,260	166,780	574,265	741,045				
72	134,780	79,030	50,520	2,850	5,190	29,310	301,680	45,370	347,050				
73	267,210	143,420	89,790	1,130	2,930	42,110	546,590	729,839	1,276,429				
74	92,840	53,830	45,010	200	90	2,910	194,880	88,544	283,424				
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	326,480	1,335,368	1,661,848				
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				

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.

Table 50: Sockeye salmon escapement counts from selected systems in Prince William Sound, 1984.¹

SYSTEM	Stream Number	Weekly Count (Dates)										TOTAL ²	
		7/1-7	7/8-14	7/15-21	7/22-28	7/29-8/4	8/5-11	8/12-18	8/19-25	8/26-9/1			
Robe River	137					1,965 ³							1,965
Billy's Hole	218				900	900		200					900
Red Lake	300	300	1,500	1,500	800	600	500	300	700	100			1,500
Shrode Lake	476	700	500		600	300	200						700
Jackpot Lakes	608		5,000		2,500	5,000	2,500	3,000	3,500				5,000
Bainbridge	630		200		500	7,000	2,000	200	300				7,000
TOTAL													17,065

¹ All counts are aerial estimates of live fish unless indicated otherwise.

² Peak live count accepted as season escapement.

³ Ground survey count of Brownie Creek and Robe River and includes live and dead fish.

Table 51. Estimated age and sex composition of sockeye salmon in the commercial catches from the general purse seine districts in Prince William Sound, 1984. 1/

	Brood Year and Age Group										Total
	1981		1980		1979		1978		1977		
	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	3.2	3.2	
Female											
Percent of Catch	0.2	0.1	38.5	0.1	4.5	7.1	0.1	0.8	0.2	51.6	
Number in Catch	356	114	58,457	190	6,849	10,777	114	1,266	237	78,360	
Male											
Percent of Catch	0.1	.0	37.1	0.3	3.9	5.5	0.0	1.3	0.1	48.4	
Number in Catch	185	71	56,327	415	5,851	8,380	0	1,924	227	73,380	
Total											
Percent of Catch	0.4	0.1	75.6	0.4	8.4	12.6	0.1	2.1	0.3	100.0	
Number in Catch	541	185	114,784	605	12,700	19,157	114	3,190	464	151,740	
Standard Error	246	124	1,701	243	1,141	1,292	106	593	230		

Strata Combined: 7/01 - 9/15
 Sample Dates: 7/23 - 8/17
 Sample Size: 1,677

1/ Includes catches from the Eastern, Northern, Coghill, Northwestern, Southwestern, Montague and, Southeastern Districts. Catch data are from preliminary fish ticket summaries. Age and sex composition data were used to allocate the catch by sex and age in three time strata. The sample in each stratum was taken on an available basis from many tenders and was approximately weighted relative to the catch in each district. This table is the weighted sum of the catch estimates by sex and age for each strata.

Table 52. Estimated age and sex composition of chum salmon in the commercial catches in the general purse seine districts, Prince William Sound, 1984. 1/

		Brood Year and Age Group						
		1981	1980	1979	1978	1977		
		0.1	0.2	0.3	0.4	0.5	0.6	
		Total						

Strata Combined: 7/01 - 9/15								
Sample Dates: 7/23 - 8/17								
Sample Size: 6,880								
Female	Percent of Catch	.0	7.2	37.0	7.1	0.2	.0	51.6
	Number in Catch	263	65,361	334,698	64,499	2,006	103	466,930
Male	Percent of Catch	.0	8.4	31.9	8.0	0.1	0.0	48.4
	Number in Catch	385	75,674	289,192	72,256	918	0	438,364
Total	Percent of Catch	0.1	15.6	68.9	15.1	0.3	.0	100.0
	Number in Catch	648	141,036	623,830	136,753	2,924	103	905,294
	Standard Error	365	4,540	6,030	4,723	757	95	

1/ This is the weighted sum of weekly estimates of the purse seine catch by age and sex in the Eastern, Northern, Northwestern, Southwestern, and, Southeastern Districts. Weekly catch data for each district were from preliminary fish ticket summaries. The age and sex composition data were from weekly catch samples in each district.

Table 53. Estimated age and sex composition of chum salmon in the commercial catches from the combined drift gillnet fisheries in Prince William Sound, 1984. 1/

	Brood Year and Age Group					Total
	1981	1980	1979	1978	1978	
	0.2	0.3	0.4	0.5		
Strata Combined:	6/17 - 9/15					
Sample Dates:	6/18 - 8/11					
Sample Size:	3,135					
Female	7.1	44.3	6.7	0.3	58.4	
Number in Catch	19,790	124,494	18,687	703	163,674	
Male	5.3	30.3	5.8	0.2	41.6	
Number in Catch	14,746	85,080	16,147	682	116,655	
Total	12.4	74.6	12.5	0.5	100.0	
Number in Catch	34,536	209,574	34,834	1,385	280,329	
Standard Error	1,895	2,589	2,002	309		

1/ This is the weighted sum of weekly estimates of the gillnet catch by age and sex in the Coghill and Eshamy districts. Weekly catch data for each district were from preliminary fish ticket summaries. The age and sex composition data were from weekly catch samples in each district.

Table 54. Forecasted commercial salmon harvest by district and species, Prince William Sound, 1985¹

COMMERCIAL HARVEST (1,000's of fish)						
District	King	Sockeye	Coho	Pink	Chum	All Species
Copper River	25 - 35	1,000 - 1,400	325 - 375			1,350 - 1,810
Bering River		80 - 100	100 - 150			180 - 250
Coghil-Unakwik		100 - 260		500 - 1,000	260 - 550	860 - 1,810
Eshamy		15 - 25		700 - 1,300	10 - 20	725 - 1,345
General Purse Seine		70 - 90		12,300 - 21,900	1,000 - 1,800	13,370 - 23,790
Area Total	25 - 35	1,265 - 1,875	425 - 525	13,500 - 24,200 ²	1,270 - 2,370 ²	16,485 - 29,005

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 1.4 million pink salmon and 26,000 chum salmon harvested for cost recovery by private non-profit hatcheries.

Table 56. Summary of season, location, effort and harvest by gear type in the Prince William Sound herring fishery, 1984.

Fishery	District	Effort	Harvest (MT)	Fishing Duration
Sac Roe Seine	Montague		2,223.6	4/14 (2 hours)
	Montague		3,070.6	4/14 (1 hour)
	TOTAL	105 ¹	5,294.2	
Sac Roe Gill Net	Montague		76.5	4/18 (5 ² hours)
	General		234.5	4/20-22 (54 hours)
	TOTAL	24	311.0	
Spawn on Kelp	C L O S E D ³			
Herring Pounds	Northern	37 ⁴	24.2	4/24-5/8
Herring Bait/Food	General	3 ⁵	949.46	9/15-1/31 ⁶

1 105 boats participating but only 101 actually made deliveries.

2 Scheduled 24 hour period reduced to 5 hours.

3 225 permits were issued.

4 65 permits issued. 45 pounds were constructed and 37 permittees actually harvested pound kelp.

5 Two seine boats participated.

6 Bait markets were limited due to forecasted poor crab seasons, and above average bait harvests in other areas. The fishery remained open for the full season permitted by regulation.

Table 57. Herring sac roe harvested in Prince William Sound, 1969 - 1984¹

Year	Effort Seines	Harvest (MT)	Effort Gill Nets	Harvest (MT)	Total Harvest (MT)
1969	6	322.6			322.6
1970					
1971	12	833.8			833.8
1972	16	1,607.8			1,607.8
1973	28	6,335.1			6,335.1
1974	72	5,776.1	3	3.48	5,779.6
1975	76	5,516.1			5,516.1
1976 ²	66	2,344.2			2,344.2
1977 ³	60	2,070.7	1	1.42	2,072.1
1978	75	1,206	38	56	1,262
1979	89	3,753.8			3,753.8
1980	74	5,481.4 ⁴	16	239.87	5,721.3
1981	101	12,490.3	18	212.78	12,703
1982 ³	95	6,483.7	18	357.29	6,841
1983	103 ⁵	2,470.9	22	95.6	2,566.5
1984	105 ⁶	5,294.2	24	311.0	5,605.2

¹ 1983 - 1984 data preliminary.

² No sac roe fishery in the Northern district.

³ No sac roe fishery in the Montague district.

⁴ 350 - 500 tons dead loss.

⁵ 103 boats participating but only 72 actually made deliveries.

⁶ 105 boats participating but only 101 actually made deliveries.

Table 58. Herring eggs-on-kelp harvested from natural spawning, Prince William Sound, 1969 - 1984.

Year	Effort	Harvest		Herring ² . Utilized (Metric Tons)
		Pounds ¹	Metric Tons	
1969	3	5,300	2.4	18.9
1970	29	190,300	86.3	681.7
1971	34	769,300	348.9	2,756.3
1972	397	599,300	271.8	2,147.2
1973	176	306,300	138.9	1,097.3
1974	166	552,100	250.4	1,978.2
1975	437	917,100	415.9	3,285.6
1976	357	484,900	219.9	1,737.2
1977	164	417,000	189.1	1,493.9
1978	66	140,900	63.9	504.8
1979	198	473,200	214.6	1,695.3
1980	469	612,300	277.7	2,193.8
1981	214	122,400	55.5	438.5
1982	151	309,600	140.4	1,109.2
1983	186	303,200	137.5	1,086.3
1984	225 ³	S E A S O N C L O S E D		

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 - 1984.

Year	PRODUCTION ¹									
	No. Permits Issued	No. Pounds Constructed	No. Producing Pounds	Herring ² Utilized (Tons)	Ribbon		Macrocystis		Total	
					lbs.	Metric Tons	lbs.	Metric Tons	lbs.	Metric Tons
1979	2	0	-	-	-	-	+	+	+	+
1980	14	4	2	27 - 45	1,771	0.8	880	0.4	2,651	1.2
1981	18 ⁴	18	11 ⁵	110 - 157	17,217	7.8	2,100	1.0 ⁶	19,317	8.8
1982	25	20	18 ⁷	260 - 385	50,165	22.8	900	0.4	51,065	23.2
1983	47	38	30 ⁸	200 - 303	35,364	16.1	20,100	9.1	55,464	25.2
1984	65	45	37	260 - 360	12,839	5.8	37,572	17.1	50,411	22.9

¹ Represents processed weights reported on fish tickets.

² Tonnage expressed as a range since herring are estimated visually and are not actually weighed.

³ A small quantity of Macrocystis sp. imported from Southeastern Alaska was suspended from lines in Tatitlek Narrows to test the feasibility of using this kelp, and an undetermined amount of eggs-on-kelp was produced.

⁴ Includes two permits issued after the March 1 deadline.

⁵ Although 11 permittees reported production, all harvest came from only 7 of the 18 pounds actually constructed.

⁶ Four individuals imported an estimated 12,000 pounds of Macrocystis sp. from Southeastern Alaska. However, only a small portion of this was actually used in two pounds with the remainder either lost due to deterioration or was suspended on lines in potential spawning areas away from the pounding site.

⁷ Although all pound operators reported production, harvest came from only 18 of the 20 pounds constructed.

⁸ Although 30 pound operators reported production, harvest came from only 26 of the 30 pounds.

Table 60.. Herring for bait and food harvested in Prince William Sound in metric tons, 1970 - 1984.¹

Year	Seine		Pair Trawl		Mid-Water Trawl		Otter Trawl		Total MT
	Effort	Harvest MT	Effort	Harvest MT	Effort	Harvest MT	Effort	Harvest MT	
1970	1	5.1							9.1
1971	2	18.1							18.1
1972	1	4.4							4.4
1973	1	7.7							7.7
1977-78 ²	2	15.4	2	131.8	1	82			147.2
1978-79 ³	2	177.2	2	896.9	1	93.6	1	2.3	1156.1
1979-80 ⁴	1	463.4	2	131.6					691
1980-81 ⁵	3	934.7	3	350.1					1184.8
1981-82 ⁶	6	1,078.9	2	66.3					1145.2
1982-83	5	801.1							801.1
1983-84	2	248.2							248.2
1984-85 ⁷	2	170.0							170.0

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 Fishing 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 still in progress.

Table 61. Prince William Sound herring sac roe aerial surveys, peak estimates and seasonal harvests in metric tons, 1975 - 1984.

Year	Fishing District	Harvest	Peak Estimate
1975	Northern	990	1,200
1976	"	No Fishery	7,830
1977	"	2,071	16,790
1978	"	1,210	8,310
1979	"	1,032	9,830
1980	"	240	24,550
1981	"	214	16,430
1982	Northern/General	6,789	26,100
1983	Northern/General	2,441 ²	10,360
1984	Northern/General	235	14,800
1975	Montague	4,319	0 ¹
1976	"	1,966	70
1977	"	No Fishery	120
1978	"	" "	60
1979	"	" "	1,000
1980	"	4,441	20,400
1981	"	9,002	23,670
1982	"	No Fishery	5,260
1983	"	130	19,760
1984	"	5,370	20,520
1975	Eastern	No Fishery	0 ¹
1976	"	379	90
1977	"	No Fishery	0 ¹
1978	"	" "	0 ¹
1979	"	2,721	17,860
1980	"	509	260
1981	"	3,523	6,240
1982	"	No Fishery	260
1983	"	No Fishery	540
1984	"	No Fishery	6,090

¹ Surveys flown, no herring schools observed.

² Includes purse seine and gill net harvests.

Table 62. Summary of peak aerial observations of sac roe herring, by district, Prince William Sound, 1975 - 1984.

Date	District	Number of Schools Observed			Estimated Tonnage ¹
		Sm.	Med.	Lg.	
<u>1975</u>					
4/23	Northern	24	24	0	1,200
<u>1976</u>					
4/14	Northern	5	7	20	7,830
<u>1977</u>					
4/18	Northern	18	22	35	13,290
			extra large schools		3,500
<u>1978</u>					
4/17	Northern	128	34	13	7,230
5/03	Northern	47	21	20	8,310
6/12	Northern	150	42	6	5,280
					some juvenile
<u>1979</u>					
4/18	Eastern	40	34	46	17,860
4/20	Northern	21	13	26	9,830
4/28	Montague	10	5	2	1,000
4/28	Hinchinbrook Island	18	6	2	1,120
<u>1980</u>					
4/09	Montague	12	17	56	20,400
4/15	Northern	62	47	49	24,550
<u>1981</u>					
3/27	Eastern	5	6	17	6,240
4/12	Northern	19	21	41	16,790
4/23	Montague	25	27	62	23,030
<u>1982</u>					
4/18	Montague	6	25	12	5,260
4/29	Northern/General	15	115	61	26,100
5/01	Eastern	2	6	0	260
<u>1983</u>					
4/09	Montague	77	46	49	19,760
4/09-29 ²	Northern/General	50	149	11	10,360
4/08	Eastern	6	12	0	540

Continued

Table 62. (Continued)

Date	District	Number of Schools Observed			Estimated Tonnage ¹
		Sm.	Med.	Lg.	
<u>1984</u>					
4/12	Montague	56	114	44	20,520
4/19	Northern/General	50	192	19	14,800
4/05	Eastern	9	10	16	6,090

¹ Estimated tonnage based upon school size: Small - up to 50 feet in diameter = 10 tons; Medium - 50 feet to 100 feet in diameter = 40 tons; Large - 100 feet and over in diameter = 350 tons.

² Includes combined peak estimates for Glacier-Fairmont Islands (4/9), Naked Island (4/12) and Valdez Arm (4/29).

Table 63. Daily aerial survey estimates of herring during the sac roe season in Prince William Sound, 1984

Date	Location	No. of Schools			Estimated Tonnage	Spawn	Remarks
		Sm.	Med.	Lge.			
<u>EASTERN DISTRICT</u>							
3/15	St. Matthews - Red Head	2	0	0	20		Birds/sea lions numerous
3/19	St. Matthews - Red Head	0	0	0	0		Birds/sea lions numerous off Hells Hole
3/21	St. Matthews - Red Head	0	0	0	0		Very little marine life activity
3/27	St. Matthews - Red Head	6	3	0	180	X	Spawn west of Hells Hole
3/28	St. Matthews - Red Head	6	2	2	840		Most fish between Hells Hole & St. Matthews
3/29	Port Gravina (Entire)	14	5	1	690		Most fish between Olsen & St. Matthews Bay
3/30	Olsen Bay & St. Matthews	5	2	0	120	X	Spawn at head of St. Matthews Bay
4/2	Olsen Bay - Red Head	10	10	5	2,160	X	Spawn near outer St. Matthews Bay
4/3	Olsen Bay - Red Head	22	19	5	2,730		Most fish from St. Matthews to Red Head
4/4	Port Gravina (Entire)	25	33	6	3,670	X	Spawn W. side St. Matthews
4/5	Port Gravina (Entire)	9	10	16	6,090		Most fish between Olsen Bay & Red Head
4/6	St. Matthews - Red Head	58	39	0	2,140	X	Minimal estimate due to spawning
4/7	Olsen Bay - Red Head	18	14	8	3,720	X	Heavy spawn St. Matthews to Hells Hole
4/8	St. Matthews - Red Head	20	11	0	460	X	Intermittent spawn
4/9	St. Matthews - Red Head	10	7	0	290	X	Spawn from Hells Hole to Humphrey's Hole
4/10	St. Matthews - Red Head	2	2	0	90	X	Lite spawn near Hells Hole
4/12	Port Gravina	5	0	0	50		No Spawn
4/13	St. Matthews	0	1	0	40		
4/14	Port Gravina - Knowles Head	0	0	0			
4/17	Port Gravina - Knowles Head	2	2	0	100		
4/18	Port Gravina - Knowles Head	0	0	0			
4/19	Port Gravina - Knowles Head	0	3	0	120		
4/22	Port Gravina - Knowles Head	0	0	0			

- Continued -

Table 63 - (Continued)

Date	Location	No. of Schools			Estimated Tonnage	Spawn	Remarks
		Sm.	Med.	Lge.			
<u>NORTHERN DISTRICT</u>							
3/19	Knowles Head - Eikelberg Bay	0	0	0			No marine bird or animal activity
3/28	Knowles Head - Eaglek	0	0	0			No marine bird or animal activity
3/30	Knowles Head - Galena Bay	4	4	0	200		Fish in Boulder Bay & Tatitlek Narrows
4/2	Knowles Head - Galena Bay	0	0	0			Sea lions off Black Point
4/3	Knowles Head - Eikelberg Bay	1	1	0	50		Fish in Galena Bay
4/6	Knowles Head - Pt. Pellew	0	0	0			
4/7	Glacier Island - Pt. Pellew	0	0	0			
4/9	Glacier Island - Pt. Pellew	0	0	0			
4/10	Knowles Head - Long Bay	0	0	0			
4/11	Granite Pt. - Eaglek Bay	1	0	0	10	X	Spawn at Tatitlek Pt. Herring in Eaglek Bay. Sea lions Port Wells
4/12	Knowles Head - Eaglek Bay	19	15	0	790	X	Fish at Virgin & Galena Bay Fairmont Isl. Spawn Tatitlek
4/13	Knowles Head - Pt. Pellew	5	6	7	2,740	X	Most fish at Tatitlek Narrows. Lite spawn Rocky Pt. & Tatitlek Narrows
4/14	Knowles Head - Pt. Pellew	10	17	14	5,770	X	Most fish at Tatitlek Narrows. Few at Fairmont Island
4/15	Knowles Head - Pt. Pellew	27	39	9	4,980	X	Most fish in Valdez Arm area. Spotty spawn
4/17	Knowles Head - Eaglek	2	8	7	2,790	X	Fresh spawn Virgin Bay & Tatitlek
4/18	Knowles Head - Eaglek	25	33	1	1,920	X	Most fish Galena Bay. No fresh spawn
4/19	Valdez Arm - Eaglek	31	84	10	7,170	X	Most fish Wells Bay some spawn Rocky Pt.
4/21	Valdez Arm - Eaglek	21	56	16	8,050	X	Good show of fish Port Wells.
4/22	Port Fidalgo to Eaglek	15	37	1	1,980		Majority of fish from Granite Pt. to Pt. Pellew
4/23	Valdez Arm - Unakwik	3	4	2	810		Majority of fish at Wells Bay & Unakwik
4/24	Valdez Arm - Pt. Pellew	5	10	2	1,150		Majority of fish at Fairmont Isl. area

- Continued -

Table 63 . (Continued)

Date	Location	No. of Schools				Estimated Tonnage	Spawn	Remarks
		Sm.	Med.	Lge.				
<u>NORTHERN DISTRICT</u>								
4/25	Valdez Arm - Eaglek	2	0	1	360	X	Some spawn Eaglek Bay	
4/26	Glacier Isl. - Fairmont Is.	1	1	0	50		All fish at Fairmont Isl.	
4/29	Fish Bay - Pt. Pellew	0	0	0				
5/1	Valdez Arm - Glacier Isl.	1	2	0	90			
5/2	Valdez Arm - Pt. Pellew	0	2	0	80	X	Spawn N. side Galena Bay	
5/4	Valdez Arm	0	3	0	120	X	Spawn N. side Galena Bay	
5/5	Valdez Arm - Pt. Pellew	17	14	0	730	X	Heavy spawn Fairmont Island.	
5/6	Valdez Arm	3	5	0	230	X	Fish at Galena Bay, Jack Bay to Valdez Narrows	
5/7	Valdez Arm - Unakwik Inlet	14	39	1	2,050	X	Spawning Fairmont Island.	
5/8	Valdez Arm	1	0	0	10	X		
<u>MONTAGUE DISTRICT</u>								
3/19	Green Isl. & N. Mont. Island	0	0	0			2 sm. pods sea lions trench area	
3/28	Green Isl. & N. Mont. Island	0	0	0			60-70 sea lions Green Isl. trench	
3/30	Green Isl. & N. Mont. Island	0	0	0			Sea lions Rocky Bay	
4/2	Green Isl. & N. Mont. Island	1	1	0	50		Herring in Zaikoff Bay	
4/4	Green Isl. & N. Mont. Island	0	2	0	80		1 school in Zaikoff Bay - 1 Port Chalmers	
4/6	Green Isl. & N. Mont. Island	0	0	0			Sea lions in Zaikoff Bay & Port Chalmers	
4/7	Green Isl. & N. Mont. Island	1	0	0	10		Herring observed in Port Chalmers	
4/8	Green Isl. & N. Mont. Island	6	27	6	3,240		Most herring observed in Port Chalmers	
4/9	Green Isl. & N. Mont. Island	7	10	6	2,560		Most herring observed in Port Chalmers	
4/10	Green Isl. & N. Mont. Island	4	5	0	240	X	All herring in Stockdale Harbor	
4/11	Green Isl. & N. Mont. Island	22	13	22	8,740		6,000 tons Stockdale	
4/12.	Green Isl. & N. Mont. Island	56	114	44	20,520	X	2,000 Montague Pt. - Graveyard	
4/13	Green Isl. & N. Mont. Island	0	0	0			Fish from Rocky Bay - Port Chalmers	
4/14	Green Isl. & N. Mont. Island	3	15	2	1,330	X	No fish observed rain, snow & wind	
4/15	Green Isl. & N. Mont. Island	45	76	21	10,840	X	Fish not showing well are off shore	
4/17	Green Isl. & N. Mont. Island	2	0	0	0	X	Spawn, Port Chalmers, most fish offshore	
							Spawn, Montague Pt. - Graveyard Pt. - Poor visibility, snow	

Table 63. (Continued)

Date	Location	No. of Schools				Estimated Tonnage	Spawn	Remarks
		Sm.	Med.	Lge.				
<u>MONTAGUE DISTRICT</u>								
4/18	Green Isl. & N. Mont. Island	12	16	6	2,860	X	Spawn, Rocky Bay - poor visibility	
4/19	Green Isl. & N. Mont. Island	5	20	1	1,200	X	Spawn, Rocky Bay, Stockdale & Port Chalmers	
4/21	Green Isl. & N. Mont. Island	0	0	0			Sea lions in Rocky Bay	
4/22	Green Isl. & N. Mont. Island	0	0	0		X	Some spawn Rocky Bay	
4/23	Green Isl. & N. Mont. Island	3	1	0	70	X	Lite spawn Graveyard Pt.	
4/25	Green Isl. & N. Mont. Island	0	0	0			No marine mammal or bird activity	
<u>GENERAL DISTRICT</u>								
3/19	Naked Isl., Hawkins-Hinch.	0	0	0			No marine mammal activity	
3/27	Naked Isl. area	0	0	0			No marine mammal activity	
3/30	Naked Isl. area	0	0	0			No marine mammal activity	
4/2	Naked Isl. area	0	0	0			No marine mammal activity	
4/4	Naked Isl., Hawkins-Hinch.	0	0	0			Sea lions N. shore Naked Island	
4/6	Naked Island	0	0	0			Sea lions between Cabin & outside bays	
4/7	Naked Isl., Hawkins - Hinch	0	0	0			No marine mammal activity	
4/8	Naked Isl. area	0	1	0	40		Fish in Cabin Bay	
4/9	Naked Isl. area	1	0	0	10		Fish in Bass harbor	
4/10	Naked Isl. Knight Island	0	0	0			Poor visibility - sea lions Bass harbor	
4/11	Naked-Perry Isl. Hawk.-Hinch.	3	1	0	70		40T Port Etches - Sea lions Naked Island.	
4/12	Naked Isl. area	0	0	0			Some sea lion activity	
4/13	Naked Isl. area	0	0	0			Wind & rain squalls - poor visibility	
4/14	Naked Isl. area	0	0	0			50 sea lions Bass Harbor	
4/15	Naked Isl. area	2	1	0	60		Numerous sea lions	
4/18	Naked Isl. area	6	34	11	5,270	X	Spawn, Storey Island.	
4/19	Naked Isl. area	16	108	9	7,630	X	Heavy spawn Cabin Bay	
4/21	Naked Isl. area	10	19	1	1,210	X	Spawn N. Shore Naked Island	
4/22	Naked Isl. area	5	3	0	170	X	Spawn Storey & Peak Island	

Table 63. (Continued)

Date	Location	No. of Schools			Lge.	Estimated Tonnage	Spawn	Remarks
		Sm.	Med.	Large				
4/23	Naked Isl. area	3	1	0	70	X	Spawn, Storey & Peak Island	
4/24	Naked Isl. area	0	0	0				
4/25	Naked Isl. area - Esther Isl.	3	9	9	3,546	X	Fish at Axel Lind Isl. Esther Isl.	
4/26	Perry Isl.- Esther Isl.	4	6	0	280	X	Spawn, Axel Lind, Perry & Bald Head Chris	
4/29	Perry Isl.- Esther Isl.	0	0	0		X		
5/1	Esther Isl. - Port Wells	1	3	0	140	X	Spawn in Squaw Bay	
5/2	Dutch Grps. - Esther Isl. area	0	0	0			Snow, poor visibility	
5/5	Esther Isl. - Naked Isl. area	0	1	0	40		Fish in Squaw Bay	

Table 64. Age, Sex & Size frequency of Sac Roe herring taken by seine, Montague district, April 14, 1984.

Age	No.	Length (mm)		Weight (gm)		Sex			Percent		
		Min.	Max.	Min.	Max.	Male	Female	Total	Male	Female	Combined Sex
2	1	151	151	37	37	1	0	1	.19	---	.19
3	115	162	203	51	104	64	51	115	11.94	9.51	21.46
4	242	168	235	57	190	114	128	242	21.27	23.88	45.15
5	61	176	237	78	189	27	34	61	5.04	6.34	11.38
6	35	192	234	94	180	13	22	35	2.43	4.10	6.53
7	44	186	238	95	187	19	25	44	3.54	4.66	8.21
8	32	207	243	98	195	20	12	32	3.73	2.24	5.97
9	5	217	240	140	205	2	3	5	.37	.56	.93
10	1	252	252	240	240	1	0	1	---	.19	.19
Total	536	151	252	37	240	261	275	536	48.51	51.48	100.00

Table 65. Age, Sex & Size frequency of Sac Roe herring taken by gillnet, Montague District, April 19, 1984.

Age	No.	Length (mm)		Weight (gm)		Sex			Percent		
		Min.	Max.	Min.	Max.	Male	Female	Total	Male	Female	Combined Sex
4	2	225	226	156	165	1	1	2	.38	.38	.76
5	13	200	229	113	159	3	10	13	1.13	3.77	4.90
6	37	199	241	127	176	25	12	37	9.43	4.53	13.96
7	89	205	244	116	189	50	39	89	18.87	14.72	33.59
8	108	204	246	110	195	68	40	108	25.66	15.09	40.75
9	15	215	238	131	178	8	7	15	3.02	2.64	5.66
10	1	226	226	166	166	1	0	1	.38	0	.38
Total	265	199	246	110	195	156	109	265	58.87	41.13	100.00

Table 66. Age, Sex & Size frequency of Sac Roe herring taken by gillnet, Storey Island, April 19-22, 1984.

Age	No.	Length (mm)		Weight (gm)		Sex			Percent		
		Min.	Max.	Min.	Max.	Male	Female	Total	Male	Female	Combined Sex
4	3	211	223	136	164	3	0	3	1.32	---	1.32
5	14	198	243	97	164	9	5	14	3.95	2.19	6.14
6	37	196	238	98	185	28	9	37	12.28	3.95	16.23
7	74	204	241	116	208	49	25	74	21.49	10.96	32.45
8	82	205	245	132	215	48	34	82	21.05	14.91	35.96
9	17	216	244	149	210	7	10	17	3.07	4.39	7.46
10	0	0	0	0	0	0	0	0	0	0	0
11	1	235	235	173	173	1	0	0	.44	0	.44
Total	228	196	245	97	215	145	83	228	63.60	36.40	100.00

Table 67 Age, length, weight composition of herring taken [raw], Montague district, 3-13 & 14, 1984.

Age Group	Year Class	Males			Females			Combined Sexes					
		Frequency		Mean	Frequency		Mean	Frequency		Mean			
		Number	%	Length mm	Weight grams	Number	%	Length mm	Weight grams	Number	%	Length mm	Weight grams
II	1982	0				1	1.1	143	34.7	1	.55	143.0	34.7
III	1981	27	29.7	179.0	44.2	33	36.7	181.9	67.6	60	33.15	180.6	57.5
IV	1980	54	59.3	191.7	83.0	43	47.8	195.6	92.4	97	56.60	193.5	87.1
V	1979	7	7.7	200.4	94.6	7	7.8	195.7	87.0	14	7.73	198.6	97.6
VI	1978	1	1.1	178.0	69.0	2	2.2	201.0	108.0	3	1.7	195.3	98.3
VII	1977	2	2.1	225.0	149.0	2	2.2	209.0	113.0	4	2.2	215.4	127.2
VIII	1976	0				0				0			
IX	1975	0				2	2.2	239.0	179.0	2	1.1	239.0	179.0
Total Number		91				90				181			
Average Length				187.9				188.4				188.2	
Average Weight					74.2				88.2				81.1

Sex Ratio: Males - 50.3
 Females - 49.7

Table 68. Age, Sex & Size frequency of Sac Roe herring captured by test seine, Port Gravina, April 3-6, 1984.

Age	No.	Length (mm)		Weight (gm)		Sex		Percent			
		Min.	Max.	Min.	Max.	Male	Female	Total	Male	Female	Combined Sex
2	1	141	141	32	32	0	1	1	---	.21	.21
3	166	151	223	37	141	77	89	166	16.42	18.98	34.40
4	215	163	219	51	125	103	112	215	21.96	23.88	45.84
5	54	175	231	66	169	26	28	54	5.54	5.97	11.51
6	14	193	224	81	145	9	5	14	1.92	1.07	2.99
7	8	205	236	104	182	5	3	8	1.07	.64	1.71
8	10	223	254	139	207	6	4	10	1.28	.85	2.13
9	1	234	234	176	176	1	0	1	.21	---	.21
Total	469	141	254	32	207	227	242	469	48.40	51.60	100.00

Table 69. Age, Sex & Size frequency of herring captured for pound fishery by seine at Boulder Bay, Prince William Sound, April 27, 1984.

Age	No.	Length (mm)		Weight (gm)		Sex			Percent		
		Min.	Max.	Min.	Max.	Male	Female	Total	Male	Female	Combined Sex
3	21	166	231	58	155	11	10	21	15.07	13.70	28.77
4	32	167	212	63	134	22	10	32	30.14	13.70	43.84
5	8	191	214	83	109	7	1	8	9.59	1.37	10.76
6	2	220	227	113	141	2	0	2	2.74	---	2.74
7	3	208	222	108	147	2	1	3	2.74	1.37	4.11
8	7	220	235	119	172	4	3	7	5.48	4.11	9.59
Total	73	166	235	58	172	48	25	73	65.75	34.25	100.00

Table 70. Age, Sex & Size frequency of Bait herring taken by seine, General district 1983-84 season.

Age	No.	Length (mm)		Weight (gm)		Sex		Percent			
		Min.	Max.	Min.	Max.	Male	Female	Total	Male	Female	Combined Sex
3	89	163	224	55	190	51	38	89	23.61	17.84	41.20
4	93	172	207	69	123	47	46	93	21.76	21.30	43.06
5	20	175	206	69	118	10	10	20	4.63	4.63	9.26
6	9	191	206	92	123	4	5	9	1.85	2.31	4.17
7	3	197	224	113	146	2	1	3	.93	.46	1.39
8	2	189	224	91	164	1	1	2	.46	.46	.93
Total	216	163	224	55	190	116	100	216	53.70	46.30	100.00

Table 71. Calendar weeks used in reporting catch statistics in 1984.

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

Table 72. Average price paid to fishermen for salmon and herring in Prince William Sound, 1978-1984.¹

Species	1978	1979	1980	1981	1982 ⁶	1983 ⁶	1984 ⁶
King Salmon	\$1.39	\$1.62	\$1.40	\$1.65	\$1.40	\$1.05	\$1.30
Sockeye Salmon							
Copper River	1.23	1.40	.85	1.40	1.01	.95	1.15
Bering River					.80	.95	1.00
Coghill/Unakwik Districts					.80	.85	.95
Eshamy							.90
General Purse Seine							.85
Coho Salmon							
Copper-Bering Rivers	1.10	1.10	.95	.95	.86 ¹⁰	.75 ¹³	1.10
Prince William Sound	.39	.39	.39	.39	.40	.30	1.10
Pink Salmon	.3701 ²	.3777 ³	.4229 ⁴	.44	.23	.24	.26
Chum Salmon	.4258	.53	.50	.50	.38	.24	.26
Herring							
Sac Roe	.363	.625	.1625	.20 ⁸	.184 ¹¹	.31 ¹⁴	.19 ¹⁶
Spawn on Kelp	1.247	1.74	1.09 ⁵	1.00 ⁹	1.29 ¹²	2.10 ¹⁵	3.50 ¹⁷
Bait	.189	.15	.15	.125	.109	.125	.125

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 averaged \$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.

-Continued-

Table 72. Continued.

- 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.
- 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 Macrocystis 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.

Table 73. Average price paid per pound for salmon, shellfish and miscellaneous fish in the Prince William Sound Area, 1984.

SALMON					
King	Sockeye	Coho	Pink	Chum	
\$1.10 - 1.30 ¹	\$.85 - 1.15 ²	\$.25 - 1.10 ³	\$.26	\$.26	

SHELLFISH					
King Crab	Dungeness Crab	Tanner Crab	Shrimp		Razor Clams (bait & food)
			Trawl	Pot	
\$1.40 - 2.25	\$1.25 - 1.35	No fishing	.32 - .35	\$4.00 - 6.00	\$.75 - 1.00

MISCELLANEOUS FISH					
Herring Sac Roe	Herring Spawn on Kelp	Herring (Bait)	Halibut	Bottom Fish (Bait)	Octopus (Bait)
\$.19 ⁴	\$3.50 ⁵	\$.125	\$.60 - .65	no fishing	\$.75 - 1.00

¹ King salmon prices varied widely throughout the season but averaged \$1.30 in the Copper River district, \$1.25 in the Bering River, \$1.20 in the Coghill-Unakwik districts and \$1.10 in the General Purse seine and Eshamy districts.

² Sockeye salmon prices varied widely throughout the season but averaged about \$1.15 for Copper River, \$1.00 for Bering River, \$.95 for Coghill-Unakwik, \$.90 for Eshamy and \$.85 for general purse seine districts.

³ The price for coho salmon caught in Prince William Sound averaged about \$.25 and averaged \$1.10 for Copper River and Bering River districts.

-Continued-

Table 73. (Continued)

- ⁴ 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.
- ⁵ 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.

Table 74. Average weight in pounds of salmon in commercial catches from the Prince William Sound Area, 1975-1984.¹

Year	King	Sockeye	Coho	Pink	Chum
COPPER RIVER - BERING RIVER					
1975	27.8	6.6	9.3	5.3	6.0
1976	28.4	6.8	10.2	4.3	7.4
1977	28.4	7.3	10.6	4.6	7.3
1978	27.3	6.2	9.3	4.2	7.0
1979	27.4	6.9	9.2	4.4	7.9
1980	29.1	6.7	9.8	4.8	7.1
1981	25.9	6.4	10.3	4.6	7.5
1982	26.8	6.5	9.9	4.2	8.8
1983	26.8	6.1	9.8	4.0	7.5
1984	29.9	6.5	11.2	5.0	8.3
10 Year Average	27.8	6.6	10.0	4.5	7.5

PRINCE WILLIAM SOUND					
1975	11.2	7.6	7.9	3.6	7.2
1976	11.5	7.4	8.4	4.2	9.1
1977	15.1	7.9	8.1	4.4	9.0
1978	12.3	8.1	8.5	3.6	8.5
1979	11.0	7.1	7.9	3.7	9.1
1980	14.6	6.9	8.3	3.3	8.3
1981	17.5	6.3	8.1	4.2	8.6
1982	15.8	7.1	8.2	3.7	9.1
1983	15.3	6.5	7.0	3.0	9.2
1984	19.1	6.2	9.0	3.6	9.5
10 Year Average	14.3	7.1	8.1	3.7	8.8

¹ Data from Alaska Department of Fish and Game Commercial Fisheries Statistical Leaflets in 1975 while all other years are from fish tickets and should be considered as preliminary data. Data from Prince William Sound includes all districts and gear types.

Table 75. Prince William Sound Area case pack and pounds of frozen, fresh, cured and exported salmon by species, 1975 - 1984.

Cases						
Year	King	Sockeye	Coho	Pink	Chum	Total
1975	183	24,281	1,254	133,358	6,266	165,342
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
Frozen						
1975	293,657	553,541	564,579	0	63,154	1,474,931
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	5,626,038
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
Fresh						
1984	351,255	1,710,782	944,366	2,236,355	1,380,761	6,623,519
Cured						
1984	0	0	1,475	0	0	1,475
Exported						
1984	76,429	851,460	1,437,027	32,763,544	2,747,490	37,875,950

Case pack on the basis of 48 one pound cans per case. Frozen, fresh and exported salmon in round weight 1975-1977. 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 15 permanent seasonal employees in 1984 who participated in various area management programs.

Thanks is extended to all personnel for a successful 1984 fisheries season. Special thanks is extended to Phil Mundy for his support and guidance. 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 Murray 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 Murray	Clerk Typist III
Maxine Holliday	Clerk Typist III

Permanent Seasonal Employees

Scott Bell	Alevin Index	3/19 - 4/03
Frank Bird	Miles Lake Sonar	5/14 - 5/20
John Burns	Eshamy Lake Weir	7/01 - 9/06
Nate Callis	Miles Lake Sonar	6/25 - 7/06
Robert Gaylor	Alevin Index	3/19 - 4/01
	Herring Sampling	4/01 - 6/03
	Coghill Weir	6/04 - 7/27
	Ground Surveys	6/30 - 9/10
Wayne Lonn	Herring Pound Operating	4/09 - 5/16
	Coghill Weir	6/01 - 7/27
Carol Maxwell	Data Control Clerk	2/27 - 3/02
		3/16 - 12/14
Bonnie Morris	Eshamy Lake Weir	7/20 - 9/06
Rene' Pellissier	Spawning Ground Surveys	4/09 - 5/10
Robert Ritchie	Alevin Index	3/14 - 5/14
	Miles Lake Sonar	5/15 - 8/08
Dale Russell	Miles Lake Sonar	5/14 - 7/20
Robert Sanderlin	Miles Lake Sonar	5/14 - 8/20
Russell Scribner	Miles Lake Sonar	6/16 - 8/07
Thea Thomas	Spawning Ground Surveys	4/09 - 5/18
		10/01 - 10/05
Charlie Trowbridge	Miles Lake Sonar	6/13 - 6/30

Appendix
Table A.

A sequential listing of finfish processors, location of operation size of cans, lines of machinery and type of product processed in 1984.

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
Alaska Fish Producers Box 104163 Anchorage, AK 99510 C.E. Creamer		Salmon Herring
Alaska Ocean Products P.O. Box 288 Clam Gulch, AK 99568 Theo Roe		Salmon
Alaska Seafood Express Box 2881 Homer, AK 99603 Michael Neece		Salmon
Alaska Wild Salmon 9730 Arlene Anchorage, AK 99515 Ken Allen		Salmon
American Eagle Seafoods Box 71129 Seattle, WA		Salmon
American Salmon Co. Box 102996 Anchorage, AK 99510 Del Molencamp/Royal Devaney		Salmon
ANPAC 3605 Artic Blvd. Bldg. 430 Anchorage, AK 99503 Jack Gadwill		Salmon

Appendix Table A, (continued).

Names, Executive, Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
Bishop Alaska Fisheries Box 1990 Homer, AK 99603 Dennis G. Bishop		Herring Eggs on Kelp
Blakes Fancy Smoked Salmon Box 94 Cordova, AK 99574 Margaret Blake		Salmon
Bonanza Company (see AK. Wild Salmon)		
Bristol Monarch 121 South River St. Seattle, WA 98108		Herring
Chugach Alaska Fisheries Box 120 Cordova, AK 99574 Bob Anderson	(2) 1-lb. Tall 1/2 lb. 1/4 lb.	Herring Herring Bait Salmon
Copper River Fishermen's Coop Box 90 Cordova, AK 99574		Herring Herring Eggs on Kelp
Copper River Products Box 835 Cordova, AK 99574 Tom Johnson		Salmon
Daerim America Box 769 Kodiak, AK 99615 Jung Kim		Herring
Eyak Packing Co. Box 1131 Cordova, AK 99574 Gerald Masolini		Salmon
Fishermen's Packing Inc. Drawer 2601 Kenai, AK 99611 Lottie Edelman		Herring

Appendix Table A, (continued)

Names, Executive, Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
Frontier Fish Co. 4377 Rural Avenue Bellingham, WA 98226 Stan Erickson		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 Jim Shefler		Salmon
Icicle Seafoods 4019 21st Ave. W. Seattle, WA 98199 Thomas W. King		Herring Herring Bait Salmon
Kanematsu Box 611 Whittier, AK 99693		Salmon
Kodiak, AK Seafoods 180 Nickerson St. #305 Seattle, WA 98106		Salmon
Kodiak King Crab P.O. Box C-70739 Seattle, WA 98107 David Perron		Herring
Lafayette Inc. 1959 N.W. Dock Place Seattle, WA 98107		Herring
MJB Box 2338 Cordova, AK 99574 Tom Copeland		Salmon
Mohr Processors Box 483 Cordova, AK 99574 Charles Mohr		Salmon

Appendix Table A, (continued).

Names, Executive, Address Location of Operations	Sizes of Cans Lines of Machinery	Type of Product
MSP Box 1249 Cordova, AK 99574 Ross Mullins/Pete Ochs		Herring Eggs on Kelp
Mystic Way Inc. 1415 N.W. 49th St. Seattle, WA 98107 Jerry Marx		Salmon
NBC Investments 8001 - 15th N.W. Seattle, WA 98117 John O. Bangs		Salmon
New West Fisheries, Inc. 1100 11th Street Bellingham, WA 98225 Bob Seidel		Herring
Nor/Nor West Trading & Packing Box 298 Anacortes, WA 98221		Salmon
North Coast Seafood Processors, Inc. Box 17538 Seattle, WA 98107 Jim Nagai		Herring
North Pacific Processors Inc. Box 1040 Cordova, AK 99574		Herring Salmon
Royal Pacific Box 4100 Kenai, AK 99611		Herring
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	1-1b. Tall 1/2 lb.	Herring Bait Salmon

Appendix Table A, (continued).

Names, Executive, Address Location of Operations	Size of Cans Lines of Machinery	Type of Product
St. Elias Ocean Products Box 548 Cordova, AK 99574	1-lb. Tall 1/2 lb. 4-lb.	Herring Salmon
Taylor Aquatic Enterprise P.O. Box 112241 Anchorage, AK 99511 Gary Taylor		Herring Eggs on Kelp
The Fresh Fish Co. P.O. Box 2469 Sitka, AK 99835 Carol R. Garcia		Salmon
Tidewater Seafoods Box 654 Whittier, AK 99693 Thomas & Amanda Hale		Salmon
Trident Seafoods 653 Northwest 41st St. Seattle, WA 98107		Herring
Ursin Seafoods 150 Nickerson St. #203 Seattle, WA 98109		Herring
Waterkist, Inc. Box 690 Valdez, AK 99686		Salmon
W/P Limited 2335 Eastlake Ave. E. Seattle, WA 98102 Denton Sherry		Salmon

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1984 (cont.).

Location	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
Bremner River						
Peninsula Lake		9/12	A	50		
Little Bremner River		9/12	A	10		
Salmon Creek		7/31	A	1,350		
Steam Boat Lake		7/31	A	1,100		
Price Cr.		7/31	A	125		
Unnamed Creek #1		7/31	A	20		
Unnamed Creek #2		7/31	A	0		
Tasnuna River						
		7/31	A	30		
Whiting Falls Creek						
		7/31	A	35		
Unnamed Tributary						
		9/12	A	15		
Tiekel River						
		7/31	A	40		
Swan Lake						
		7/31	A	400		
Lake #2						
		7/31	A	100		
Tonsina River						
Lower Tonsina Creek	*	8/29	A	600		
Little Tonsina River		7/30 & 9/12	A		568	50
Fourth of July Creek		7/30 & 9/27	A		10	20
Tonsina Lake		10/17	A	975		
Bernard Creek		7/30	A		39	
Grayling Creek		7/30	A		279	
Dust Creek		7/30	A		52	
Unnamed Creek		N.S.				
Klutina River						
	*	9/27	A	7,600		
Manker Creek		7/30	A		264	
Mahlo Creek		7/30	A	4,300	12	
Unnamed Lake		7/30	A	8,900		
1884 Lake		9/27	A	23		
Hallet Slough	*	8/29	A	400		
Curtis Creek		N.S.				
St. Anne Creek		7/29	A	10,300	89	
Tazlina River						
Upper Mendeltna Creek		6/25	A	1,825		
Mendeltna Creek		8/03	A	1,900		
Kiana Creek		7/30	A	255	382	
Tazlina Lake		8/09	A	888		

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1984 (cont.).

Location	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
Gulkana River						
Mouth to West Fork		8/05	A		255	
West Fork		7/23	A	2,250	114	
Moose Creek		7/20	A		17	
Keg Creek		7/20	A	2,505		
Victor Creek		7/23	A	5,800		
West Fork to Middle Fork		8/03	A		1,490	
Middle Fork		7/23	A	300	168	
Dickey Lake		8/03	A	105		
Swede Lake		8/08	A	2,400		
Hungry Hollow Creek		7/23	A		63	
East Fork						
East Fork to Paxson Lake	8/03 &	8/08	A	4,100	82	
Paxson Lake		8/03	A	0		
Paxson Lake Inlet		8/03	A	6,700		
Inlet to Mud Creek		8/03	A	15,700		
Mud Creek and Lake		8/03	A	270		
Mud Creek to Summit Lake	8/03 &	10/03	A	9,600 ^{5/}		
Fish Lake		7/23	A	10,950		
Summit Lake		10/03	A	15		
Gunn Creek		10/03	A	950 ^{6/}		
Gunn Lake Creek		8/03	A	220		
Gakona River						
Spring Creek		7/24	A		66	
Alder Creek		7/23	A	15		
Boulder Creek tributary						
		7/24	A		8	
Sinona Creek						
		7/24	A		1	
Unnamed Creek						
		7/24	A		2	
Chistochina River						
East Fork		7/23	A		577	
Eagle Creek		7/23	A	18	50	
Mankomen Lake		7/23	A	0		
Slana River *						
Mentasta Lake		8/08	A	4,850		
Fish Creek		7/23	A	900		
Bad Crossing #1		7/20	A	110		
Bad Crossing #2		7/23	A	650		
Granite Creek		7/20	A	0		

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1984 (cont.).

Location	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
Bone Creek		7/20	A		40	
Slana Sloughs		7/20	A	0		
Suslota Lake		8/28	A	700		
Indian River		7/23	A		17	
Ahtell Creek		7/23	A		2	
Tanada Creek						
Tanada Lake		10/03	A	9,100		
Tanada Lake Outlet		10/03	A	7,000		
Copper Creek						
Copper Lake		10/03	A	345		
Tebay River		8/29	A	10		
Chokosna River		N.S.				
Lakina River						
Long Lake		9/27	A	1,360		
Nizina River						
Spruce Point Creek	9/12 & 9/27		A	25		305
Trumpeter Lake	9/27		A			35
Lake Creek	9/12 & 9/27		A	20		2
Clear Creek (Chitina R.)	9/12 & 9/27		A	1		102
Tana River	*					
Tana River Clear Channels	7/31 & 9/27		A	1,740	25	15
Tana Lake Inlet	* 7/31 & 9/27		A	1,000		30
West Fork Clear Channels	7/31		A	925		
Chakina River		N.S.				
Monahan Creek		N.S.				

1/ Escapement refers to peak survey for area, or units, when areas overlap physically or in timing.

2/ * denotes glacial.

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

Appendix Table B. Copper River and Bering River sockeye, chinook and coho salmon escapement^{1/}, 1984 (cont.).

Location	Survey Conditions ^{2/}	Date ^{3/}	Method ^{4/}	Sockeye	Chinook	Coho
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^{4/} A = air
W = weir
G = ground

^{5/} Counts influenced by returns to Gulkana Hatchery.

^{6/} Returns from Gulkana Hatchery releases.

Appendix Table C. Coghill River field camp climatological and stream observations, 1984.

	Temperatures		Water (F°)		Precip. 0900	Cloud ¹ Cover		Water Gauge (Ft.) 0900
	Air Min.	(F°) Max.	0900	2100		0900	2100	
6/7	44	63	44	46	.17	3	2	.8
6/8	44	65	45	45	0	2	3	.8
6/9	-	-	42	44	.2	4	3	8.0
6/10 - 6/16	D A T A		M I S S I N G					
6/17	38	70	46	48	.02	1	1	.6
6/18	38	73	48	51.5	0	1	1	.6
6/19	36	72	48.5	51	0	2	1	.6
6/20	38	72	49	-	0	1	1	.6
6/21	37	73	50	53	0	3	1	.6
6/22	38	70	50	53	0	1	4	.6
6/23	39	64	49	53	0	4	4	.7
6/24	48	61	53	56	.10	4	4	.7
6/25	40	68	56	54	.28	4	3	.9
6/26	40	68	50	52	.02	4	4	.9
6/27	46	85	50	50	.40	4	1	.10
6/28	36	73	54	52	0	1	4	9.0
6/29	48	60	51	51	.08	4	4	8.0
6/30	42	66	51	48	.03	3	3	8.0
7/1	44	61	51	51	0	4	4	8.0
7/2	50	62	52	49	.14	4	4	8.0
7/3	50	64	51	53	.05	4	3	.7
7/4	40	75	50	53	0	2	2	7.0
7/5	38	78	51	54	0	2	4	7.0
7/6	42	79	50	54	0	2	2	7.0
7/7	44	79	50	53	0	2	4	7.0
7/8	40	56	50	54	.77	4	4	11.0
7/9	48	63	52	53	.23	4	4	11.0
7/10	48	60	53	54	.24	3	4	10.0
7/11	50	62	51	52	.84	3	4	12.0
7/12	42	62	50	50	.14	4	2	11.0
7/13	40	65	50	51	.52	4	4	12.0
7/14	46	60	50	50	.30	4	4	10.0
7/15	40	58	51	51	.28	2	2	10.0
7/16	50	62	51	52	.14	4	4	10.0
7/17	48	59	51	49	.05	4	4	11.0
7/18	44	63	50	51	.15	4	4	8.0
7/19	46	58	50	51	.01	4	4	8.0
7/20	46	58	50	52	0	4	4	8.0
7/21	48	60	50	52	.03	4	4	7.0
7/22	50	61	51	52	0	4	4	7.0
7/23	49	61	49	50	0	4	4	7.0
7/24	50	-	50	-	0	4	4	7.0

Cloud Cover: 1 = Clear, 2 = Less than ½ cloud cover, 3 = Greater than ½ cloud cover, 4 = Complete cloud cover.

Appendix Table D. Eshamy River field camp climatological and stream observations, 1984.

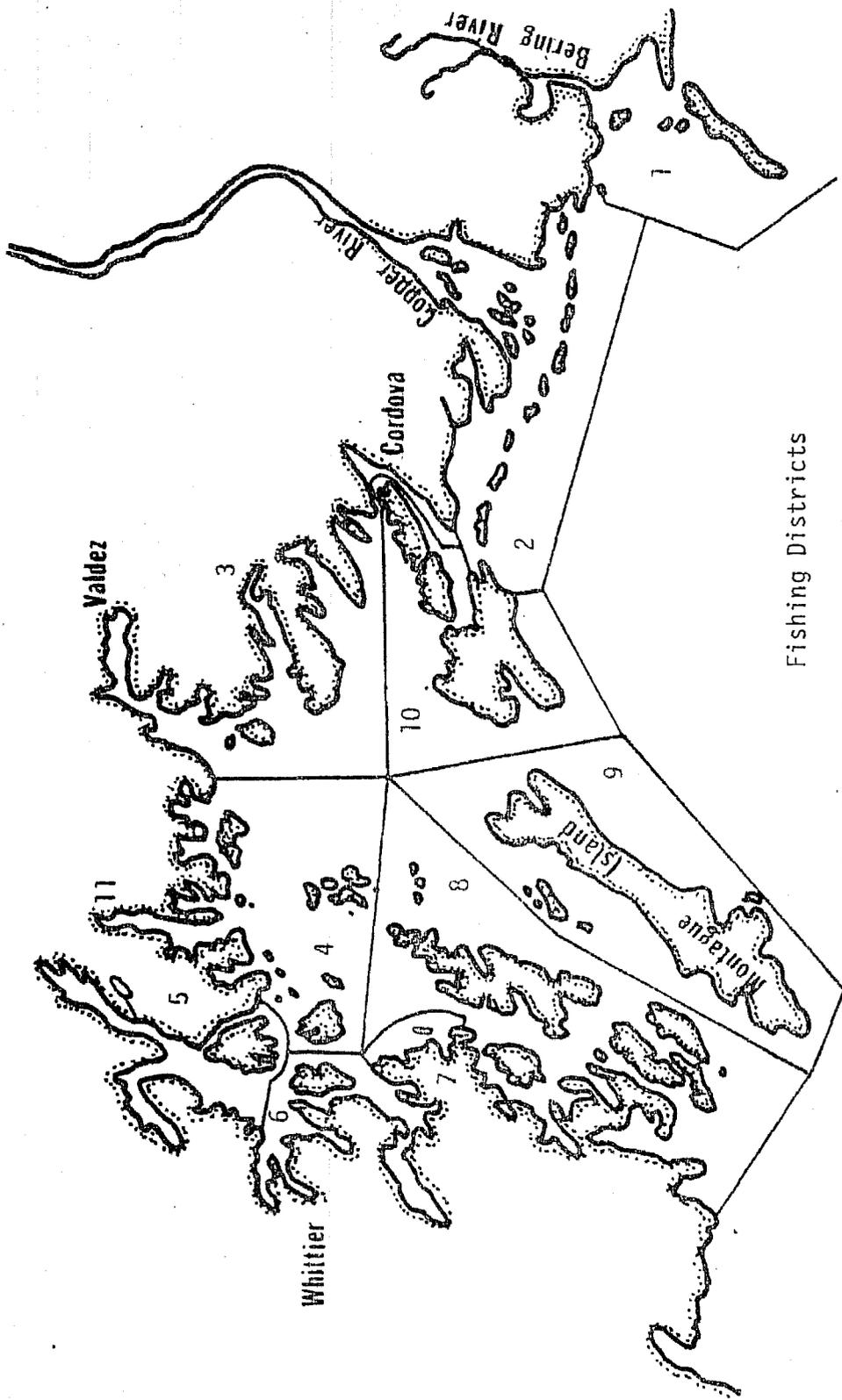
Date	Temperatures		Water (C°) 0900 2100	Precip. 0900	Cloud [†] Cover		Water Gauge (Ft.) 0900
	Air (F°)				0900	2100	
	Min.	Max.					
6/22							
6/23			15			4 4	2.5
6/24			15 15	.33		4 4	2.5
6/25			15 15	.45		4 4	2.5
6/26			15 15	.35		4 4	2.5
6/27			15 15	.21		4 2	2.5
6/28			15 15	.06		1 3	2.25
6/29			15	.00		4 4	2.0
6/30			14.5 14.5	.34		4 4	1.75
7/ 1							
7/ 2			14	1.15			1.4
7/ 3		62	15	0		4 2	1.5
7/ 4		65	15	0		2 2	1.4
7/ 5		66	16	0		2 4	1.0
7/ 6		70	17	0		1 1	1.0
7/ 7		70	17	.42		2 4	1.0
7/ 8		62	17	.3		4 4	.06
7/ 9		60	16	.32		4 4	.06
7/10		57	16	1.15		4 4	1.0
7/11		58	16	.3		4 2	1.2
7/12		57	16	.52		3 4	1.4
7/13		56	16	.2		4 4	1.6
7/14		58	16	.3		4 4	1.8
7/15		62	16	0		2 3	1.6
7/16		58	16	.10		4 4	1.6
7/17		58	16	.22		4 4	1.6
7/18		58	16	0		4 4	1.4
7/19		58	16	0		4 4	1.4
7/20		58	16	0		4 4	1.2
7/21		56	15			4 4	1.0
7/22		58	16	0		4 4	.8
7/23		60	16	.50		4 4	.6
7/24		58	16	.10		4 4	.6
7/25		57	15	.12		4 4	.4
7/26		60	16	.02		4 4	.2
7/27		58	16	0		4 4	.2
7/28		62	16	0		4 3	.2
7/29		60	16	.22		4 4	.2
7/30		60	16	0		4 4	.2
7/31		60	16	0		4 4	.2

(Continued)

Appendix Table D. (Continued)

Date	Temperatures		Precip. 0900	Cloud ¹ Cover		Water Gauge (Ft.) 0900
	Air (F°) Min.	Water (C°) 0900 2100		0900	2100	
8/ 1	62	16	0	2	4	.2
8/ 2	62	16	0	4	2	.2
8/ 3	67	16	0	1	2	.2
8/ 4	70	16	0	1	4	.2
8/ 5	62	16	0	4	1	.2
8/ 6	72	16	0	1	1	0
8/ 7	66	17	0	4	4	0
8/ 8	62	17	0	4	2	0
8/ 9	64	17	.20	4	2	0
8/10	60	17	.32	4	4	0
8/11	65	17	0	4	2	0
8/12	70	17	0	1	1	0
8/13	66	17	0	1	1	0
8/14	70	17	0	1	1	0
8/15	70	17	0	1	1	0
8/16	65	17	.12	3	4	0
8/17	60	17	.63	4	4	0
8/18	54	17	3.5	4	4	0
8/19	57	17	1.35	4	4	2.2
8/20	57	16	.32	4	4	4.6
8/21	55	15	.60	4	4	4.6
8/22	56	15	.32	4	4	4.4
8/23	54	15	.24	3	3	4.2
8/24	54	15	.84	4	4	4.2
8/25	57	15	.16	4	2	4.0
8/26	56	13	0	1	1	3.0
8/27	59	13	0	1	1	2.8
8/28	62	13	0	1	2	2.6
8/29	64	13	0	1	2	2.4
8/30	60	12	0	1	2	1.8
8/31	64	12	0	1	1	1.2
9/ 1	62	12	0	1	1	1.0
9/ 2	60	12	0	1	1	.4
9/ 3	59	12	.12	1	4	.4
9/ 4	57	12	0	4	1	.2
9/ 5	59	12	0	1	1	.2

¹ Cloud Cover: 1 = Clear
2 = Less than 1/2 cloud cover
3 = Greater than 1/2 cloud cover
4 = 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

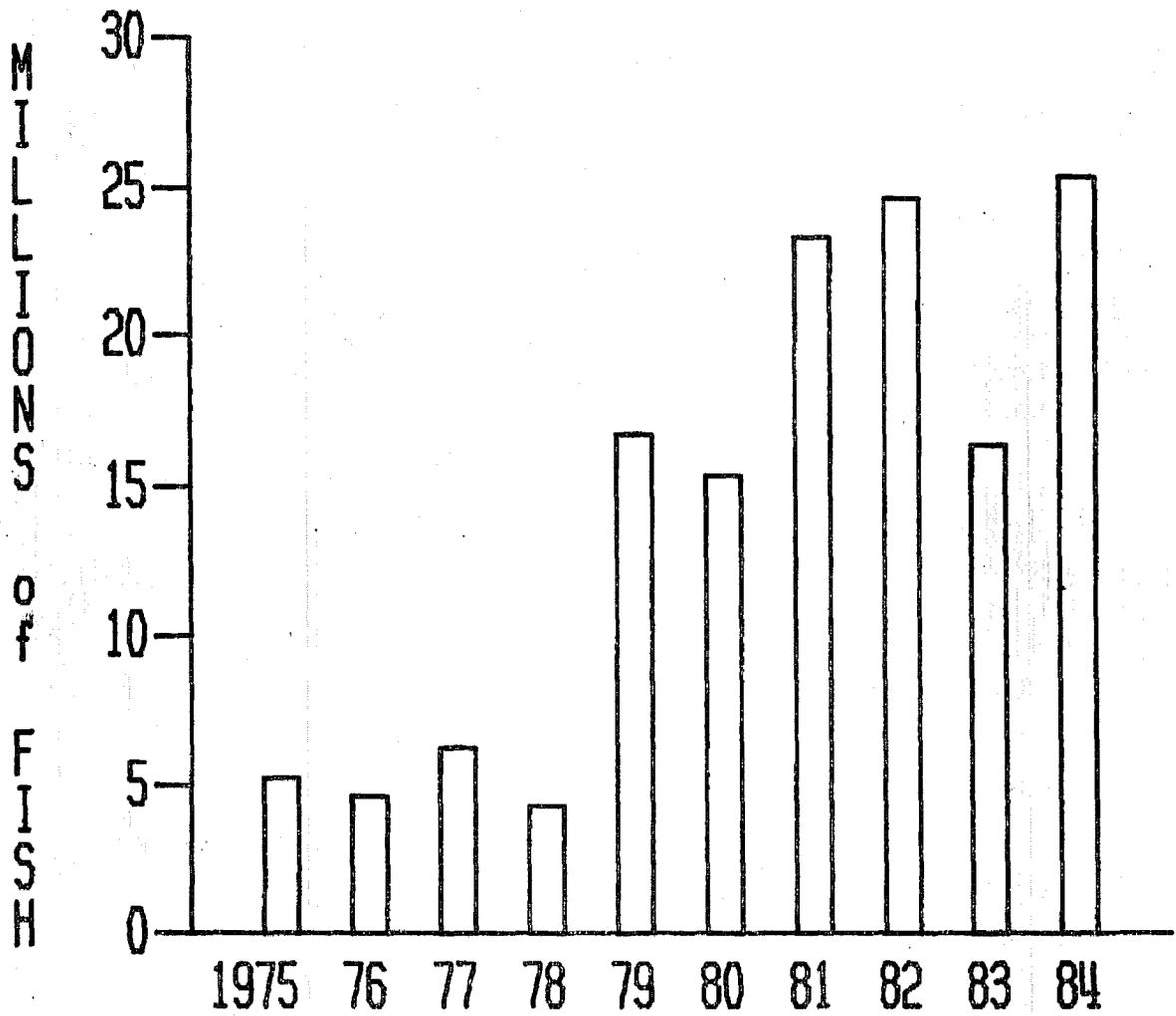
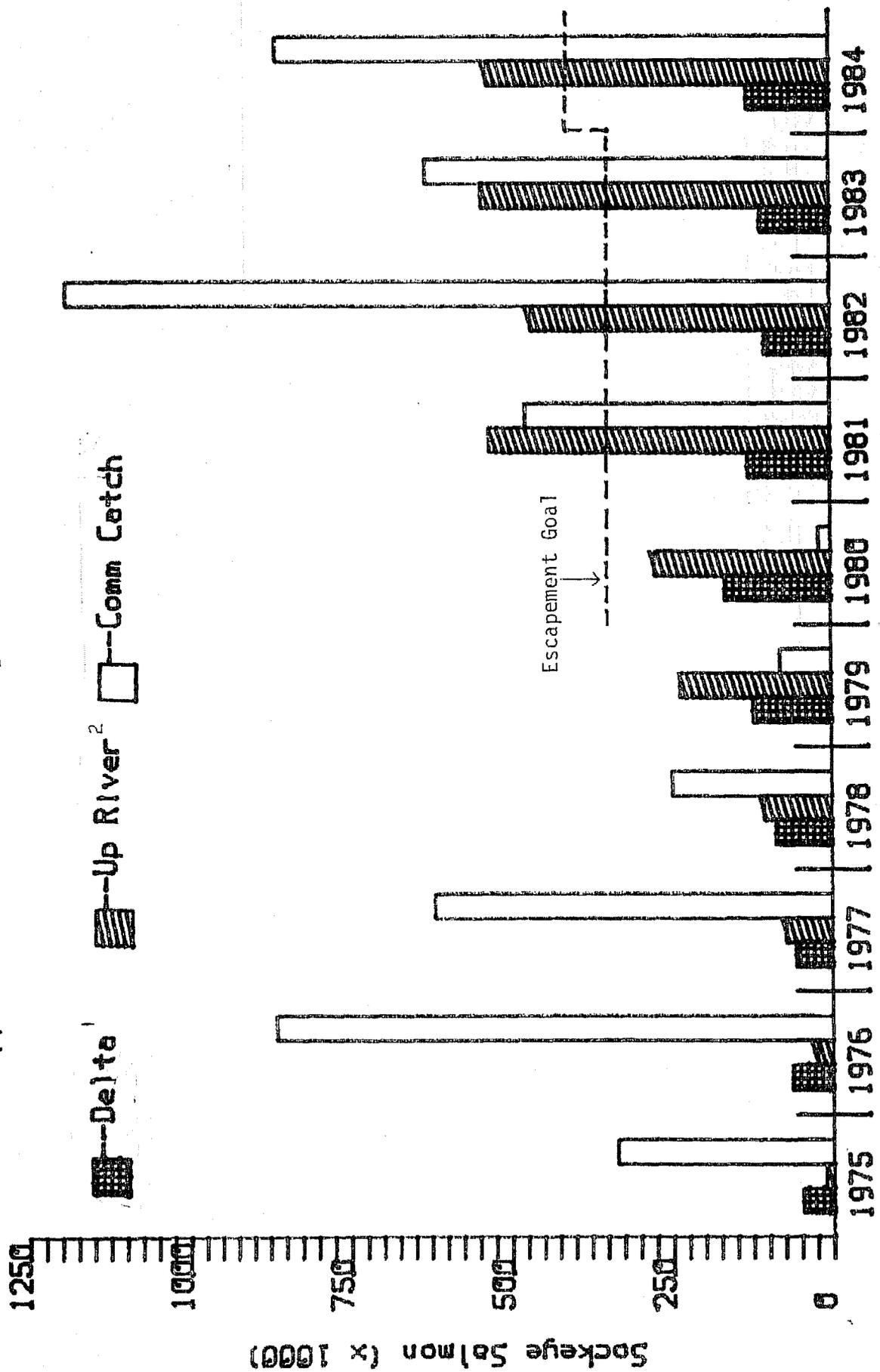


Figure 2. All species salmon catch, Prince William Sound, 1975 - 1984.

Figure 3. Copper River Dist. Sockeye Salmon Catch and Escapement.



¹ Aerial index from P.W.S. Annual Report table No. 10.

² 1975-77 aerial index, 1978 on Miles Lake Sonar count.

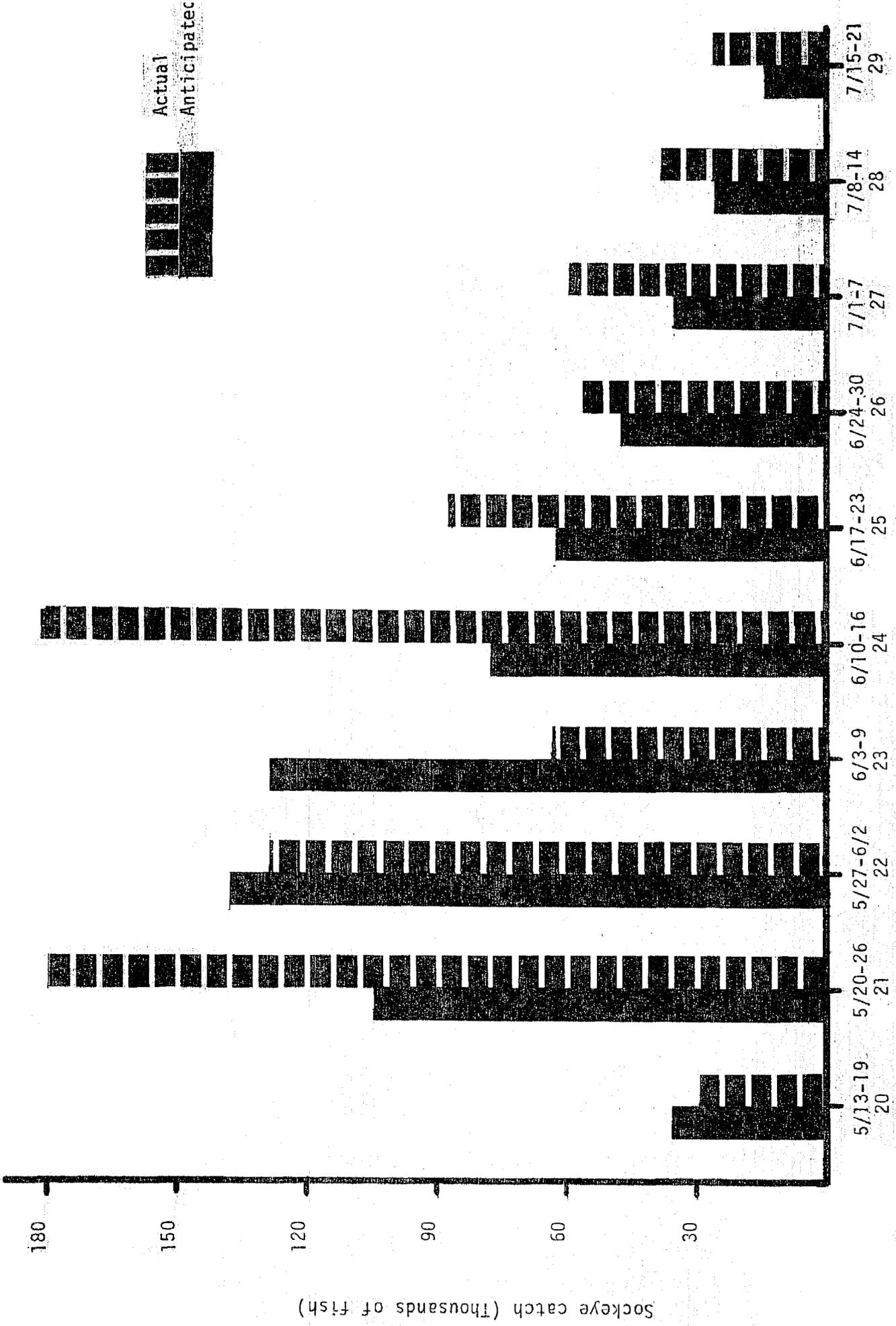


Figure 4. Sockeye salmon catch by week, Copper River district, 1984.

Figure 5. MILES LAKE DAILY SONAR COUNTS, 1984.

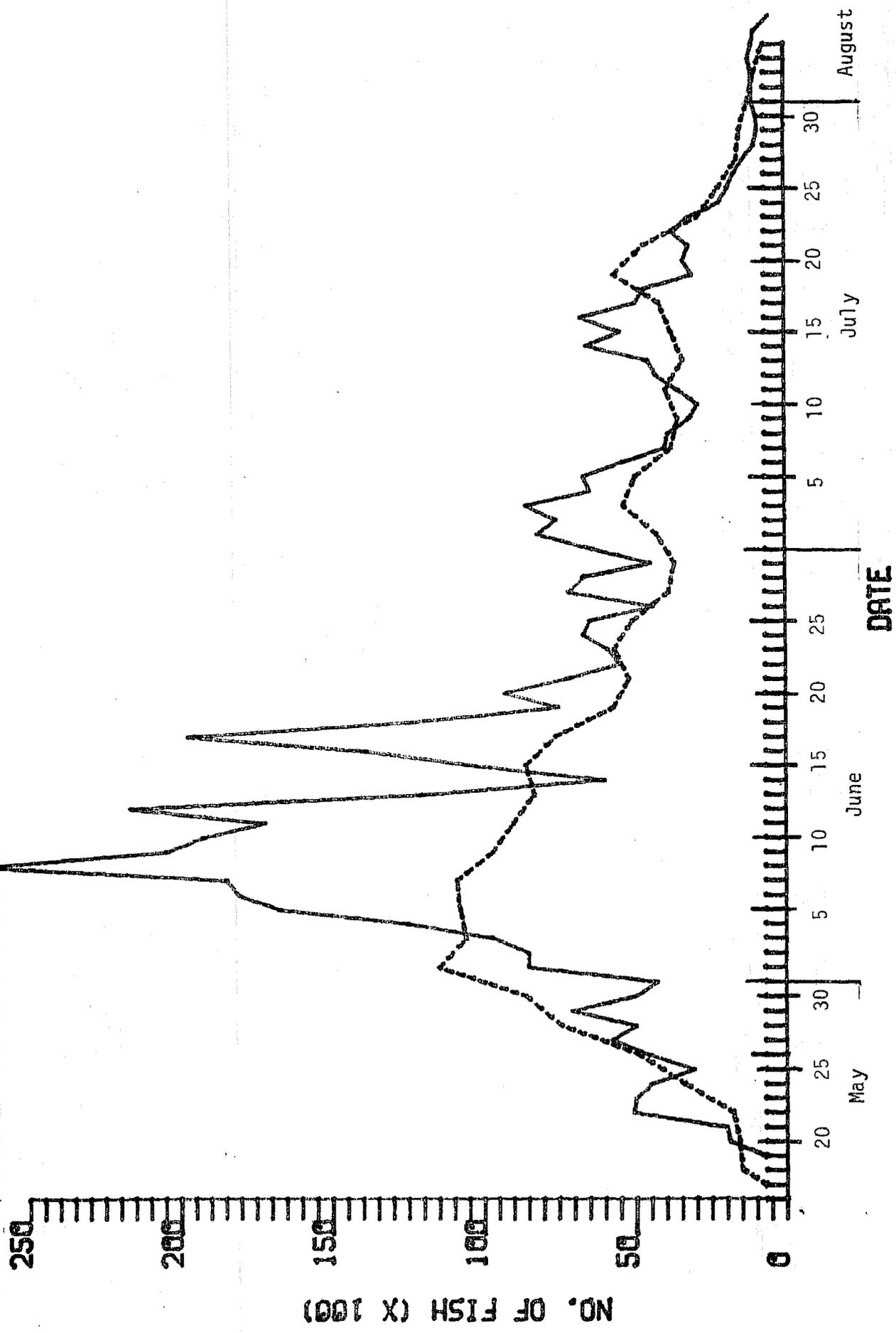


Figure 6. 1984 Miles Lake Sonar Counts by Stat Week.

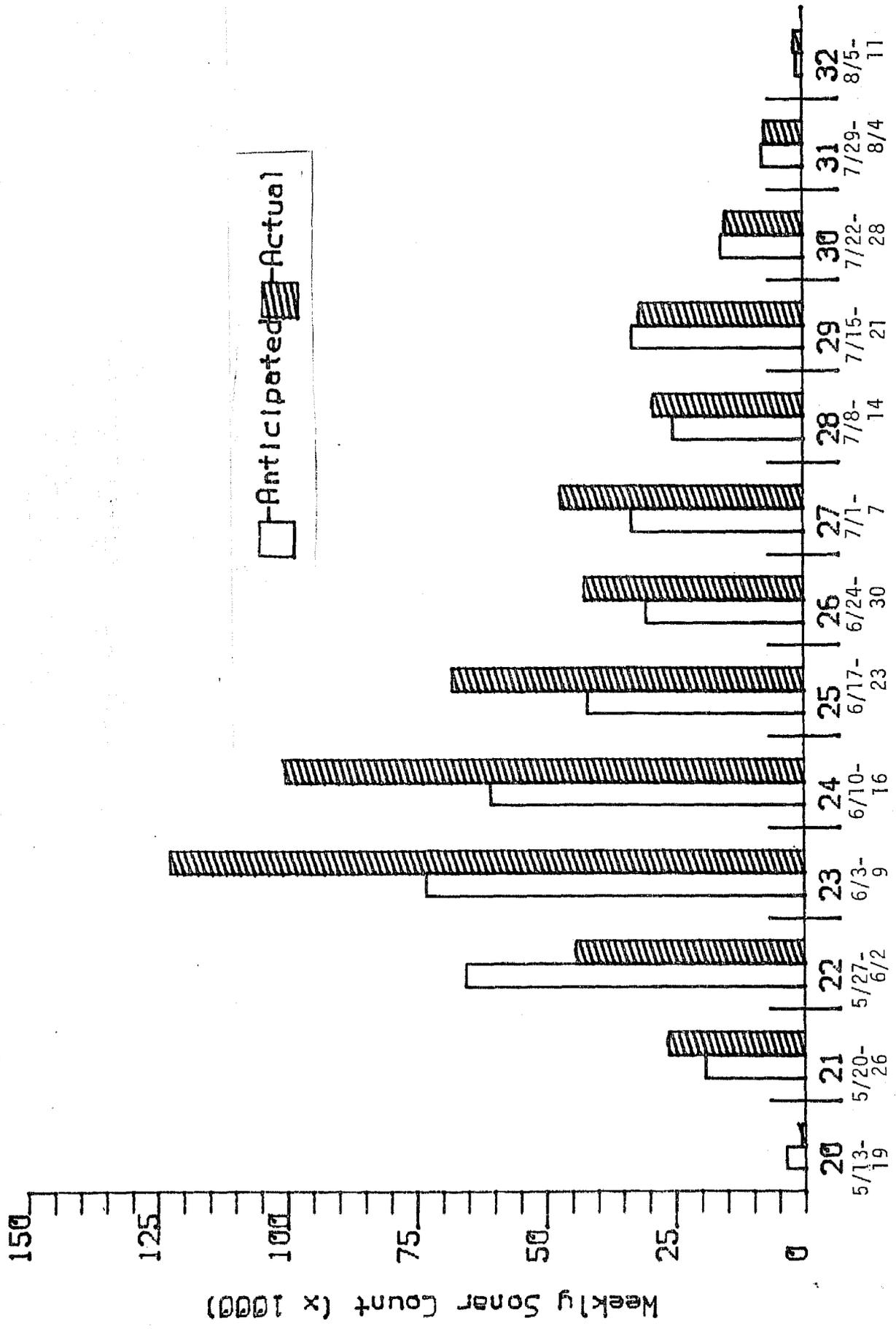
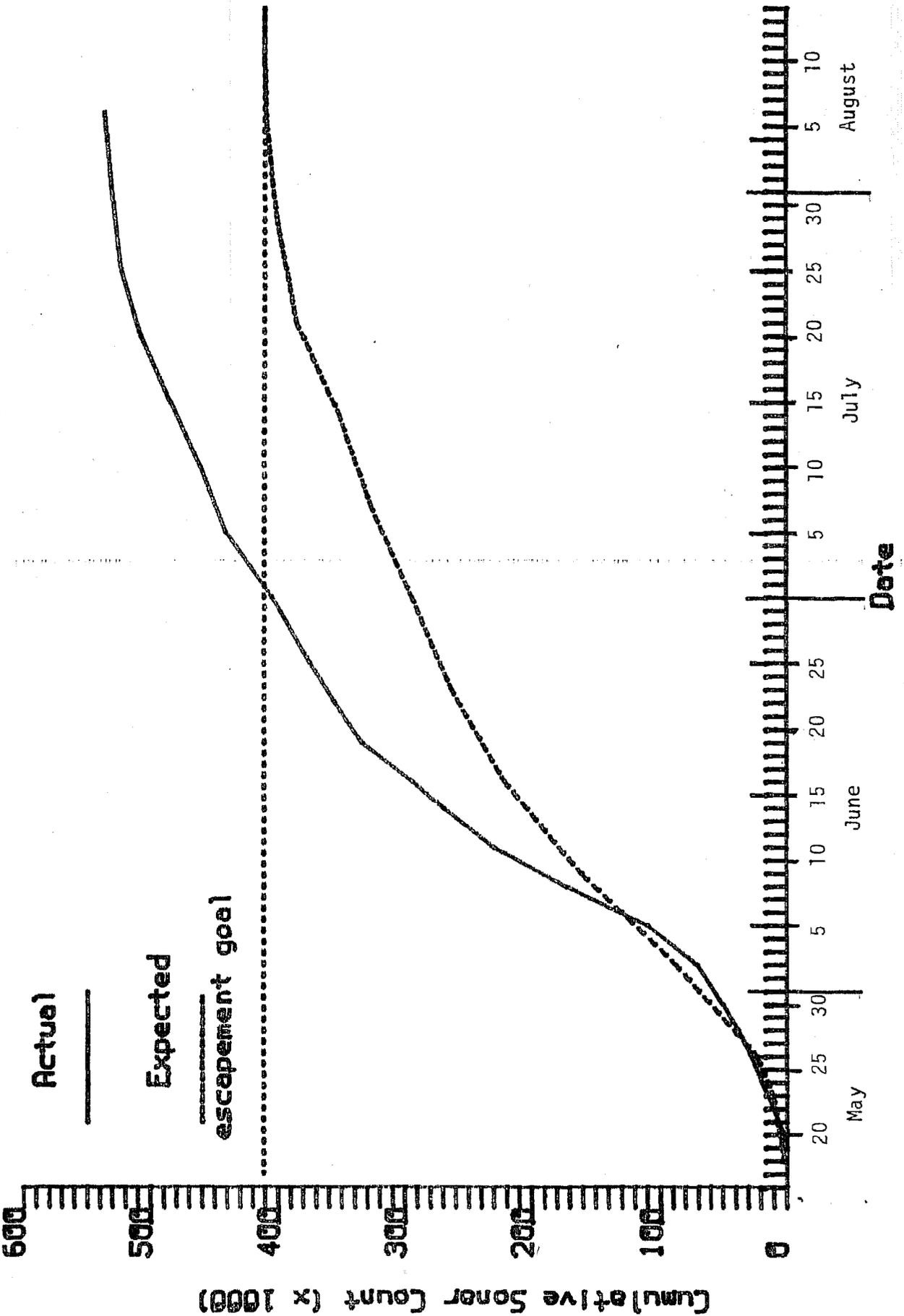


Figure 7. 1984 Copper River Cumulative Expected and Daily Sonar Counts at Miles Lake.



CHINOOK SALMON CATCH, COPPER RIVER DISTRICT

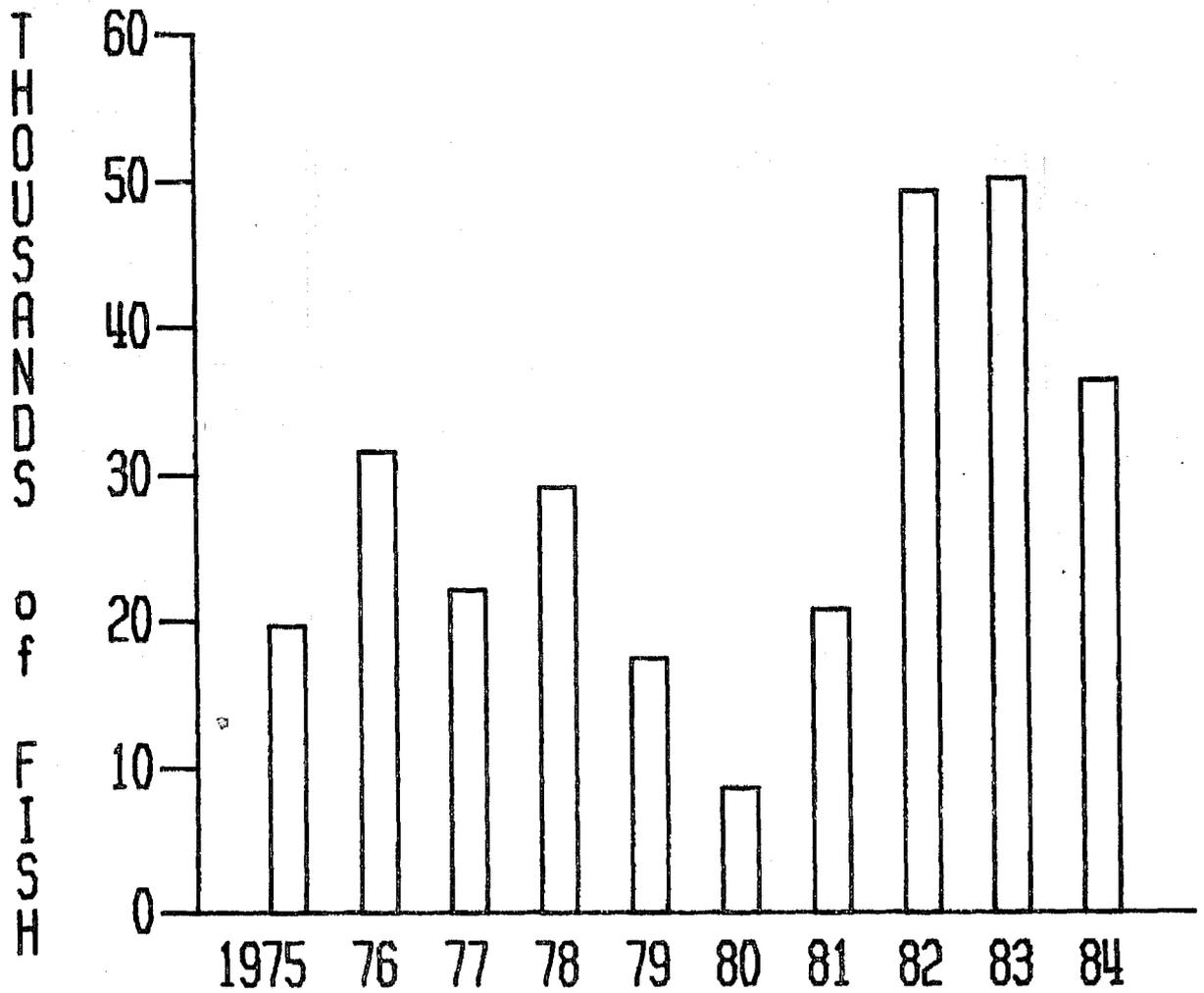


Figure 8. Chinook salmon catch, Copper River district, 1975 - 1984.

COHO SALMON CATCH, COPPER RIVER DISTRICT

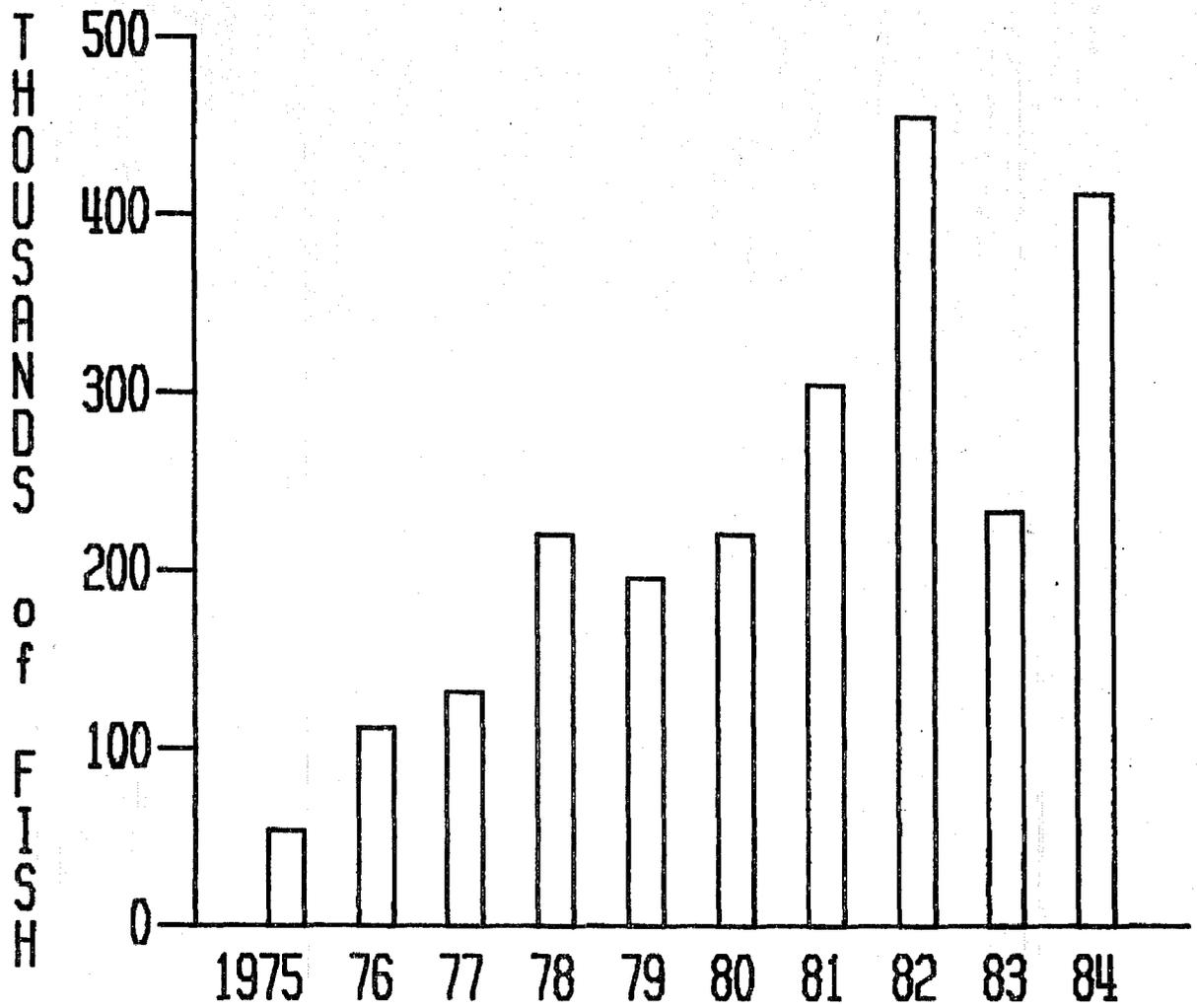
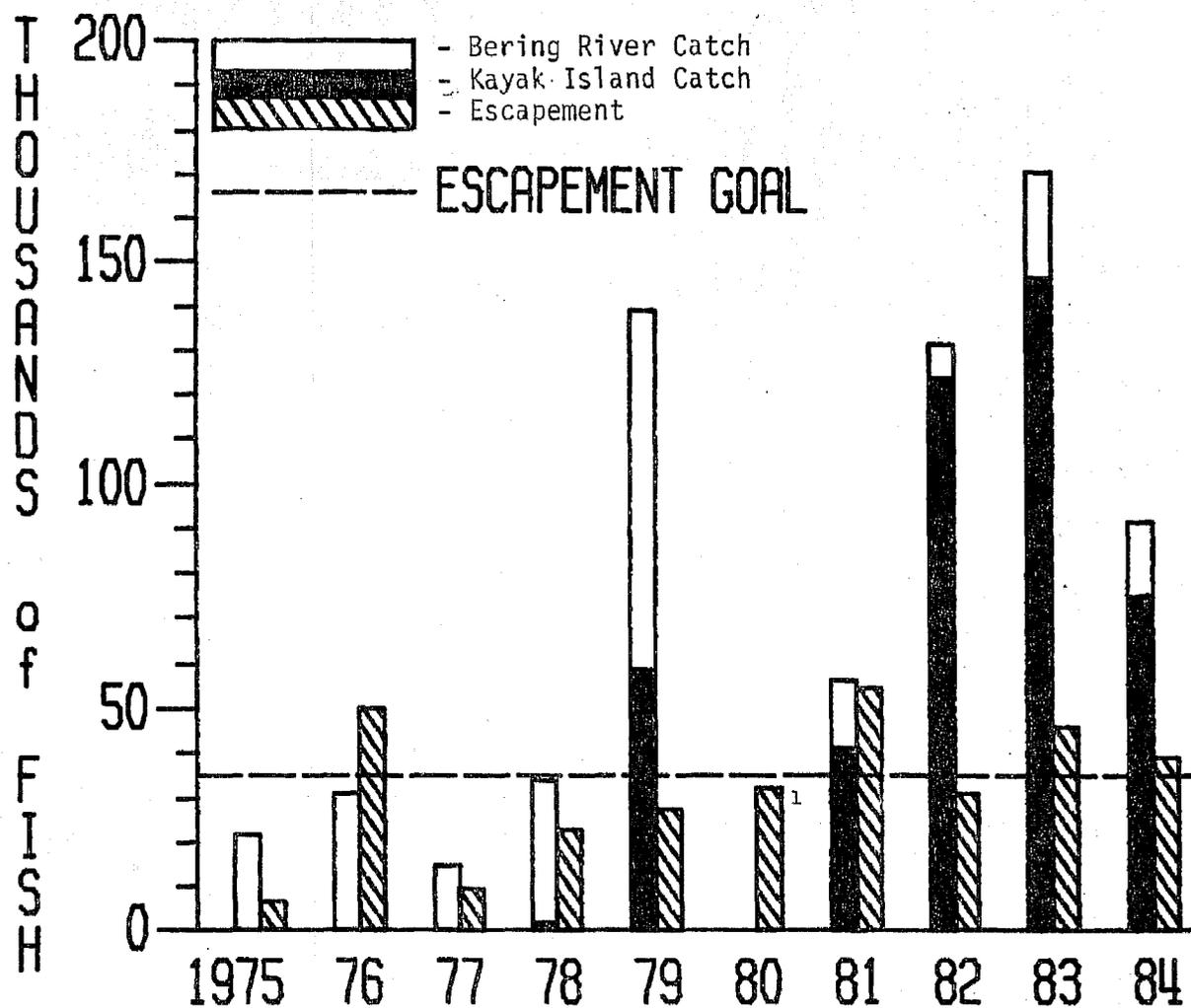


Figure 9. Coho salmon catch, Copper River district, 1975 - 1984.

SOCKEYE SALMON CATCH and ESCAPEMENT BERING RIVER DISTRICT



¹ Season closed in 1980.

Figure 10. Sockeye salmon catch and escapement, Bering River district, 1975-1984.

COHO SALMON CATCH, BERING RIVER DISTRICT

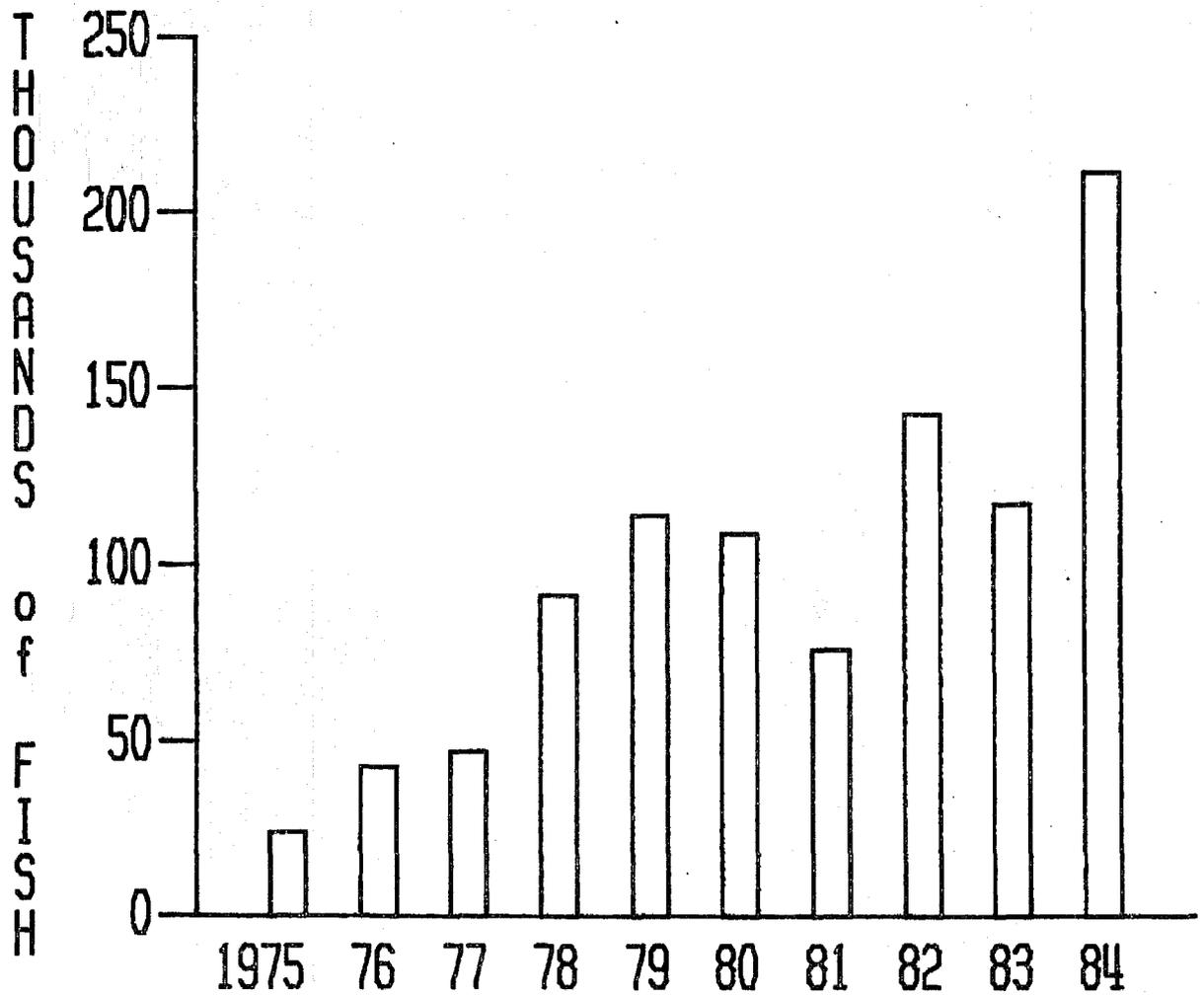


Figure 11. Coho salmon catch, Bering River district, 1975 - 1984.

SOCKEYE SALMON CATCH and ESCAPEMENT COGHILL DISTRICT

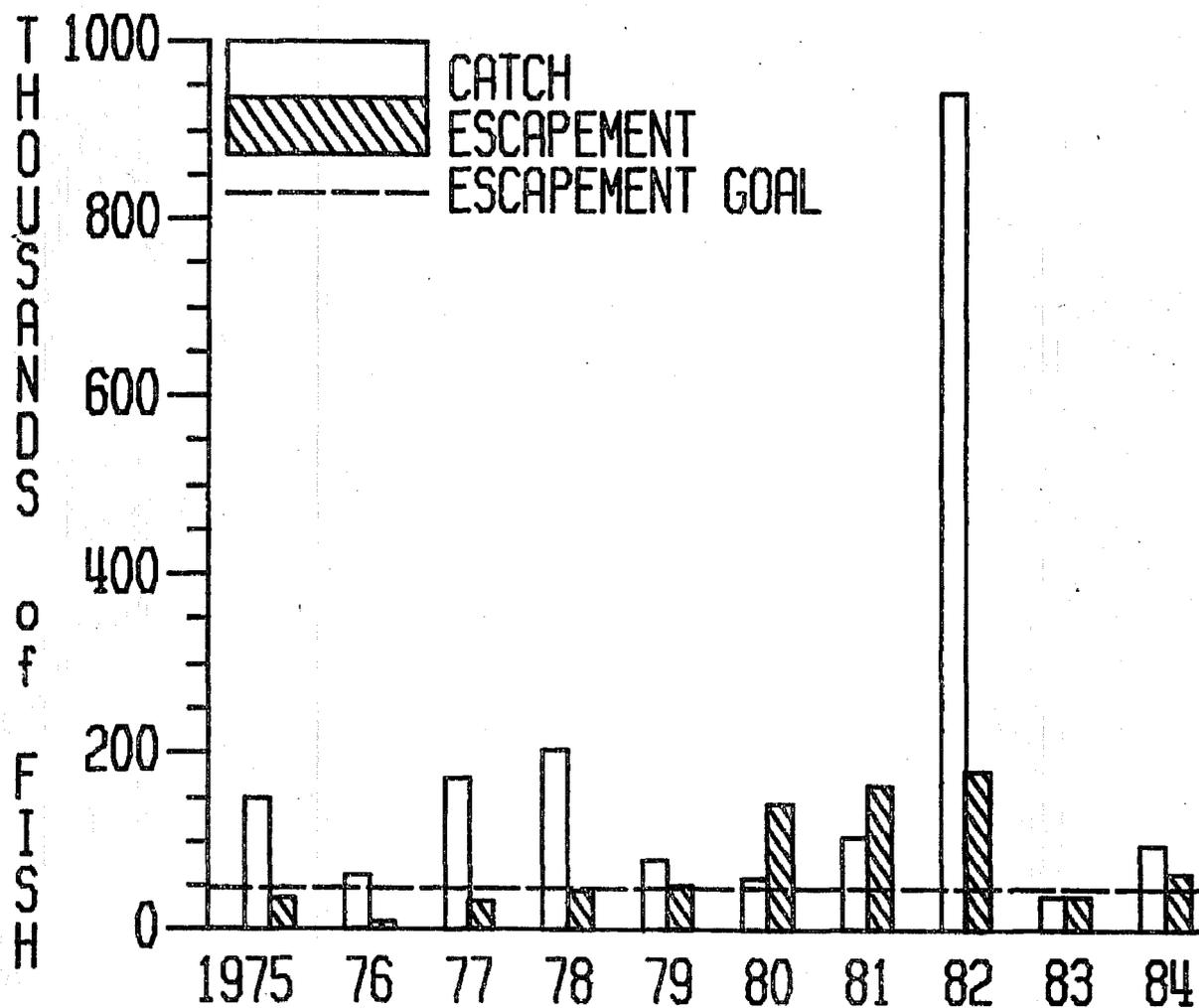


Figure 127. Sockeye salmon catch and escapement, Coghill district, 1975-1984.

SOCKEYE SALMON CATCH and ESCAPEMENT ESHAMY DISTRICT

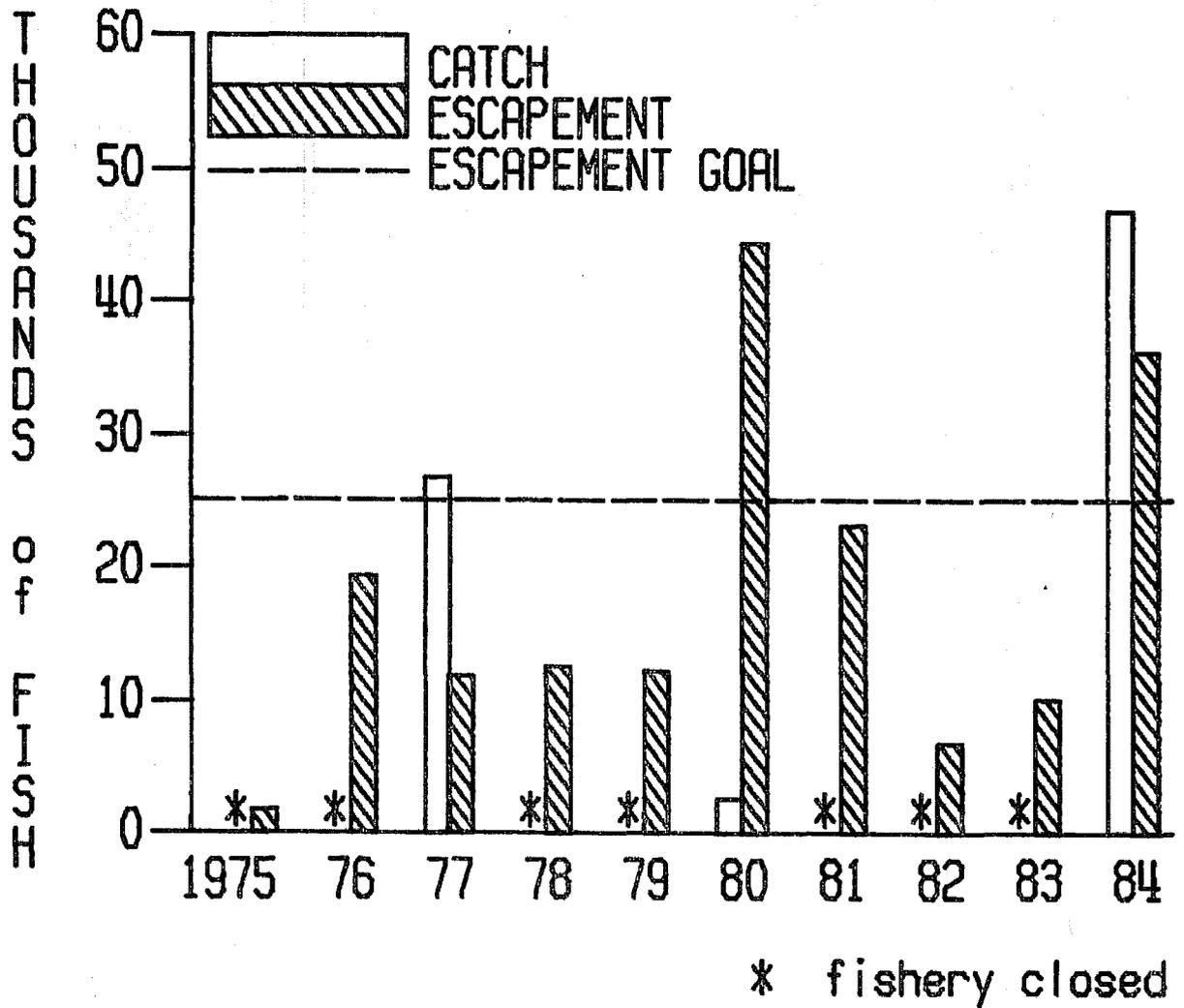
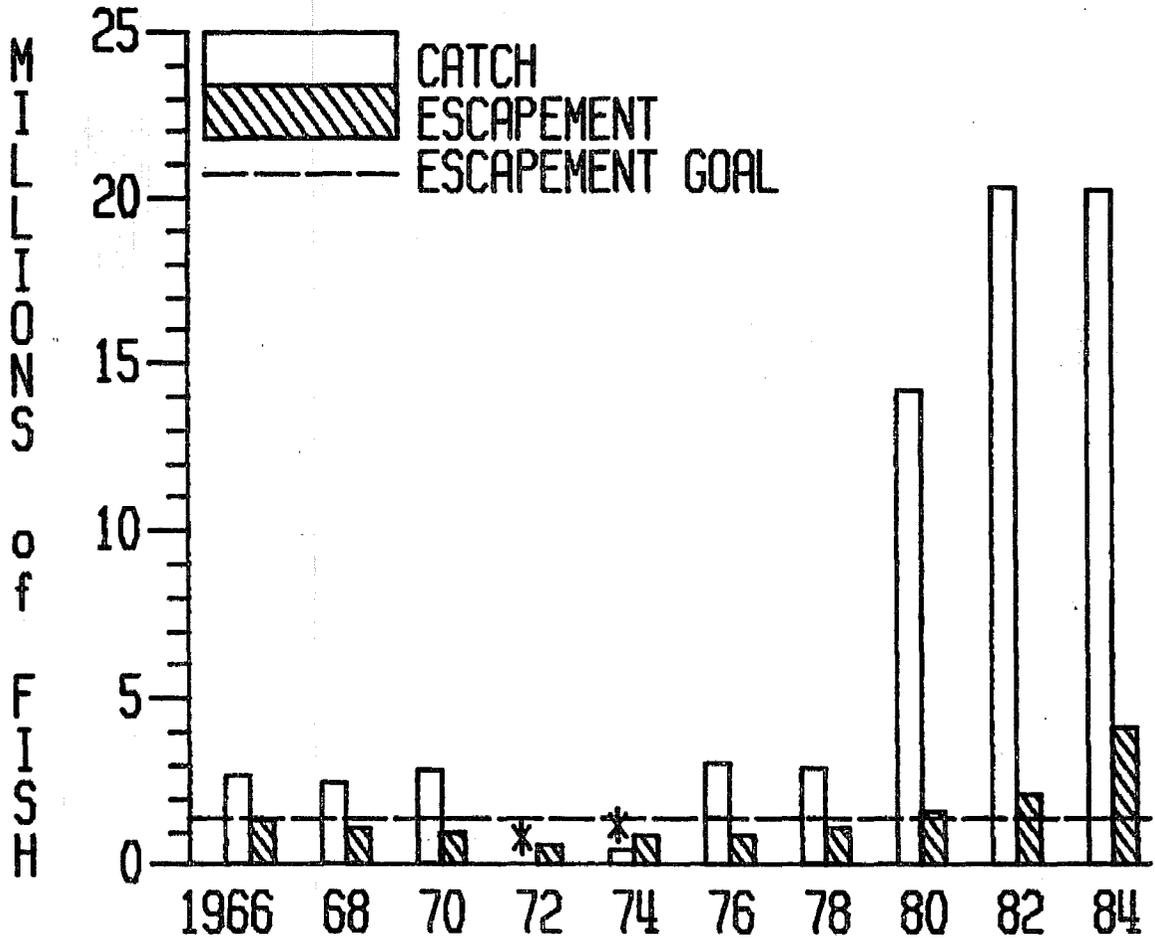


Figure 13. Sockeye salmon catch and escapement, Eshamy district, 1975-1984.

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.

PINK SALMON CATCH and ESCAPEMENT, ODD YEARS PRINCE WILLIAM SOUND

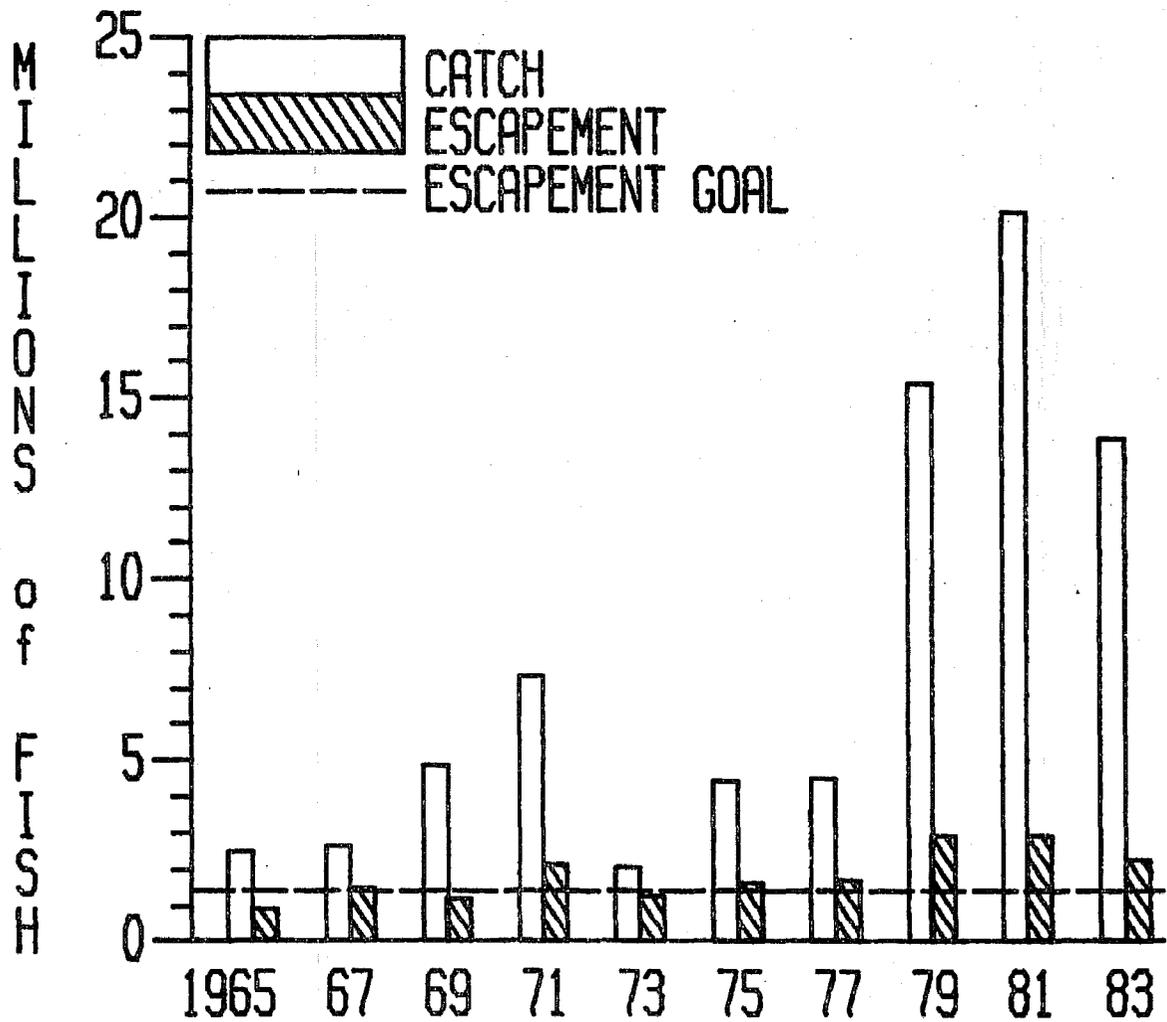


Figure 15. Pink salmon catch and escapement, odd years, Prince William Sound, 1975 - 1983.

CHUM SALMON CATCH and ESCAPEMENT PRINCE WILLIAM SOUND

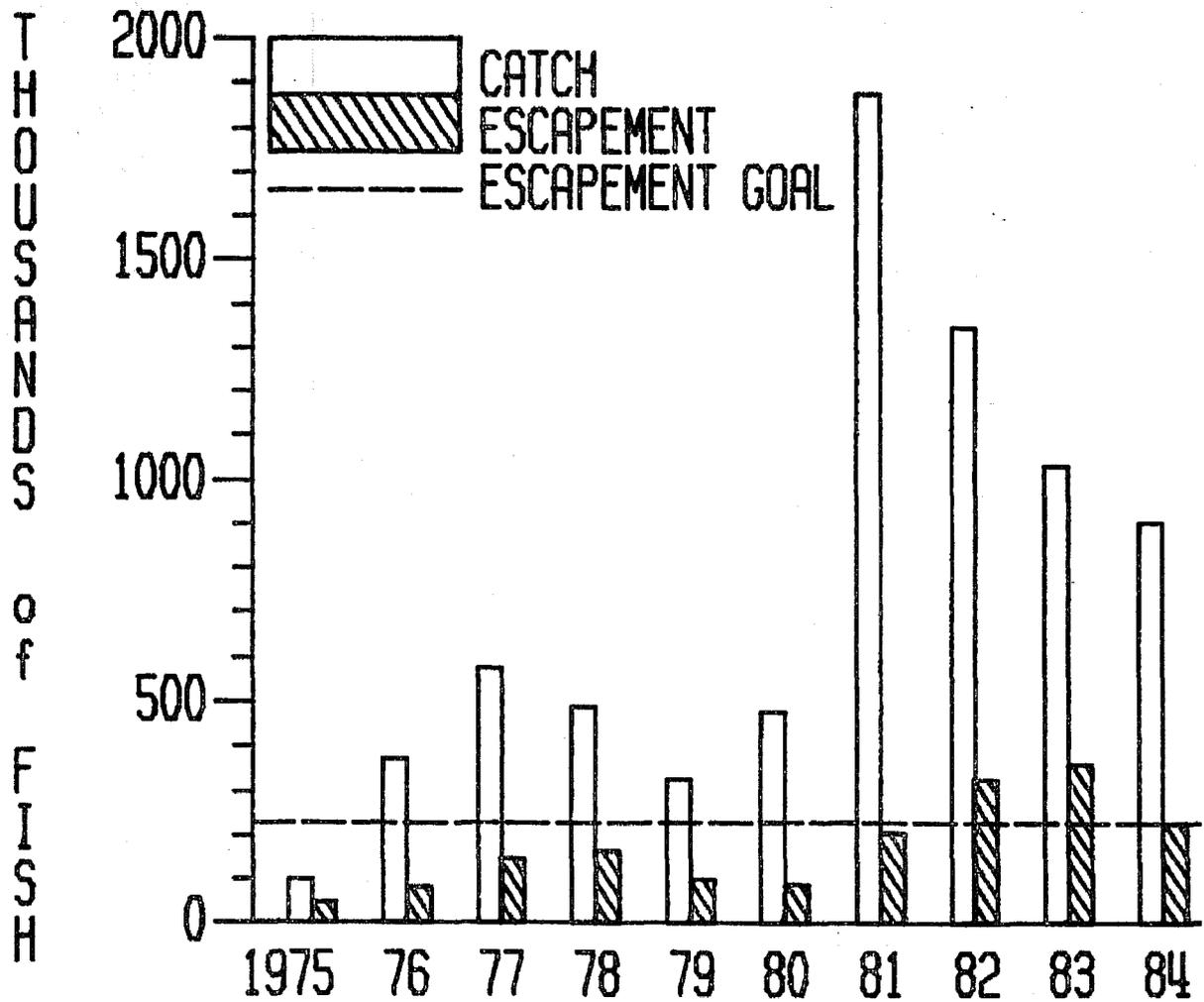


Figure 16. Chum salmon catch and escapement, Prince William Sound, 1975 - 1984.

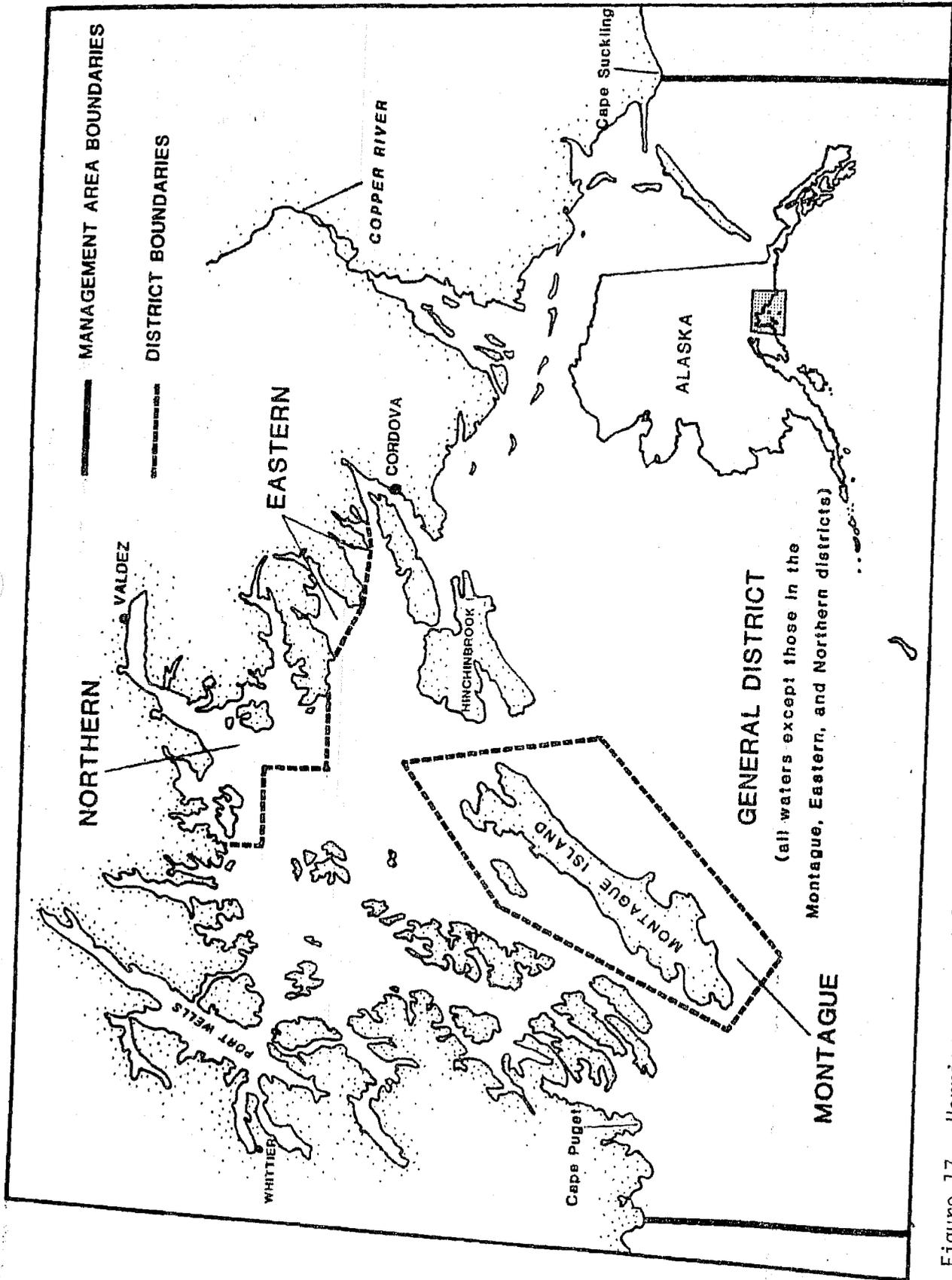


Figure 17. Herring commercial fishing districts of the PWS Management Area.

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

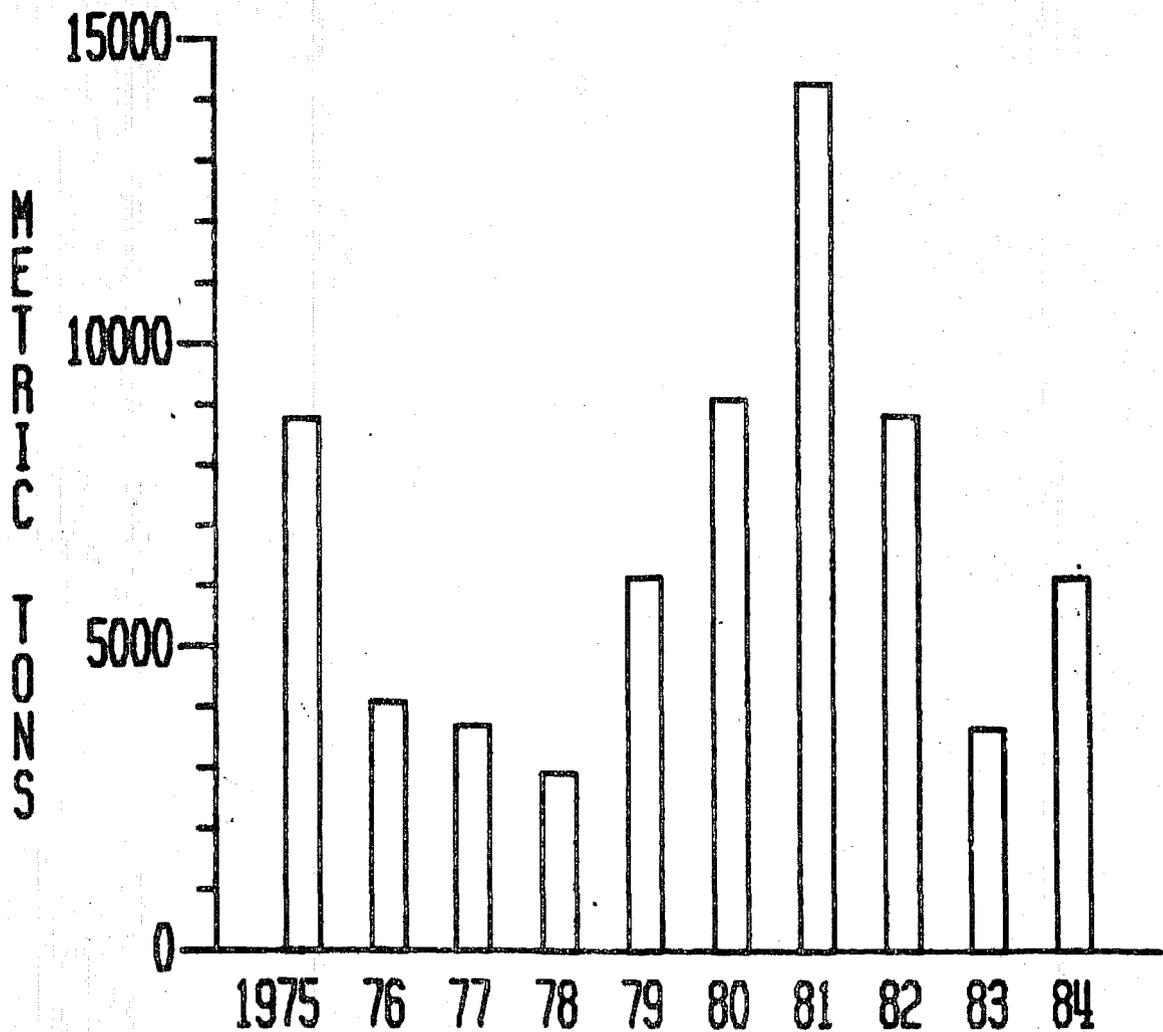


Figure 18. All fisheries herring harvest, Prince William Sound 1975 - 1984.

HERRING SAC ROE HARVEST and PEAK AERIAL ESTIMATE PRINCE WILLIAM SOUND

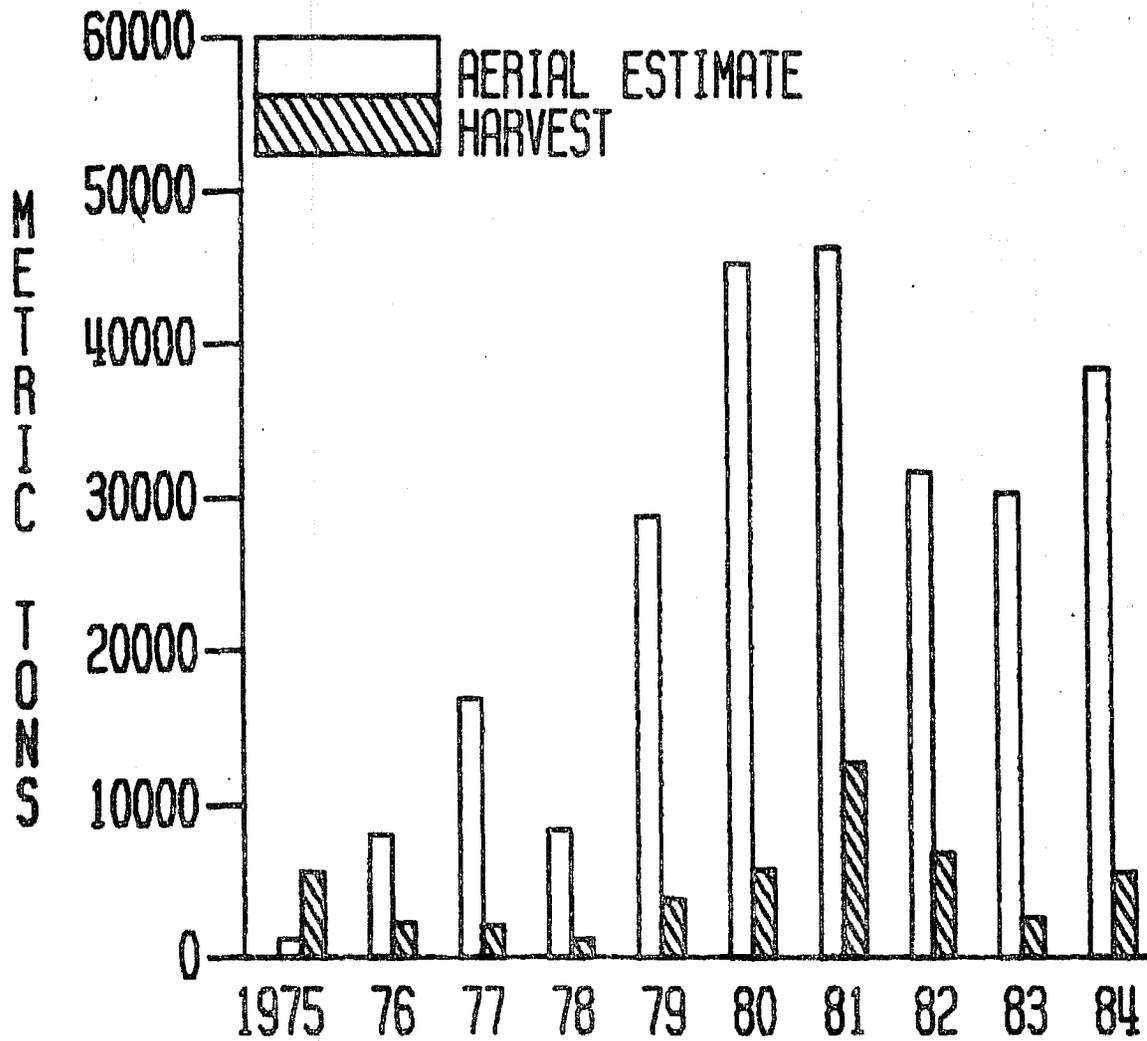


Figure 19. Herring sac roe harvest and peak estimate, Prince William Sound, 1975 - 1984.

HERRING SPAWN on KELP HARVEST, PRINCE WILLIAM SOUND

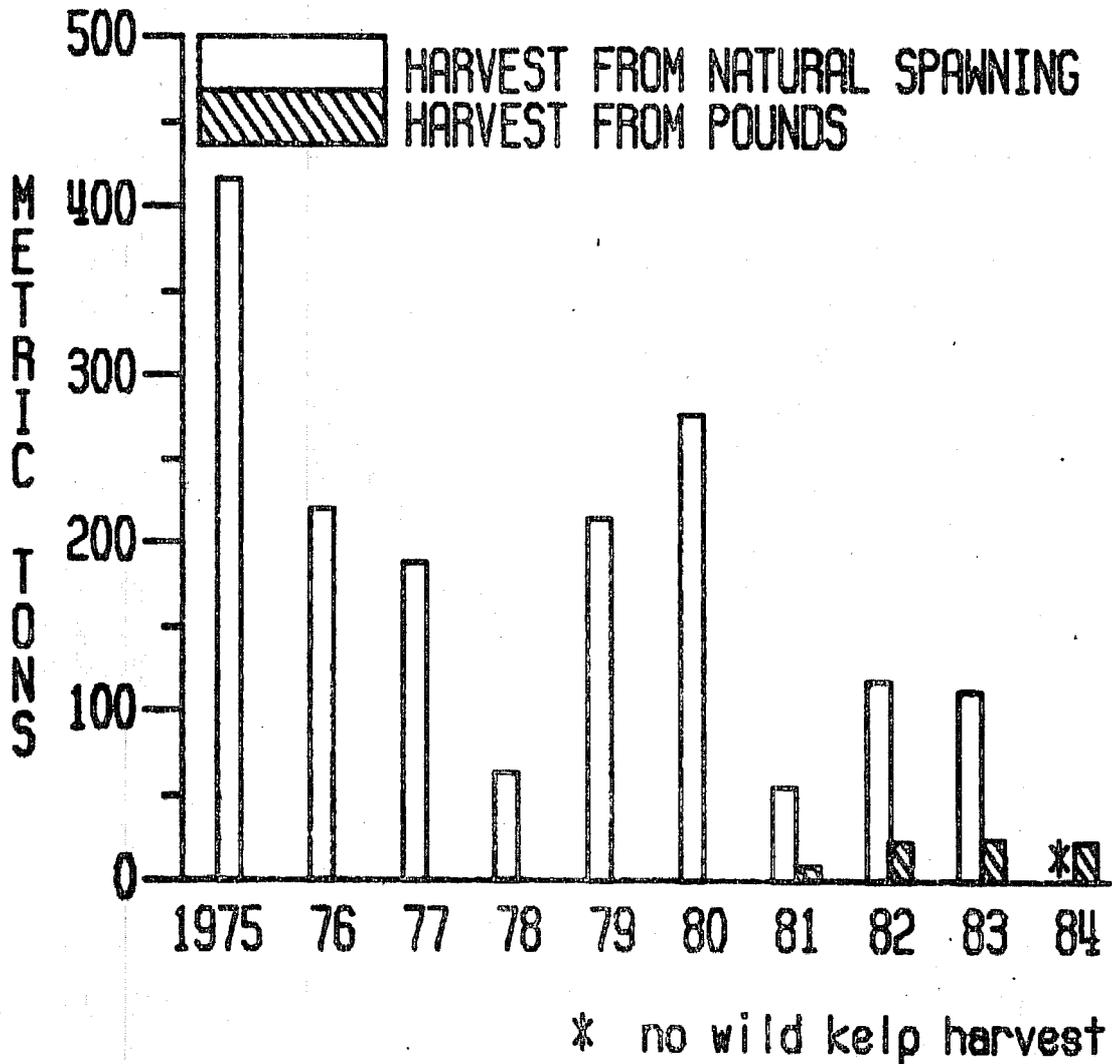


Figure 20. Herring spawn on kelp harvest, Prince William Sound 1975 - 1984.

BAIT HERRING HARVEST, PRINCE WILLIAM SOUND

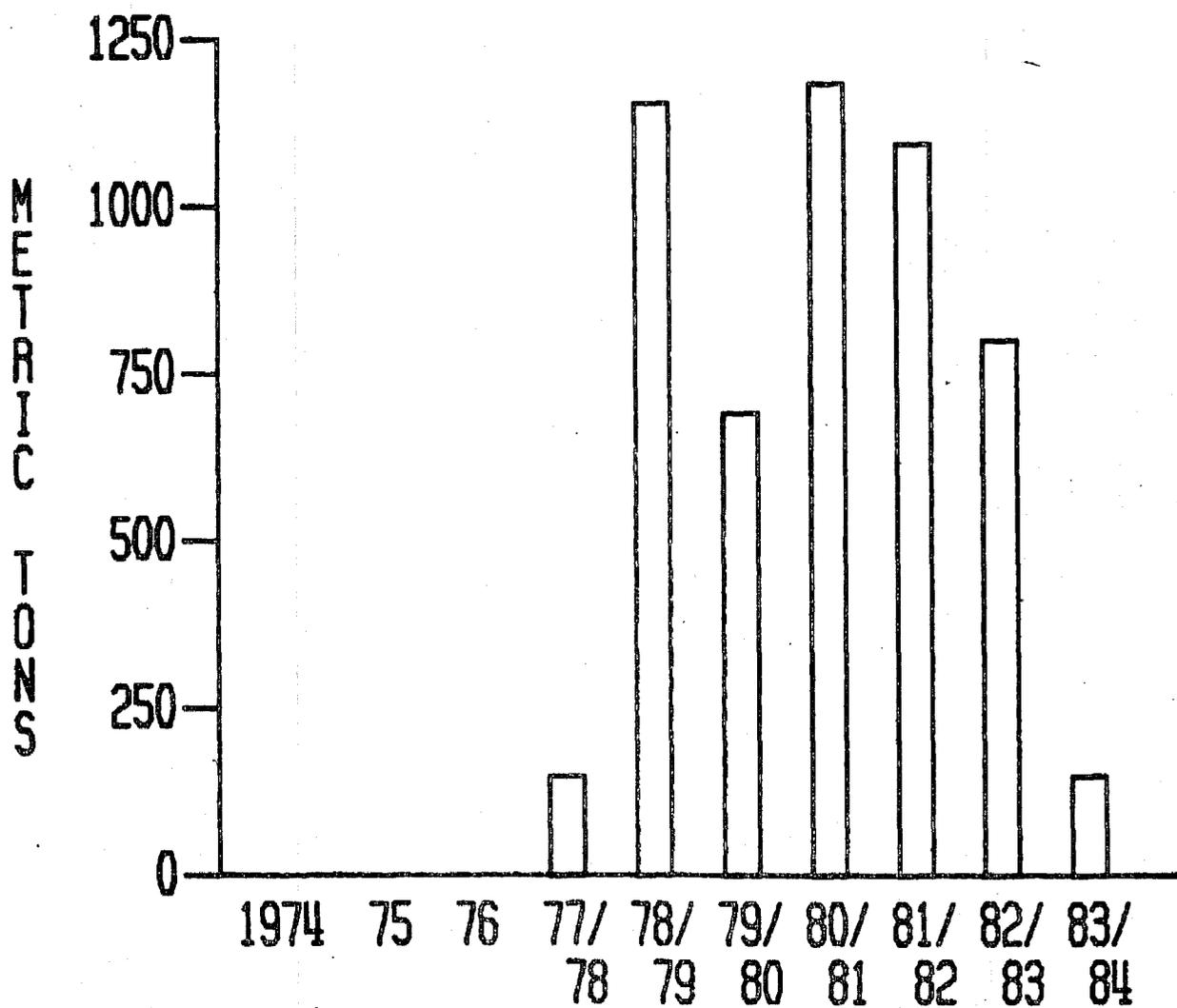


Figure 21. Bait/food herring harvest, Prince William Sound, 1974 - 1984

HERRING SAC ROE HARVEST and PEAK AERIAL ESTIMATE EASTERN DISTRICT

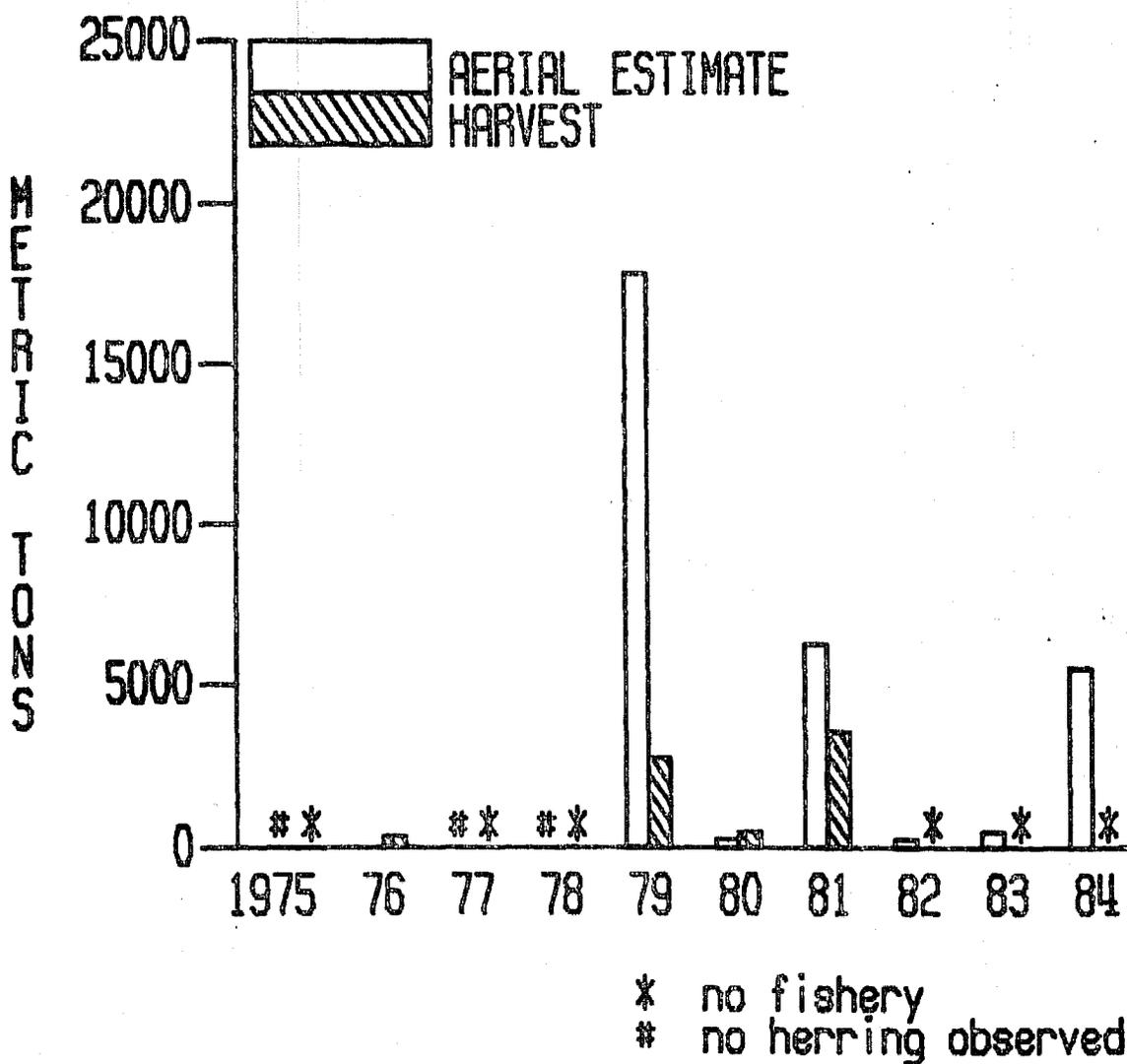


Figure 22. Herring sac roe harvest and peak estimate, Eastern District, Prince William Sound, 1975 - 1984.

HERRING SAC ROE HARVEST and PEAK AERIAL ESTIMATE NORTHERN DISTRICT

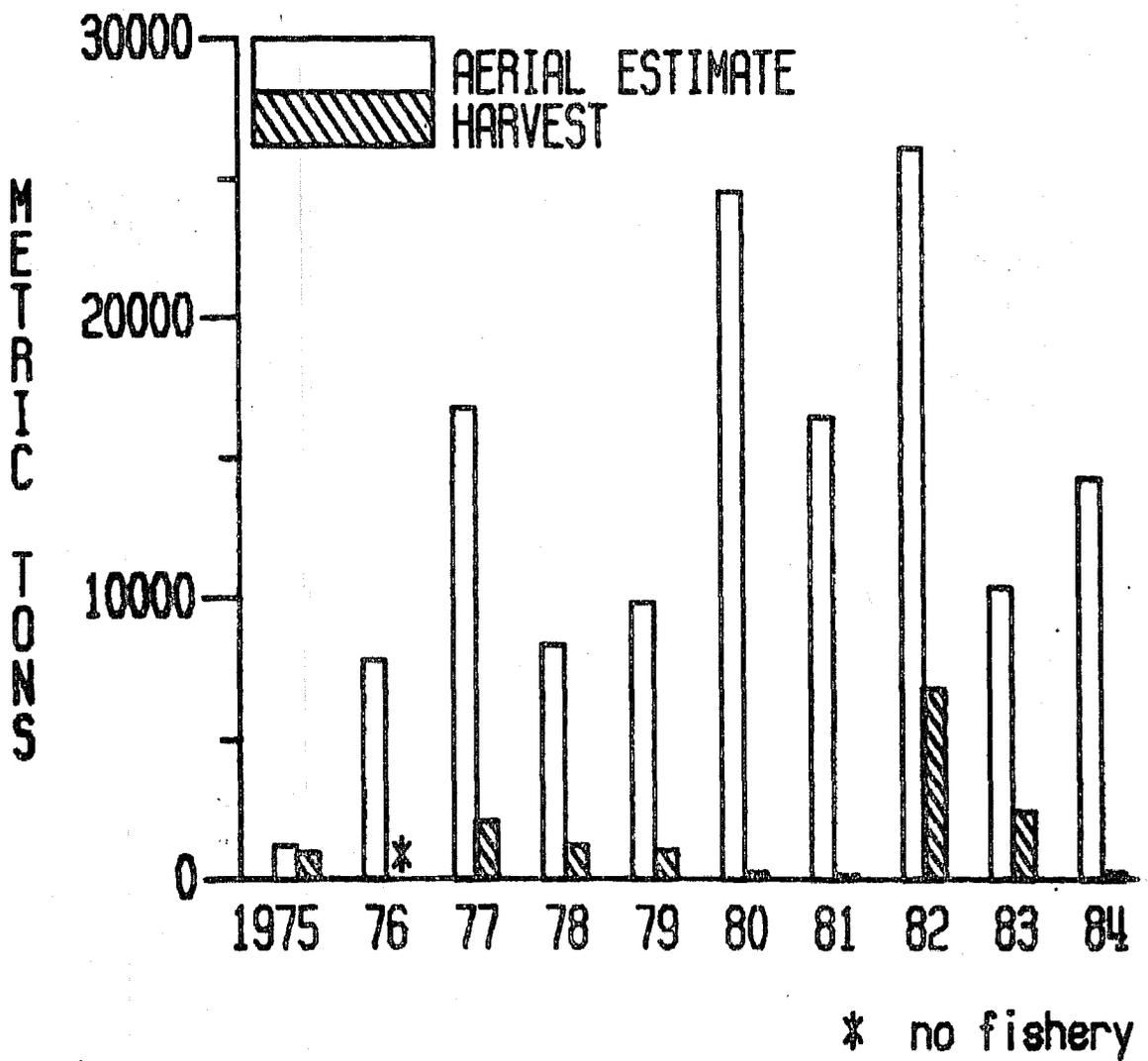


Figure 23. Herring sac roe harvest and peak estimate, Northern District, Prince William Sound, 1975 - 1984.

HERRING SAC ROE HARVEST and PEAK AERIAL ESTIMATE MONTAGUE DISTRICT

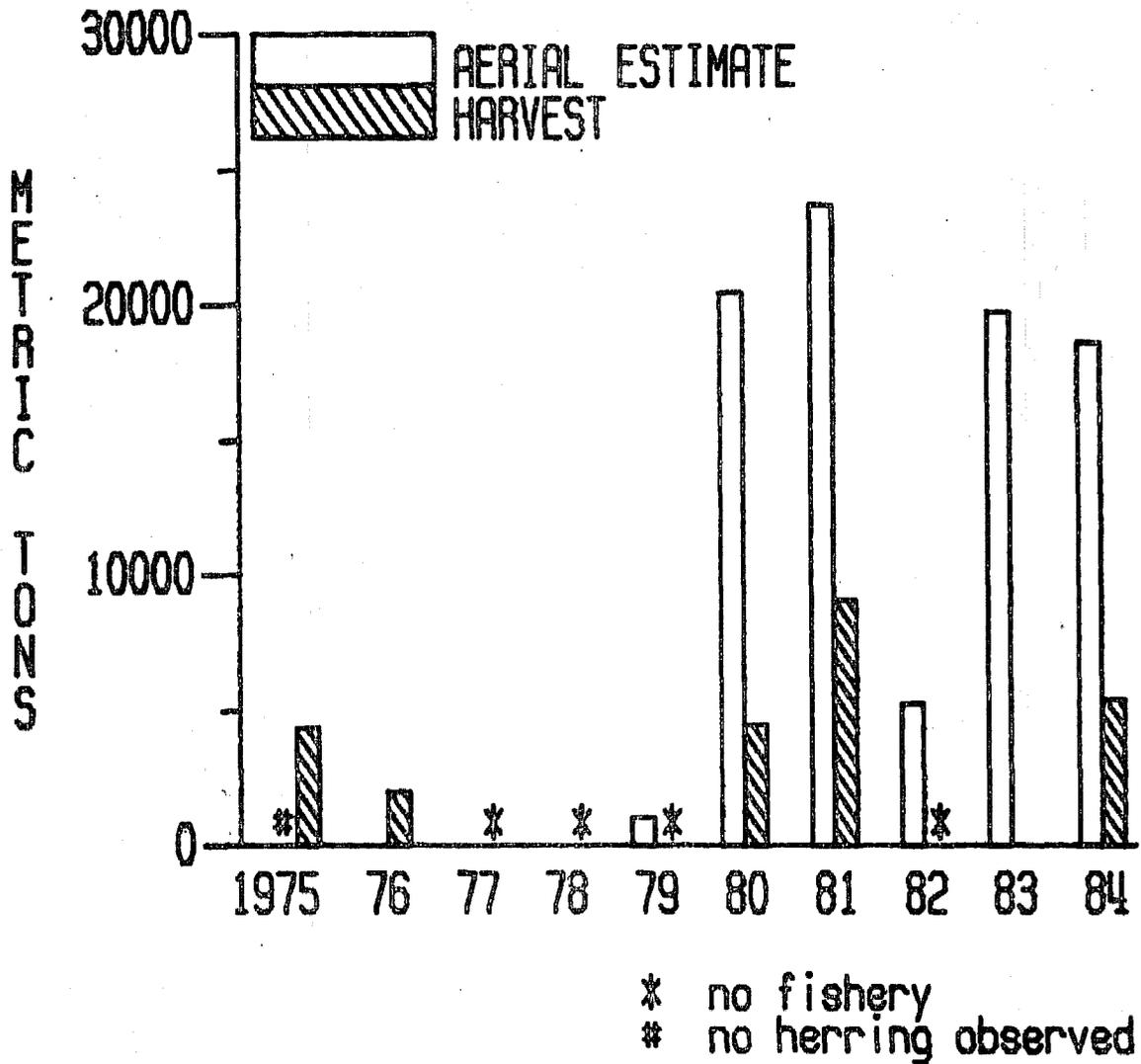


Figure 24. Herring sac roe harvest and peak estimate, Montague District, Prince William Sound, 1975 - 1984.

Scale 1:50,000
 Uplift (feet)

Cordova
 Port Gravina
 Wilby Island
 Sawmill Bay
 Chenega Island
 Gibbon Anchorage
 Macleod Harbor
 Patton Bay

Subsidence (feet)

Whittier

Mariners are cautioned to expect shallowing for the areas listed. Tidal observations are at selected sites and the magnitude of the changes except at these sites is not known.

VHF FM WEATHER BROADCASTS FOR
 FM Stations with a range of approximately 20 miles are in operation broadcasting weather warnings, forecasts and reports from the following stations:
 WEATHER SERVICE OFFICE as follows:
 Cordova WXJ-79 162.55 MHz
 Seward KEC-81 162.55 MHz

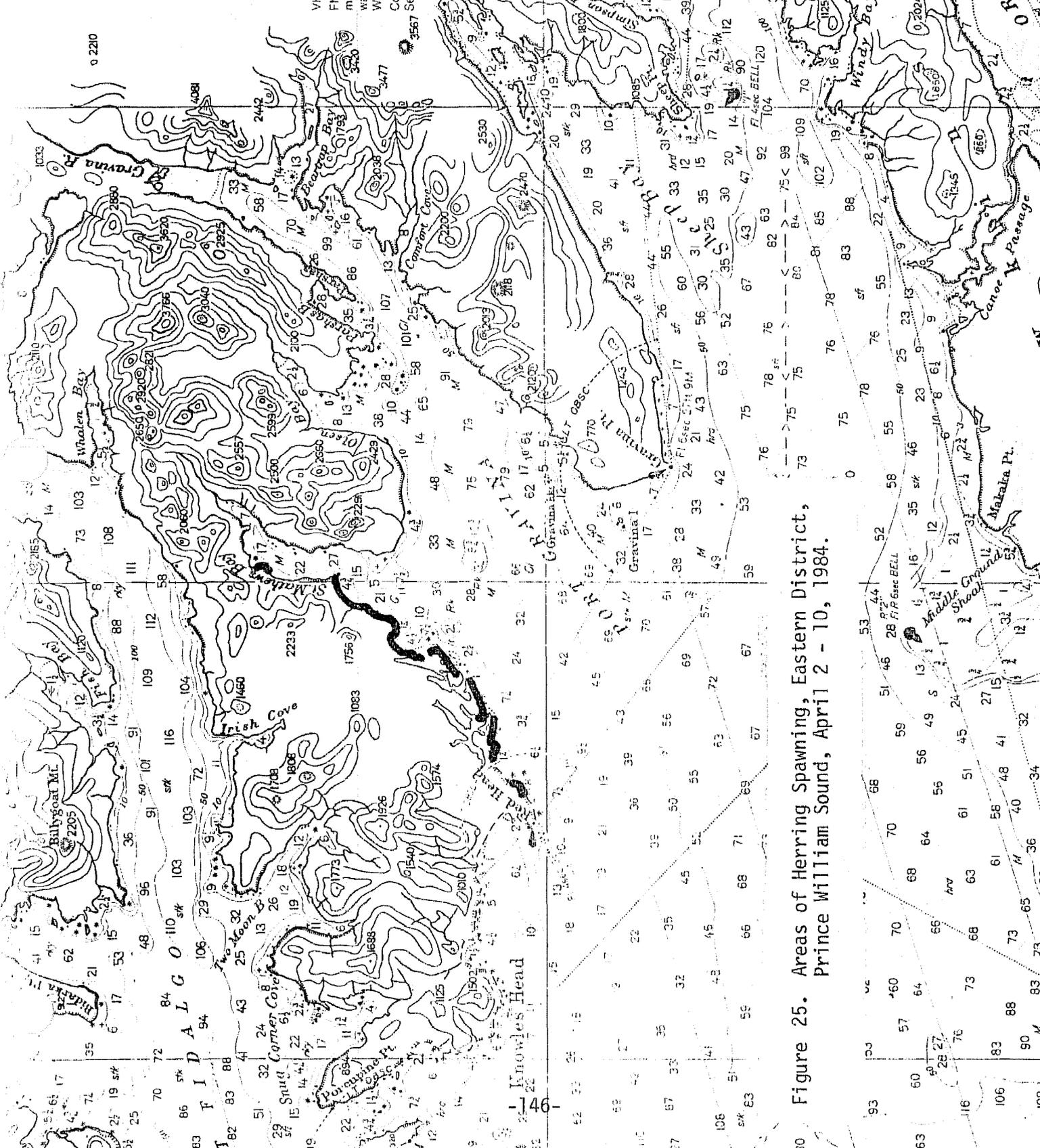
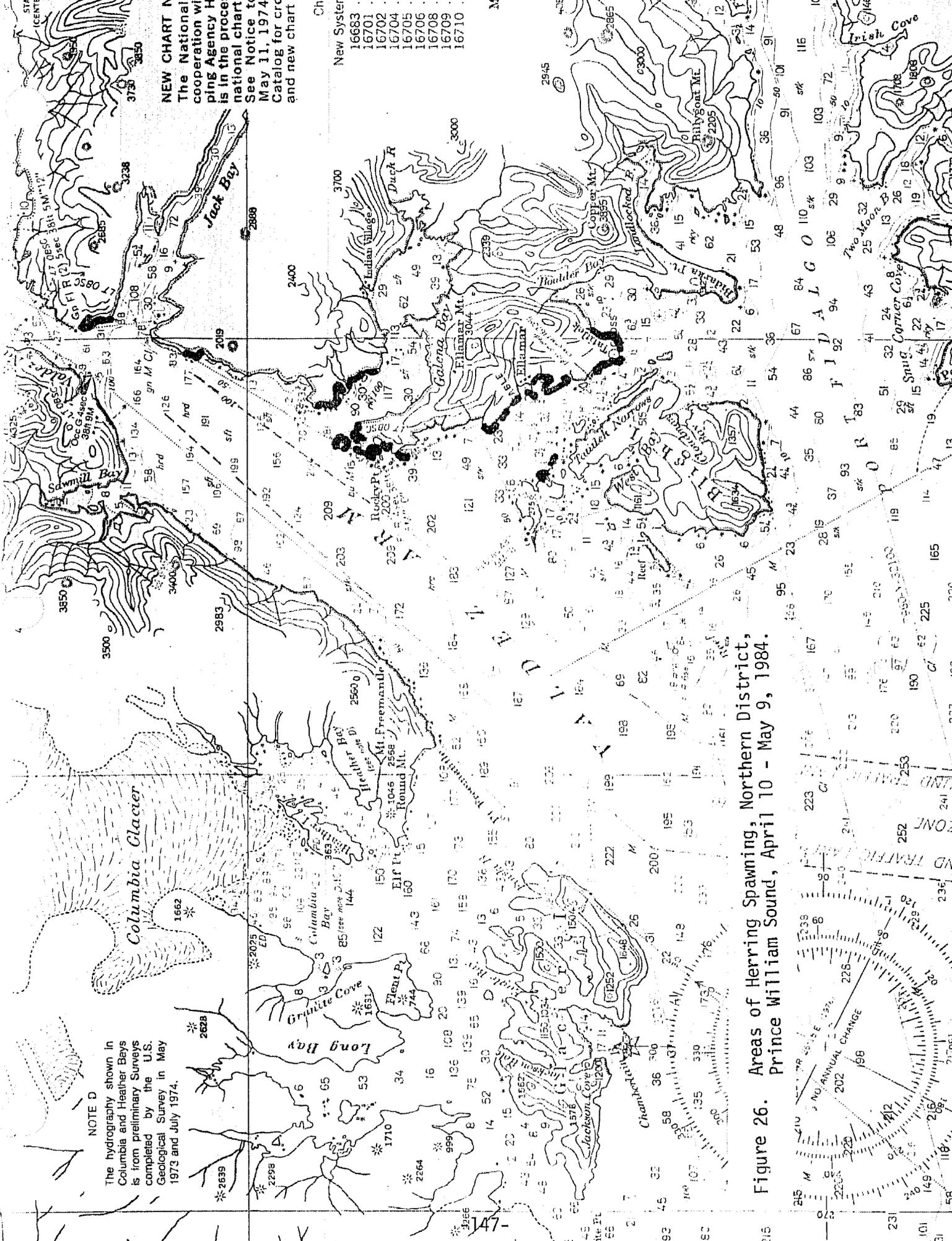


Figure 25. Areas of Herring Spawning, Eastern District, Prince William Sound, April 2 - 10, 1984.



NOTE D

The hydrography shown in Columbia and Heather Bays is from preliminary surveys completed by the U.S. Geological Survey in May 1973 and July 1974.

NEW CHART NUMBER
 The National Oceanic and Atmospheric Administration in cooperation with the U.S. Fish and Wildlife Service is in the process of updating the national chart number for this area. See Notice to Mariners, May 11, 1974, and new chart number in the National Oceanic and Atmospheric Administration Catalog for charts and new chart numbers.

Chart New System

16683
16701
16702
16704
16705
16706
16708
16710

Figure 26. Areas of Herring Spawning, Northern District, Prince William Sound, April 10 - May 9, 1984.

NO ANNUAL CHANGE
 202
 198

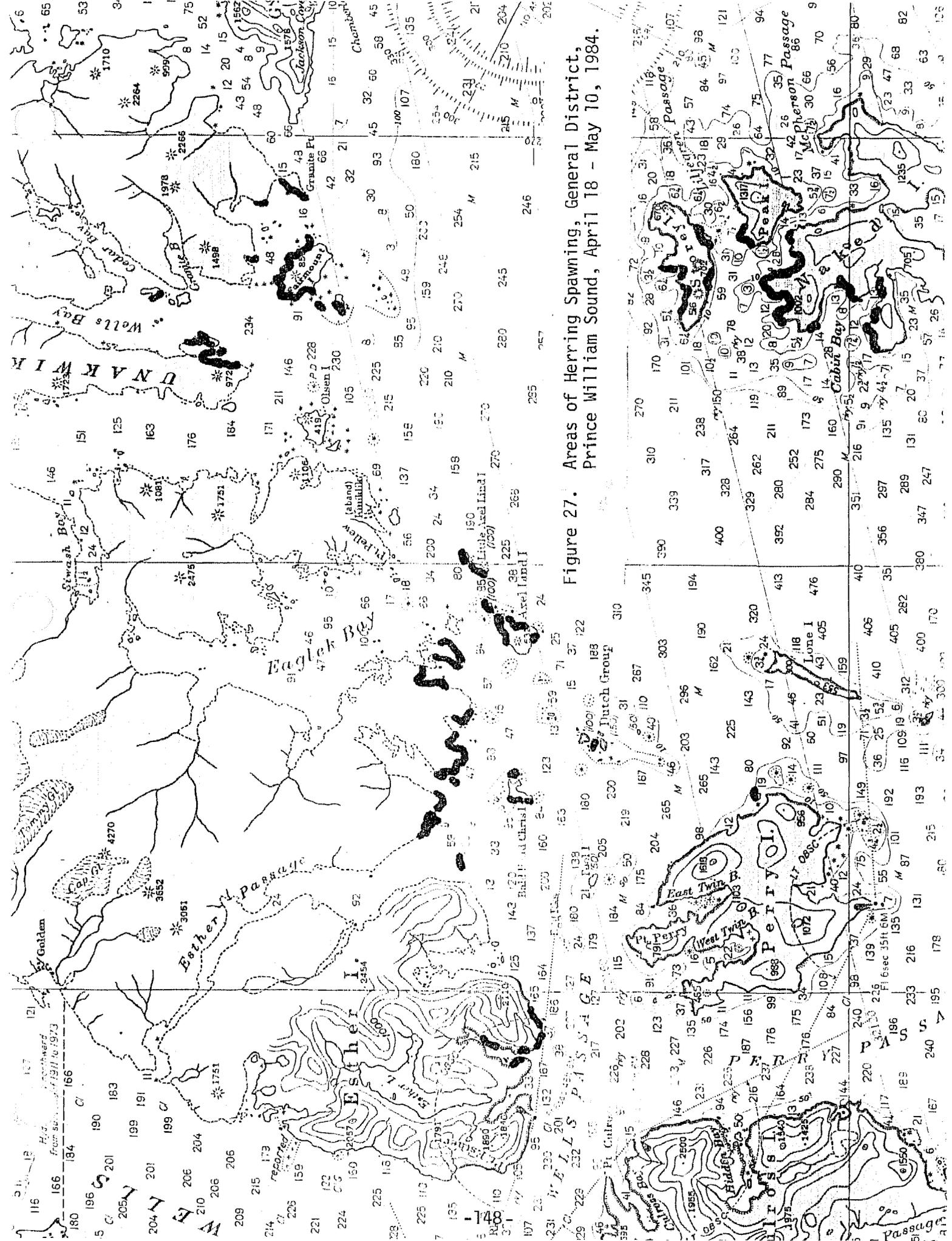


Figure 27. Areas of Herring Spawning, General District, Prince William Sound, April 18 - May 10, 1984.

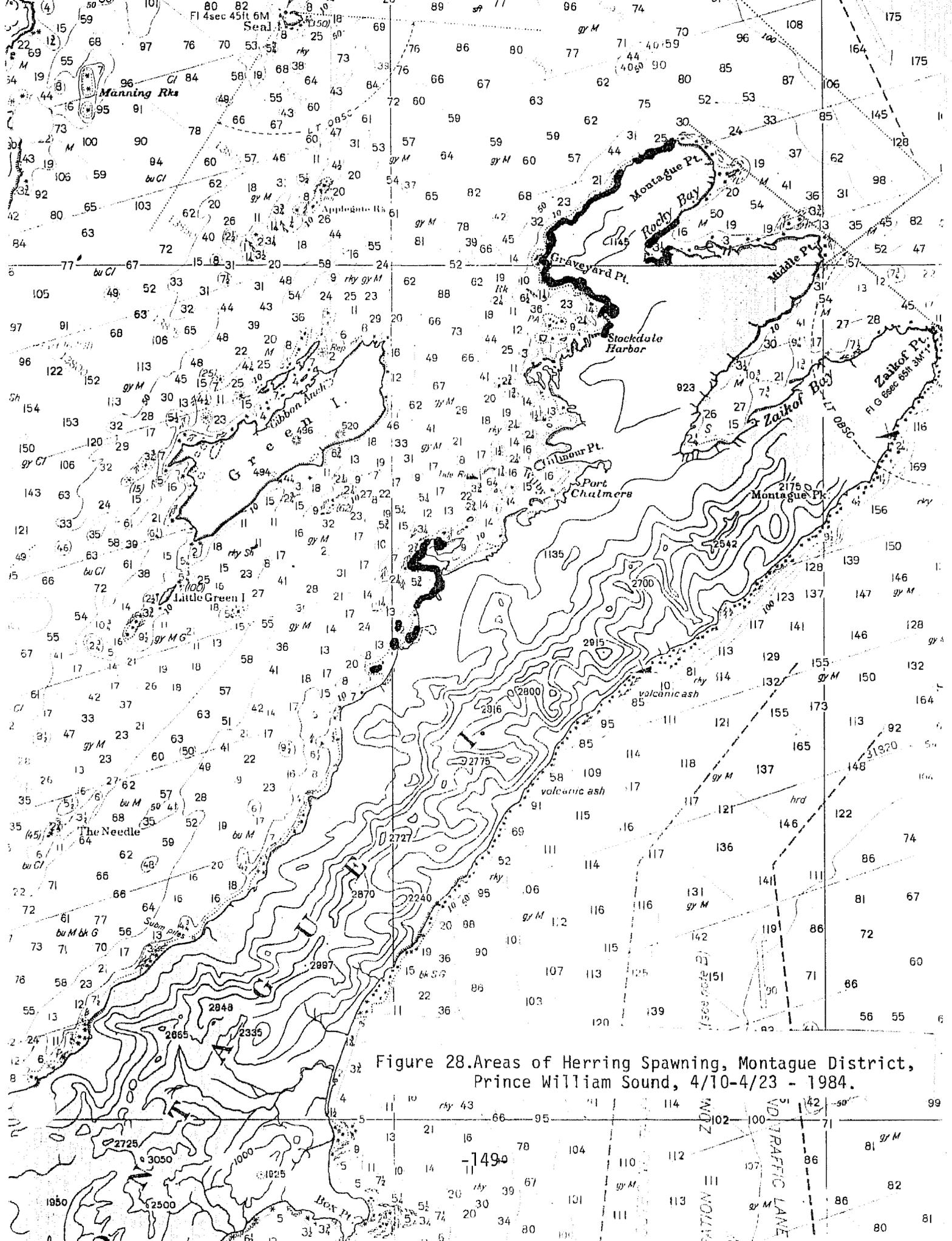
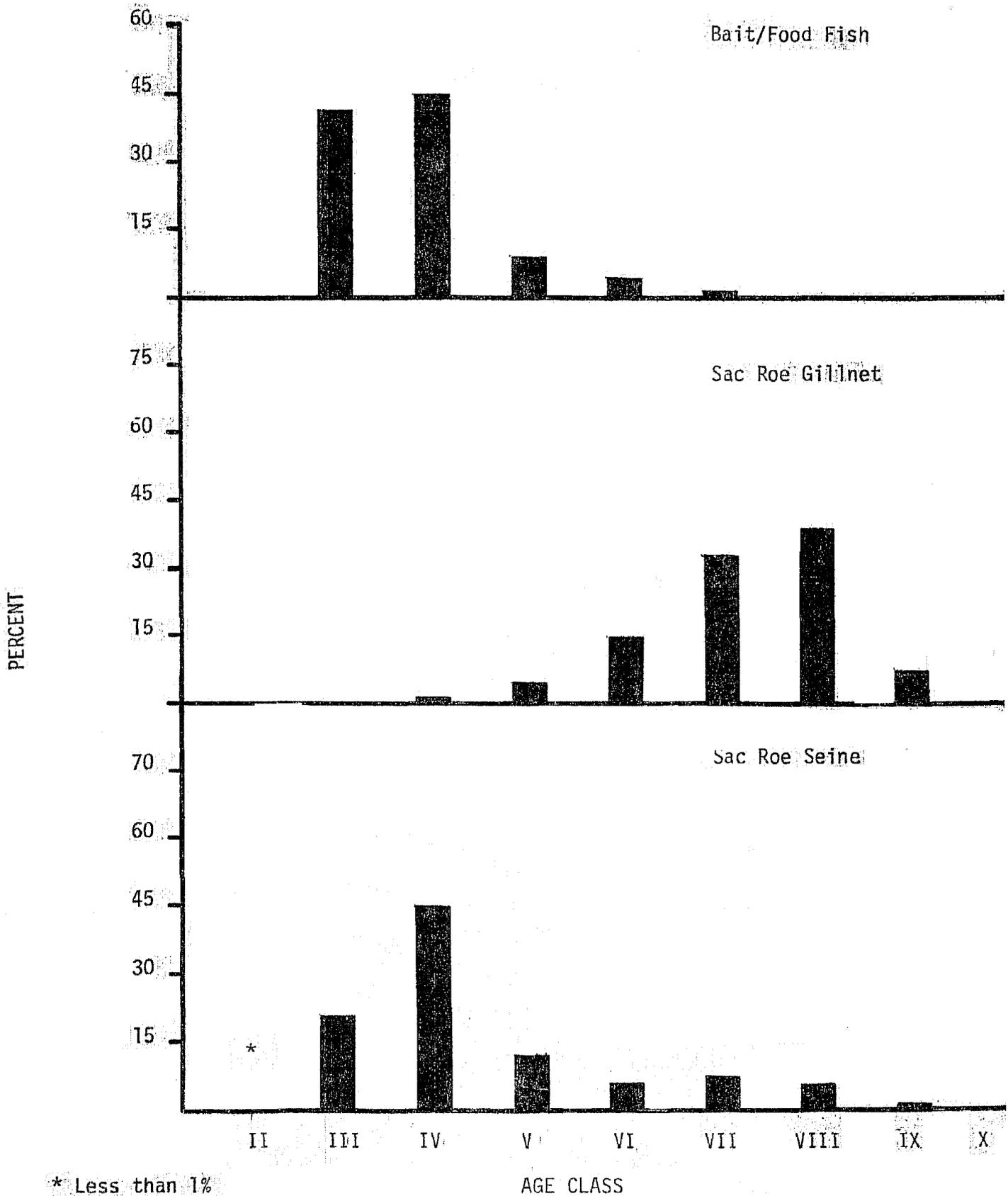


Figure 28. Areas of Herring Spawning, Montague District, Prince William Sound, 4/10-4/23 - 1984.



* Less than 1%

Figure 29. Prince William Sound Sac Roe, Bait/food fish, fisheries percent contributions by age class.

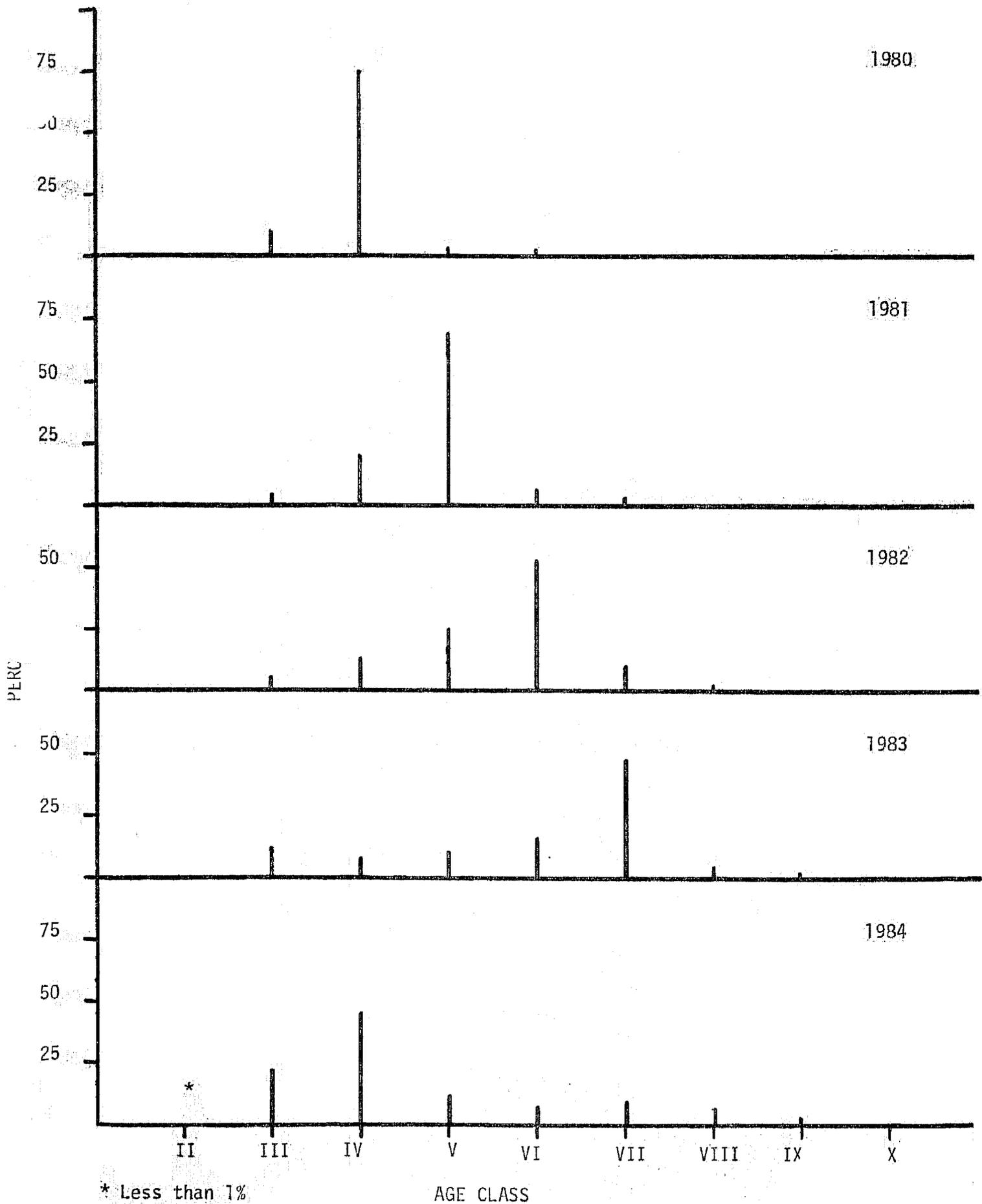


Figure 30. Prince William Sound herring sac roe seine fishery, Percent contribution by age class, 1980 - 1984.