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ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES

PRINCE WILLIAM SOUND AREA
ANNUAL FINFISH MANAGEMENT REPORT

1988

Regional Information Report No. 2C90-02

Area Management Biologist . . . . . James A. Brady
Asst. Area Management Biologist . . . . . Keith Schultz
Asst. Area Management Biologist . . . . . Ellen Simpson
Herring Project Leader. . . . . Evelyn Biggs
Research Project Leader . . . . . Samuel Sharr
Research Project Leader . . . . . Ken Roberson

Area Office
P.O. Box 669
Cordova, Alaska 99574

March 1990

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The finfish operations for the Commercial Fisheries Division, Prince William Sound Area, employed 2 college interns, 19 seasonal and 6 permanent employees during the 1988 season who participated in various area management programs. Thanks is extended to all personnel for a successful 1988 season.

Permanent Employees during the 1988 season:

James A. Brady	Area Management Biologist
Keith Schultz	Assistant Area Biologist
Sam Sharr	Research Project Leader
Kenneth Roberson	Research Project Leader
Drew Crawford	Research Biologist
Cheryl "Jo" Mala	Clerk Typist III

Permanent Seasonal Employees:

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Bill Busher	Miles Lake Sonar
Greg Carpenter	Salmon Sampler (College Intern)
Steve Ehrman	Eshamy/Main Bay
Bruce Gordon	Coghill
Robin Irving	Eshamy
Sandra Jack	Fish Ticket Editor
Scott Jordan	Salmon Sampler(College Intern)
Blaine McKnight	Salmon Sampler
Jeannie Merritt	Data Entry
Kim Mix	Coghill
Steve Moffitt	Salmon Sampler/Stream Surveys(College Intern)
Dave Norman	Herring/Miles Lake Sonar
Carol Peckham	Salmon Sampler (College Intern)
Diane Phipps	Salmon Sampler
John Richardson	Miles Lake Sonar
Ellen Simpson	Salmon Sampler Crew Leader
Michael Traffas	Salmon Sampler
Tom Vania	Miles Lake Sonar

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1988 PRINCE WILLIAM SOUND SALMON FISHERIES

Management Area Description

The Prince William Sound commercial salmon management area encompasses all coastal waters and inland drainages entering the northcentral Gulf of Alaska between Cape Suckling and Cape Fairfield (Appendix A.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. In addition, regulatory management plans have been developed directing that the department manage fisheries to assist specific PNP hatcheries in achieving cost recovery and brood stock objectives.

Legal gear for the salmon fishery includes purse seines and both drift and set gill nets. Drift gill net fishermen are the most numerous and are permitted to fish in the Bering River, Copper River, Coghill, Unakwik and Eshamy districts. During the 1988 season, 526 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 28 set gill net fishermen participated in the fishery this season. Purse seine gear is legal in the Eastern, Northern, Unakwik, Coghill, Northwestern, Southwestern, Montague and Southeastern districts. An estimated 255 permits were active during the 1988 season.

Overview of Area-Wide Fisheries

The Prince William Sound Area combined commercial salmon harvest for 1988 amounted to 14.9 million fish (Appendix A.2). This represents a 56% decline from the record harvest of 1987, and ranks as the lowest harvest since 1978. (Appendix A.3 & A.4). An exceptionally poor return of wildstock pink salmon is largely to blame for the decline in overall catch for the area. Sockeye returns were below average in the Copper and Bering River Districts and especially weak in the Coghill district. Chum production was exceptionally strong and yielded a harvest significantly above the recent ten year average. If fishery restrictions for the protection of pink salmon had not been necessary, it is likely that the chum harvest would have approached the current record. Coho production fell close to the average harvest level for the past ten years.

Pink production from the Sound's hatcheries provided an estimated 90% of the harvest this year. As a result of the weak wild stock pink return, the fishery was restricted to the small terminal areas in front of the hatcheries for much of the season. The Esther and Armin F. Koernig (AFK) hatcheries provided a majority of the harvest to the common property fishery. Early chum returns to the Main Bay and Esther hatcheries contributed significantly to the gill net harvest in the Coghill district.

Resulting from exceptional prices, this season's below average harvest ranks as outstanding in terms of economic value. The value of the combined commercial salmon harvest is estimated at $65 million (Appendix A.5 & A.6), nearly matching the all time high set by the record 1987 harvest. A combination of exceptionally high prices and supplemental production from the hatcheries resulted in outstanding seasons for all gear types. The drift gill net catch is valued at $34.6 million, setting the average earnings for the 526 permit holders at $65,885. Seiners harvested $29.2 million worth of fish setting the average earnings for the 255 permit fleet at $114,600. Set netters also enjoyed an exceptional season, with a catch valued at $1.49 million, and an average earnings for the 28 fishermen of $53,300.

Escapements throughout the Sound were quite mixed. The wild stock pink escapements were among the lowest on record. Hardest hit were the early and middle run timing stocks, which pass the fishery in July and early August. These systems suffered escapement levels of under 10% of expectations. The late August spawning systems were the only systems to meet minimum escapement levels. Chum escapements were exceptionally high throughout the Sound. Minimum spawning objectives were reached for sockeye and chinook. Coho salmon escapements on the Copper River delta were disappointing.

The wildstock failure of pink salmon necessitated widespread general closures of the Sound for a majority of the season. Fishing activity was concentrated in terminal areas in front of the Esther and Armin F. Koernig (AFK) hatcheries for most of August and early September, establishing a major departure from historic fishing patterns. Conflicts between gill netters and seiners resulting from the congestion in the Esther terminal areas are a major topic to be addressed at the 1988-89 Board of Fisheries meeting.

SALMON SEASON SUMMARY BY DISTRICT

Copper River District Season Summary

Chinook and Sockeye Salmon Season

The Copper River District 1988 season opened on May 16 and landed 6,841 chinook and 22,871 sockeye salmon during the 24 hour period (Appendix B.1, B.2 & B.3).(For specific period openings and species catches refer to Appendix B.3) The mid-point of the preseason chinook salmon harvest forecast was 35,000 fish. The chinook salmon harvest during the first period amounted to 20 percent of the pre-season forecast, when historically only 8 percent of the chinook salmon migration has passed through the fishery by this date (Appendix

B.4). In the interest of providing for adequate chinook salmon escapement, the next commercial opening was delayed until May 23, a week later.

The second commercial period on May 23 landed 5,622 chinook and 66,931 sockeye salmon. To provide a limited amount of protection to the chinook salmon stock while targeting on the more numerous smaller sockeye salmon, fishermen were restricted to gill nets with a mesh size smaller than 6 inches. This mesh restriction remained effective until August 1 when coho salmon normally become the predominate specie in the district. The harvest for both the chinook and sockeye salmon during the May 23 period was within the range of the weekly forecast projections.

The Department operated two Bendix side-scanning sonar counters on the Copper River near Miles Lake from May 19 until August 3, to enumerate escapements into the upper Copper River spawning tributaries. Although species apportionment of the daily sonar counts is difficult, sockeye salmon make up more than 90 percent of the season's total. Salmon take an estimated seven to nine days to travel from the fishing district at the mouth of the Copper River to the sonar site. Consequently, it is not until the third week of the fishery that the sonar estimates of escapement become a key factor in determining fishery openings. Prior to this point managers must evaluate run strength solely on catch data.

The Miles Lake daily sonar estimates were above minimum expectations early on in the project (Appendix B.7 & B.8), and with early favorable commercial catch statistics, the Department increased the next two commercial fishing periods from 24 to 36 hours each. Following the two 36 hour periods on May 26 and 30, fisherman landed a cumulative total of 22,576 chinook and 221,767 sockeye salmon. The harvest for chinook salmon was within the forecast range for those dates; however, the sockeye salmon harvest was below expectations and suggested that the preseason harvest forecast range of 600,000 to 800,000 sockeye salmon would not be achieved.

The effects of the two 36 hour fishing periods within one week caused the corresponding daily counts at Miles Lake to fall below minimum objectives through the first week of June, indicating that the 1988 sockeye return was weaker than forecast (Appendix B.8). As a result, the next period in the Copper River District was reduced to 12 hours.

The commercial period on June 2 landed 2,224 chinook and 32,541 sockeye salmon. The daily fish passage at the Miles Lake sonar project continued to be weak and fell to a low of 3,558 fish on June 2 or 75 percent below the daily escapement objective for that date (Appendix B.8). As a result, it was not until June 9, a week later, that additional commercial fishing time was justified. The "normal" schedule of two 24 hour periods a week resumed and remained in effect into August.

Daily sonar counts at Miles Lake recovered from the shortfalls experienced in early June and tracked along the desired escapement curve for the balance of the season. The final sonar estimate was 488,398 salmon or almost 7 percent above the desired passage of 458,188 fish. Copper River sockeye salmon stocks are divided into two general stock components, the upriver stocks and the delta stocks. The Miles Lake sonar project monitors the escapement of the upriver component of the population. Escapements for the delta stocks are monitored by weekly aerial surveys (Appendix B.9). In the 1988 season, the delta stock sockeye salmon escapements were below objectives at roughly 60 percent of the recent average (Appendix B.10).

The Copper River District's season cumulative commercial harvest was 30,741 chinook and 576,950 sockeye salmon, or 9 and 10 percent, respectively below the previous ten year average (Appendix B.6).

Coho Salmon Season

Coho salmon normally becomes the predominate species in the district in early August. The coho salmon season has traditionally been managed with a single fishing period per week. The Miles Lake sonar project ending date is scheduled before most of the upriver coho salmon component passage and is of little use to managers. However, the delta component of the Copper River coho salmon run is believed to be much larger than the upriver component. The tools available to monitor the status of the delta stocks include weekly aerial surveys and commercial catch statistics (Appendix B.11).

Commencing on August 15, the district was placed on a schedule of one 72 hour fishing period per week. This continued through the weeks that corresponded to the peak of the coho salmon run. Catches in the district were above expectations, with the peak period harvest of 91,486 coho salmon occurring on August 22. Intensifying fishermen interest in fishing this year was an average price of 2.01 dollars a pound for coho salmon. Increased effort, more aggressive fishing and better equipment have made the fishing fleet more efficient in recent years.

Poor aerial survey conditions in 1988 throughout August and early September hampered assessment of coho salmon escapements in most of the Department's index spawning streams. Aerial survey conditions did improve in early September when several days of good weather allowed the clearing of some of the turbid, rain swollen streams of the district. The results of a September 9th survey suggested a weak escapement with the surveyable streams ranging from 20 to 40 percent below the historical averages.

To provide for additional needed escapement, the weekly commercial fishing period on September 12 was reduced from 72 to 24 hours. Aerial survey conditions proceeded to improve. A survey completed under near excellent conditions on September 15 continued to document a poor coho salmon escapement at below 40 percent of the desired level. Following the period on September 12 the district was closed for the remainder of the 1988 season. Aerial

surveys continued into November, with the season's escapement amounting to a disappointing 38 percent of desired levels (Appendix B.12). The season's commercial coho salmon harvest of 315,568 fish was 5 percent above the previous ten year average (Appendix B.5 & B.6).

The Department needs to review the Copper River coho salmon management strategy. With aerial surveys the primary escapement monitoring tool, commercial catch statistics are heavily relied on during years of poor aerial survey conditions. As the fleet increases in efficiency, managers need to take extra care to provide for adequate escapement. The basic weekly fishing schedule of three days of fishing per week has remained unchanged since the early 1980's. As the fleet increases in efficiency, the Department may need to reduce the length of weekly commercial fishing periods to provide for the proper escapement.

Bering River District Season Summary

Sockeye Salmon Season

The Bering River District management strategy provides for a weekly commercial fishing schedule coincidental with the Copper River District. However, with no significant Bering River chinook salmon stocks and a later sockeye salmon run timing, the season opener is usually a month later than the Copper River District. The Bering River District season opened on June 20, 1988. Harvests were below anticipated levels, with 37 fishermen landing 11 chinook and 5,519 sockeye salmon (Appendix B.21).

On June 23 during a 24 hour period, 16 fishermen landed 4 chinook and 1,078 sockeye salmon. As with the previous period the harvest was below expectations. For the remainder of the sockeye salmon run the Bering River area received limited effort as fishermen interests decreased. Only 3 landings occurred during the entire month of July with 9 periods receiving no effort. Disappointing catches compared with the Copper River and other drift gill net

districts in Prince William Sound may have kept most of the effort from this district. The preseason harvest forecast of 20,000 to 30,000 sockeye salmon was never achieved with only 7,152 sockeye salmon taken. Even with the limited effort in the Bering River District, the season's sockeye salmon escapement was approximately 60 percent below desired levels (Appendix B.10 & B.22).

Coho Salmon Season

During the coho salmon season, effort in the Bering River District increased with 120 fishermen making landings during the period on September 5. As with the Copper River delta streams, poor aerial survey conditions in the Bering River hampered escapement estimates throughout most of the season. Weather did improve towards mid-September and aerial surveys documented a poor coho salmon escapement at 25 percent of desired levels. The 24 hour commercial fishing period on September 12 completed the season. The cumulative harvest of 86,539 coho salmon was 39 percent below the previous ten year average (Appendix B.23). Aerial surveys continued into November and documented an improvement in the coho salmon season's escapement at 66 percent of desired levels (Appendix B.24).

Coghill and Unakwik Districts

The outlook for the Coghill district called for a weak return of sockeyes yielding a catch of only 83,900 fish. The low forecast was based on poor production of the 1983 brood year, which was apparent from the weak return of these fish as four year olds in 1987. The Coghill River weir was installed and operational on June 10th (Appendix C.4), but no significant sockeye counts were received until June 24. In addition to Coghill River sockeyes, a hatchery return of 229,000 early chums was anticipated at the Esther hatchery located at the southern end of the Coghill district. An estimated 55% of this return or 125,000 fish were required to meet the hatcheries brood stock needs. The Unakwik district which is normally managed in concert with the Coghill district had an anticipated sockeye harvest of 25,000 fish.

The Coghill and Unakwik districts were opened for a 48 hour period on June 20 (Appendix C.1 & C.9). Chums were abundant in front of the Esther Hatchery, and a harvest of 138,000 chums resulted. The sockeye harvest of only 7,500 was below expectations and with weir counts performing poorly as well, the second opening of the Coghill district was restricted to only the waters of the Esther secondary terminal harvest area (STHA). The secondary terminal harvest area (STHA) includes the waters designated as the primary terminal harvest area. The strength of the chums continued to dominate the catches, although broodstock collection at the hatchery was starting to fall behind schedule. The hatchery operators were late in installing the barrier seine for brood holding and a poor fit resulted in some loss of brood stock. Fish were holding along the south shoreline of Esther Island, and a closure of this area was implemented to improve brood collection rates. Daily weir counts of sockeyes at Coghill River improved dramatically through June 30. As in past years, a dramatic increase in escapement rates was observed during the peak of the tide series. In an effort to provide access to any available surplus sockeyes in Port Wells, the district was reopened on Sunday, July 3, for the third 48 hour opening of the season. The minimum escapement objective of 55,000 sockeyes was assured by July 4 and the waters of Port Wells north of 61°00′ N. lat. were extended to continuous fishing until further notice.

The cumulative chum harvest through the third opening of the Coghill District amounted to over 325,000 fish. This is an outstanding harvest and is attributed to the strong wild stock performance along with the production from the Esther and Main Bay hatcheries. Collection of chum brood stock at Esther, however, at this time had fallen significantly behind schedule. On July 10, with the egg take already underway, only 35% of the brood was held at the hatchery. To insure that the remaining brood would be collected, the southern portion of the Coghill district was not reopened until August 5, well after the chum return was over. Additional closures of the waters of Culross Passage and Perry Passage were also placed into effect for the seine opening on July 11 and 12 to protect the returning hatchery chums. These measures were successful and the hatchery broodstock goals were met.

The continuous fishing schedule in College Fjord at the mouth of Coghill River continued until July 15, when the district was closed for the protection of wildstock pink salmon. The commercial harvest of sockeyes at that point amounted to over 75,000, exceeding preseason expectations, but falling significantly below the recent ten year average harvest of 269,000 (Appendix C.3). The final escapement count for the Coghill weir was 72,052 sockeye salmon, (Appendix C.4 & C.5).

The exceptionally poor performance of wildstock pinks dictated that the bulk of the Coghill district remain closed for the remainder of the season. The anticipated return of 4.18 million pink salmon to the Esther hatchery provided the only prospect of surplus fish for the commercial fleet. A total of 270,000 brood fish was required to meet egg take goals at the hatchery, with an anticipated sales harvest of 700,000 fish. Sales harvesting started on July 23. Early assessments of the hatchery return based on daily sales harvest and sex ratios indicated a weaker than anticipated return, as had been experienced with the Solomon Gulch facility. However the indications of run strength improved through time. The Esther secondary terminal harvest area was opened for 24 hours on August 5, along with a number of other isolated areas in the Sound. Daily sales harvests improved dramatically after this opening at both the Esther and AFK hatcheries, assuring the PWSAC corporate revenue goal from fish sales. The Esther secondary terminal harvest area was reopened on August 10 and remained open to continuous seven day per week fishing until the end of the commercial season on September 25.

The commercial harvest of pinks out of the Coghill district amounted to nearly 2.9 million. Through the month of August over 290 gill netters and 100 seiners fished in this small portion of the Coghill district. Both gear types are allowed in the district after July 6, and because the weak wildstock pink return required a concentrated harvest in the terminal hatchery area, gear conflicts were at an all time high. Gill netters have geared up for the hatchery returns at Esther, and were able to account for 43% of the harvest of pinks. The development of the production returns to Esther and the

necessity for terminal management of the hatchery return this season, have brought to light a number of questions regarding the allocation of PWSAC fish at Esther. These issues are thoroughly covered by public proposals to the Board of Fisheries.

Eshamy District

The harvest outlook for the Eshamy District called for a return of late June early July chums to the Main Bay hatchery amounting to 194,000 adults. Because the Main Bay facility has changed over to sockeye production, there were no broodstock requirements and all returning fish were targeted by the commercial fishery. In addition to chums, the return of sockeyes to Eshamy Lake was anticipated to yield a harvestable surplus of 30,000 fish.

The Eshamy District opened on June 20 (Appendix D.1). At this time there was already a buildup of chums in front of the hatchery. The Crafton Island subdistrict was placed on a weekly schedule from noon Monday until noon Friday, and the Main Bay subdistrict was opened to seven day per week continuous fishing. This schedule was maintained through July 18, corresponding to the balance of the hatchery return of chums. As in Coghill chum catches were excellent, amounting to 299,637 for the season. Set netters took 31% of the harvest.

The Eshamy weir resumed operation in 1988 and the first fish counts were obtained on July 7 (Appendix D.3 & D.4). The fishing schedule for the Eshamy District was changed on July 18 to a single 60 hour opening per week, reflecting a strategy for harvesting surplus sockeyes returning to Eshamy Lake. During the next two openings of the district, escapements were slightly ahead of expectations while catches ranged from 8,000 to 10,000 per week. With the exception of a brief opening of the special harvest area at the Solomon Gulch hatchery, the Eshamy district was the only area open to commercial fishing in the Sound during this time period. Gill netters fishing in this district were targeting primarily on pink salmon and harvested over 120,000 pinks during the week of July 25. Because the balance of the Sound was closed

to protect the weak return of wildstock pinks, this level of interception in the Eshamy district could not be justified. Consequently, the outer waters of the district were closed, commencing August 1, and the fishery was restricted to only the waters of Eshamy Bay. The outer waters remained closed through the last opening for the season on August 22. The sockeye harvest for the season amounted to 68,000 fish, however due to timing of catch, it is presumed that some of these fish were from Coghill Lake. The final escapement count at Eshamy weir amounted to 31,741 sockeye salmon.

A minor return of less than 100,000 August timing pinks was anticipated at Main Bay. The Main Bay terminal harvest area was opened on the same schedule as Eshamy Bay on August 8, for a total harvest of this return.

General Purse Seine Districts

The outlook for the general purse seine fishery was for a catch of 16.5 million pink salmon and 1.1 million chum salmon. Hatchery production was anticipated to account for 64% of the pink harvest with production returns anticipated for the Solomon Gulch, Cannery Creek, Esther and Armin F. Koernig (AFK) hatcheries. An exceptionally low fry index was observed for the 1986 brood year wild stock pinks. This was attributed to the severe flooding that scoured many of the major spawning streams in October of 1986. In spite of the low fry index, normal marine survival rates were anticipated to yield a harvestable surplus of 5.5 million wild stock pinks.

Aerial surveillance of pink and chum spawning systems in the Sound began on June 21. The early surveys revealed an exceptionally strong show of chum salmon in the Eastern and Northern districts, with fish already moving into the spawning streams of Beartrap and Olsen Bays. Bay and mouth counts of chums were well ahead of normal. However pink salmon, were virtually absent in the bays and spawning streams with early returning stocks. In response to the buildup of chums, the Eastern and Northern districts were opened for 12 hours on June 27. A total return of 3.2 million pinks were anticipated for the Solomon Gulch hatchery in Port Valdez. Prior to the seine opening, no sales

fish had been harvested at the hatchery, and in order to prevent an excessive interception prior to assessing the strength of the return, the waters of Valdez Arm and Port were closed. Waters of Jack and Galena Bays were open to provide an opportunity to harvest wildstock chums.

The harvest for the June 29 opening was 60,005 pinks and 219,653 chums (Appendix E.1). This was an outstanding harvest of chums for so early in the season. Aerial surveys flown through that week revealed the strong showing of chums to be continuing in the Eastern and Northern districts. A second opening of these two districts was announced for July 5, to insure a timely harvest of buildup of chums. The daily run entry of pinks at the Solomon Gulch Hatchery was starting to develop, with 78,000 sales fish harvested through July 1 (Appendix F.3). Revenues from hatchery sales totaled $191,000, which was 60% below the anticipated level for this date. It was felt that some continued protection was needed to assist the hatchery in achieving its goal of $1.49 million. Because daily entry rates were improving, only the western waters of Valdez Arm were closed, along with the Valdez Narrows subdistrict.

The harvest for the July 5 opening was 179,798 pinks and 403,016 chums. Aerial surveys during the week of July 4 continued to show a strong return of chums in the Eastern and Northern districts as well as buildups developing in the Northwestern and Southeastern districts. Stream counts for chums were well ahead of anticipated levels, yet pink salmon were still failing to show in significant numbers. Based solely on the exceptional buildup of chums, these districts were again opened for a 36 hour period on July 10.

The cumulative sales harvest at the Solomon Gulch Hatchery on July 8 totaled 382,000 fish, continuing to lag significantly below expectations. Due primarily to the better than anticipated price of $.75/lb, the revenue from the sales was nearing 50% of their goal. In addition to the balance of the sales fish, 185,000 pinks were required to meet broodstock goals. The hatchery was reporting a run entry of 50,000 fish per day. The sex ratio was holding at 35 - 40% female indicating that the return was 40% complete. Based on this data, it was estimated that the hatchery would need to harvest their entire

return in order to achieve broodstock and cost recovery goals. This situation was reviewed with the regional aquaculture association and the Valdez Fisheries Development Association (VFDA) board of directors, who both recommended that the published sales goal not be adjusted. Consequently, in compliance with the Solomon Gulch regulatory management plan, the waters of Valdez Port and Arm were closed to the latitude of Rocky Point. The waters of Galena, Jack and Sawmill Bays were left open to provide opportunity for the fleet to harvest wildstock chums.

At the conclusion of the third general seine opening, the cumulative chum harvest in the Sound stood at 1.1 million, well on track to setting a new all time harvest record. Aerial surveys had consistently revealed the strong return of chums and all openings to date were justified solely on the exceptional chum performance (Appendix E.11). However during this time, aerial pinks salmon counts were disastrously low (Appendix E.7). Spot ground counts of representative spawning streams verified the weakness in pink escapements, and revealed that aerial counts for pinks were in some cases overestimated. Overall pink escapements amounted to 5 to 10% of the mean weekly counts over the prior 7 even cycle brood years (Appendix E.7). Consequently, management priorities were shifted to favor the conservation of the pink salmon stocks. Because many of the early chum systems in the Sound also support early pink returns, commercial openings on chums could no longer be justified due to the interception of pinks. Wild stock pink performance failed to improve and for the balance of the season openings were restricted to isolated terminal areas targeting on wildstock chums or hatchery pinks, while the balance of the Sound remained closed for the protection of the natural pink salmon stocks.

Aside from a minor opening at the Solomon Gulch hatchery on July 25, the Sound remained closed until August 5, when a 24 hour opening was scheduled in five isolated areas of the Sound. The areas opened included Port Fidalgo, Port Valdez, Long Bay, Unakwik Inlet, the Esther hatchery secondary terminal harvest area and the Port San Juan subdistrict. Wildstock chums were targeted in Fidalgo and Long Bay, while hatchery pinks were available in Port Valdez, Unakwik, Esther and Port San Juan. All areas were opened simultaneously to

spread the fleet out as much as possible. The harvest from this opening was 485,700 pinks and 156,800 chums. A majority of the pink harvest came from Esther and San Juan, but significant catches also came from Unakwik and Long Bay. The return to the Cannery Creek hatchery in Unakwik Inlet was significantly below expectations and Unakwik was not reopened for the balance of the season in an effort to achieve minimum broodstock goals at the hatchery.

Returns to the Esther and AFK hatcheries were forecast at 3.7 and 6.1 million pinks respectively (Appendix F.5). The apparent poor marine survival observed at Solomon Gulch did not bode well for these returns to materialize at forecast levels. While these returns appeared to be weak on the front end, they came in only slightly under the forecast levels. Daily sales harvests increased substantially through the first 10 days of August and were unaffected by the August 5 opening (Appendix F.1 & F.2). Due to the high average price of $1.12/lb, the PWSAC revenue goal of $4.3 million was assured to be met by August 10, with less than 50% of the planned number of fish harvested. To provide the commercial fleet with the opportunity to have a timely and orderly harvest of the remaining surplus hatchery fish, the Esther STHA and the Port San Juan subdistrict were opened to seven day per week continuous fishing starting on August 10. This fishing pattern continued for the balance of the season.

Brief weekly openings of the Port Fidalgo subdistrict were continued through most of the remainder of August. With the major waters of the Sound closed, the fishing fleet was congested in the small terminal areas in front of the hatcheries. Although this was a major departure from historic fishing patterns, conflicts were eventually worked out or at least tolerated, so that an orderly harvest was conducted. A lineup of 46 boats was reported at Evans Point, in the San Juan subdistrict. Harvests from August 10 through August 20 averaged 500,000 fish daily. Because new fish were entering each day to replace those harvested the day before, a high quality was maintained through the course of the fishery.

The continuous fishing schedule was maintained at both hatcheries through the duration of the return in mid September. Minor adjustments of the waters open to fishing immediately in front of the hatcheries were necessary to insure that brood stock objectives were met and that no surplus fish were left unharvested.

The 1988 pink salmon escapement index of 964,530 fish (Appendix E.4), amounted to 70% of the desired goal for Prince William Sound. This is the lowest escapement index since 1976 (Appendix E.5). The July and early August spawning stocks suffered severe short falls in escapement, while the majority of the escapement occurred during the period from mid August to mid September (Appendix E.7).

1989 SALMON OUTLOOK

The area wide outlook for the 1989 season is outstanding, with the combined harvest for all species forecast to exceed 44 million salmon. If this forecast is realized it will establish a new all time harvest record for the Prince William Sound Management Area.

Pink Salmon

The forecasted harvest of 18.75 million wild stock pink salmon in 1989 is the largest forecast on record and if it materializes will rival the previous high wild stock return of 1984. The large forecast is driven in large part by the 1988 pre-emergent fry index which was the largest ever recorded in the Prince William Sound. Because the index exceeded the bounds of available data, the projection based on a regression violates some basic assumptions. Nevertheless, the climatic conditions prior to the emergence of fry in 1988 were mild and there is no question that huge numbers of fry out migrated. Not a single fry dig transect was frozen over or snow covered and indices were uniformly high throughout the Sound. Because the late winter and early spring

conditions were so mild, fry may have emerged earlier than normal. Conversely, the spring plankton bloom appears to have been delayed. Area aquaculture associations held and fed fry for 10 to 14 days longer than anticipated because of this delay in zooplankton production. It is possible that early emergence coupled with the delayed zooplankton production may have resulted in poor early marine survival of out migrating wild stock fry. Because of concerns about the validity of using out of range data in the forecast regression and concerns about their early marine survival, the lower end of the forecast for wild stocks may be the most reasonable projection.

The common property harvest of 22.35 million fish returning to hatcheries in 1989 exceeds any previous estimate for hatchery returns. The forecast is based on the largest fry release to date (530 million) and an average marine survival of 5.3% which may be a conservative figure. Hatchery fry are fed and held until natural zooplankton food resources are plentiful and the hatchery stocks appear to have good early marine survival even in years when wild stocks do not.

Chum Salmon

The forecast for natural chum returns in 1989 is 86% of the 1970 and 1988 average. The regressions between sibling age groups which have been used in some prior years to forecast explain less of the variability in returns than the models used in the 1989 forecast, but they corroborate the lower than average prediction for 1989.

Despite the lower than average forecast for natural stocks, the overall harvest of chums in 1989 should exceed the 1970-1988 average by 330,000 fish because of close to full production levels from the area hatcheries. The Main Bay hatchery which previously produced chum salmon is no longer doing so, but large fry releases at that facility in 1985 and 1986 will produce 1989 returns of approximately 245,000 fish. In the absence of brood stock requirements, these returns can be fully exploited. The Esther Island facility will also have large returns of which 226,000 fish will be available for harvest in the

common property fisheries.

Sockeye Salmon (Coghill District)

The forecast harvest of 343,200 sockeyes to Coghill in 1989 is almost 100,000 fish greater than the recent 15 year average. If this above average return materializes, the commercial harvest will be the fifth largest in the history of the fishery. The favorable forecast is based on above average returns of 4 year old fish from the 1984 brood year in the otherwise poor returns in 1988. This evidence of good production from the 1984 brood year is indicative of a strong return of 5 year old fish in 1989. Five year old fish are historically more than 70% of the returns to the Coghill system.

Sockeye Salmon (Copper River District)

The forecast harvest of sockeyes in the Copper River District is 971,800 fish, which if realized will rank as the third largest harvest since statehood. The Gulkana incubation facility is anticipated to contribute 126,900 sockeyes to the harvest. The wild stock portion of the forecast, amounting to 844,900 fish, is based on return per spawner data from the six most similar spawning populations and parent year escapement weighted age class (4,5,and 6 year olds) for the Copper River Delta and Upper Copper River independently. The 1989 return is influenced heavily by the 1984 brood year for both delta and upriver escapement components.

Chinook Salmon (Copper River District)

The chinook salmon harvest forecast of 42,100 fish stands significantly above the long term average for the Copper River District. During the past six years, chinook salmon returns to the Copper River have been consistently above average and have established several of the top catches on record while escapements have also been maintained at high levels. Only a failure of the 1983 or 1984 brood year could seriously affect the forecasted return. No

climate condition or other event is believed to have impacted any of the brood years involved. A chinook salmon harvest of the 42,100 fish magnitude appears to be a solid estimate.

Coho Salmon (Copper/Bering)

The harvest projection of 440,400 fish for the combined Copper and Bering River Districts is based on the mean performance of the fishery over the past decade. Escapement estimates are based solely on aerial surveys and until 1982 no age composition data was collected from the fisheries. The age composition and escapement information which we do have suggests that the harvest projection based on the mean is probably too low in the Copper River District and too high in the Bering River District. On the average, brood year production in both districts is approximately 64% fish 4 years old and just over 30% fish 3 years old. The escapement index in the 1985 brood year which produced the 4 year old fish expected back in 1989 was exceptionally large. Furthermore, the returns of 3 year old fish were above average in the Copper River District in 1987, which suggests that the sibling returns of 4 year old fish in 1989 will also be strong. Though the escapement to the Bering River area was also strong in 1985, the returns from that escapement were weak for reasons we don't understand. The poor returns of 3 year old fish in 1988 suggests a similar poor return of 4 year old fish to the Bering River District in 1989. Because the catches in the Copper River District are traditionally twice those in the Bering River District and because the catches in the Copper River District should be above average, the total catch for the Copper/Bering area should be in the upper end of the projected range.

1988 PRINCE WILLIAM SOUND AND COPPER RIVER SUBSISTENCE FISHERIES

Subsistence and personal use fisheries harvests continue to be minor by comparison to the commercial harvest in the Prince William Sound management area. The largest subsistence and personal use fisheries occur on the upper Copper River at and above Wood Canyon. In the commercial fishing districts of Prince William Sound and the Copper River delta, commercial fishermen may

withhold a portion of their catch for personal use. There is currently no mechanism to monitor this catch thus it continues to go unreported. Subsistence fishing permits are issued from the Cordova office for the Copper River flats, Prince William Sound, and Chenega and Tatitlek residents. A breakdown of these catches are reported in Appendices G.1, G.2, G.3, and G.4.

Upper Copper River Subsistence and Personal Use Fisheries

Subsistence Fishery

The 1988 Copper River salmon return was anticipated to be ample to allow unrestricted fishing for the subsistence fish wheel and dip net fishery. Sonar counts in May indicated normal entry of salmon into the Copper River with sufficient strength to meet upriver escapement and subsistence fishery needs. The fish wheel and dip net fishery was open June 1 to seven day per week fishing. Throughout the subsistence fishing season, sonar counts at Miles Lake tracked along anticipated performance curves indicating that the minimum escapement goal of 458,188 would be reached. The subsistence season went along without change, as it related to sockeye salmon. There were 70 dip net and 339 fish wheel permits issued and the resultant harvest is estimated at 30,514 salmon (Appendix G.4), composed primarily of sockeye (95 %).

Batzulnetas Subsistence Fishery

In 1988, following a trial year for the fishery in 1987, the Board of Fisheries passed Proposal 399A, formally establishing the Batzulnetas subsistence fishery. Only residents domiciled in the villages of Dot Lake and Mentasta may be issued permits and salmon may only be taken from a location on the Copper River near the mouth of Tanada Creek and approximately one half mile downstream from that mouth. From June 1 through September 1 or until the season is closed by emergency order, fishing periods of 2 days per week in June and 3.5 days per week for the remainder of the season using fish wheels and dip nets is allowed. King salmon are to be released live and bag and possession limits are 30 salmon per single person household, 60 for a two

person household, and 10 additional salmon for each additional person. Permits for increased bag limits are available upon request. Permits with reported catch are to be returned to the Glennallen office.

No salmon were reported taken in the fishery in 1988.

Personal Use Fishery

The 60,000 salmon guideline harvest for the personal use dip net and fish wheel fishery are broken into weekly guidelines. Anticipating weekly periods of two to three days or less early in the season to comply with guideline harvest levels, in contrast to seven days per week fishing in past years, the Department undertook extensive public information effort incorporating frequent news releases and dedicated phone lines with recorded messages in Glennallen, Fairbanks, and Anchorage.

A total of 4,205 dip net and 46 fish wheel personal use permits were issued in 1988. The estimated harvest for the season was 45,921 salmon (Appendix G.4), primarily sockeye (92%). The combined upper river personal use and subsistence estimated catch of 76,435 was near the recent five year average.

Tatitlek and Southwestern Prince William Sound Subsistence Fisheries

In 1988, the Board of Fisheries established special subsistence fisheries for residents of the Southwestern portion of Prince William Sound, including Chenega residents, and residents of Tatitlek in northeastern P.W.S. Tatitlek is a long established village located in Eastern Prince William Sound on the east side of Tatitlek Narrows, bordering Bligh Island. Chenega is a newly reestablished village (since 1982), the former Chenega having been destroyed in the 1964 earthquake and resultant tsunami, and is located in Crab Bay on the east side of Evans Island, approximately two miles north of the AFK Hatchery. The residents of the two predominately native villages proposed to establish the special fisheries based on documentation of historic and

traditional subsistence use of the resources in the areas near their villages. Permits for these fisheries are issued by village vendors and returned with catches reported to the Cordova office.

The Tatitlek subsistence permit is for residents domiciled in the villages of Tatitlek and Ellamar only, and allows them to fish in those waters north of a line from Porcupine Point to Granite Point, and south of a line from Point Lowe to Tongue Point. The season runs from May 15 through October 31 with seven day a week fishing until two days prior to the first commercial fishing opener and seven day a week fishing two days after the final commercial opener; during the commercial fishing season, the user may only fish during commercial salmon fishing periods. Gill nets up to 150 fathoms in length and with a maximum mesh size of 6.25 inches are the only allowable gear in salt water, with dip nets allowable in fresh water for the harvest of pink salmon. There is no bag and possession limit for this fishery.

The Chenega subsistence fishery permit is issued only to residents domiciled in the Southwestern commercial salmon fishing district and applies to subsistence fishing in the Southwestern District and the northwestern shoreline of Green Island. The season runs from May 15 until September 30, but all other restrictions are identical to the Tatitlek permit.

In 1988, 10 Tatitlek permits were issued and 5 fished for a total catch of 604 salmon (Appendix G.1), 90% of which were pink and chum salmon. For the Southwestern area, 17 permits were issued and 9 fished for a total catch of 851 salmon, 46% of which were pink and chum, 25% sockeye, and 29% coho.

1988 PRINCE WILLIAM SOUND HERRING FISHERIES

Although there are several small spawning populations in the Prince William Sound, the commercial herring fisheries target on what is considered to be a single stock that spawns during the mid-April to early May period. All fisheries are managed for a sliding scale exploitation rate of 0 - 20% overall. Production for the 1988 season was anticipated to be dominated by

four year old fish from the 1984 brood year. Based on a stock recruitment model, a biomass of 40,000 to 45,000 tons was anticipated, which would allow harvest for all fisheries at or above the base guideline harvest levels.

A summary of the 1988 harvests for the four spring herring fisheries is presented in Appendix H.2. The sac roe harvest amounted to 8,254 tons of herring for purse seine and gill net combined. The seine harvest exceeded expectations, however the level of exploitation was justified given the strength observed in the biomass. The natural roe on kelp harvest of 96.6 tons falls slightly below the guideline level while the pounded kelp harvest of 124.4 tons exceeded the guideline harvest level by 46%. The estimated exvessel value for all four fisheries combined is $11.8 million. A detailed narrative of each fishery follows.

Sac Roe Seine Fishery

The purse seine fleet was placed on 48 hour advance notice on April 1st in accordance with previous practice. Aerial surveillance of the Sound was started on March 25th, however adverse weather conditions precluded daily surveys through late March and early April. The first significant showing of fish occurred on April 8, when during a brief period of good weather 2,000 tons of herring were observed in the vicinity of Wells Bay and Glacier Island. The rapid development in this area suggested a similar pattern to 1987 and the advanced notice period was reduced to 24 hours. However, over the next few days, cold stormy weather set in along the northern shoreline leaving ice and slush covering the heads of many of the bays, and the herring dropped into deeper waters and were not seen for nearly two weeks.

On April 14 over 6,000 tons of herring were observed on Montague Island. In anticipation of a possible fishery developing on this encouraging biomass, the advanced notice period for the seine fleet was reduced to 12 hours and the R/V Montague was dispatched to the area to coordinate test fishing activities. Samples were obtained from Green Island and Hanning Bay. These were sent to

Cordova for age analysis and distributed to processors to determine roe recovery. Results from these samples indicated an age composition of 86% four year old fish, with 10% mature roe and a mean weight of 95 grams. High winds and stormy weather hampered evaluation of the biomass over the next three days. Turbid water conditions made aerial assessment difficult, however sonar reports and continued test fishing confirmed the presence of a large herring biomass in Hanning Bay.

On April 18, a majority of the fleet was still in port. Designated test boats were on site in Fairmount Bay on the north shore and on Montague Island. Samples from both areas revealed the presence of mature fish with recoveries over 10%, however the mean size of the samples from Montague was 94 grams as opposed to 129 grams from Fairmount Bay on the north shore. The observed biomass on the north shore was quite small, 700-800 tons, relative to that at Hanning Bay on Montague Island.

Recognizing the possibility of an opening on the biomass located on Montague Island, an announcement was made reducing the advanced notice period to 2 hours effective noon on April 19. This was announced at the regular 6:30 p.m. radio schedule from the R/V Montague, and generated considerable discussion from fishermen and processors. Concern was primarily focused on the mean gram size of the fish in the Montague area. Based on the recent experience in the Sitka fishery, the fleet recognized the low market value associated with fish below 100 grams, and strongly urged staff to target the fishery on the north shore where larger fish might be obtained. Although there was no assurance of a harvestable biomass on the north shore, a consensus was obtained from the fleet and processors to abandon the prospect of a fishery on Montague. The fleet was placed back on 6 hour notice and all assessment efforts were redirected to the north shore.

Aerial surveys on April 19 revealed 2,500 tons of herring in the vicinity of Wells and Fairmount Bays, plus an additional 1,500 tons in McPhearson Passage on Naked Island. An aggressive sampling program was mobilized targeting on Fairmount, Granite and Cedar Bays on the north shore and McPhearson Bay on

Naked. Samples from Naked Island averaged 20 grams smaller than those from the north shore, making this a less likely area for a commercial opening. As the observed biomass continued to build over the next two days, the advanced notice period was reduced to 1 hour. A survey on the morning of April 21 revealed a biomass of 6,700 tons in the area from Unakwik Inlet to Fairmount Bay and light spawning starting at the head of Fairmount Bay. Samples indicated mature fish in all areas; however, the sample from Fairmount Bay averaged 99 grams while the other areas averaged over 125 grams. After discussions with processors, an announcement was made for a 60 minute opening starting at 4:00 in the afternoon. The area open included the waters on Unakwik Inlet, Wells Bay, Cedar Bay and Granite Bay. Fairmount Bay was excluded from the open area. Harvest figures were compiled that evening with an estimated harvest of 3,437 tons. Roe recovery was estimated to average 10.5% and the mean size of the fish 115 gm.

The strength of the biomass of fish observed to date throughout the Sound supported preseason expectations for a sac roe harvest of 5,000 tons, consequently the decision was made to allow a second opening on April 22. Concern was expressed by the fleet that there was not sufficient biomass remaining to have a fishery; however, experience over the past few days had shown the biomass in this area to reveal itself later in the afternoon. Sampling in Cedar, Granite and Fairmount showed no significant difference in size of the fish between these areas and following consultation with processors, Fairmount Bay was added to the prospective fishing area. An afternoon survey revealed an increase in the observable biomass to over 5,000 tons; however, many schools were scattered over rock piles and not accessible. The decision was made to allow a second 60 minute opening starting at 4:00 p.m. A survey was flown starting about twenty minutes into the fishery, and it was apparent at that time that the harvest would likely exceed 4,000 tons. A number of large sets were made throughout the area open as fish continued to surface during the opening. The final catch for the opening amounted to 4,459 tons and averaged 10.5% recovery and slightly smaller fish than on the previous day.

The season's total harvest amounted to 7,896 tons, (Appendix H.4 & H.5). Fishermen were advanced $500 per ton for 10% fish and a $340 adjustment is anticipated. Assuming a final average price of $840 for 10% fish, the value of the harvest is estimated at $6.6 million (Appendix H.23).

Gill Net Sac Roe Season

The gill net fleet was placed on 12 hour advanced notice on April 19th when the biomass started developing on Montague Island. The notice period was reduced to one hour at noon on April 23, the day following the closure of the second seine opening. An aerial survey in the morning revealed over 3,000 tons of fish in the area open to the seine fishery on the previous day. Heavy spawning had started in Fairmount Bay and light spawn was beginning in Granite, making this area an ideal candidate for a potential gill net fishery. Sampling with the gill net fleet commenced the morning of April 23 and resulted in recoveries ranging from 8% to 11% and mean size ranging from 150 to 166 grams. Fishermen were reluctant to proceed with a fishery that evening due to a lack of fish, although the pattern of the past four days had shown the available biomass to increase significantly late each afternoon and evening. As the pattern once again started to develop, a consensus was reached among the fishermen and a 5.5 hour opening was announced lasting from 6:30 p.m. until midnight on April 23rd. The area open included the waters of Wells, Cedar, Granite and Fairmount Bays. The harvest for this opening amounted to 358 tons (Appendix H.4 & H.5), meeting preseason objectives. Roe recovery averaged 10% and the mean weight of the fish was reported at 170 grams. Fishermen received $1,300 per ton advance and an estimated $200 adjustment, setting the exvessel value of the harvest at $537,000 (Appendix H.23).

Wild Harvest Spawn On Kelp

The natural spawn on kelp fishery has a guideline harvest of 103 tons of roe on kelp. Wide spread spawning in 1988 provided three potential areas for the wild harvest fishery, Valdez Arm, Naked Island and Fairmount Bay. Kelp divers

were placed on 48 hour notice on April 24 and divers were dispatched to these areas to evaluate quality and quantity of harvestable product. Reports from these surveys were sketchy, but indicated some good product mixed in with larger areas with sparse coverage or dirty kelp. The Entry Commission indicated that over 240 permits had been issued for 1988, and based on contacts in the Cordova office, a number of first time participants were anticipated. Consequently the first opening was limited to 4 hours to evaluate effort, quality and harvest rate of the fleet, while minimizing the potential for a large harvest of unmarketable product. The first opening occurred on April 29, from 9:00 a.m. to 1:00 p.m., and was restricted to the waters of Valdez Arm, including Sawmill, Jack and Galena Bays, Tatitlek Narrows and Boulder Bay. Effort for the opening was estimated at 125 divers and the harvest totaled 35 tons.

With approximately 70 tons remaining on the quota, a second opening was announced for the following day in the Fairmount Bay area. Stable weather the evening of April 29, provided a safe crossing for the divers, many of which operate out of small boats. The second opening lasted for eight hours from 11:00 a.m. until 7:00 p.m., and included the waters of Fairmount, Granite, Cedar and Wells Bays. The harvest for this opening amounted to 62 tons.

Six buyers were represented on the grounds and paid $1.50/lb for ribbon and from $1.00 to $.75/lb for sieve and hair kelp. The total harvest of 96.6 tons (Appendix H.6) was composed of 64% ribbon, 24% sieve and 12% hair, setting the estimated exvessel value of the harvest at $232,000 (Appendix H.23).

Roe On Kelp In Pounds

The roe on kelp in pounds fishery was limited by the Commercial Fisheries Entry Commission in December of 1986. A total of 127 permanent and interim use permits were granted as of January 1, 1988. In addition to the CFEC permit, a permit issued by the Department is also required for this fishery. Although 137 persons applied for an ADF&G permit only 122 were eligible for CFEC permits and qualified for an allocation by constructing a pound frame by April

1st.

The 1988 fishery was restricted to the traditional areas of Valdez Arm and Port Fidalgo. A majority of the pounds were initially constructed in Galena Bay, which once again turned out to be the center of the fishery. Other pounds were operated in the vicinity of Tatitlek Narrows and Bligh Island.

Fish were first observed in Galena Bay on April 5. Test samples were obtained in Galena Bay on April 8 which revealed the presence of mature fish. Age structure revealed a stronger component of older fish than was later observed in the sac roe fisheries. The preseason harvest strategy was to target the pound fishery on older fish which normally exhibit an earlier timing. Consequently the fishery was open to seining of herring for introduction into pounds at 12:00 noon on April 12 until further notice. The area open included all waters of Valdez Arm and Port Fidalgo.

The harvest of herring proceeded at a steady pace with small sets predominating. Fishing was competitive at times in areas such as the entrance to Galena Bay, as only small schools were available. By April 22, all but a few pounds were filled and significant biomass of new fish was moving into Valdez Arm. With more than ample opportunity provided for all pound operators to obtain fish, an announcement was made closing the fishery effective noon on the following day, April 23.

On April 23 one group had completed their harvesting and a number of others were starting to harvest their kelp. It was observed from an on site inspection that production was exceptionally good, with the pounds in some groups producing more than double their allocation limit of 1,400 pounds. On the grounds harvest weights were estimated by counting totes, which last year averaged 670 pounds of product. Given the strong showing of herring this season, the fact that a few groups might fall below quota and the imprecision in estimating harvest weight, fishermen were advised that a harvest of no more than 1,900 pounds per individual would be tolerated. Groups were provided with a figure of the number of totes they could harvest. These guidelines were to

some degree ignored by groups, while others in efforts to stay within the tote quota "creatively packed" up to 1,100 pounds of kelp in their totes. The Department and Fish and Wildlife Protection initiated efforts to violate one group that had knowingly and admittedly decided to exceed the harvest guidelines set on the grounds. Production was inventoried and monitored closely in the processing plants where the final weights are obtained. At the conclusion of processing, the total production for the fishery was determined to be 124 tons, exceeding the 85 ton quota by 46%.

A total of nine of the 15 groups exceeded the elevated production limitation per individual of 1,900 pounds, and all but two groups exceeded the original production limit of 1,400 lbs. There was considerable debate as to how the surplus production should be handled, and confiscation by the State was considered. However due to confusion that developed on the grounds due to lack of formal announcements and limitations of on grounds monitoring capability by Fish and Game, it was determined that the State's case was not strong enough to stand in court. Consequently no violations or confiscations occurred.

On May 5th a meeting was scheduled with representatives of the 15 pounding groups to discuss the problems of the 1988 season and discuss possible changes to the permit system to provide management with better control of the fishery. A questionnaire was distributed to each person in attendance and mailed to groups that could not attend. The responses to this questionnaire will be discussed by staff along with any proposed changes to regulations and permits for this fishery at the December Board of Fisheries meeting.

The 1988 season's harvest of 124 tons sets a new record for this fishery (Appendix H.7 & H.8). In addition to the quantity, the quality of this season's harvest was far better that any previous year. Fishermen received an estimated $18.00 per pound for their product, setting the exvessel value of the 1988 production at $4.46 million (Appendix H.23).

1988 Food And Bait Season

The herring food and bait season normally opens on September 1, however due to the industry demand for a higher quality bait with higher oil content, the season opening date was delayed by emergency order until November 1. A total of seven seine boats and five gill net boats participated in the 1988 fishery. This was the first season that gill netters had attempted to participate in the fishery, and after the first two nights it was apparent that they were not effective in harvesting fish and most dropped out with little or no reported harvest. The seiners harvested 140 tons on the first night with all of the fishing activity occurring in front of Red Head, near Port Gravina. As a new development to this fishery, a number of boats had tenders along, and as a result the rate of harvest was markedly increased. The daily harvest increased each night as favorable weather continued to dominate the area. The harvest for the sixth night of the fishery exceeded 370 tons, bringing the cumulative harvest to within 175 tons of the quota. Recognizing that an additional night's fishing time would result in the quota being substantially exceeded, the fishery was closed by emergency order. The season's harvest totaled 1,335 tons (Appendix H.9). Fishermen in this fishery generally seek their own markets and have their harvest custom processed. Consequently precise estimates of the value of the harvest are difficult to obtain. It is estimated that fishermen received $250 to $300 per ton for their catch, which would set the exvessel value of the harvest between $333,000 and $400,000 (Appendix H.23).

Stock Status

The 1988 herring season saw the decline of the 1980 and 1981 brood classes, which have dominated the age structure observed in the sac roe harvests since 1984. However as a replacement, the emergence of an exceptionally strong 4 year age class, resulting from the 1984 brood year was observed. This single age class made up approximately 70% of the commercial seine harvest and as much as 87% of biomass that was located on Montague Island. It is the strongest single brood year observed in Prince William Sound since 1976.

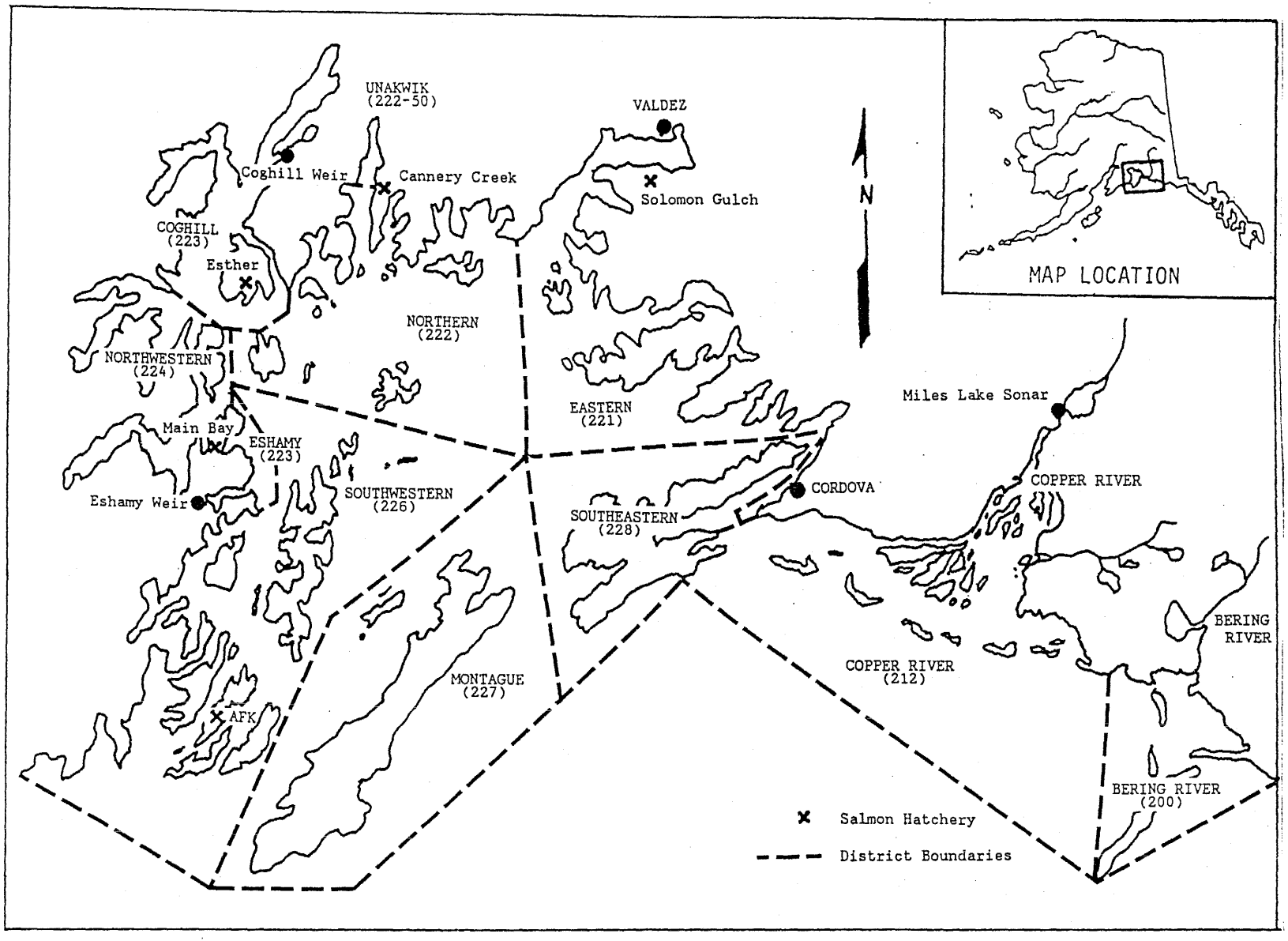
Because it is typical for the biomass to be dominated by a single age class, the strength of the 1984 brood year bodes well for the next two or three seasons.

Biomass has historically been evaluated in Prince William Sound through an extensive aerial survey program. Surveys are flown on a daily basis from late March through early May. Observed herring biomass is recorded in standardized areas using a surface area to tonnage conversion. Any spawning activity as indicated by milt in the water is recorded on detailed maps. Due to the wide number of factors that effect aerial biomass observations, including tide stage, time of day, location, depth of water, visibility etc., a high degree of variability is recognized. The peak aerial biomass observed in 1988 was 34,270 tons, (Appendix H.12). This figure demonstrates an increase in stock size over the past three years, (Appendix H.21 & H.22) and is recognized as a minimum estimate due to limitations of observing fish in the deep waters of the northern shore. Spawning activity was extensive in 1988. An estimated 166.3 linear miles of spawn were observed (Appendix H.12), setting a new record.

A spawn deposition study was initiated in 1988, utilizing diver surveys of actual egg deposition to back calculate the biomass of the spawning population. This project was highly successful in covering the major areas of spawn in the Sound, and yielded a quantitative estimate of the spawning biomass with a much higher degree of precision that can be provided by aerial surveys. This project is now fully funded and has quickly become an integral part of the Sound's stock assessment program. Results of the 1988 spawn survey indicated an estimated spawning biomass of 43,581 tons (Appendix H.12). The major part of this biomass, 24,104 tons, was on Montague Island as is also indicated by the aerial surveys. This biomass was not exploited by any of the five herring fisheries. Although the linear miles of spawn set a new record, the spawn surveys revealed that a majority of the spawn was light and in some areas although milt was observed, no eggs were deposited. Heaviest egg deposition occurred on Naked Island.

1989 Herring Season Outlook

Due to the favorable age structure and population size the harvest outlook for 1989 is good, with a significant harvestable surplus available to all fisheries. It was estimated in 1988 that 81% of the total number of herring spawning in Prince William Sound were 4 year old fish. Using a schedule of increasing natural mortality with age, the 1989 population is forecast to be composed of 84% five year old fish, having a mean size of 127 grams. Accounting for normal growth rates and recruitment the 1989 population of herring is projected to be 54,116 tons. A healthy stock of this magnitude justifies exploitation at the full 20% level, permitting a combined harvest total of 10,832 tons of herring from all five fisheries. Guideline harvest levels for all fisheries are established by the Prince William Sound herring management plan.



Appendix A.1. Map of the Prince William Sound Area showing commercial fishing districts, salmon hatcheries, weir locations and the Miles Lake sonar site.

Appendix A.2. Commercial salmon harvest by gear type, district and species, Prince William Sound, 1988.

District	Effort	Chinook	Sockeye	Coho	Pink	Chum	Total
Eastern	241	103	3,893	4,358	477,848	812,753	1,298,955
Northern	146	64	5,690	136	228,618	199,487	433,995
Unakwik	34	0	667	7	57,844	23,860	82,378
Coghill	117	63	1,623	15,787	1,600,481	11,755	1,629,709
Northwestern	16	18	359	19	7,738	14,083	22,217
Southwestern	203	77	11,114	6,817	5,411,424	79,020	5,508,452
Montague	0	0	0	0	0	0	0
Southeastern	9	1	48	0	1,776	2,479	4,304
Purse Seine	255	326	23,394	27,124	7,785,729	1,143,437	8,980,010
Bering River	158	19	7,152	86,539	23	181	93,914
Copper River	520	30,741	576,950	315,568	2,775	11,022	937,056
Unakwik	35	15	8,589	0	281	1,504	10,389
Coghill	440	501	82,294	41,307	1,314,061	346,388	1,784,551
Eshamy	330	94	50,868	794	348,873	206,060	606,689
Drift Gill Net	525	31,370	725,853	444,208	1,666,013	565,155	3,432,599
Eshamy	28	100	18,321	283	180,456	93,577	292,737
Set Gill Net	28	100	18,321	283	180,456	93,577	292,737
Solomon Gulch	1	0	69	6,110	726,357	1,747	734,283
Cannery Creek	1	0	0	0	66,049	0	66,049
Esther	1	0	0	0	528,298	10,022	538,320
Armin F. Koernig	1	0	0	0	846,213	27,729	873,942
Hatchery (a)	4	0	69	6,110	2,166,917	39,498	2,212,594
Ed. Permit (b)	1	1	5	79	17,786	1,343	19,214
Confiscated	1	0	32	12	3,220	307	3,571
Other Gear		1	37	91	21,006	1,650	22,785
Prince William Sound Grand Total		31,797	767,674	477,816	11,820,121	1,843,317	14,940,725

(a) Hatchery sales for hatchery operating costs. Includes hatchery carcass sales.

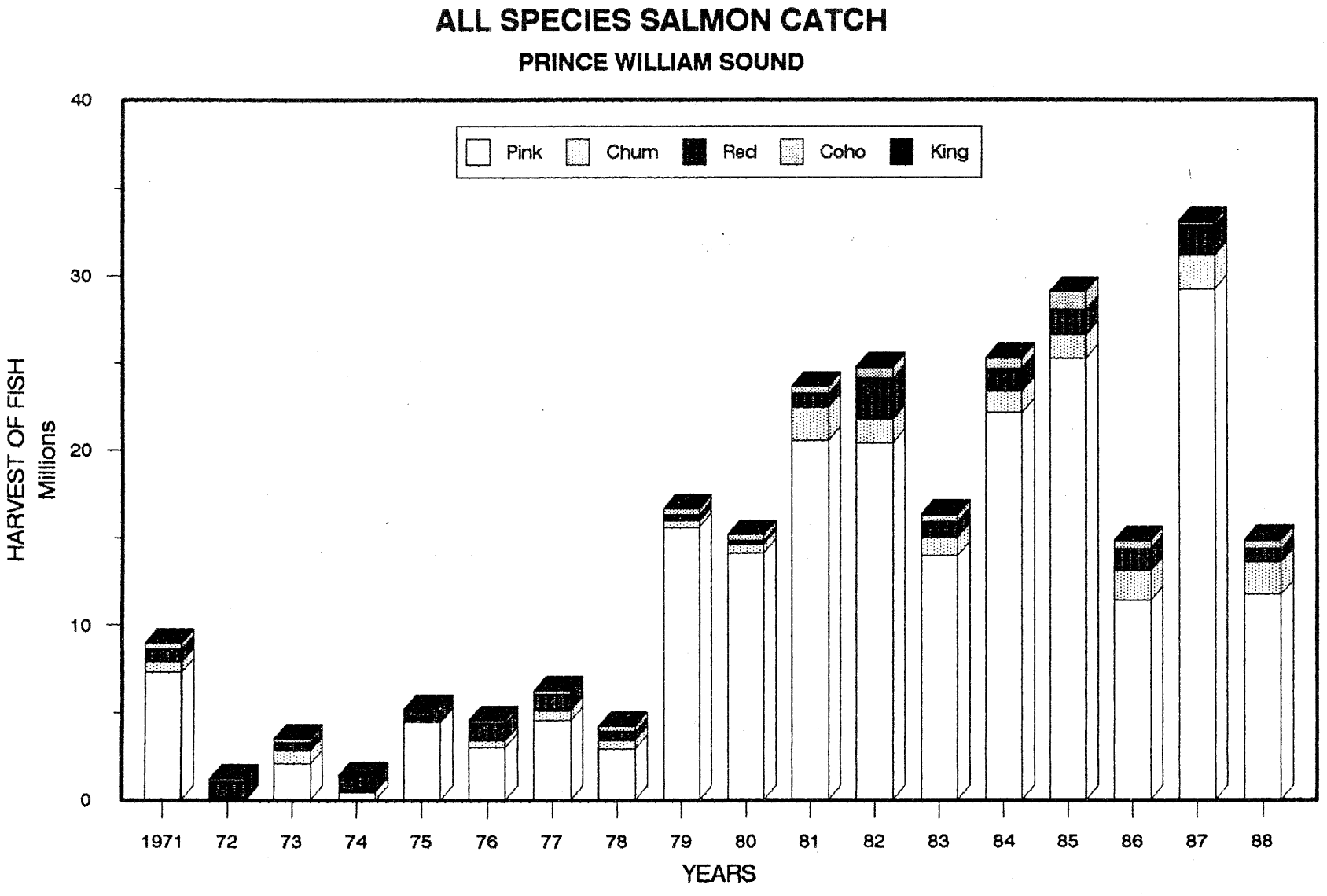
(b) Cordova High School educational special permit.

Appendix A.3. Commercial salmon harvest by species from all gear types, Prince William Sound, 1971 - 1988. a

	Catch by Species					
Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	20,142	741,945	327,697	7,312,730	579,552	8,982,066
1972	23,003	976,115	124,670	57,090	46,088	1,226,966
1973	22,638	473,044	199,019	2,065,844	740,017	3,500,562
1974	20,602	741,340	76,041	458,619	89,210	1,385,812
1975	22,325	546,634	84,109	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
1979	20,078	369,583	315,774	15,615,810	349,615	16,670,860
1980	8,643	208,724	337,123	14,161,023	482,214	15,197,727
1981	20,782	784,469	396,163	20,558,304	1,888,822	23,648,540
1982	47,871	2,362,328	623,877	20,403,423	1,336,878	24,774,377
1983	53,879	908,469	365,469	13,977,116	1,048,737	16,353,670
1984	39,774	1,303,515	609,484	22,119,309	1,229,185	25,301,267
1985	43,735	1,464,563	1,025,046	25,252,924	1,321,538	29,107,806
1986	42,128	1,288,712	426,240	11,410,302	1,700,906	14,868,288
1987	41,909	1,737,989	175,214	29,230,303	1,919,415	33,104,830
1988 b	31,797	767,674	477,816	11,820,121	1,843,317	14,940,725
Ten Year Average (1978-87)	34,923	1,093,386	458,732	17,564,601	1,176,708	20,328,351

a Includes catches by all gear types and hatchery sales from the Eastern, Northern, Coghill, Unakwik, Northwestern, Eshamy, Southwestern, Montague, Southeastern, Copper River and Bering River Districts.

b Includes confiscated and educational special use permits. Also includes hatchery sales harvests and carcass sales.



Appendix A.4. Commercial salmon harvest by species for all gear types combined, Prince William Sound, 1971 - 1988.

Appendix A.5. Mean price and estimated exvessel value of the commercial salmon harvest by gear type, Prince William Sound, 1988. a

PURSE SEINE

Species	Number	Pounds	Avg. Wt.	Price	Value
Chinook	326	3,725	11.4	2.23	8,306.75
Sockeye	23,394	151,454	6.5	2.68	405,896.72
Coho	27,124	226,126	8.3	1.86	420,594.36
Pink	7,785,729	27,022,720	3.5	0.79	21,347,948.80
Chum	1,143,437	9,653,746	8.4	0.73	7,047,234.58
	8,980,010	37,057,771			$29,229,981.21

DRIFT GILL NET

Species	Number	Pounds	Avg. Wt.	Price	Value
Chinook	31,370	830,873	26.5	2.23	1,852,846.79
Sockeye	725,853	4,450,679	6.1	3.09	13,771,838.40
Coho	444,208	4,336,755	9.8	2.30	9,996,146.94
Pink	1,666,013	6,290,499	3.8	0.79	4,969,494.21
Chum	565,155	5,569,021	9.9	0.73	4,065,385.33
	3,432,599	21,477,827			$34,655,711.67

SET GILL NET

Species	Number	Pounds	Avg. Wt.	Price	Value
Chinook	100	1,520	15.2	2.46	3,739.20
Sockeye	18,321	118,707	6.5	2.77	328,818.39
Coho	283	2,250	8.0	1.19	2,677.50
Pink	180,456	642,421	3.6	0.61	391,876.81
Chum	93,577	823,717	8.8	0.93	766,056.81
	292,737	1,588,615			$1,493,168.71

HATCHERY SALES b

Species	Number	Pounds	Avg. Wt.	Price	Value
Chinook	0	0			0.00
Sockeye	69	417			c
Coho	6,110	49,554	8.1	2.16	107,041.62
Pink	2,166,917	7,148,636	3.3	0.72	5,180,820.41
Chum	39,498	346,647	8.8	0.72	251,224.97
	2,212,594	7,545,254			$5,539,087.00

OTHER GEAR d

Species	Number	Pounds	Avg. Wt.	Price	Value
Chinook	1	20	20.0	2.23	44.60
Sockeye	37	250	6.8	2.68	670.00
Coho	91	784	8.6	1.85	1,450.40
Pink	21,006	75,775	3.6	0.79	59,862.25
Chum	1,650	13,650	8.3	0.73	9,964.50
	22,785	90,479			$71,991.75

Gear Type	Value of Catch	No. of Permits	Average Earnings
Purse Seine	29,229,981.21	255	$114,627.38
Drift Gill Net	34,655,711.67	526	65,885.38
Set Gill Net	1,493,168.71	28	53,327.45
Subtotal- Value of CPF Catch	$65,378,861.59		
Hatchery	$5,539,087.00		
Other Gear	$71,991.75		
GRAND TOTAL	$70,989,940.34		

a Mean prices are estimated at the end of the season based on the average of cash buyers and the advance prices paid by the canneries on the grounds. They do not reflect the spring adjustments paid by some companies.

b Includes carcass sales. Prices are an average of sales harvest prices and carcass sale prices.

c Incidental catch - value included in pink total.

d Includes the Cordova High School special educational permit and confiscated fish sales.

Appendix A.6. Commercial salmon harvest and estimated value by gear type and district, Prince William Sound, 1988.

District	Permits	Landings	Chinook	Sockeye	Coho	Pink	Chum	Total	Estimated Value a	
221 Eastern	241	1,173	103	3,893	4,358	477,848	812,753	1,298,955	6,405,677	b
222 Northern	146	323	64	5,690	136	228,618	199,487	433,995	1,915,876	b
222 Unakwik	34	47	0	667	7	57844	23860	82,378	317,099	b
223 Coghill	117	775	63	1,623	15,787	1,600,481	11,755	1,629,709	4,882,645	b
224 Northwestern	16	25	18	359	19	7,738	14,083	22,217	118,197	b
226 Southwestern	203	2,336	77	11,114	6,817	5,411,424	79,020	5,508,452	15,569,261	b
227 Montaque	0	0	0	0	0	0	0	0	0	b
228 Southeastern	9	12	1	48	0	1,776	2,479	4,304	20,618	b
PURSE SEINE TOTAL	255	4,691	326	23,394	27,124	7,785,729	1,143,437	8,980,010	$29,229,372	
200 Bering River	158	1,055	19	7,152	86,539	23	181	93,914	2,120,296	
212 Copper River	520	12,279	30,741	576,950	315,568	2,775	11,022	937,056	20,245,134	
222 Unakwik	35	103	15	8,589	0	281	1,504	10,389	167,457	c
223 Coghill	440	8,687	501	82,294	41,307	1,314,061	346,388	1,784,551	8,821,429	
225 Eshamy	330	4,316	94	50,868	794	348,873	206,060	606,689	3,301,396	
DRIFT GILL NET TOTAL	525	26,440	31,370	725,853	444,208	1,666,013	565,155	3,432,599	$34,655,712	
225 Eshamy	28	1,291	100	18,321	283	180,456	93,577	292,737	1,493,169	
SET GILL NET TOTAL	28	1,291	100	18,321	283	180,456	93,577	292,737	$1,493,169	
221 Solomon Gulch	1	51	0	69	6,110	726,357	1,747	734,283	1,546,476	d
222 Cannery Creek	1	6	0	0	0	66,049	0	66,049	27,322	d
223 Esther	1	39	0	0	0	528,298	10,022	538,320	1,861,204	d
226 Armin F. Koernig	1	40	0	0	0	846,213	27,729	873,942	2,104,085	d
HATCHERY SALES TOTAL	4	136	0	69	6,110	2,166,917	39,498	2,212,594	$5,539,087	
221 Eastern	1	8	1	0	0	3,476	1,299	4,776	17,479	b
223 Coghill	1	13	0	5	79	14,310	44	14,438	43,349	b
Educational Permit e	1	21	1	5	79	17,786	1,343	19,214	$60,828	
223 Coghill	1	9	0	32	12	3,220	307	3,571	11,172	c
Confiscated Total	1	9	0	32	12	3,220	307	3,571	$11,172	
OTHER GEAR TOTAL	2	30	1	37	91	21,006	1,650	22,785	$72,000	
PRINCE WILLIAM SOUND GRAND TOTAL		32,588	31,797	767,674	477,816	11,820,121	1,843,317	14,940,725	$70,989,339	

a (Reported number of pounds delivered by species) x (estimated average price per pound for that species and district) = Estimated Value. Actual value may vary.

b Used the general purse seine disrict average price paid by species in estimating value.

c Used the Coghill District drift gill net average price paid by species in estimating value.

d Hatchery sales for hatchery operating costs. Includes hatchery carcass sales.

e Cordova High School educational special permit.

Appendix A.7. Average price paid to fishermen for salmon, Prince William Sound, 1979-1988. a

Species	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
King Salmon	1.62	1.40	1.65	1.40	1.05	1.30	1.65	1.45	1.75	2.23
Sockeye Salmon	1.40	0.85	1.40	1.01	0.95	1.15	1.50			
Copper River				0.80	0.95	1.00	1.55	1.65	1.90	3.20
Bering River				0.80	0.85	0.95	1.10	1.65	1.90	3.00
Coghill/Unakwik districts						0.90	1.20	1.37	1.75	2.68
Eshamy						0.85	1.10	1.34	1.60	2.77
General Purse Seine								1.35	1.45	2.68
Coho Salmon										
Copper/Bering rivers	1.10	0.95	0.95	0.86	0.75	1.10	0.85	0.94	0.93	2.35
Prince William Sound	0.39	0.39	0.39	0.40	0.30	1.10	0.40	0.46	0.55	1.86
Pink Salmon	0.38	0.42	0.44	0.23	0.24	0.26	0.22	0.23	0.40	0.79
Chum Salmon	0.53	0.50	0.50	0.38	0.24	0.26	0.29	0.33	0.39	0.73

a Based on processor reports, fish tickets and other sources. Prices are monitored throughout the season and a weighted average is generally used. Prices generally do not reflect post season adjustments. Prices are an estimate only; Caution should be used if using these prices to estimate value.

Appendix A.8. Formal forecasts and projections of commercial salmon harvest by district and species, Prince William Sound, 1989. a

District	COMMERCIAL HARVEST (1,000's of fish)				
	King	Sockeye	Coho	Pink	Chum
Copper River b	25 - 44	598 - 804	135 -429		
Bering River c		20 - 30	0 -237		
Coghill-Unakwik d		123 - 573			
Eshamy e		0 - 5			
General P.W.S. Districts f				10,750 -32,050	0 -1,177
Total Wild	25 - 44	741 -1,412	135 -666	10,750 -32,050	0 -1,177
Solomon Gulch				4,270 - 6,890	27 - 36
Armin F. Koernig				3,120 - 5,350	72 - 88
Esther Island				6,610 -10,380	194 - 259
Cannery Creek				3,130 - 5,020	-
Main Bay					220 - 269
Total Hatchery				17,130 -27,640	513 - 652
Total Hatchery and Wild	25 - 44	741 -1,412	135 -666	27,880 -59,690	513 -1,829

a Harvest estimates are only made for those species which constitute a significant portion of the catch. The pink salmon harvest projection does not include 3.7 million fish projected for harvest by hatcheries for cost recovery.

b Formalized forecast procedures are used for Copper River king and sockeye returns. Copper River coho catches are based on mean fishery performance adjusted by escapement levels and environmental conditions.

c Bering River sockeye and coho harvest estimates are based on mean fishery performance adjusted by escapement levels and environmental conditions.

d Coghill sockeye returns are formally forecast using a sibling relationship model for the major age class and spawner recruit relationships for other age classes. The pink and chum harvest represents a projection of harvest component inside the Coghill district for the area production.

e No formal forecast exists for Eshamy sockeye production. The chum production is based on anticipated returns to the Main Bay hatchery.

f Formal forecast procedures are used for estimating wildstock returns for pink and chum salmon in Prince William Sound. Hatchery contributions are based on known fry releases and assumed marine survival rates. Sockeye production is based upon mean fishery performance.

Appendix A.9. Calendar weeks used in reporting catch statistics, 1988.

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

Appendix A.10. A listing of finfish processors, location of operation, type of product processed, 1988.

Executive Names, Address Location of Operations	Processor Code	Type of Product
American Eagle Seafoods P.O. Box 1310 Cordova, Ak. 99574 Rachel Sherman/Steve Smith	F0243-1	Herring Wild harvest Herring Pounding Salmon
Anpac, Incorporated 1304 Laona Circle P.O. Box 4-2520 Anchorage, Ak 99509 Jack Schultheis/Bill Sturdivant	F0281-1 or F0800-4	Herring Sac Roe Herring Drift Net Herring Wild Harvest Salmon
Arctic Fresh Seafoods of Anchorage 6133 E. 12th Street Anchorage, Ak 99504 Raymond Benish/Frank Benish	F1062-4	Salmon
Bristol Monarch Corporation 7814 8th Avenue South Seattle, Wa. 98108 Bob Morton	F0079-5	Herring Sac Roe Salmon
Chugach Alaska Fisheries Box 120 Cordova, Ak. 99574 Steve Meuter	F0213-7 or F0830-8	Salmon
Copper River Fishermen's Coop Box 90 Cordova, Ak 99574 Leslie Justice	F0146-1	Herring Wild Harvest Herring Pounding Salmon
Eyak Packing Company P.O. Box 1131 Cordova, Ak 99574 Gerald Masolini	F0224-6	Salmon
Icicle Seafoods, Inc. DBA Seward Fisheries Box 8 Seward, Ak. 99664 Kevin Robins	F0135-2	Herring Sac Roe
Inlet Fisheries P.O. Box 1970 Soldotna, Ak. 99669 Ellie Tikka	F0561-4	Salmon

Executive Names, Address Location of Operations	Processor Code	Type of Product
John Cabot Trading Co. Box 10-4139 1200 E. 70th Anchorage, Ak. 99518 Roy Jones	F0932-3	Salmon
Lafayette Fisheries, Inc. 4529 22nd W. Seattle, Wa. 98199 W.R. Bingham/John Garner	F0072-8	Herring Sac Roe Herring Drift Net
Nautilus Marine, Inc. Box 727 Valdez, Ak. 99686 Duane Goodman	F0815-7	Herring Sac Roe Herring Wild Harvest Salmon
New West Fisheries, Inc. 1100 11th St. Bellingham, Wa. 98225 Jerry Thon	F0602-0	Herring Sac Roe Herring Drift Net
North Coast Seafood Processors P.O. Box 31179 Seattle, Wa 98107 James Nagai/Carol Thomas	F0084-8	Herring Sac Roe
North Pacific Processors Box 1040 Cordova, Ak. 99574 Don Roemhildt/Ken Roemhildt	F0232-2	Herring Pounding Salmon
Oceanic Seafoods 8221 44th Ave. W. Bldg. A Mukilteo, Wa. 98275 Allen Searle/Bruce Jepsen	F0051-1	Herring Sac Roe
Pan Pacific Seafoods, Incorporated 150 Nickerson Street Suite 103 Seattle, Wa 98109 Janet Dizard	F0923-6	Herring Sac Roe
Peter Pan Seafoods Incorporated Box 1027 Valdez, Ak 99686 Jim Poor/Mike Poor	F1041-7	Salmon

Executive Names, Address Location of Operations	Processor Code	Type of Product
Phoenix Fisheries Box 716 Whittier, Ak. 99693 Perry Hendricks	F0597-4	Salmon
Robert Burden Box 150 Cordova, Ak 99574 Robert Burden	524762-88	Salmon
Royal Pacific Fisheries Box 4609 Kenai, Ak. 99611 Marvin Dragseth	F0409-1	Herring Sac Roe
Sagaya Corporation 3309 Spenard Rd. Anchorage, Ak. 99503 Paul Reid	F0803-7	Herring Pound
Seahawk Seafoods, Inc. Box 151 Valdez, Ak. 99686 Ray Cessarini/Sandra Cesarini	F0223-5	Herring Sac Roe Herring Drift Net Herring Pound Salmon
Seward Marine Services Box 87 Seward, Ak 99664 Neil Anderson	F0082-6	Herring Sac Roe
St. Elias Ocean Products Box 548 Cordova, Ak. 99574 Bill Terhar	F0120-9	Herring Sac Roe Salmon
Taylor Aquatic Enterprises Box 112241 Anchorage, Ak. 99511 Gary Taylor	F0131-8	Herring Wild Harvest
Western Fish Producers Box 1159 Pt. Rovers, WA. 98281 Bjorn Nordman/Tom Whiniham	F0588-7	Herring Sac Roe Herring Drift Net
YAK, Inc. 4019 21st W. Suite 202 Seattle, Wa. 98199 Mary Ruminski/Alan Chaffee	F0786-1	Herring Sac Roe

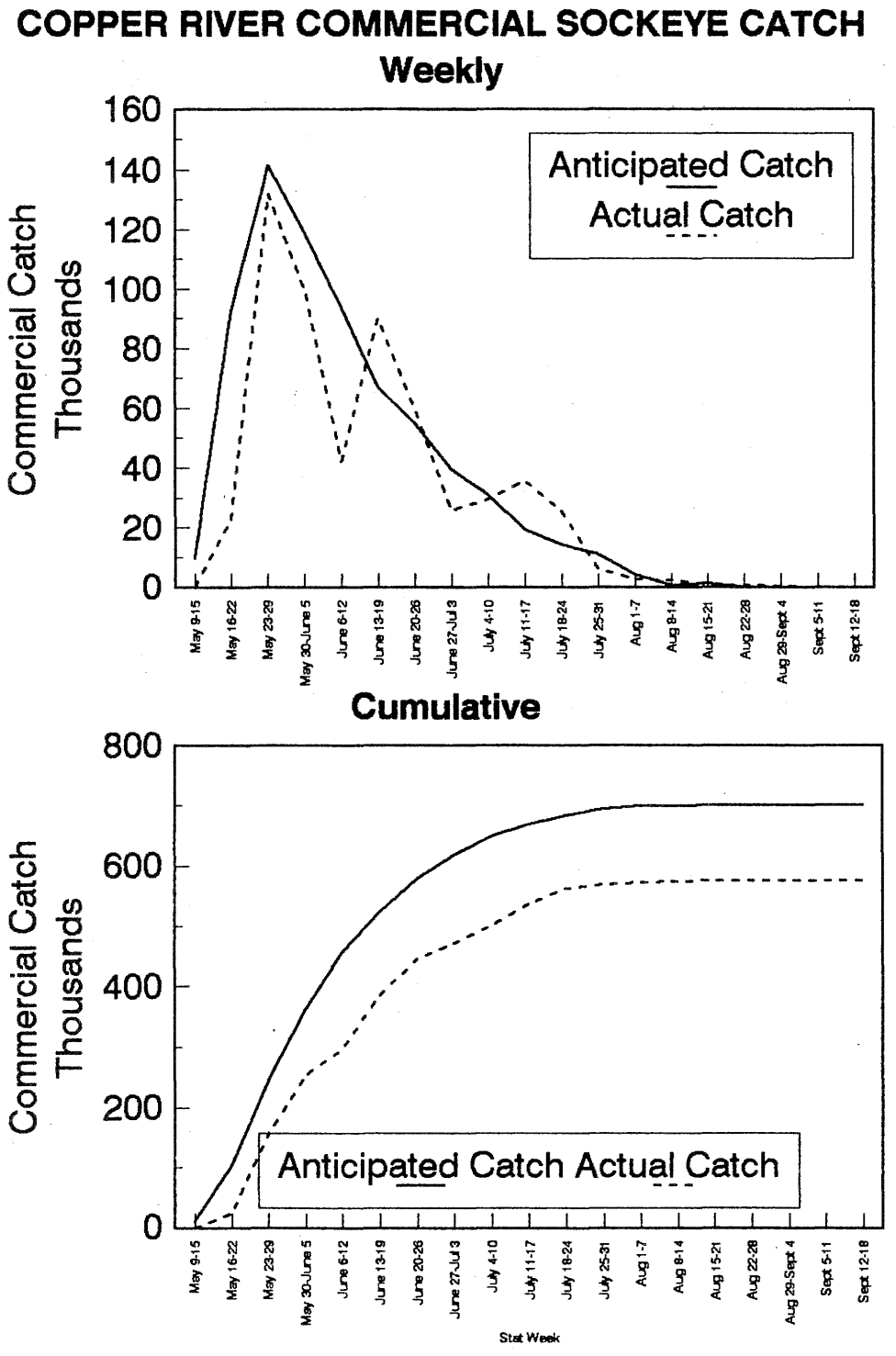
Appendix B.1. Anticipated and actual weekly catch and escapement of sockeye salmon in the Copper River District drift gill net fishery, 1988.

Date	Stat. Week	Fishing Time (Hrs.)	Actual Catch	Anticipated Catch a	Anticipated Cumulative Escapement b	Actual Cumulative Escapement c
May 8-14	20	0	0	9,914	0	0
May 15-21	21	24	22,871	92,730	6,236	2,630
May 22-28	22	60	131,867	141,621	40,156	67,370
May 29-June 4	23	48	99,570	119,009	123,296	113,050
June 5-11	24	24	42,129	93,560	215,471	195,230
June 12-18	25	24	89,944	67,204	274,100	258,095
June 19-25	26	48	59,952	55,060	315,896	305,535
June 26-Jul 2	27	48	26,023	39,802	346,780	349,730
July 3-9	28	48	29,527	31,189	379,620	382,288
July 10-16	29	48	35,651	19,249	410,217	430,616
July 17-23	30	48	25,578	14,449	440,646	458,606
July 24-30	31	48	6,450	11,104	452,851	483,942
Jul 31-Aug 6	32	48	2,836	4,413	455,305	488,398
Aug 7-13	33	48	2,276	630	458,188	
Aug 14-20	34	72	1,114	1,261	0	
Aug 21-27	35	72	746	0	0	
Aug 28-Sept 3	36	72	368	0	0	
Sept 4-10	37	72	38	0	0	
Sept 11-17	38	24	10	0	0	
Season Total		876	576,950	701,195	458,188	488,398

a Based on average historic catches for comparable dates(1969-1988).

b Based on historical escapements at Miles Lake sonar, includes upriver chinook escapement component and sockeye broodstock for the Gulkana hatchery. Does not include sockeye escapements for the Copper/Bering delta streams.

c Escapement estimate from sonar counters at Miles Lake.



Appendix B.2. Anticipated and actual weekly and cumulative catches of sockeye salmon in the Copper River District drift gill net fishery, 1988.

Appendix B.3. Commercial salmon harvest by period in the Copper River District drift gill net fishery, 1988.

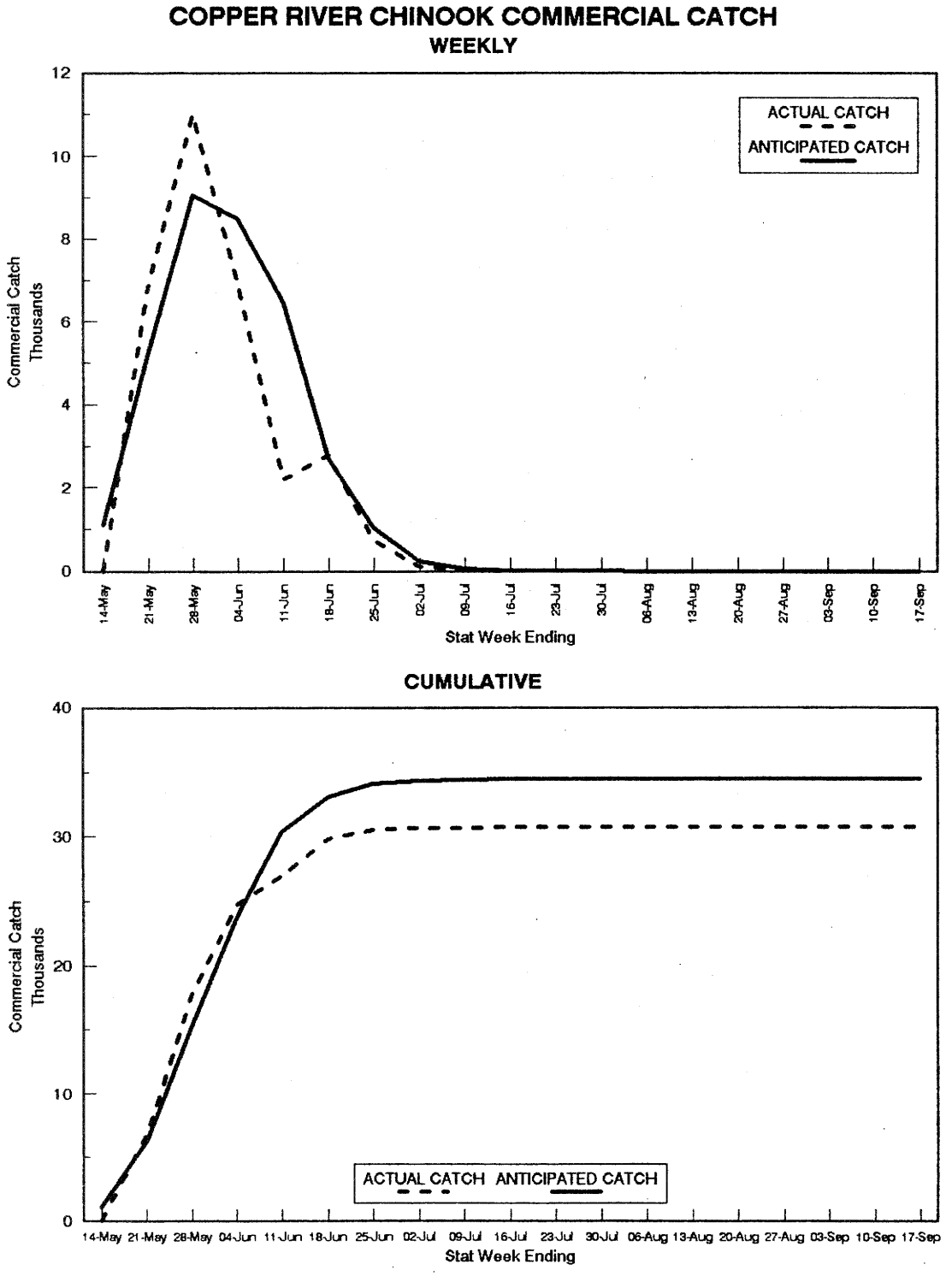
Period	Date[a]	Hours[b]		Permits	Landings	Chinook		Sockeye		Coho		Pink		Chum	
						Numbers	Pound	Number	Pound	Number	Pound	Number	Pound	Number	Pound
01	5\16	24		440	688	6,841	179,625	22,871	137,080	0	0	0	0	79	613
02	5\23	24	c	473	720	5,622	143,544	66,931	397,097	16	103	0	0	863	6,187
03	5\26	36		497	988	5,379	142,927	64,936	384,372	2	12	0	0	1,041	7,371
04	5\30	36		497	915	4,725	128,515	67,029	398,003	3	22	1	3	1,153	8,004
05	6\02	12		481	523	2,224	60,831	32,541	192,547	1	9	0	0	157	1,075
06	6\09	24		498	731	2,210	62,592	42,129	254,552	10	57	0	0	2,081	14,560
07	6\13	24		479	734	1,514	42,823	45,465	275,231	9	62	0	0	866	5,990
08	6\16	24		433	587	1,273	36,279	44,479	265,659	54	431	0	0	1,461	9,706
09	6\20	24		270	361	467	13,373	27,427	162,309	147	882	1	8	489	3,248
10	6\23	24		293	376	282	7,126	32,525	189,460	63	415	42	146	904	6,757
11	6\27	24		86	122	63	1,862	11,719	68,287	4	26	8	32	45	473
12	6\30	24		195	239	48	1,244	14,304	86,379	33	226	30	109	292	2,286
13	7\04	24		44	66	20	572	10,788	65,148	1	10	31	122	35	277
14	7\07	24		118	167	10	306	18,739	114,580	204	1,086	47	166	70	647
15	7\11	24		115	143	6	114	19,465	122,361	63	402	212	831	255	2,067
16	7\14	24		205	223	9	162	16,186	102,663	112	883	276	1,078	348	3,130
17	7\18	24		193	226	5	110	14,507	92,456	170	1,421	362	1,460	123	1,100
18	7\21	24		212	236	7	120	11,071	67,246	543	3,723	306	1,386	72	571
19	7\25	24		115	120	6	67	3,819	22,622	682	4,385	66	243	20	118
20	7\28	24		101	106	5	52	2,631	15,680	1,881	12,458	234	951	43	282
21	8\01	24		133	139	5	66	1,680	10,034	2,534	17,873	210	854	25	178
22	8\04	24		50	59	2	81	1,156	7,115	4,514	36,131	220	894	260	2,254
23	8\08	48		200	379	5	110	2,276	14,040	21,101	172,651	297	1,161	28	136
24	8\15	72		204	622	5	157	1,114	7,262	57,533	542,032	311	1,164	130	1,121
25	8\22	72		235	792	5	185	746	5,621	91,486	892,057	86	592	12	59
26	8\29	72		306	800	1	10	368	3,124	55,195	562,190	12	48	169	1,775
27	9\05	72		294	913	2	50	38	228	60,351	639,050	16	64	1	6
28	9\12	24	d	221	304	0	0	10	69	18,856	203,654	7	26	0	0
Total				520	12,279	30,741	822,903	576,950	3,461,225	315,568	3,092,251	2,775	11,338	11,022	79,991
Average Weight							26.77		6.00		9.80		4.09		7.26

a Starting date of period.

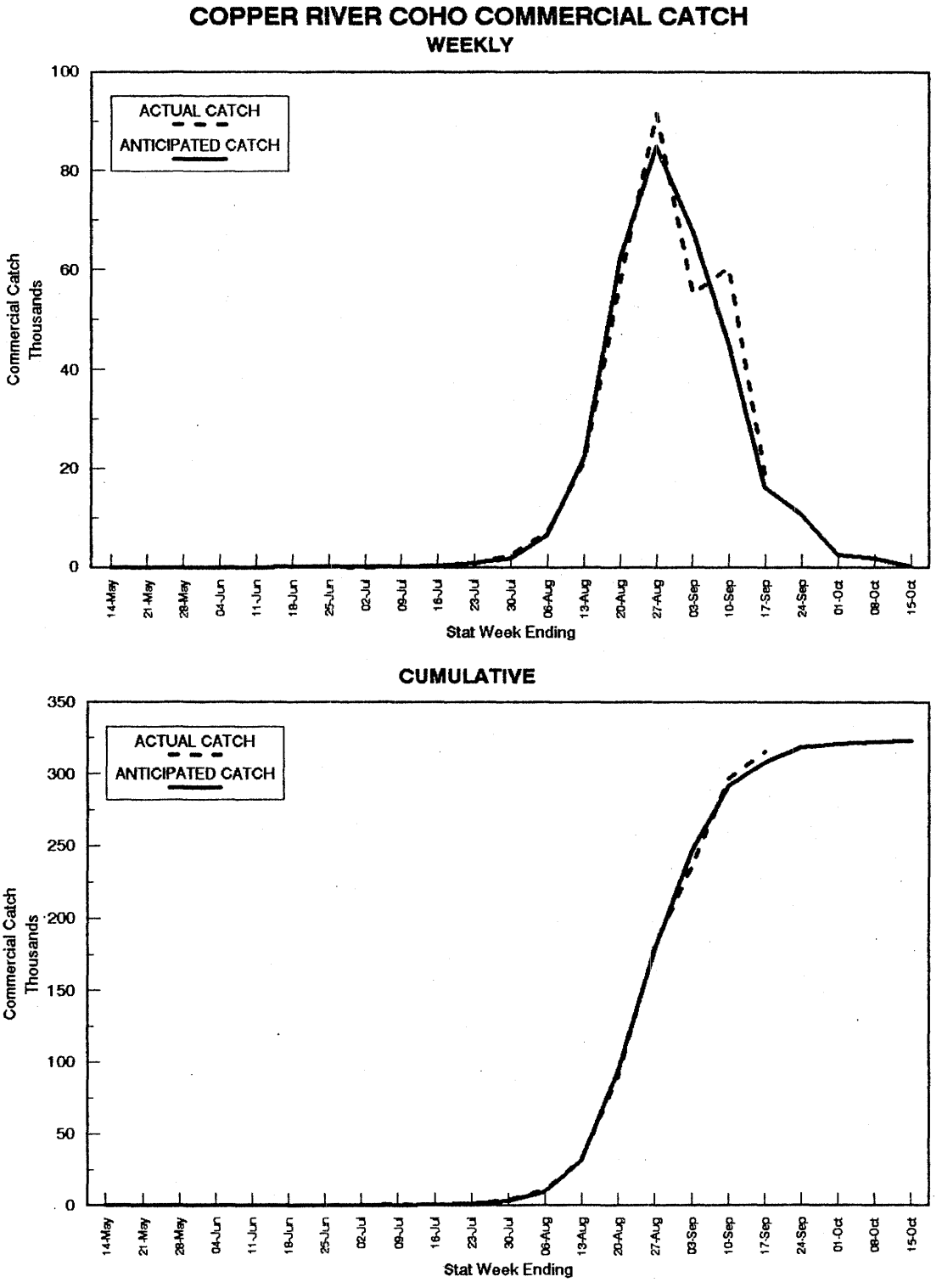
b From 5/16 - 8/08 all Monday openers started at 7:00 AM and Thursday openers started at 7:00 PM. Starting on 8/15, all openers started at 12:00 Noon.

c From 0700 May 23 until 0001 August 01 only drift gill nets with a mesh size smaller than six inches was allowed.

d All waters of Little Softuk was closed north of the entrance to Little Softuk at 60 12.9 N. latitude.



Appendix B.4. Anticipated and actual weekly and cumulative catches of chinook salmon in the Copper River District drift gill net fishery, 1988.



Appendix B.5. Anticipated and actual weekly and cumulative catches of coho salmon in the Copper River District drift gill net fishery, 1988.

Appendix B.6. Commercial salmon catch by species in the Copper River District, 1971 - 1988.

Year	Catch by Species					
	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	16,486	616,801	208,915	1,762	5,287	849,251
1972	22,349	727,144	103,211	2,304	717	855,725
1973	19,948	332,816	132,272	8,964	10,173	504,173
1974	18,890	607,766	46,625	9,839	664	683,784
1975	19,644	335,384	53,805	236	807	409,876
1976	31,483	865,254	111,900	3,392	178	1,012,207
1977	22,089	619,140	131,356	23,185	335	796,105
1978	29,062	249,872	220,338	3,512	2,233	505,017
1979	17,678	80,528	194,885	1,295	107	294,493
1980	8,454	18,908	225,299	3,966	198	256,825
1981	20,178	477,662	310,154	23,952	1,799	833,745
1982	47,362	1,177,632	454,763	7,154	1,177	1,688,088
1983	50,022	633,010	234,243	7,345	2,217	926,837
1984	38,955	899,776	382,432	32,194	6,935	1,360,292
1985	42,333	931,132	587,990	19,061	5,966	1,586,482
1986	40,670	780,808	295,980	3,016	17,614	1,138,088
1987	41,001	1,180,782	111,599	31,635	14,796	1,379,813
1988	30,741	576,950	315,568	2,775	11,022	937,056
Ten Year Average (1978-87)	33,572	643,011	301,768	13,313	5,304	996,968

Appendix B.7. Daily sockeye salmon escapement estimates at the Miles Lake sonar, 1988.

Date	Water Level a	Estimate North Bank	Estimate South Bank	Estimate Daily	Estimate Cumulative	Escapement Objective Daily	Escapement Objective Cumulative
17-May	130.25					460	460
18-May	130.00					937	1,397
19-May	130.07		313 b	313	313	1,098	2,495
20-May	130.09		877 c	877	1,190	1,197	3,692
21-May	129.93		1,440 d	1,440	2,630	1,247	4,939
22-May	129.96		2,256 e	2,256	4,886	1,297	6,236
23-May	130.06		5,078	5,078	9,964	2,070	8,306
24-May	130.15		11,033	11,033	20,997	3,207	11,513
25-May	130.40		9,979	9,979	30,976	3,534	15,047
26-May	130.51		8,946	8,946	39,922	3,970	19,017
27-May	130.65		13,247	13,247	53,169	5,921	24,938
28-May	130.82	345 f	13,856	14,201	67,370	9,295	34,234
29-May	131.22	513	9,509	10,022	77,392	5,923	40,156
30-May	131.62	381	6,425	6,806	84,198	8,399	48,555
31-May	131.68	821	6,765	7,586	91,784	10,464	59,020
01-Jun	131.77	498	4,707	5,205	96,989	10,324	69,344
02-Jun	132.09	378	3,180	3,558	100,547	12,633	81,977
03-Jun	132.28	239	4,387 g	4,626	105,173	11,892	93,869
04-Jun	132.38	741	7,136	7,877	113,050	13,922	107,790
05-Jun	133.22	469	6,286	6,755	119,805	15,506	123,296
06-Jun	133.93	394	8,501	8,895	128,700	13,904	137,201
07-Jun	135.00	163	8,933	9,096	137,796	13,168	150,369
08-Jun	136.10	223	11,099	11,322	149,118	14,855	165,224
09-Jun	137.13	537	14,104	14,641	163,759	14,770	179,994
10-Jun	137.80	624	14,592	15,216	178,975	13,023	193,017
11-Jun	138.42	833	15,422	16,255	195,230	12,402	205,419
12-Jun	138.96	983	13,976	14,959	210,189	10,052	215,471
13-Jun	139.27	732	10,019	10,751	220,940	9,442	224,913
14-Jun	139.88	811	8,571	9,382	230,322	9,020	233,933
15-Jun	140.43	542	9,368	9,910	240,232	9,035	242,968
16-Jun	141.05	421	6,063	6,484	246,716	8,680	251,648
17-Jun	140.75	384	4,526	4,910	251,626	8,637	260,285
18-Jun	139.62	698	5,771	6,469	258,095	7,706	267,991
19-Jun	138.83	454	7,401	7,855	265,950	6,110	274,100
20-Jun	139.52	372	7,580	7,952	273,902	5,386	279,486
21-Jun	138.60	507	5,263	5,770	279,672	5,484	284,970
22-Jun	137.20	386	6,599	6,985	286,657	5,811	290,781
23-Jun	136.90	409	7,290	7,699	294,356	6,615	297,396
24-Jun	136.74	410	5,172	5,582	299,938	6,801	304,197
25-Jun	136.75	265	5,332	5,597	305,535	6,374	310,571
26-Jun	136.31	369	6,009	6,378	311,913	5,325	315,896
27-Jun	137.09	268	6,291	6,559	318,472	4,455	320,351
28-Jun	137.10	196	6,063	6,259	324,731	4,224	324,575
29-Jun	136.90	127	8,093	8,220	332,951	4,237	328,812
30-Jun	137.20	242	6,255	6,497	339,448	3,970	332,782
01-Jul	137.76	155	5,447	5,602	345,050	4,081	336,863
02-Jul	138.74	108	4,572	4,680	349,730	4,882	341,745
03-Jul	139.46	166	4,056	4,222	353,952	5,034	346,780
04-Jul	139.97	178	3,354	3,532	357,484	5,884	352,664
05-Jul	140.90	151	3,153	3,304	360,788	4,778	357,442
06-Jul	141.35	177	3,333	3,510	364,298	4,464	361,905
07-Jul	141.27	81	4,243	4,324	368,622	4,148	366,053
08-Jul	140.88	194	8,305	8,499	377,121	3,951	370,004
09-Jul	140.15	181	4,986	5,167	382,288	4,211	374,216
10-Jul	139.55	254	6,093	6,347	388,635	5,404	379,620
11-Jul	140.15	329	7,291	7,620	396,255	4,577	384,197
12-Jul	140.20	301	7,580	7,881	404,136	4,555	388,753
13-Jul	139.95	325	6,762	7,087	411,223	3,809	392,562

- Continued -

Appendix B.7. (page 2 of 2).

Date	Water Level (a)	Estimate: North Bank	Estimate: South Bank	Estimate: Daily	Estimate: Cumulative	Escapement Objective: Daily	Escapement Objective: Cumulative
14-Jul	139.89	248	6,764	7,012	418,235	4,297	396,858
15-Jul	140.17	248	6,676	6,924	425,159	4,467	401,325
16-Jul	141.16	202	5,255	5,457	430,616	4,628	405,953
17-Jul	141.68	247	4,630	4,877	435,493	4,264	410,217
18-Jul	141.66	121	3,736	3,857	439,350	5,106	415,323
19-Jul	141.86	170	4,413	4,583	443,933	6,062	421,385
20-Jul	142.82	178	4,305	4,483	448,416	5,951	427,336
21-Jul	142.38	154	3,810	3,964	452,380	4,668	432,004
22-Jul	142.32	114	2,683	2,797	455,177	3,306	435,311
23-Jul	141.20	149	3,280	3,429	458,606	2,814	438,125
24-Jul	140.08	88	3,812	3,900	462,506	2,521	440,646
25-Jul	139.58	41 h	3,982	4,023	466,529	2,333	442,979
26-Jul	139.70		4,142	4,142	470,671	1,717	444,696
27-Jul	139.70		3,920	3,920	474,591	1,579	446,276
28-Jul	139.20		3,452	3,452	478,043	1,916	448,192
29-Jul	139.05		3,476	3,476	481,519	1,683	449,875
30-Jul	138.80		2,423	2,423	483,942	1,588	451,464
31-Jul	138.89		1,920	1,920	485,862	1,388	452,851
01-Aug	139.38		1,438	1,438	487,300	1,354	454,205
02-Aug	140.46		1,098 i	1,098	488,398	1,100	455,305
						Season Goal:	458,188
Total		20,295	468,103	488,398			

a Feet above mean sea level.

b Artifical substrate was operational from 1600 to 2400 and counted 125 fish. Estimated 313 fish for daily count based on the observed passage rate during operation.

c Ice took out south bank counter at 0100. No counts were obtained. Estimated daily count of 877 fish is average of 19 May and 21 May daily estimates.

d Continued ice problems. Obtained two scope counts using tripod method. Estimate daily count of 1,440 fish from observed passage rate of scope counts.

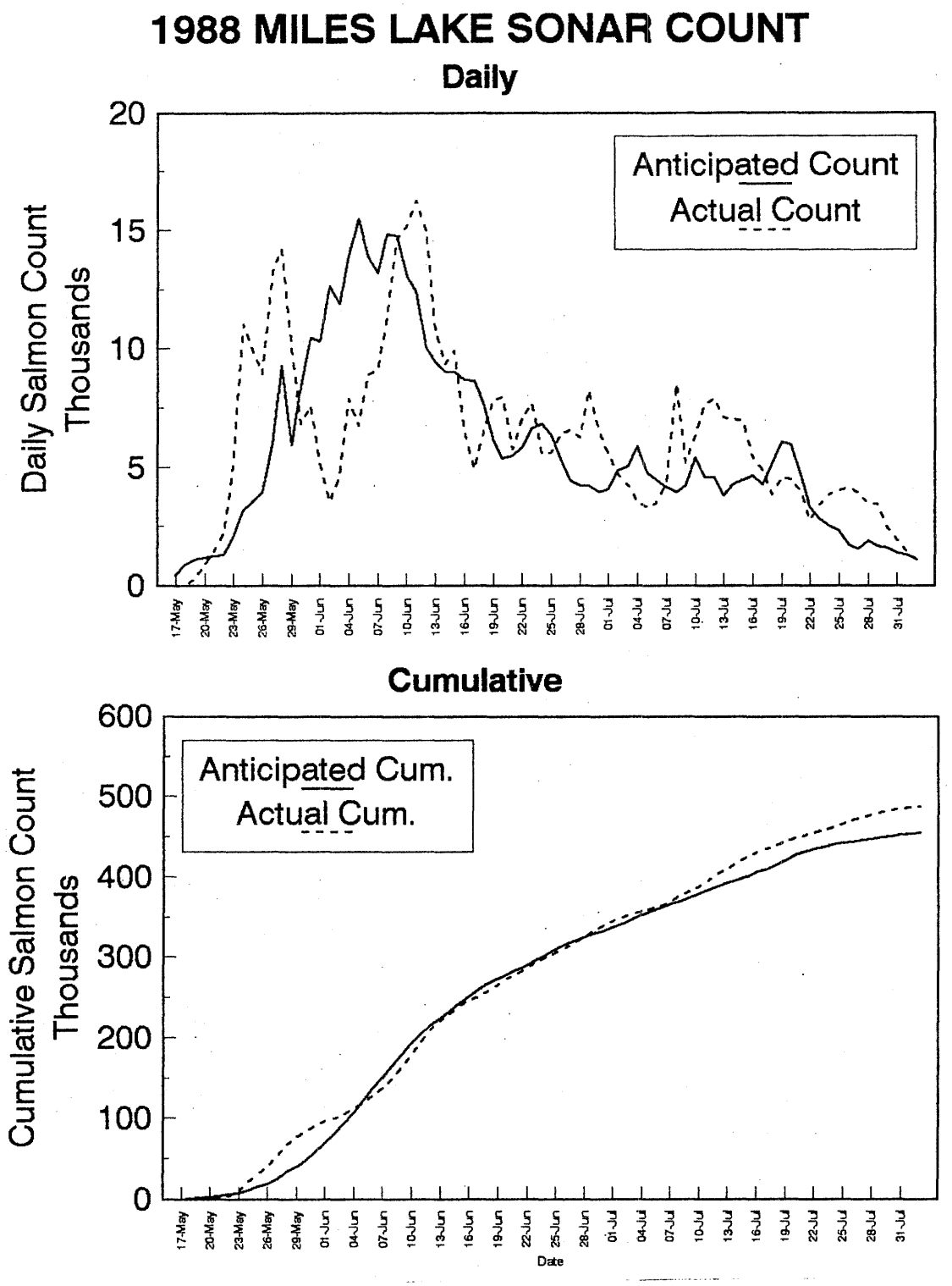
e Redeployed artifical substrate. Operational from 1900 to 2400. Daily estimate of 2,256 fish based on the average passage rate observed during operation.

f Artifical substrate was operational from 1200 to 2400 and counted 189 fish. Estimated 349 fish for daily count based on the observed passage rate during operation.

g South bank operating off permanent substrate for the remainder of the season.

h Counter operational until 2400. Last day of operation, north bank.

i Counter operational until 2400. Last day of operation, south bank.



Appendix B.8. Anticipated and actual daily and cumulative sockeye salmon escapements estimates at the Miles Lake sonar project, 1988.

Appendix B.9. Aerial escapement indices by date and location for sockeye salmon returning to the Copper River Delta, 1988.

Copper River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date							
		09 Jun	14 Jun	22 Jun	25 Jun	31 Jun	07 Jul	15 Jul	21 Jul
Eyak River	Eyak River	NS	0	NS	0	200	50	50	0
	West Shore Beaches	30	30	NS	45	80 +	450	800	1,560
	Middle Arm Beaches d	180	170	NS	550 *	180	80	250	175
	North Shore Beaches	0	0	NS	0	0	0	0	0
	Hatchery Creek Delta d	0	0	NS	50	350	400 *	120	200
	Hatchery Creek d	0	20	NS	0	0	300 *	150	330
	Power Creek Delta	NS	NS	NS	NS	NS	NS	NS	NS
	Power Creek	NS	NS	NS	NS	NS	NS	NS	NS
Ibek Creek	Ibek Creek	NS	NS	NS	NS	NS	NS	NS	NS
Alganik Slough	Alganik Slough	NS	0	NS	NS	NS	0	NS	NS
	McKinley Lake	NS	0	0	NS	2,000	4,600	NS	9,700 *
	Salmon Creek West Fork	NS	NS	NS	NS	0	0	NS	100 *
	Salmon Creek East Fork	NS	NS	NS	NS	0	0	NS	0 *
26/27 Mile Creek	26/27 Mile Creek	0	250	250	600	1,600	2,105 *	NS	1,600
30 Mile Creek	30 Mile Creek	NS	0	0	NS	0	1,000	NS	1,000
Goat Mountain Creek	Goat Mountain Creek	NS	0	NS	NS	0	0	NS	150
Pleasent Creek	Pleasent Creek	NS	20	NS	460 *	125 +	300	NS	10 +
Martin River	Martin River- Lower	70	44	NS	20	120	500	NS	160
	Ragged Point River	NS	NS	NS	30	100	250	NS	1,050
	Ragged Point Lake Outlet	NS	NS	NS	NS	NS	0	NS	0
	Ragged Point Lake	NS	NS	NS	NS	NS	NS	NS	0
	Martin River- Upper	105	330	NS	670	210	1,100	NS	850
	Martin Lake Outlet	0	0	NS	710	120	400 *	NS	100
	Martin Lake d	0	570	NS	650	4,800	5,300 *	NS	1,250
	Martin Lake Feeders	0	0	NS	0	120	140 *	NS	3,500
	Pothole River	NS	0	NS	0	35	540	NS	100
	Pothole Lake Outlet	NS	NS	NS	0	0	0	NS	0
	Pothole Lake	NS	NS	NS	0	0	100	NS	0
	Little Martin Lake Outlet	0	0	NS	0	0	30	NS	50
	Little Martin Lake	NS	60	NS	30	0	500	NS	850
	Tokun Springs	NS	0	NS	0	0	0	NS	0
	Tokun River d	30	0	NS	90	100	250 *	NS	450
	Tokun Lake Outlet d	0	50	NS	400	300 +	300 *	NS	0
	Tokun Lake d	NS	600	NS	3,400	100 +	4,000+*	NS	2,400
Martin River Slough	Martin River Slough	0	0	NS	1,800	2,900	3,115 +	NS	1,150
Copper River Aerial Survey Daily Totals		415	2,144	250	9,505	13,440	25,810	1,370	26,735

-Continued-

Copper River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date							
		28 Jul	5-6 Aug	14 Aug	19 Aug	28 Aug	06 Sep	09 Sep	15 Sep
Eyak River	Eyak River	0 +	0	0	0	NS	NS	NS	NS
	West Shore Beaches	2,400	3,600 *	2,900	2,275	NS	0	0	1,200
	Middle Arm Beaches d	250	1,400 +	2,100 *	1,500	NS	650	NS	1,200
	North Shore Beaches	20 +	NC	NC	180	NS	NC	NS	525 *
	Hatchery Creek Delta d	0	400	250	250	NS	0	NS	75 *
	Hatchery Creek d	450	70	40	45	NS	220	NS	450 *
	Power Creek Delta	NS	NS	NC	NS	NS	NS	NS	NS
	Power Creek	NS	NS	NS	NS	NS	NS	NS	NS
Ibek Creek	Ibek Creek	NS	NS	0 *	0	0	0	0	0
Alganik Slough	Alganik Slough	NS	NS	NS	NS	NS	NS	NS	NS
	McKinley Lake	3,100	NS	1,000	475	0	0	100	350
	Salmon Creek West Fork	NS	NS	2,200	900	1,000	50 +	NS	300 +
	Salmon Creek East Fork	NS	NS	50	30	0	0	NS	0
26/27 Mile Creek	26/27 Mile Creek	1,050 +	520 +	1,400	850	700 +	250	350	300
30 Mile Creek	30 Mile Creek	3,620 *	720	2,300	1,320	1,400 SP	700 SP	950 SP	1,300 SP
Goat Mountain Creek	Goat Mountain Creek	220 *	NC	100 +	0	0	0	NS	0
Pleasent Creek	Pleasent Creek	10 +	0	0	0	0	0	NS	0
Martin River	Martin River- Lower	160	NS	0	0	NC	0 *	0	0
	Ragged Point River	1,350	NS	1,000	600	0	0 *	NS	0
	Ragged Point Lake Outlet	0	NS	100	60	150	60 *	NS	100
	Ragged Point Lake	0	NS	400	500	1,650	2,000 *	NS	1,500
	Martin River- Upper	400	NS	350	270	200	0	0	0
	Martin Lake Outlet	250	NS	0	0	50	50	0	0
	Martin Lake d	150	NS	150	0	50	0	0	400
	Martin Lake Feeders	3,100	NS	200	10	0	0	NS	0
	Pothole River	140	NS	50 *	0	50	0	NS	0
	Pothole Lake Outlet	10	NS	0 *	0	100	0	NS	0
	Pothole Lake	50	NS	1,700 *	300 +	1,200	600	NS	1,000
	Little Martin Lake Outlet	0	NS	0	0	0 *	0	NS	5
	Little Martin Lake	1,200	NS	1,100	300	2,200 *	520	NS	1,100
	Tokun Springs	50 *	NS	0	0	0	10	NS	0
	Tokun River d	320	NS	10	160 *	100	0	NS	0
	Tokun Lake Outlet d	0	NS	0	0 *	0	0	NS	0
	Tokun Lake d	2,900	NS	3,500	4,400 *	2,600	620	NS	900 +
Martin River Slough	Martin River Slough	300	NS	70	0	0	0	NS	0
Copper River Aerial Survey Daily Totals		21,500	6,710	20,970	14,425	11,450	5,730	1,400	10,705

-Continued-

Copper River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date				Estimated Escapement	
		22 Sep	27 Sep	16 Oct	31 Oct	Site b	System c
Eyak River	Eyak River	NC	NS	NS	NS	0	8,350
	West Shore Beaches	NC	1,000	100	0	3,600	
	Middle Arm Beaches d	600 +	700	100	10	2,650	
	North Shore Beaches	NC	300	100	0	525	
	Hatchery Creek Delta d	0	0	0	0	475	
	Hatchery Creek d	90	270	0	0	750	
	Power Creek Delta	NS	0	0	NS	0	
	Power Creek	NS	0	0	NS	350	
Ibek Creek	Ibek Creek	0	0	0	0	0	0
Alganik Slough	Alganik Slough	NC	NS	NS	NS	0	9,800
	McKinley Lake	0	0	0	0	9,700	
	Salmon Creek West Fork	100 +	40	0	0	100	
	Salmon Creek East Fork	0	25	0	0	0	
26/27 Mile Creek	26/27 Mile Creek	120	30	0	0	2,105	2,105
30 Mile Creek	30 Mile Creek	500	600	0	0	3,620	3,620
Goat Mountain Creek	Goat Mountain Creek	0	0	0	0	220	220
Pleasent Creek	Pleasent Creek	0	0	0	0	460	460
Martin River	Martin River- Lower	0	0	0	0	0	0
	Ragged Point River	0	0	0	0	0	2,060
	Ragged Point Lake Outlet	100	0	0	0	60	
	Ragged Point Lake	1,700	1,300	0	100	2,000	
	Martin River- Upper	0	0	0	0	0	0
	Martin Lake Outlet	0	0	0	0	400	6,440
	Martin Lake d	500 +	600 +*	600	0	5,900	
	Martin Lake Feeders	0	0	0	0	140	
	Pothole River	0	0	0	0	50	2,785
	Pothole Lake Outlet	0	35 *	0	0	35	
	Pothole Lake	650 +	1,000 *	700	900	2,700	
	Little Martin Lake Outlet	0	0	0	0	0	2,200
	Little Martin Lake	400	700	0	0	2,200	
	Tokun Springs	0	0	0	0	50	12,160
	Tokun River d	0	0 *	0	0	410	
	Tokun Lake Outlet d	0	0 *	0	0	300	
	Tokun Lake d	1,050	3,000 +*	300	70	11,400	
Martin River Slough	Martin River Slough	0	0	NS	0	3,115	3,115
Copper River Aerial Survey Daily Totals		5,810	9,600	1,900	1,080		53,315

-Continued-

a The survey sites represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainage. Weather permitting, the sites are surveyed weekly. The surveys provide information about the relative strength of escapement among years and within a year, time for spawning sites and the relative escapement strength among sites. The indices are not intended to provide an actual estimate of escapement for coastal stocks but they have been for the purpose in the absence of any other escapement estimating method. The abbreviations used in the following table have the following meanings: NS= no survey, NC= surveyed but no count due to poor conditions. and SP= possible species confusion. The + sign after some counts indicate that the count is the minimum estimate of seen in less then ideal conditions. The * symbol indicates that this survey count was used as the peak survey for the site without duplication of counts for survey sites along migratory corridors (see footnote b).

b The escapement estimates for each site is in the astricted survey estimate. Where the survey site is a terminal spawning area the peak count is used however, if the site is a schooling area for migratory fish bound for sites further upstream the count which minimizes possible duplication counts across dates selected.

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

d The sites typically have very protracted run timing or two temporally segregated spawning populations at the same site. Aerial counts from more then one day may be astricted and used in the escapement estimate if the surveyor indicates that these counts represented different fish.

Appendix B.10. Copper River and Bering River area sockeye salmon escapement estimates, 1979 - 1988. a

Stream/Lake b	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Eyak Lake	13,500	22,500	11,300	11,700	8,900	11,690	11,025	2,960	7,420	6,775
Hatchery Creek	1,000	700	4,750	1,800	2,000	3,700	850	650	1,975	1,225
Power Creek	glacial	4,500	1,100	300	200	500	muddy	0	0	350
Ibek Creek	0	0	0	0	0	0	25	0	0	0
McKinley Lake	25,000	27,500	10,000	9,500	12,000	15,000	19,000	12,000	10,300	9,700
Salmon Creek	4,000	5,000	10,800	13,500	8,500	11,000	8,000	900	2	100
26/27 Mile Creek	1,500	7,500	9,500	5,500	8,000	7,500	6,500	2,030	4,100	2,105
39 Mile Creek	17,500	18,000	11,000	13,000	13,000	17,000	27,000	9,500	6,100	3,620
Goat Mountain	muddy	150	muddy	3,000	100	1,500	150	600	1,000	220
Pleasant Creek	muddy	250	muddy	NS muddy	NS muddy	7,400	2,500	1,000	1	460
Martin River	8,200	3,500	5,350	1,000	3,650	5,000	0	2,875	1,480	0
Ragged Pt. R./Lake	20,000	18,000	9,500	13,500	10,000	8,950	18,500	3,900	4,100	2,060
Martin Lake	14,000	27,650	41,050	14,820	17,600	35,350	20,500	11,200	6,010	6,440
Pothole Lake	5,000	2,200	8,000	1,230	6,500	6,000	1,500	2,200	910	2,785
L. Martin Lake	4,000	8,000	2,500	6,020	6,400	10,500	11,000	1,500	3,320	2,200
Tokun Lake/River c	10,000	1,500	1,700	450	500	27,553	11,393	16,000	8,080	12,160
Martin River Slough	4,200	10,000	15,000	9,500	11,000	14,500	8,100	7,980	5,900	3,115
Copper Delta Total	127,900	156,950	141,550	104,820	108,350	183,143	146,043	75,295	60,698	53,315
Upper Copper R. d	237,173	276,538	535,263	467,306	545,724	536,806	436,313	509,275	483,478	488,398
Copper R. Dist. Tot	365,073	433,488	676,813	572,126	654,074	719,949	582,356	584,570	544,176	541,713
Bering River/Lake						29,000	15,700	13,200	19,200	11,450
Shepherd Creek						14,500	8,000	3,600	4,100	950
Clear Creek						3,500	100	1,350	2,000	100
Kushtaka Lake						1,500	500	825	1,225	480
Bering R. Area Tot.						48,500	24,300	18,975	26,525	12,980
Copper/Bering Total						768,449	606,656	603,545	570,701	554,693

a The escapement figures in this table are based on peak aerial survey estimates, sonar and weir counts from a majority of the known salmon spawning areas in the Copper and Bering River delta. These indices are not intended to provide a true estimate of total escapement for the coastal stocks, but a comparable index based upon the best data currently available. An effort has been made to standardize the estimate across years, however in years prior to 1984, different methodology was used and discrepancies may be found when cross referenced to the primary data.

b The areas in this table represent combined survey sites corresponding to the "system" designations for the current year survey results presented elsewhere in this report.

c Weir counts at Tokon Lake included in estimates for 1983, 1984 and 1985.

d Upriver escapement estimate from Miles Lake sonar counts.

Appendix B.11. Aerial escapement indices by date and location for coho salmon returning to the Copper River Delta, 1988.

Copper River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date							
		28 Jul	5-6 Aug	14 Aug	19 Aug	28 Aug	06 Sep	09 Sep	15 Sep
Eyak River	Eyak River	0	0	700	300	NS	NS	NS	NS *
	West Shore Beaches	0	0	0	0	NS	350 +	1,400	3,050 *
	Middle Arm Beaches	0	0	300	0	NS	200 *	NS	150
	North Shore Beaches	0	NC	NC	0	NS	NC	NS	0
	Hatchery Creek Delta	0	NS	0	0	NS	50 *	NS SP	0
	Hatchery Creek	0	NS	0	0	NS	50 *	NS SP	0
	Power Creek Delta	NS	NS	NC	NS	NS	NS	NS	NS
	Power Creek	NS	NS	NS	NS	NS	NS	NS	NS
Ibek Creek	Ibek Creek	NS	NS	0	0	26	100 +	700 +	550
Scott River	Scott River	NS	NS	50	30	0	10 +	100	15
	Elsner River	NS	NS	0	NS	0	0	0	0
	Scott Lake	NS	NS	700 *	150 +	150 +	0	300	250
Alganik Slough	Alganik Slough	NS	NS	NS	NS	NS	NS	NS	NS
	18/20 Mile Creek	NS	0	0	0	70 +	110	400	925 +
	McKinley Lake	0	NS	0	0	100 +	175	200 +	75
	Salmon Creek West Fork	NS	NS	0	0	100	30	NS	0
	Salmon Creek East Fork	NS	NS	0	0	50	25	NS	0
26/27 Mile Creek	26/27 Mile Creek	0	0	40	40	50 +	40	100	60
39 Mile Creek	39 Mile Creek	0	0	0	120 SP	100 SP	100	500	700 SP
Goat Mountain Creek	Goat Mountain Creek	0	NC	60	400	550 +	725	NS	1,500 *
Pleasent Creek	Pleasent Creek	0	0	0	0	0	0	NS	5
Martin River	Martin River- Lower	0	NS	85	350	NC	250 +	250	1,150
	Ragged Point River	0	NS	0	0	110	0	NS	75
	Ragged Point Lake Outlet	0	NS	0	0	0	0	NS	0
	Ragged Point Lake	0	NS	0	0	0	200	NS	0
	Martin River- Upper	0	NS	450	450	2,700 +	980 +	1,400 +	2,600
	Martin Lake Outlet	0	NS	0	0	0	0	0	0
	Martin Lake	0	NS	100	20	0	50	0	0
	Martin Lake Feeders	0	NS	0	0	0	10	NS	20
	Pothole River	0	NS	0	60	300 *	0	NS	100
	Pothole Lake Outlet	0	NS	0	0	50 *	0	NS	0
	Pothole Lake	0	NS	100	NC	0 *	0	NS	0 +
	Little Martin Lake Outlet	0	NS	0	0	370	620	NS	2,400
	Little Martin Lake	0	NS	0	0	0	40	NS	200 *
	Tokun Springs	0	NS	0	0	120	75	NS	30
	Tokun River	0	NS	70	0	60	10	NS	80
	Tokun Lake Outlet	0	NS	0	0	0	0	NS	0
	Tokun Lake	0	NS	0	0	0	0	NS	0
Martin River Slough	Martin River Slough	0	NS	0	100	720	3,185	NS	3,440
Copper River Aerial Survey Daily Totals		0	0	2,655	2,020	5,626	7,385	5,350	17,375

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Appendix B.11. (Page 2 of 3)

Copper River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date				Estimated Escapement	
		22 Sep	27 Sep	16 Oct	31 Oct	Site b	System c
Eyak River	Eyak River	NC	NS	NS	NS	0	3,700
	West Shore Beaches	NC	1,470	900	350	3,050	
	Middle Arm Beaches	60	50	0	0	200	
	North Shore Beaches	NC	30	25	0	0	
	Hatchery Creek Delta	0	20	20	50	50	
	Hatchery Creek	0	0	40	15	50	
	Power Creek Delta	NS	75	0	NS	0	
	Power Creek	NS	130	350 +	NS	350	
Ibek Creek	Ibek Creek	520	510 +	2,400+*	1,800 +	2,400	2,400
Scott River	Scott River	40 +	190	0	360 *	360	1,060
	Elsner Lake	0	0	0	0	0	
	Scott Lake	20 +	200 +	100	0	700	
Alganik Slough	Alganik Slough	NC	NS	NS *	NS	NS	3,170
	18/20 Mile Creek	640 +	810 +	1,075+*	520	1,075	
	McKinley Lake	170	320	200	170 *	170	
	Salmon Creek West Fork	0	60	100 *	0	100	
	Salmon Creek East Fork	10	75	1,500 +	1,825 *	1,825	
26/27 Mile Creek	26/27 Mile Creek	40 +	60	70	105 *	105	105
39 Mile Creek	39 Mile Creek	690	1,390 *	170	165	1,390	1,390
Goat Mountain Creek	Goat Mountain Creek	1,000 +	1,200 +	300 +	500	1,500	1,500
Pleasent Creek	Pleasent Creek	110 *	50 +	0	0	110	110
Martin River	Martin River- Lower	240	15	0 *	0	0	0
	Ragged Point River	50	80	380 *	140	380	1,080
	Ragged Point Lake Outlet	0	0	0 *	2	0	
	Ragged Point Lake	0	0	700 *	0	700	
	Martin River- Upper	200 +	3,400 +*	650	600	3,400	3,400
	Martin Lake Outlet	0 *	0	0	0	0	145
	Martin Lake	105 *	20	0	100	105	
	Martin Lake Feeders	40 *	80	10	0	40	
	Pothole River	0	0	25	125	300	350
	Pothole Lake Outlet	0	0	0	700	50	
	Pothole Lake	0	0	0	0	0	
	Little Martin Lake Outlet	4,300 *	3,900	2,500	300	4,300	4,500
	Little Martin Lake	0	0	0	0	200	
	Tokun Springs	100	310 *	25	100	310	910
	Tokun River	280	600 *	200	180 +	600	
	Tokun Lake Outlet	0	0 *	0	0	0	
	Tokun Lake	0	0 *	0	0	0	
Martin River Slough	Martin River Slough	4,110 *	2,950 +	NS	145 +	4,110	4,100
Copper River Aerial Survey Daily Totals		12,725	17,995	11,740	8,252		27,930

-Continued-

a The survey sites represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainage. Weather permitting, the sites are surveyed weekly. The surveys provide information about the relative strength of escapement among years and within a year, time for spawning sites and the relative escapement strength among sites. The indices are not intended to provide an actual estimate of escapement for coastal stocks but they have been for the purpose in the absence of any other escapement estimating method. The abbreviations used in the following table have the following meanings: NS= no survey, NC= surveyed but no count due to poor conditions. and SP= possible species confusion. The + sign after some counts indicate that the count is the minimum estimate of seen in less then ideal conditions. The * symbol indicates that this survey count was used as the peak survey for the site without duplication of counts for survey sites along migratory corridors (see footnote b).

b The escapement estimates for each site is in the astricted survey estimate. Where the survey site is a terminal spawning area the peak count is used however, if the site is a schooling area for migratory fish bound for sites further upstream the count which minimizes possible duplication counts across dates selected.

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

Appendix B.12. Copper River delta and Bering River coho salmon escapement estimates, 1980 - 1988. a

Stream/Lake b	1980	1981	1982	1983	1984	1985	1986	1987	1988
Eyak Lake	9,200	2,750	7,000	14,600	6,500	1,400	2,550	2,800	3,250
Hatchery Creek		2,500	125	1,000	1,750	7,010	400	850	100
Power Creek		800	1,500	1,000	1,900	1,800	0	4,800	350
Ibek Creek	12,110	10,000	1,100	4,200	9,700	8,500	4,200	3,100	2,400
McKinley Lake	2,500		500	5,000	500	4,300	1,600	10	170
Salmon Creek	2,000	1,700	4,650	6,500	850	7,000	200	0	1,925
26/27 Mile		250	50	0	350	300	60	350	105
39 Mile	7,100	1,900	2,000	6,500	8,000	8,000	5,800	2,800	1,390
Goat Mountain	800	500	50		600	4,000	100	520	1,500
Pleasant Cr.	500		400	350	1,100	1,500	0	250	110
Martin River	12,855	4,000	7,500	3,100	4,000	11,500	4,820	3,060	3,400
Ragged Pt. River/Lake		1,200	2,550	525	650	1,500	30	3,330	1,080
Martin Lake	4,500		9,000	6,100	4,700	9,100	275	70	145
Pothole Lake					900	8,500	640	70	350
Little Martin Lake	1,500	6,000	150	1,125	7,000	4,100	275	560	4,500
Tokun River/Lake	4,200	800	2,400	350	525	1,900	490	495	600
Martin River Slough	22,000	10,900	1,350	9,700	15,500	26,000	4,350	3,400	4,110
Copper Delta Total	79,265	43,300	40,325	60,050	64,525	106,410	25,790	26,465	27,930
Katalla R.	8,000	3,000	11,500	4,800	7,000	14,000	1,800	1,600	560
Bering Lake	700	0	8,000	4,000	2,000	18,000	1,350	900	2,350
Dick Creek	1,625	0	5,500	7,100	5,500	5,000	350	50	105
Shepard Cr.	0	600				1,500	10	45	70
Nichawak R.	250		5,000	800	1,000	3,500	1,700	250	3,670
Gandil R.	600					4,500			
Controller Bay					4,500	34,000	4,210	2,740	4,660
Bering Area Total	11,175	3,600	30,000	16,700	20,000	80,500	9,420	5,585	11,415
Copper/Bering Total	90,440	46,900	70,325	76,750	84,525	186,910	35,210	32,050	39,345

a The escapement figures in this table are based on peak aerial survey estimates and weir counts from a majority of the known salmon spawning areas in the Copper and Bering River delta. These indices are not intended to provide a true estimate of total escapement for the coastal stocks, but a comparable index based upon the best data currently available. An effort has been made to standardize the estimate across years, however counts were obtained only as environmental conditions allow and may not necessarily correspond to periods of peak abundance. Missing counts are generally a result of bad weather, high water, turbulence or other factors that prevented surveys for that given year.

b The areas in this table represent combined survey sites corresponding to the "system" designations for the current year survey results presented elsewhere in this report.

Appendix B.13. Aerial survey indices of sockeye salmon escapement to the Upper Copper River drainage, 1978 to 1988. a

	Yearly Survey Indices											
Location	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	10 Year Average
Fish Lake	2,650	1,700	3,175	8,800	22,560	5,500	10,950	3,750	8,750	9,530	6,800	7,737
Bad Crossing #1&2	600	650	75	15,000	4,550	2,000	760	1,125	5,300	2,575	2,075	3,264
Suslota Lake	1,200	1,000	1,700	300	1,800	5,600	700	2,200	1,300	970	550	1,677
Dickey Lake	75	13	250	20	410	135	105	290	43	360	57	170
Keg Creek	1,050	1,300	2,335	320	495	620	2,505	825	200	400	360	1,005
Mahlo Creek	300	450	1,000	1,800	3,300	2,400	4,300	575	1,750	2,350	3,900	1,823
St. Anne Creek	1,150	730	5,000	4,700	8,800	9,700	10,300	1,250	4,600	6,980	6,100	5,321
Fish Cr.-Mentasta	1,300	350	900	10,500	1,700	900	900	1,800	1,100	250	650	1,970
Swede Lake	80	155	400	450	1,400	550	2,400	250	385	113	230	618
Tana River	504	465	2,130	290	1,100	2,485	3,665	1,145	1,825	472	2,034	1,408
Mentasta Lake	3,600	2,500	3,200	7,400	3,250	6,800	4,850	3,850	2,850	1,800	4,300	4,010
Tanada Lake	525	3,375	4,200	5,300	3,880	4,300	9,100	5,900	3,960	4,950	2,100	4,549
Salmon Creek	50	450	1,500	250	850	1,550	1,350	575	300	1,150	700	803
Paxson Inlt-Mud Cr	2,700	5,400	8,200	2,200	1,150	7,500	15,700	7,500	7,000	4,250	6,350	6,160
Mud Creek and Lake	150	460	740	810	1,900	470	270	200	70	0	150	507
Mendeltna Creek	725	350	1,125	4,830	400	2,850	1,900	2,300	3,325	2,275	1,550	2,008
Paxson Lake Outlet	2,500	1,900	3,800	1,500	3,800	3,300	4,100	3,600	1,810	5,100	3,200	3,141
Mud Cr.- Summit L.	800	2,600	3,075	3,400	17,400	5,700	9,600	8,150	3,375	9,050	15,400	6,315
Long Lake	1,425	3,100	2,650	1,325	1,700	5,600	1,360	590	1,300	1,225	1,125	2,028
Tonsina Lake	4	775	650	1,725	1,700	2,850	975	290	350	740	650	1,006
Totals	21,388	27,723	46,105	70,920	82,145	70,810	85,790	46,165	49,593	54,540	58,281	55,518

a The escapement figures in this table are based on peak aerial survey estimates and weir counts from a majority of the known salmon spawning areas in the upper Copper River drainage. These indices are not intended to provide a true estimate of total escapement for these stocks, but a comparable index based upon the best data currently available. An effort has been made to standardize the estimate across years, however counts were obtained only as environmental conditions allow and may not necessarily corresponed to periods of peak abundance. Missing counts are generally a result of bad weather, high water, turbulence or other factors that prevent surveys for that given year.

Appendix B.13. Aerial survey indices of sockeye salmon escapement to the Upper Copper River drainage, 1978 to 1988. a

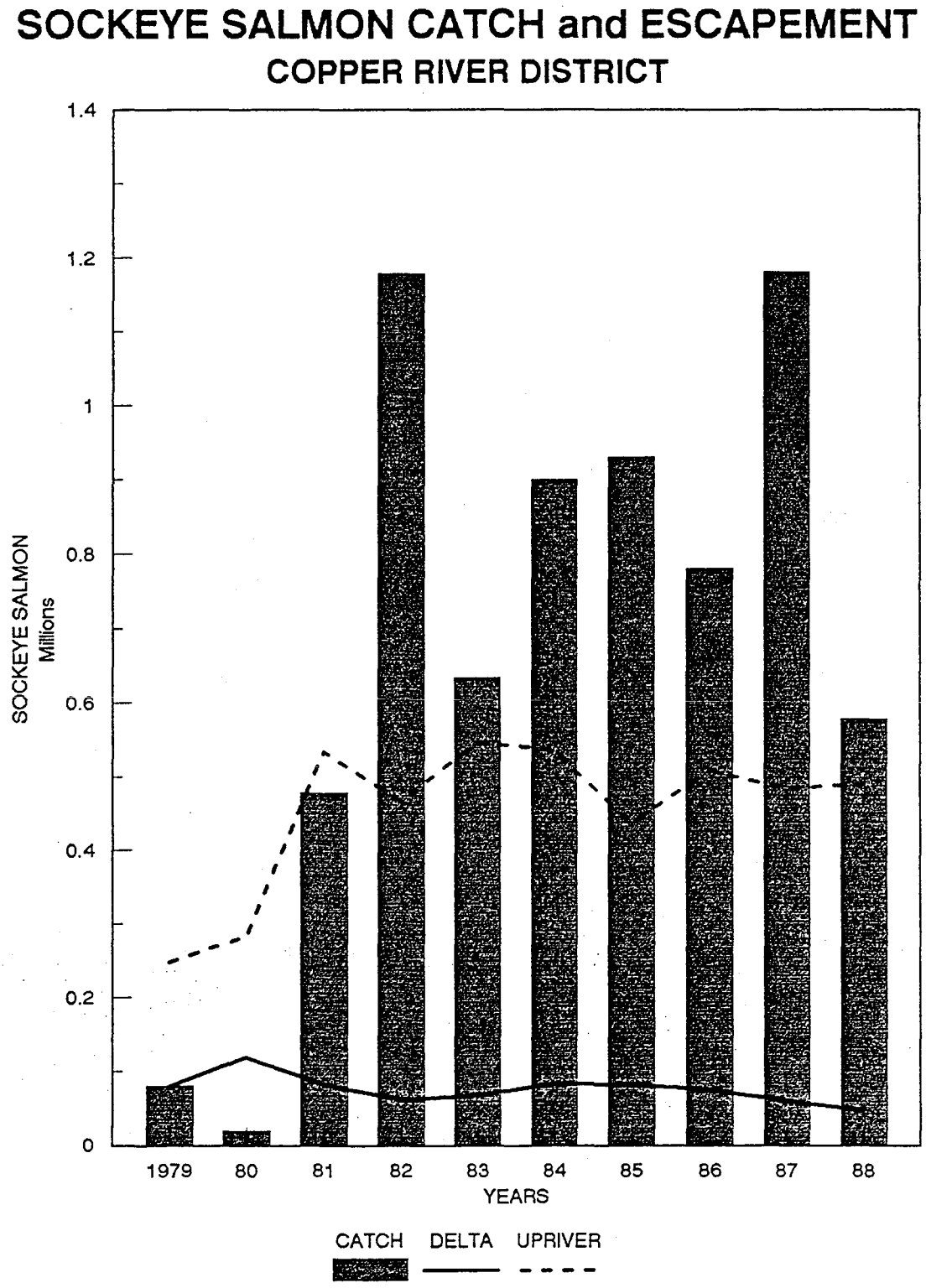
Location	Yearly Survey Indices											10 Year Average
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
Fish Lake	2,650	1,700	3,175	8,800	22,560	5,500	10,950	3,750	8,750	9,530	6,800	7,737
Bad Crossing #1&2	600	650	75	15,000	4,550	2,000	760	1,125	5,300	2,575	2,075	3,264
Suslota Lake	1,200	1,000	1,700	300	1,800	5,600	700	2,200	1,300	970	550	1,677
Dickey Lake	75	13	250	20	410	135	105	290	43	360	57	170
Keg Creek	1,050	1,300	2,335	320	495	620	2,505	825	200	400	360	1,005
Mahlo Creek	300	450	1,000	1,800	3,300	2,400	4,300	575	1,750	2,350	3,900	1,823
St. Anne Creek	1,150	730	5,000	4,700	8,800	9,700	10,300	1,250	4,600	6,980	6,100	5,321
Fish Cr.-Mentasta	1,300	350	900	10,500	1,700	900	900	1,800	1,100	250	650	1,970
Swede Lake	80	155	400	450	1,400	550	2,400	250	385	113	230	618
Tana River	504	465	2,130	290	1,100	2,485	3,665	1,145	1,825	472	2,034	1,408
Mentasta Lake	3,600	2,500	3,200	7,400	3,250	6,800	4,850	3,850	2,850	1,800	4,300	4,010
Tanada Lake	525	3,375	4,200	5,300	3,880	4,300	9,100	5,900	3,960	4,950	2,100	4,549
Salmon Creek	50	450	1,500	250	850	1,550	1,350	575	300	1,150	700	803
Paxson Inlt-Mud Cr	2,700	5,400	8,200	2,200	1,150	7,500	15,700	7,500	7,000	4,250	6,350	6,160
Mud Creek and Lake	150	460	740	810	1,900	470	270	200	70	0	150	507
Mendeltna Creek	725	350	1,125	4,830	400	2,850	1,900	2,300	3,325	2,275	1,550	2,008
Paxson Lake Outlet	2,500	1,900	3,800	1,500	3,800	3,300	4,100	3,600	1,810	5,100	3,200	3,141
Mud Cr.- Summit L.	800	2,600	3,075	3,400	17,400	5,700	9,600	8,150	3,375	9,050	15,400	6,315
Long Lake	1,425	3,100	2,650	1,325	1,700	5,600	1,360	590	1,300	1,225	1,125	2,028
Tonsina Lake	4	775	650	1,725	1,700	2,850	975	290	350	740	650	1,006
Totals	21,388	27,723	46,105	70,920	82,145	70,810	85,790	46,165	49,593	54,540	58,281	55,518

a The escapement figures in this table are based on peak aerial survey estimates and weir counts from a majority of the known salmon spawning areas in the upper Copper River drainage. These indices are not intended to provide a true estimate of total escapement for these stocks, but a comparable index based upon the best data currently available. An effort has been made to standardize the estimate across years, however counts were obtained only as environmental conditions allow and may not necessarily corresponed to periods of peak abundance. Missing counts are generally a result of bad weather, high water, turbulence or other factors that prevent surveys for that given year.

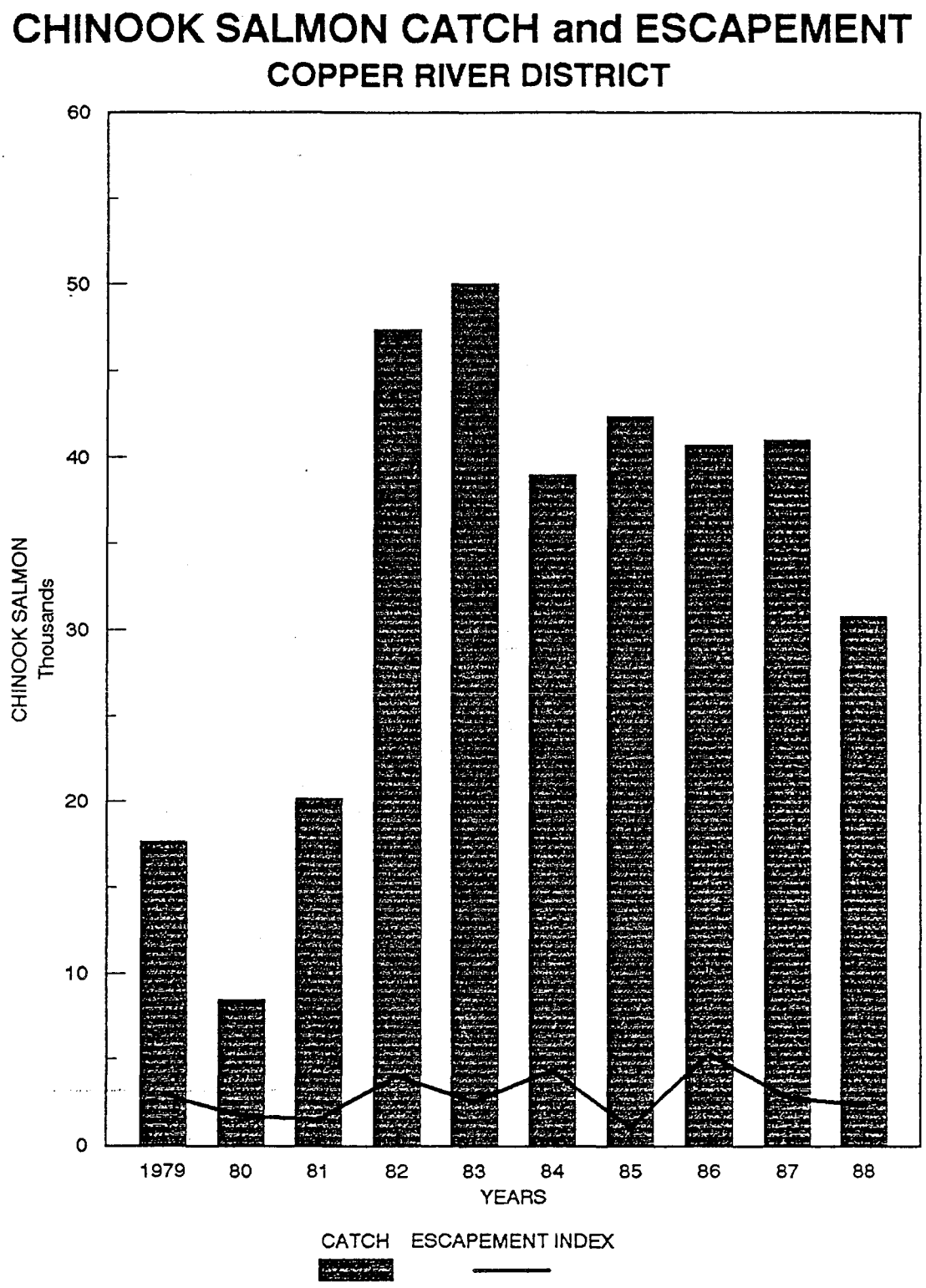
Appendix B.14. Aerial survey indices of chinook salmon escapement to the Copper River drainage, 1978 - 1988. a

Location	Yearly Survey Indices											10 Year Average 1978 - 1987
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	
East Fork Chistochina	137	810	575	120	1,260	575	577	360	618	764	684	580
Gulkana River	921	1,380	718	754	1,656	931	2,189	321	3,182	1,228	967	1,328
Mendeltna Creek	52	5	3	51	70	12	26	26	76	10	17	33
Kiana Creek	125	279	247	191	200	166	382	91	328	80	249	209
St. Anne Creek	24	16	8	19	35	87	89	15	182	192	62	67
Manker Creek	20	16	35	23	49	141	264	22	251	141	115	96
Grayling Creek	92	153	66	107	127	287	279	58	224	112	161	151
Little Tonsina River	285	285	70	191	440	330	568	203	424	247	75	304
Indian River	9	29	24	20	179	41	17	14	29	33	0	40
Total without interpolated counts	1,665	2,973	1,746	712	4,016	2,570	4,391	1,110	5,285	2,807	2,330	2,728
Counts Missing				2					1			
Total with interpolated counts	1,665	2,973	1,746	1,476	4,016	2,570	4,391	1,110	5,314	2,807	2,330	2,807

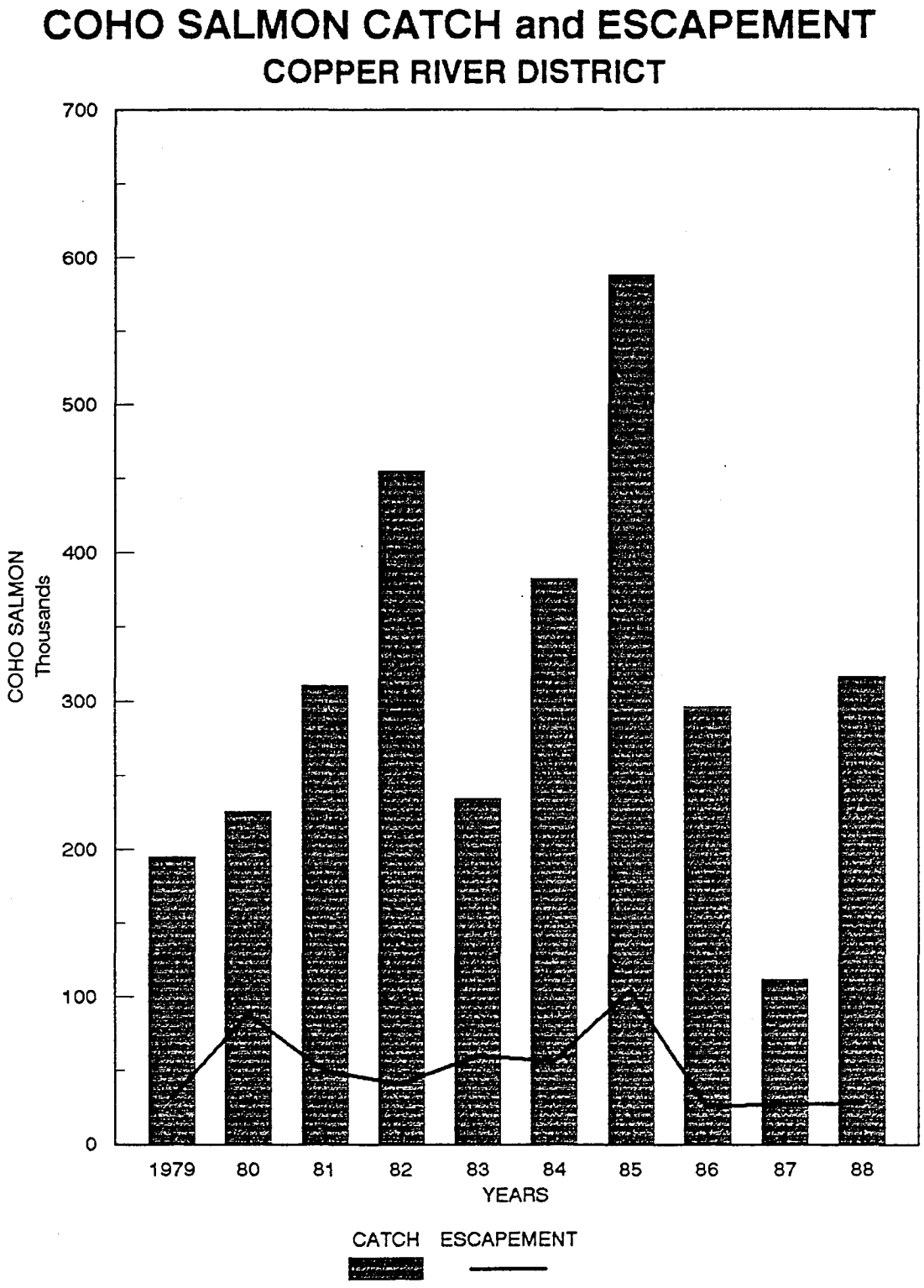
a The escapement figures in this table are based on peak aerial survey estimates and weir counts from a majority of the known salmon spawning areas in the upper Copper River drainage. These indices are not intended to provide a true estimate of total escapement for these stocks, but a comparable index based upon the best data currently available. An effort has been made to standardize the estimate across years, however counts were obtained only as environmental conditions allow and may not necessarily correspond to periods of peak abundance. Missing counts are generally a result of bad weather, high water, turbulence or other factors that prevented surveys for that given year.



Appendix B.15. Sockeye salmon catch and escapement in the Copper River District, 1979 - 1988.



Appendix B.16. Chinook salmon catch and escapement in the Copper River District, 1979 - 1988.



Appendix B.17. Coho salmon catch and escapement in the Copper River District, 1979 - 1988.

Appendix B.18. Estimated age and sex composition of the commercial sockeye salmon catch in the Copper River District drift gill net fishery, 1988.

		Brood Year and Age Group											
		1985		1984			1983			1982		1981	
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4	Total
Catch Dates:	5/16 - 9/13												
Sample Dates:	5/16 - 7/30												
Sample Size:	5,058												
Female	Percent of Sample	0.3	0.0	4.2	9.0	0.0	0.1	30.4	0.8	0.4	5.8	0.0	51.0
	Number in Catch	1,883	0	24,141	51,827	0	390	175,565	4,574	2,428	33,471	46	294,325
Male	Percent of Sample	0.5	0.0	4.5	11.3	0.0	0.1	26.9	0.9	0.5	4.2	0.1	49.0
	Number in Catch	2,644	209	26,183	65,083	79	501	154,995	5,262	3,145	24,169	355	282,625
Total	Percent of Sample	0.8	0.0	8.7	20.3	0.0	0.2	57.3	1.7	1.0	10.0	0.1	100.0
	Number in Catch	4,527	209	50,324	116,910	79	891	330,560	9,836	5,573	57,640	401	576,950
	Standard Error	665	131	2,746	3,175	59	353	4,480	1,245	953	2,823	255	

Appendix B.19. Estimated age and sex composition of the commercial chinook salmon catch in the Copper River District drift gill net fishery, 1988.

		Brood Year and Age Group											
		1985		1984		1983			1982		1981		
		0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	1.5	2.4	Total
Catch Dates:	5/16 - 9/08												
Sample Dates:	5/17 - 6/11												
Sample Size:	1,752												
Female	Percent of Sample	0.0	0.0	0.0	0.8	0.0	10.1	0.0	27.3	1.5	0.1	2.1	41.9
	Number in Catch	0	0	0	252	0	3,099	0	8,404	464	18	644	12,881
Male	Percent of Sample	0.0	0.0	0.0	1.2	0.0	11.6	0.0	41.0	1.6	0.1	2.4	58.1
	Number in Catch	12	12	12	375	12	3,554	12	12,599	507	37	728	17,860
Total	Percent of Sample	0.0	0.0	0.0	2.0	0.0	21.6	0.0	68.3	3.2	0.2	4.5	100.0
	Number in Catch	12	12	12	627	12	6,653	12	21,003	972	55	1,371	30,741
	Standard Error	11	11	11	101	11	309	11	353	140	29	162	

Appendix B.20. Estimated age and sex composition of the commercial coho catch in the Copper River District drift gill net fishery, 1988.

		Brood Year and Age Group					
		1986	1985	1984	1983	1982	
		0.1	1.1	2.1	3.1	4.1	Total
Catch Dates:	5/16 - 9/13						
Sample Dates:	8/10 - 9/08						
Sample Size:	1298						
Female	Percent of Sample	0.0	17.4	17.5	1.2	0.0	36.2
	Number in Catch	0	54,957	55,231	3,895	0	114,083
Male	Percent of Sample	0.0	32.9	29.7	1.3	0.0	63.8
	Number in Catch	0	103,702	93,651	4,132	0	201,485
Total	Percent of Sample	0.0	50.3	47.2	2.5	0.0	100.0
	Number in Catch	0	158,660	148,882	8,027	0	315,568
	Standard Error	0	4,478	4,470	1,438	0	

Appendix B.21. Commercial salmon harvest by period in the Bering River District drift gill net fishery, 1988.

Period	(a) Date	(b) Hours	Permits	Landings	Chinook		Sockeye		Coho		Pink		Chum	
					Numbers	Pound	Number	Pound	Number	Pound	Number	Pound	Number	Pound
01	6/20	24	37	62	11	263	5,519	33,012	0	0	0	0	0	0
02	6/23	24	16	18	4	126	1,078	6,409	0	0	1	3	2	21
03	6/27	24	3	3	0	0	499	3,399	0	0	0	0	0	0
04	6/30	24	3	3	0	0	15	100	1	5	1	5	30	242
05	7/04	24	0	0	0	0	0	0	0	0	0	0	0	0
06	7/07	24	0	0	0	0	0	0	0	0	0	0	0	0
07	7/11	24	0	0	0	0	0	0	0	0	0	0	0	0
08	7/14	24	0	0	0	0	0	0	0	0	0	0	0	0
09	7/18	24	0	0	0	0	0	0	0	0	0	0	0	0
10	7/21	24	0	0	0	0	0	0	0	0	0	0	0	0
11	7/25	24	0	0	0	0	0	0	0	0	0	0	0	0
12	7/28	24	0	0	0	0	0	0	0	0	0	0	0	0
13	8/01	24	9	10	0	0	6	37	607	6,026	9	54	0	0
14	8/04	24	0	0	0	0	0	0	0	0	0	0	0	0
15	8/08	48	3	3	0	0	7	40	108	883	1	4	1	9
16	8/15	72	5	14	0	0	4	26	1,706	14,860	3	12	0	0
17	8/22	72	53	142	3	72	9	61	16,776	160,546	6	22	148	1,480
18	8/29	72	94	329	1	29	6	43	30,438	294,224	2	7	0	0
19	9/05	72	120	383	0	0	9	56	30,072	300,137	0	0	0	0
20	9/12	24	58	88	0	0	0	0	6,831	69,400	0	0	0	0
Total			158	1,055	19	490	7,152	43,183	86,539	846,081	23	107	181	1,752
Average Weight						25.79		6.04		9.78		4.65		9.68

a Starting date of period.

b Starting times for specific openings refer to Apenndix B.29.

Appendix B.22. Aerial escapement indices by date and location for sockeye salmon returning to the Bering River Delta, 1988.

Bering River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date							
		09 Jun	14 Jun	22 Jun	25 Jun	31 Jun	07 Jul	15 Jul	21 Jul
Bering River	Bering River	0	470	NS	100	50	1,700	NS	400 *
	Bering Lake	0	60	NS	700	4,900 +	9,700	NS	9,000 *
	Dick Creek	0	0	NS	0	0	0	NS	2,050 *
	Shepherd Creek - Lagoon	0	0	NS	0	450	200	NS	300 *
	Shepherd Creek	NS	NS	NS	NS	NS	0	NS	500 *
	Carbon Creek	NS	NS	NS	NS	NS	0	NS	150 *
	Maxwell Creek	NS	NS	NS	NS	NS	NS	NS	0 *
	Trout Creek	NS	NS	NS	NS	NS	NS	NS	0
	Clear Creek	NS	NS	NS	NS	NS	NS	NS	0
	Kushtake Lake	NS	NS	NS	NS	NS	0	NS	0
	Shokum Creek	NS	NS	NS	NS	NS	0	NS	0
Katalla River	Katalla River	0	0	NS	0	40	300	NS	150
Bering River Total		0	530	0	800	5,440	11,900	0	12,550

Bering River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date							
		28 Jul	5-6 Aug	14 Aug	19 Aug	28 Aug	06 Sep	09 Sep	15 Sep
Bering River	Bering River	200	NS	0	0	NC	NC	NS	0
	Bering Lake	4,200 +	NS	450	215	100	0	NS	0
	Dick Creek	4,100 +	NS	1,670	120	0	0	NS	60 +
	Shepherd Creek - Lagoon	0	NS	10	0	NS	0	NS	0
	Shepherd Creek	600 +	NS	150	NS	NS	NS	NS	NS
	Carbon Creek	120	NS	NS	NS	NS	NS	NS	NS
	Maxwell Creek	0	NS	NS	NS	NS	NS	NS	NS
	Trout Creek	0 *	NS	NS	NS	NS	0	NS	0
	Clear Creek	100 *	NS	NS	NS	NS	0	NS	0
	Kushtake Lake	10 +	NS	180 *	70	NS	10	NS	0
	Shokum Creek	20 +	NS	300 *	30	NS	0	NS	0
Katalla River	Katalla River	350 *	NS	150	15	NS	0	NS	0
Bering River Total		9,700	0	2,910	450	100	10	0	60

-Continued-

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Bering River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date				Estimated Escapement	
		22 Sep	27 Sep	16 Oct	31 Oct	Site b	System c
Bering River	Bering River	NC	NC	NS	0	400	11,450
	Bering Lake	NC	0	NS	0	9,000	
	Dick Creek	25	50	NS	0	2,050	
	Shepherd Creek - Lagoon	0	0	NS	0	300	950
	Shepherd Creek	NS	NS	NS	NS	500	
	Carbon Creek	NS	NS	NS	NS	150	
	Maxwell Creek	NS	NS	NS	NS	0	
	Trout Creek	NS	NS	NS	NS	0	0
	Clear Creek	NS	NS	NS	NS	100	100
	Kushtake Lake	NS	NS	NS	NS	180	480
	Shokum Creek	NS	NS	NS	NS	300	
Katalla River	Katalla River	NC	0	NS	0	350	350
Bering River Total		25	50	0	0		13,330

a The survey sites represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainage. Weather permitting, the sites are surveyed weekly. The surveys provide information about the relative strength of escapement among years and within a year, time for spawning sites and the relative escapement strength among sites. The indices are not intended to provide an actual estimate of escapement for coastal stocks but they have been for the purpose in the absence of any other escapement estimating method. The abbreviations used in the following table have the following meanings: NS= no survey, NC= surveyed but no count due to poor conditions. The + sign after some counts indicate that the count is the minimum estimate of seen in less then ideal conditions. The * symbol indicates that this survey count was used as the peak survey for the site without duplication of counts for survey sites along migratory corridors (see footnote b).

b The escapement estimates for each site is in the astricted survey estimate. Where the survey site is a terminal spawning area the peak count is used however, if the site is a schooling area for migratory fish bound for sites further upstream the count which minimizes possible duplication counts across dates selected.

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

Appendix B.23. Commercial salmon catch by species in the Bering River District, 1971 - 1988.

Year	Catch by Species					
	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	105	36,776	88,231	4	0	125,116
1972	107	51,445	19,825	3	1	71,381
1973	285	15,426	65,348	2	5	81,066
1974	32	4,208	28,615	7	2	32,864
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 a	0	0	108,872	0	0	108,872
1981	200	55,585	82,626	9,882	8,307	156,600
1982	254	129,667	144,752	47	333	275,053
1983	610	179,273	117,669	851	4,615	303,018
1984	330	91,784	214,632	309	20,408	327,463
1985	215	26,561	419,276	214	9,642	455,908
1986	128	19,038	115,809	15	243	135,233
1987	34	16,926	15,864	54	7	32,885
1988	19	7,152	86,539	23	181	93,914
Ten Year Average (1978-87)	249	69,140	142,464	1,853	6,904	220,611

a In 1980 no fishing was allowed prior to August 11.

Appendix B.24. Aerial escapement indices by date and location for coho salmon returning to the Bering River Delta, 1988.

Bering River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date							
		5-6 Aug	14 Aug	19 Aug	28 Aug	06 Sep	09 Sep	15 Sep	26 Sep
Bering River	Bering River	NS	1,000	0	NC	NC	NS	0	NC
	Bering Lake	NS	0	0	2,350+*	NC	NS	775	NC
	Dick Creek	NS	0	0	105 *	130	NS	180	60
	Shepherd Creek - Lagoon	NS	0	0	NS	70+*	NS	0	20
	Shepherd Creek	NS	0	0	NS	NS	NS	NS	NS
	Carbon Creek	NS	NS	NS	NS	NS	NS	NS	NS
	Maxwell Creek	NS	NS	NS	NS	NS	NS	NS	NS
	Trout Creek	NS	NS	NS	NS	NS	NS	0 *	NS
	Clear Creek	NS	NS	NS	NS	NS	NS	0 *	NS
	Kushtake Lake	NS	0	0	NS	0	NS	0 *	NS
	Shokum Creek	NS	0	0	NS	0	NS	0 *	NS
Katalla River	Katalla River	NS	300	0	NS	560 *	NS	200 +	NC
Nichawek River	Nichawek River	NS	0	15	300 +	570 +	NS	780	3,125
Controller Bay Strms.	Controller Bay Streams	NS	0	0	200 +.	1,370 +	NS	3,325 +	4,660+*
Bering River Total		0	1,300	15	2,955	2,700	0	5,260	7,865

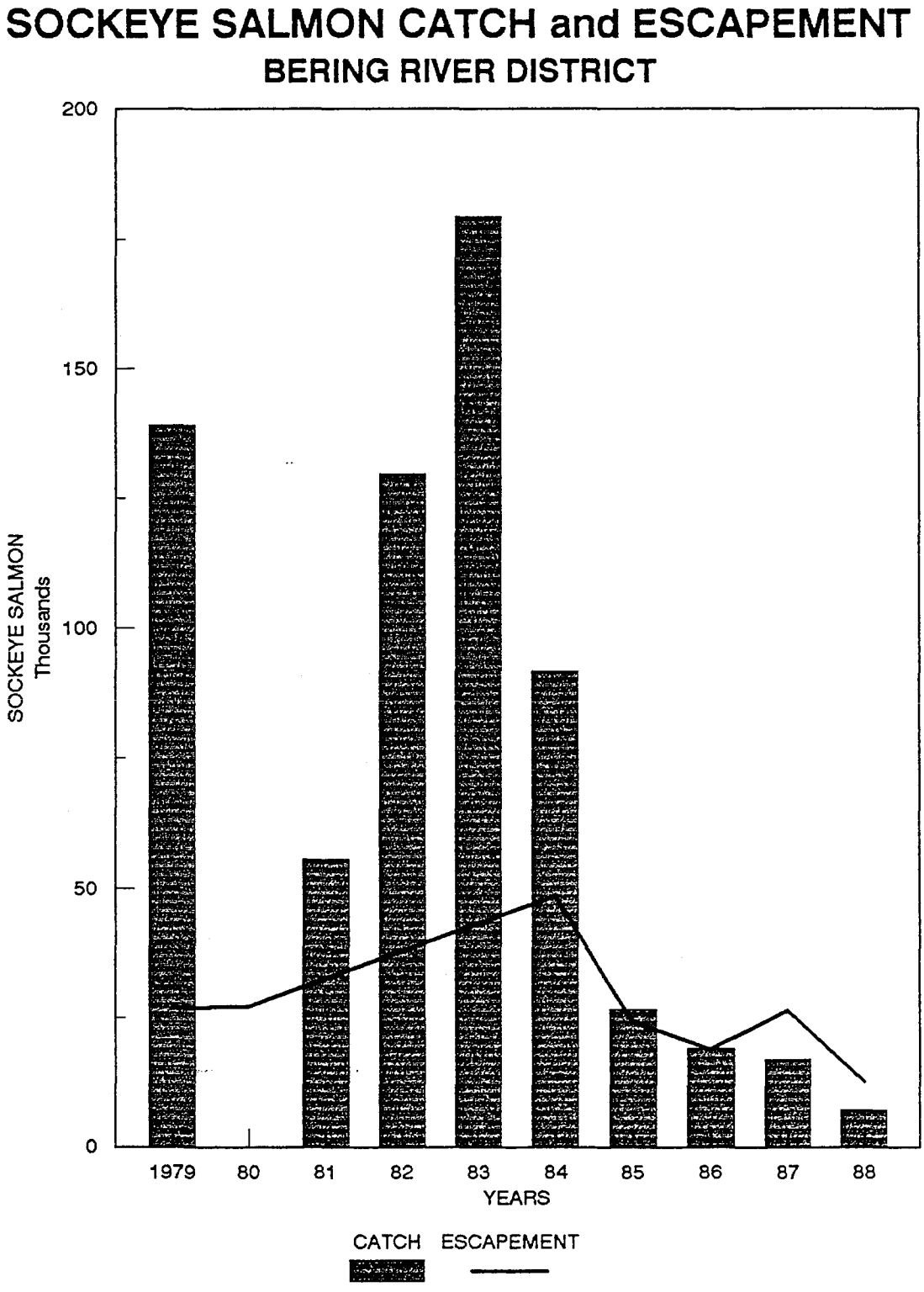
Bering River Delta System and Drainage	Survey System	Aerial Escapement Indices by Survey Date			Estimated Escapment	
		27 Sep	16 Oct	31 Oct	Site b	System c
Bering River	Bering River	NC	NS	0	1,000	3,455
	Bering Lake	2,005	NS	905	2,350	
	Dick Creek	250	NS	5	105	
	Shepherd Creek - Lagoon	0	NS	0	70	70
	Shepherd Creek	NS	NS	NS	NS	
	Carbon Creek	NS	NS	NS	NS	
	Maxwell Creek	NS	NS	NS	NS	
	Trout Creek	NS	NS	NS	0	0
	Clear Creek	NS	NS	NS	0	0
	Kushtake Lake	NS	NS	NS	0	0
	Shokum Creek	NS	NS	NS	0	0
Katalla River	Katalla River	100	NS	15	560	560
Nichawak River	Nichawak River	3,670 *	NS	50	3,670	3,670
Controller Bay Strms.	Controller Bay Streams	3,270 +	NS	120	4,660	4,660
Bering River Total		9,295	0	1,095		12,415

-Continued-

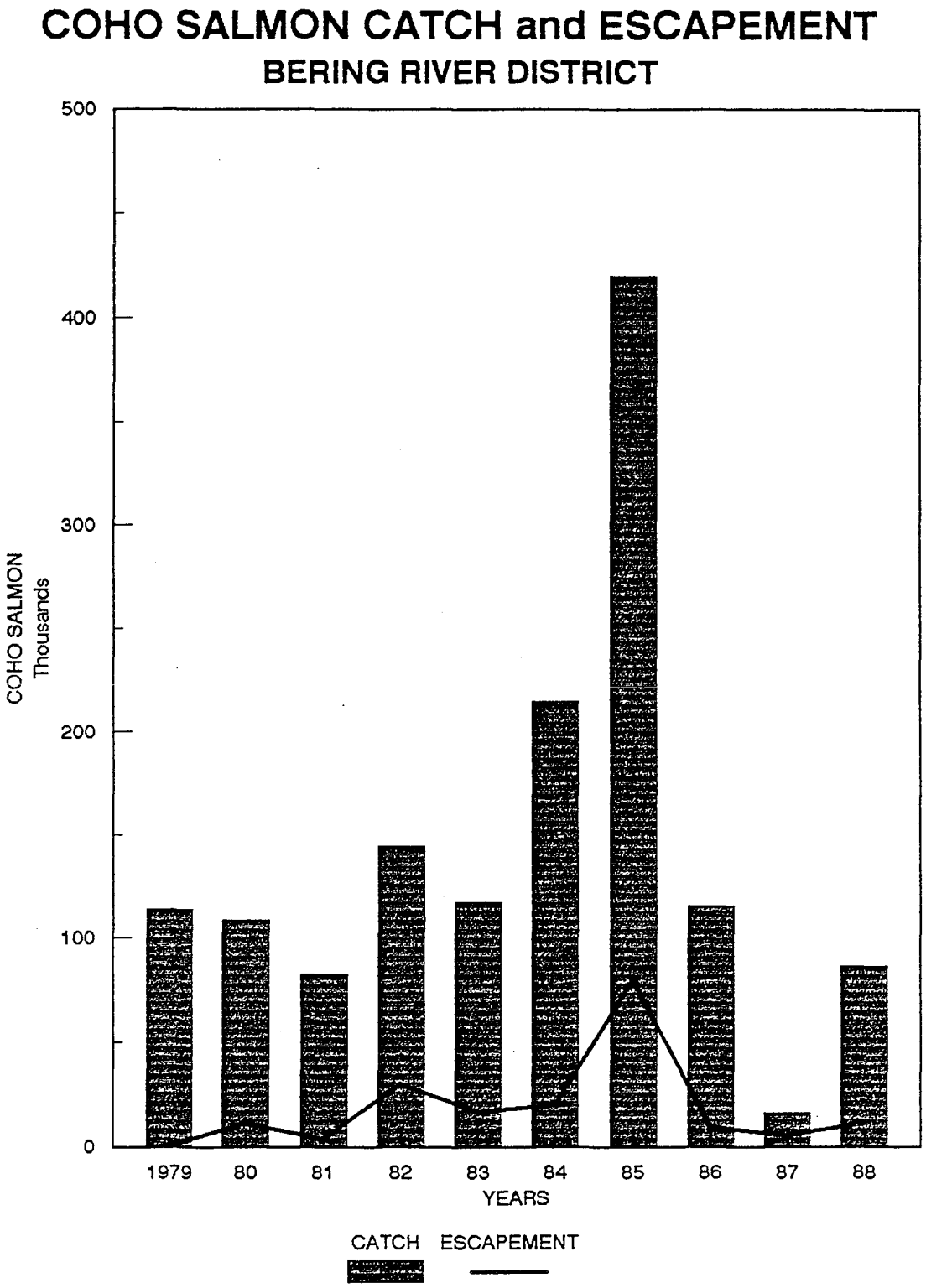
a The survey sites represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainage. Weather permitting, the sites are surveyed weekly. The surveys provide information about the relative strength of escapement among years and within a year, time for spawning sites and the relative escapement strength among sites. The indices are not intended to provide an actual estimate of escapement for coastal stocks, but they have been for the purpose in the absence of any other escapement estimating method. The abbreviations used in the following table have the following meanings: NS= no survey, NC= surveyed but no count due to poor conditions. The + sign after some counts indicate that the count is the minimum estimate of seen in less then ideal conditions. The * symbol indicates that this survey count was used as the peak survey for the site without duplication of counts for survey sites along migratory corridors (see footnote b).

b The escapement estimates for each site is in the astricted survey estimate. Where the survey site is a terminal spawning area the peak count is used however, if the site is a schooling area for migratory fish bound for sites further upstream the count which minimizes possible duplication counts across dates selected.

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



Appendix B.25. Sockeye salmon catch and escapement in the Bering River District, 1979 - 1988.



Appendix B.26. Coho salmon catch and escapement in the Bering River District, 1979 - 1988.

Appendix B.27. Estimated age and sex composition of the commercial sockeye salmon catch in the Bering River District drift gill net fishery, 1988.

		Brood Year and Age Group							
		1985	1984		1983			1982	
		0.2	0.3	1.2	0.4	1.3	2.2	1.4	Total
Catch Dates:	6/20 - 9/13								
Sample Dates:	6/21								
Sample Size:	696								
Female	Percent of Sample	0.3	5.2	9.8	0.1	35.2	0.1	0.4	51.1
	Number in Catch	21	372	701	7	2,518	7	29	3,655
Male	Percent of Sample	0.6	6.0	15.1	0.3	26.1	0.1	0.7	48.9
	Number in Catch	43	429	1,080	21	1,867	7	50	3,497
Total	Percent of Sample	0.9	11.2	24.9	0.4	61.3	0.2	1.1	100.0
	Number in Catch	64	801	1,781	28	4,385	14	79	7,152
	Standard Error	26	86	117	17	132	12	28	

Appendix B.28. Estimated age and sex composition of the commercial coho salmon catch in the Bering River District drift gill net fishery, 1988.

		Brood Year and Age Group			
		1985	1984	1983	
		1.1	2.1	3.1	Total
Catch Dates:	6/20 - 9/13				
Sample Dates:	8/26 - 9/13				
Sample Size:	853				
Female	Percent of Sample	35.2	17.3	0.3	52.8
	Number in Catch	30,466	15,008	231	45,705
Male	Percent of Sample	28.6	18.3	0.3	47.2
	Number in Catch	24,732	15,833	269	40,834
Total	Percent of Sample	63.8	35.6	0.6	100.0
	Number in Catch	55,198	30,841	500	86,539
	Standard Error	1,577	1,575	491	

Appendix B.29. Summary of periods, dates, hours fished, and emergency orders issued for the commercial salmon gill net fisheries in the Bering River and Copper River districts, 1988.

Bering River (200)			Copper River (212)			
Periods	Dates	Hours Fished	Periods	Dates	Hours Fished	Emergency Orders Issued
			1	5/16 - 5/17	24	a 2-F-E-07-88
			2	5/23 - 5/24	24	b 2-F-E-08-88
			3	5/26 - 5/28	36	c 2-F-E-09-88
			4	5/30 - 5/31	36	d 2-F-E-10-88
			5	6/02 - 6/03	12	e 2-F-E-11-88
			6	6/09 - 6/10	24	2-F-E-12-88
			7	6/13 - 6/14	24	2-F-E-13-88
			8	6/16 - 6/17	24	2-F-E-15-88
1	6/20 - 6/21	24	9	6/20 - 6/21	24	f 2-F-E-17-88
2	6/23 - 6/24	24	10	6/23 - 6/24	24	
3	6/27 - 6/28	24	11	6/27 - 6/28	24	
4	6/30 - 7/01	24	12	6/30 - 7/01	24	
5	7/04 - 7/05	24	13	7/04 - 7/05	24	
6	7/07 - 7/08	24	14	7/07 - 7/08	24	
7	7/11 - 7/12	24	15	7/11 - 7/12	24	
8	7/14 - 7/15	24	16	7/14 - 7/15	24	
9	7/18 - 7/19	24	17	7/18 - 7/19	24	
10	7/21 - 7/22	24	18	7/21 - 7/22	24	
11	7/25 - 7/26	24	19	7/25 - 7/26	24	
12	7/28 - 7/29	24	20	7/28 - 7/29	24	
13	8/01 - 8/02	24	21	8/01 - 8/02	24	
14	8/04 - 8/05	24	22	8/04 - 8/05	24	
15	8/08 - 8/10	48	23	8/08 - 8/10	48	g 2-F-E-27-88
16	8/15 - 8/18	72	24	8/15 - 8/18	72	h 2-F-E-31-88
17	8/22 - 8/25	72	25	8/22 - 8/25	72	
18	8/29 - 9/01	72	26	8/29 - 9/01	72	
19	9/05 - 9/08	72	27	9/05 - 9/08	72	
20	9/12 - 9/13	24	28	9/12 - 9/13	24	i 2-F-E-40-88
	9/19	0		9/19	0	j 2-F-E-41-88

a The Copper River and Bering River districts fishing season is officially opened for a first period of 24 hrs. beginning Monday at 7 a.m.

b Only gill nets with 6 inch or smaller mesh allowed after 7 a.m., May 23.

c A 36 hr. period will be open from 7 p.m. Thurday to 7 a.m. Saturday. In addition, a 24 hr. period was announced for Monday, May 30 beginning at 7 a.m.

d This announcement extends the previously announced opener on May 30 to 36 hrs. and adds a second period beginning 7 p.m. Thursday, June 2 beginning at 7 p.m.

e This announcement reduces the previously announced period from 24 hrs. to 12 hrs.

f Until further notice, the Copper River and Bering River districts will be open for 2 - 24 hr. fishing periods per week from 7 a.m. Monday until 7 a.m. Tues and from 7 p.m. Thrusday until 7 p.m. Friday.

g Until further notice, the Copper River and Bering River districts will be open for one 48 hr. fishing period per week from 12 Noon Monday, Aug 8 until Wed. at 12 Noon.

h The previously announced 48 hr. period has been increased to 72 hrs. from 12 Noon, Monday, August 15 until 12 Noon, Thursday, and will remain 72 hrs. until further notice.

i Copper River and Bering River district fishing periods are reduced to 24 hrs. as of 12 Noon, Monday, September 12 to Tuesday, at 12 Noon.

j This announcement officially closes the 1988 Copper and Bering River districts seasons.

Appendix C.1. Commercial salmon harvest by period in the Coghill District commercial drift gill net and purse seine fisheries, Prince William Sound, 1988.

Period Date	Hours		Permits	Chinook Number	Chinook Pounds	Sockeye Number	Sockeye Pound	Coho Number	Coho Pound	Pink Numbers	Pink Pounds	Chum Number	Chum Pounds
DRIFT GILL NET													
6/20-6/22	48	a	159	97	1,516	7,447	46,828	0	0	122	454	131,785	1,143,848
6/27-6/29	48	b	327	74	962	11,232	73,586	2	12	4,859	19,015	93,195	814,835
7/03-7/09	156	c	360	262	2,648	42,779	285,311	16	111	6,409	24,971	87,133	755,685
7/10-7/15	141	d	138	47	498	14,333	99,341	1	8	797	3,418	8,787	81,490
8/05-8/06	24	d	292	1	20	1,218	8,354	341	2,710	82,158	317,630	4,198	34,974
8/10-8/13	51	e	248	5	51	2,752	18,740	2,650	20,993	427,462	1,595,932	10,002	78,680
8/14-8/20	168	f	231	9	116	1,490	10,743	5,008	40,428	485,288	1,813,972	6,166	750,136
8/21-8/27	168	f	167	5	67	649	4,704	4,717	40,962	197,047	747,854	2,836	22,024
8/28-9/03	168	f	78	1	7	136	941	8,135	77,339	97,068	371,693	1,460	10,506
9/04-9/10	168	f	71	0	0	141	926	10,365	106,509	12,333	45,791	656	4,238
9/11-9/17	168	f	64	0	0	110	776	8,730	89,203	512	1,941	152	1,069
9/18-9/24	168	f	23	0	0	7	46	1,342	13,931	6	24	18	159
Total			440	501	5,885	82,294	550,296	41,307	392,206	1,314,061	4,942,695	346,388	3,697,644
Average Weight					11.75		6.69		9.49		3.76		10.67
PURSE SEINE													
7/06-7/09	96	d	3	0	0	48	287	0	0	321	1,120	436	3,588
7/10-7/15	141	d					No Effort						
8/05-8/06	24	e	20	3	29	231	1,492	98	670	37,512	127,551	1,449	12,551
8/10-8/13	51	e	72	1	12	535	3424	611	4579	397931	1390981	3927	31160
8/14-8/20	168	f	75	18	235	587	4287	4525	33918	790750	2865626	3289	27698
8/21-8/27	168	f	59	38	324	196	1328	3053	25390	267895	961407	2359	19122
8/28-9/03	168	f	25	3	20	26	176	5385	50921	94769	344972	231	1619
9/04-9/10	168	f	11	0	0	0	0	2115	20972	11303	39605	64	569
Purse Seine Total			117	63	620	1,623	10,994	15,787	136,450	1,600,481	5,731,262	11,755	96,307
Average Weight					9.84		6.77		8.64		3.58		8.19
Combined Total				564	6,505	83,917	561,290	57,094	528,656	2,914,542	10,673,957	358,143	3,793,951
Average Weight					11.53		6.69		9.26		3.66		10.59

a Starting date of period.

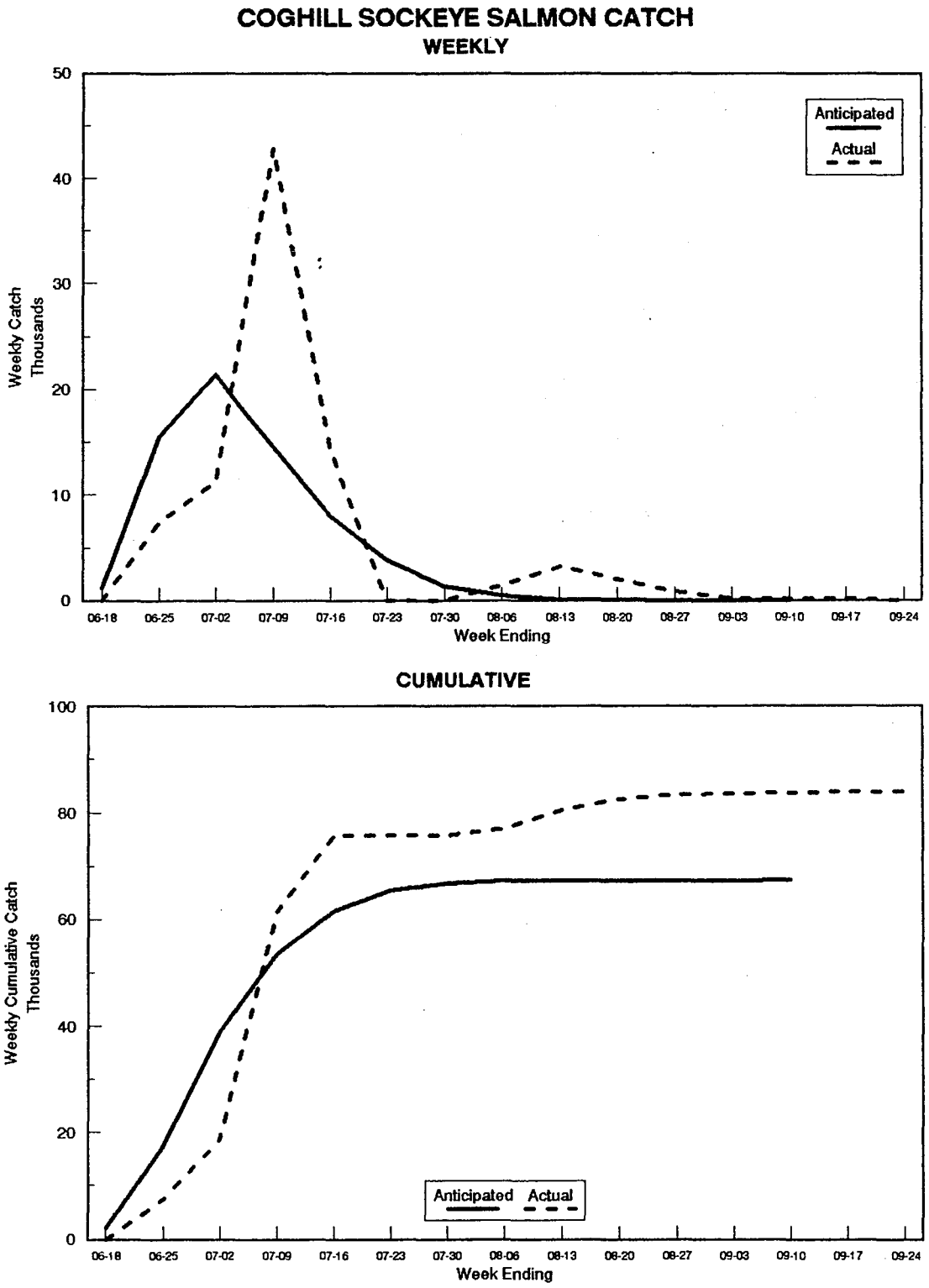
b The Esther Hatchery Sanctuary Zone was closed. This included the waters of Lake and Quillion Bay inside a line from Esther light to Hodgkin's Point.

c The Esther Hatchery Secondary Terminal Harvest Area and Sanctuary Zone was closed to fishing.

d From 1200 July 03 to 1200 July 05 the entire Coghill District was open except for a portion of the Esther Hatchery Secondary Terminal Harvest Area and the Sanctuary Zone was closed to fishing. Effective 1200 July 03 deep drift gill net gear was allowed. From 1530 July 03 to 1200 July 09 fishing remained open north of 60 56.0 N. latitude. By regulation purse seine can only be used after July 05. From 1200 July 09 to 2100 July 15 only those waters north of 61 00.0 N. latitude was open.

e Only the Esther Hatchery Primary and Secondary Terminal Harvest Area was open to fishing.

f From 0900 August 10 until 1200 August 22 and from 1200 August 28 until 1200 September 05 and from 1200 September 07 until 1200 September 25 only the Esther Hatchery Primary and Secondary Terminal Harvest Area and Sanctuary Zone was open. From 1200 August 22 until 1200 August 28 and from 1200 September 05 until 1200 September 07 only the Esther Hatchery Primary and Secondary Terminal Harvest Area was open to fishing.



Appendix C.2. Anticipated and actual weekly and cumulative catches of sockeye salmon in the Coghill District based on a projected harvest of 67,500 fish, 1988.

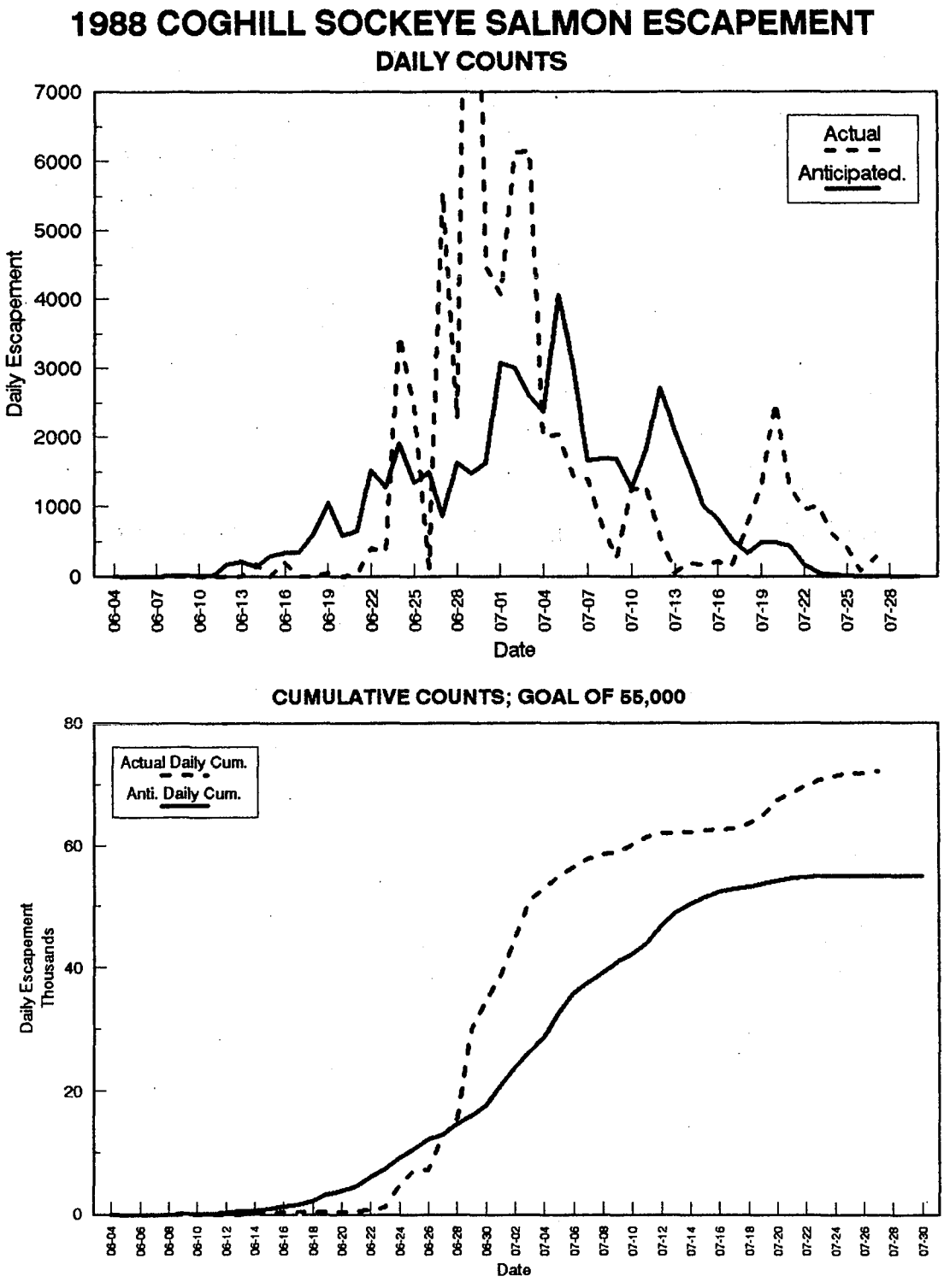
Appendix C.3. Commercial salmon catch by species in the Coghill District, Prince William Sound, 1974 - 1988.

Year	Catch by Species					
	Chinook	Sockeye	Coho	Pink	Chum	Total
Gear: Drift Gill Net						
1974	156	95,610	103	98,149	51,428	245,446
1975	525	142,864	357	99,492	32,438	275,676
1976	102	54,334	72	53,219	89,170	196,897
1977	124	154,342	49	332,859	127,476	614,850
1978	469	193,899	64	49,527	110,679	354,638
1979	543	75,753	1,837	259,372	56,916	394,421
1980	107	56,957	1,053	355,684	68,071	481,872
1981	152	101,058	1,008	526,739	131,399	760,356
1982	127	929,965	213	181,925	252,077	1,364,307
1983	340	38,273	1,013	233,263	234,022	506,911
1984	396	94,956	563	897,496	264,878	1,258,289
1985	380	339,296	1,131	454,531	246,824	1,042,162
1986	617	381,565	789	68,887	218,971	670,829
1987	352	377,454	13,396	712,897	318,842	1,422,941
1988	501	82,294	41,307	1,314,061	346,388	1,784,551
Ten Year Average (1978-87)	348	258,918	2,107	374,032	190,268	825,673
Gear: Purse Seine						
1974	192	4,273	22	54,268	7,720	66,475
1975	246	4,985	30	145,155	2,561	152,977
1976	83	6,159	29	56,967	30,328	93,566
1977	40	16,436	50	230,215	37,102	283,843
1978	206	9,623	34	13,059	14,007	36,929
1979	692	3,047	55	38,560	5,709	48,063
1980	0	2,159	0	134,876	4,702	141,737
1981	1	1,997	0	34,083	23,378	59,459
1982	23	17,466	29	1,006,579	135,553	1,159,650
1983	0	175	16	41,048	8,958	50,197
1984	0	21	0	10,911	1,126	12,058
1985	85	10,757	112	69,242	19,330	99,526
1986	186	18,514	98	145,706	27,078	191,582
1987	58	38,899	1,956	865,671	59,252	965,836
1988	63	1,623	15,787	1,600,481	11,755	1,629,709
Ten Year Average (1978-87)	125	10,266	230	235,974	29,909	276,504
Gear: Combined Gear						
1975	771	147,849	389	244,647	34,999	428,655
1976	185	60,493	101	110,186	119,498	290,463
1977	164	170,778	99	563,074	164,578	898,693
1978	675	203,522	98	62,586	124,686	391,567
1979	1,235	78,800	1,892	297,932	62,625	442,484
1980	107	59,116	1,053	490,560	72,773	623,609
1981	153	103,055	1,008	560,822	154,777	819,815
1982	150	947,431	242	1,188,504	387,630	2,523,957
1983	340	38,448	1,029	274,311	242,980	557,108
1984	396	94,977	563	908,407	266,004	1,270,347
1985	465	350,053	1,243	523,773	266,154	1,141,688
1986	803	400,079	887	214,593	246,049	862,411
1987	410	416,353	15,352	1,578,568	378,094	2,388,777
1988	564	83,917	57,094	2,914,542	358,143	3,414,260
Ten Year Average (1978-87)	473	269,183	2,337	610,006	220,177	1,102,176

Appendix C.4. Daily salmon escapement at the Coghill River weir, Prince William Sound, 1988.

	Sockeye (a)		Pink		Chum		King	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
06/10	0	0	0	0	0	0	0	0
06/11	0	0	0	0	0	0	0	0
06/12	0	0	0	0	0	0	0	0
06/13	0	0	0	0	0	0	0	0
06/14	178	178	0	0	0	0	0	0
06/15	0	178	0	0	0	0	0	0
06/16	208	386	0	0	0	0	0	0
06/17	0	386	0	0	0	0	0	0
06/18	0	386	0	0	0	0	0	0
06/19	60	446	0	0	0	0	0	0
06/20	0	446	0	0	0	0	0	0
06/21	25	471	0	0	0	0	0	0
06/22	400	871	0	0	0	0	0	0
06/23	358	1,229	0	0	0	0	0	0
06/24	3,477	4,706	0	0	0	0	0	0
06/25	2,438	7,144	0	0	0	0	0	0
06/26	127	7,271	0	0	0	0	0	0
06/27	5,564	12,835	0	0	0	0	0	0
06/28	2,264	15,099	0	0	0	0	0	0
06/29	15,021	30,120	0	0	0	0	0	0
06/30	4,478	34,598	0	0	0	0	0	0
07/01	4,093	38,691	0	0	3	3	0	0
07/02	6,121	44,812	0	0	16	19	0	0
07/03	6,166	50,978	0	0	16	35	0	0
07/04	2,011	52,989	0	0	1	36	0	0
07/05	2,046	55,035	0	0	3	39	1	1
07/06	1,446	56,481	0	0	0	39	1	2
07/07	1,406	57,887	0	0	0	39	0	2
07/08	723	58,610	0	0	4	43	0	2
07/09	270	58,880	0	0	2	45	0	2
07/10	1,246	60,126	0	0	4	49	1	3
07/11	1,302	61,428	0	0	4	53	3	6
07/12	570	61,998	0	0	5	58	0	6
07/13	51	62,049	0	0	3	61	0	6
07/14	189	62,238	2	2	1	62	0	6
07/15	180	62,418	0	2	5	67	0	6
07/16	212	62,630	0	2	5	72	0	6
07/17	160	62,790	1	3	6	78	0	6
07/18	756	63,546	18	21	9	87	0	6
07/19	1,295	64,841	35	56	17	104	0	6
07/20	2,508	67,349	88	144	69	173	0	6
07/21	1,317	68,666	64	208	62	235	2	8
07/22	960	69,626	61	269	47	282	0	8
07/23	1,018	70,644	77	346	43	325	3	11
07/24	622	71,266	33	379	13	338	3	14
07/25	418	71,684	27	406	9	347	1	15
07/26	82	71,766	0	406	6	353	0	15
07/27	286	72,052	23	429	14	367	1	16
Totals	72,052		429		367		16	

(a) Sockeye count includes 29 jack salmon.



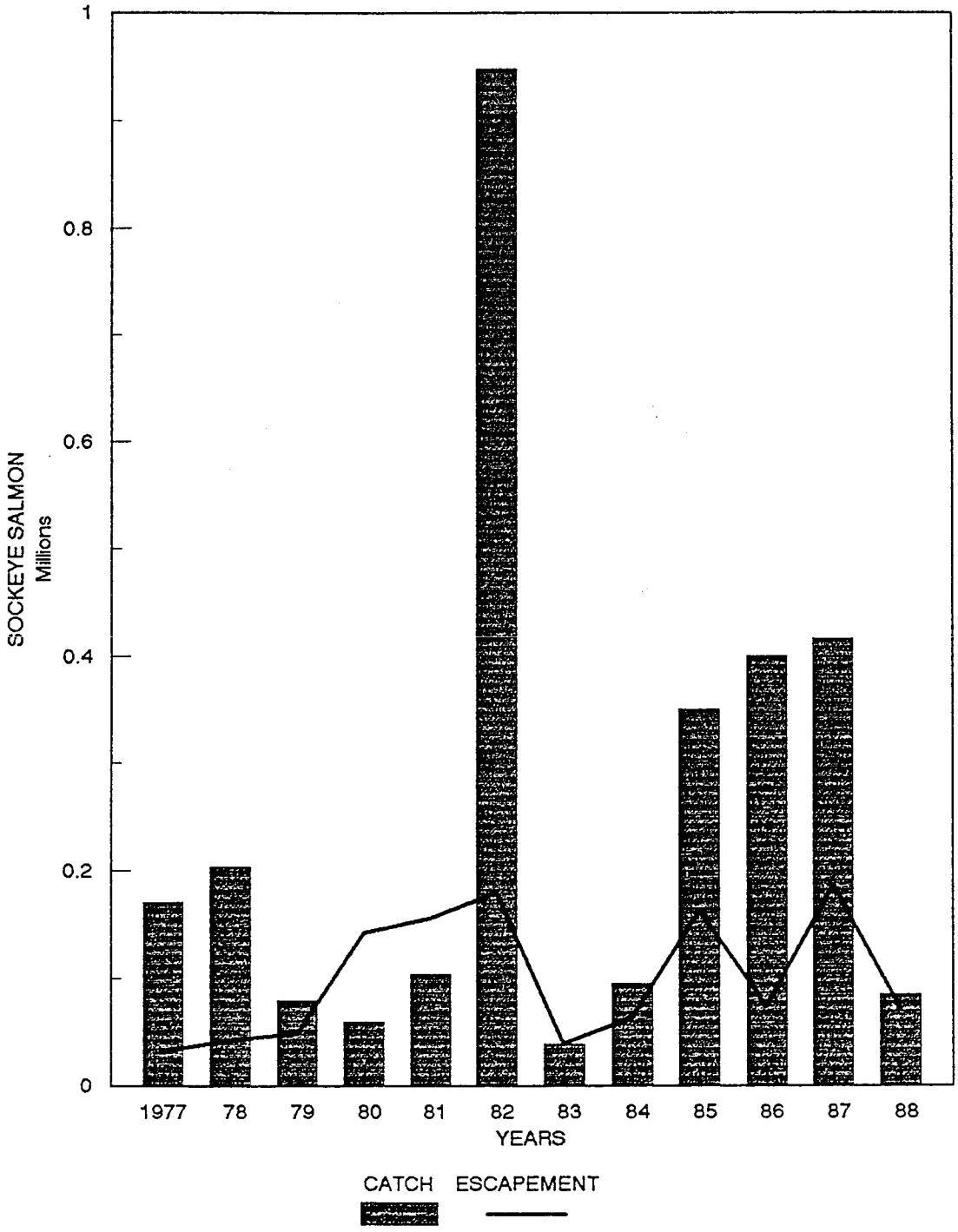
Appendix C.5. Anticipated and actual daily and cumulative sockeye salmon escapement at the Coghill Weir, Prince William Sound, 1988.

Appendix C.6. Salmon escapement by species in the Coghill District, Prince William Sound, 1968 - 1988.

Year	Sockeye (a)	Pink (b)	Chum (b)
1968	11,800	2,650	12,640
1969	81,000	72,000	34,600
1970	35,200	18,580	3,080
1971	15,000	500,000	10,200
1972	51,000	7,770	11,700
1973	55,000	543,150	73,600
1974	22,333	42,660	39,700
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	444,700	30,740
1982	180,314	264,420	24,150
1983	38,783	311,200	62,800
1984	63,622	468,040	24,460
1985	163,311	299,350	23,290
1986	71,095	115,800	19,320
1987	187,263	147,060	24,510
1988	72,052	37,070	39,240
20 Year Average	72,006	226,097	25,930

(a) Escapement count of sockeye salmon past the Coghill River weir.

(b) Pink and Chum escapements estimated for streams in district by aerial surveys. These are preliminary estimates.



Appendix C.7. Sockeye salmon catch and escapement in the Coghill District, Prince William Sound, 1977 - 1988.

Appendix C.8. Estimated age and sex composition of the commercial sockeye salmon catch in the Coghill District and the sockeye salmon escapement to Coghill Lake, Prince William Sound, 1988. Commercial samples include both drift gill net (98%) and purse seine (2%) catches.

		Brood Year and Age Group												
		1986	1985		1984		1983			1982		1981		
		0.1	0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	1.5	2.4	Total
Catch Dates:	6/20 - 9/24													
Sample Dates:	6/21 - 7/06													
Sample Size:	1128													
Female	Percent of Sample	0.0	0.0	0.0	0.2	15.6	0.0	38.1	0.4	0.7	0.4	0.0	0.0	55.3
	Number in Catch	0	0	0	168	13,067	0	32,018	298	550	354	0	0	46,455
Male	Percent of Sample	0.0	0.0	0.0	0.2	15.6	0.0	27.5	0.0	1.2	0.1	0.0	0.0	44.7
	Number in Catch	0	0	0	131	13,088	0	23,115	37	1,035	56	0	37	37,499
Total	Percent of Sample	0.0	0.0	0.0	0.4	31.2	0.0	65.7	0.4	1.9	0.5	0.0	0.0	100.0
	Number in Catch	0	0	0	299	26,155	0	55,133	335	1,585	410	0	37	83,954
	Standard Error	0	0	0	179	1,342	0	1,375	182	401	189	0	35	
Escapement Dates:	6/10-7/27													
Sample Dates:	6/22-7/18													
Sample Size:	1,902													
Female	Percent of Sample	0.0	0.0	0.0	0.1	17.1	0.0	20.7	0.0	0.3	0.2	0.0	0.0	38.5
	Number in Escapement	13	13	0	102	12,307	0	14,932	0	212	148	0	0	27,727
Male	Percent of Sample	0.0	0.2	0.0	0.0	42.6	0.1	16.8	0.2	1.4	0.1	0.1	0.0	61.5
	Number in Escapement	0	143	13	13	30,676	49	12,094	118	1,039	82	69	0	44,296
Total	Percent of Sample	0.0	0.2	0.0	0.2	59.7	0.1	37.5	0.2	1.7	0.3	0.1	0.0	100.0
	Number in Escapement	13	156	13	115	42,983	49	27,026	118	1,251	230	69	0	72,023
	Standard Error	16	82	16	57	841	44	826	76	216	97	62	0	
Catch and Escapement Combined														
Sample Dates:	6/21-7/18													
Sample Size:	3,032													
Female	Percent of Sample	0.0	0.0	0.0	0.2	16.3	0.0	30.1	0.2	0.5	0.3	0.0	0.0	47.6
	Catch & Escapement	13	13	0	270	25,374	0	46,950	298	762	502	0	0	74,182
Male	Percent of Sample	0.0	0.1	0.0	0.1	28.1	0.0	22.6	0.1	1.3	0.1	0.0	0.0	52.4
	Catch & Escapement	0	143	13	144	43,764	49	35,209	155	2,074	138	69	37	81,795
Total	Percent of Sample	0.0	0.1	0.0	0.3	44.3	0.0	52.7	0.3	1.8	0.4	0.0	0.0	100.0
	Catch & Escapement	13	156	13	414	69,138	49	82,159	453	2,836	640	69	37	155,977
	Standard Error	16	82	16	189	1,584	44	1,604	196	456	209	62	35	

Appendix C.9. Commercial salmon harvest by period in the Unakwik District drift gill net and purse seine fisheries, Prince William Sound, 1988.

Period	Date[a]	Hours	Permits	Chinook		Sockeye		Coho		Pink		Chum	
				Numbers	Pound	Number	Pound	Number	Pound	Number	Pound	Number	Pound
Gear: Drift Gill Net													
01	6\20	48	0	0	0	0	0	0	0	0	0	0	0
02	6\27	48	17	9	94	4,309	28,488	0	0	54	220	746	6,254
03	7\03	48	16	5	64	3,082	21,919	0	0	23	89	521	4,396
04	7\11	60	15	1	8	1,192	8,153	0	0	41	184	82	697
05	8\05	24	1	0	0	6	40	0	0	163	570	155	1,255
Total			35	15	166	8,589	58,600	0	0	281	1,063	1,504	12,602
Average Weight					11.07		6.82		0.00		3.78		8.38
Gear: Purse Seine b													
01	6\20	48	0	0	0	0	0	0	0	0	0	0	0
02	6\27	48	4	0	0	205	1,298	0	0	508	1,653	1,981	18,190
03	7\03	48	4	0	0	215	1,386	0	0	1,122	3,545	3,815	35,038
04	7\11	60	3	0	0	118	741	0	0	3,568	13,022	5,281	46,961
05	8\05	24	29	0	0	129	821	7	52	52,646	176,733	12,783	107,497
Total			34	0	0	667	4,246	7	52	57,844	194,953	23,860	207,686
Average Weight					0.00		6.37		7.43		3.37		8.70
Combined Total			69	15	166	9,256	62,846	7	52	58,125	196,016	25,364	220,288
Average Weight					11.07		6.79		7.43		3.37		8.69

a Statistical week ending date

b Northern District Statistical Area 222-50.

Appendix C.10. Commercial salmon catch by species in the Unakwik District, Prince William Sound, 1974 - 1988. a

Year	Catch by Species					
	Chinook	Sockeye	Coho	Pink	Chum	Total
DRIFT GILL NET						
1974	5	10,449	3	10,911	500	21,868
1975	4	11,922	0	84	70	12,080
1976	4	8,421	0	2,744	331	11,500
1977	3	7,912	2	257	141	8,315
1978	24	9,116	0	2,082	597	11,819
1979	11	9,250	9	2,359	289	11,918
1980	0	1,547	6	4,815	727	7,095
1981	0	2,445	0	4,152	1,330	7,927
1982	1	48,947	0	335	598	49,881
1983	3	13,215	0	1,515	1,426	16,159
1984	2	18,522	0	27,742	7,125	53,391
1985	26	27,532	22	9,191	3,942	40,713
1986	5	25,759	1	1,973	2,463	30,201
1987	2	5,894	1	4,871	1,356	12,124
1988	15	8,589	0	281	1,504	10,389
Ten Year Average (1978-87)	7	16,223	4	5,904	1,985	24,123
PURSE SEINE						
1974 b						
1975 b						
1976	0	7	0	8,526	225	8,758
1977 b						0
1978	3	268	5	55,115	5,025	60,416
1979 b						
1980	0	6	0	9,113	355	9,474
1981	0	108	0	71,624	17,650	89,382
1982	0	2	4	89,137	517	89,660
1983	0	6	0	3,344	716	4,066
1984 b						
1985	0	138	0	28,210	4,123	32,471
1986	0	76	0	4,718	4,675	9,469
1987	0	146	0	187,752	6,549	194,447
1988	0	667	7	57,844	23,860	82,378
Ten Year Average (1978-87)	0	94	1	56,127	4,951	61,173
COMBINED GEARS						
1974	5	10,449	3	10,911	500	21,868
1975	4	11,922	0	84	70	12,080
1976	4	8,428	0	11,270	556	20,258
1977	3	7,912	2	257	141	8,315
1978	27	9,384	5	57,197	5,622	72,235
1979	11	9,250	9	2,359	289	11,918
1980	0	1,553	6	13,928	1,082	16,569
1981	0	2,553	0	75,776	18,980	97,309
1982	1	48,949	4	89,472	1,115	139,541
1983	3	13,221	0	4,859	2,142	20,225
1984	2	18,522	0	27,742	7,125	53,391
1985	26	27,670	22	37,401	8,065	73,184
1986	5	25,835	1	6,691	7,138	39,670
1987	2	6,040	1	192,623	7,905	206,571
1988	15	9,256	7	58,125	25,364	92,767
Ten Year Average (1978-87)	8	16,298	5	50,805	5,946	73,061

a Northern District Statistical Area 222-50

b Fishing was closed.

Appendix C.11. Estimated age and sex composition of the commercial sockeye salmon harvest in the Unakwik District, all gear types combined, Prince William Sound, 1988. Drift gill net (93%) and purse seine (7%) catches combined.

		Brood Year and Age Group					
		1984		1983		1982	
		0.3	1.2	1.3	2.2	1.4	Total
Catch Dates:	6/27 - 8/06						
Sample Dates:	7/14						
Sample Size:	578						
Female	Percent of Sample	0.3	6.6	46.4	0.2	0.3	53.8
	Number in Catch	28	611	4,294	19	28	4,980
Male	Percent of Sample	0.3	9.7	36.0	0.0	0.2	46.2
	Number in Catch	28	898	3,331	0	19	4,276
Total	Percent of Sample	0.6	16.3	82.4	0.2	0.5	100.0
	Number in Catch	56	1,509	7,625	19	47	9,256
	Standard Error	30	142	147	17	27	

Appendix C.12. Summary of periods, dates, hours fished, and emergency orders issued for the commercial salmon fisheries in the Coghill and Unakwik districts, Prince William Sound, 1988.

Unakwik (222-50)			Coghill (223)			
Periods	Dates	Hours Fished	Periods	Dates	Hours Fished	Emergency Orders Issued
1	6/20 - 6/22	48	1	6/20 - 6/22	48	a 2-F-E-14-88
2	6/27 - 6/29	48	2	6/27 - 6/29	48	b 2-F-E-18-88
3	7/03 - 7/05	48	3	7/03 - 7/05	48	c 2-F-E-19-88
			4	7/05 - 7/09	108	c 2-F-E-20-88
4	7/11 - 7/13	48	5	7/09 - 7/15	153	d 2-F-E-21-88
						e 2-F-E-22-88
5	8/05 - 8/06	24	6	8/05 - 8/06	24	f 2-F-E-26-88
			7	8/10 - 9/05	627	g 2-F-E-28-88
			8	9/07 - 9/25	432	h 2-F-E-39-88
						i 2-F-E-42-88

a The season was officially open beginning 12 Noon on Monday, June 20 with a 48 hour period in Coghill and Unakwik.

b Another 48 hour period was announced for Unakwik and Coghill, beginning 12 Noon, Tuesday, June 27, however only the secondary terminal harvest area of the Esther Subdistrict will be open in the Coghill District.

c A third 48 hour period was announced for Unakwik and Coghill lasting from from 1200 July 3 to 1200 July 5. However, that portion of the STHA enclosed by a line from Hodgkin Point, to Point Culross, to Esther Rocks, to the shore marker on Esther Island, will be closed. Beginning 12 Noon, Tuesday, July 5, portions of the Coghill District were opened to seven day a week fishing until further notice.

d Beginning at 9 a.m., Monday, July 11 until Wednesday at 9 a.m., Unakwik was was open for 48 hours. In addition, the open fishing area in Coghill was reduced, however, seven day a week fishing continued.

e Coghill District was closed 9 p.m., July 15 until further notice.

f A 24 hour period was announced for the Esther Primary and Secondary Terminal Harvest Areas and portions of the Northern District including Unakwik Inlet but excluding the Cannery Creek Secondary Terminal Harvest Area from 12 Noon, Friday, August 5 until 12 Noon, Saturday.

g The Esther Secondary Terminal Harvest Area was opened to seven day a week fishing until further notice starting 9 a.m., Wednesday, August 10. August 8 until Wednesday at 12 Noon.

h The Esther Subdistrict was closed to fishing at 12 Noon, September 5, however, the Sanctuary Zone of Esther Hatchery was reopened 12 Noon September 7 until further notice.

i Effective Sunday, September 25, at 12 Noon, the commercial salmon fishing season in Prince William Sound was officially closed.

Appendix D.1. Commercial salmon harvest by period in the Eshamy District drift and set gill net fisheries, Prince William Sound, 1988.

Period	Date[a]	Hours		Permits	Landings	Chinook		Sockeye		Coho		Pink		Chum	
						Numbers	Pound	Number	Pound	Number	Pound	Number	Pound	Number	Pound
Gear: Drift Gill Net															
01	6\20	729	b	296	2,774	78	1,265	29,003	190,572	134	983	96,423	374,386	182,081	1,577,226
02	7\25	60		233	836	15	129	8,518	57,642	209	1,618	108,251	419,065	17,168	141,891
03	8\01	60	c	78	212	0	0	4,587	30,883	35	283	32,163	117,476	3,155	27,419
04	8\08	60	d	151	312	1	35	5,413	36,165	74	604	43,328	171,892	1,793	15,658
05	8\15	84	d	40	123	0	0	2,554	16,871	243	1,896	52,578	195,942	1,464	11,838
06	8\22	84	d	27	59	0	0	793	5,242	99	833	16,130	56,535	399	3,000
Drift Gill Net Total				330	4,316	94	1,429	50,868	337,375	794	6,217	348,873	1,335,296	206,060	1,777,032
Average Weight							15.20		6.63		7.83		3.83		8.62
Gear: Set Gill Net															
01	6\20	729	b	27	888	96	1,494	9,637	62,004	12	93	21,431	85,144	88,586	784,355
02	7\25	60		22	83	1	6	1,909	12,516	2	16	18,136	66,296	2,036	16,632
03	8\01	60	c	19	65	2	13	1,352	8,813	5	38	14,231	49,831	680	5,803
04	8\08	60	d	21	75	1	7	1,832	12,055	8	58	22,051	78,854	588	4,674
05	8\15	84	d	19	100	0	0	2,258	14,784	151	1,206	64,857	224,507	900	7,130
06	8\22	84	d	20	80	0	0	1,333	8,535	105	839	39,750	137,789	787	5,123
Set Gill Net Total				28	1,291	100	1,520	18,321	118,707	283	2,250	180,456	642,421	93,577	823,717
Average Weight							15.20		6.48		7.95		3.56		8.80
Combined Total				358	5,607	194	2,949	69,189	456,082	1,077	8,467	529,329	1,977,717	299,637	2,600,749
Average Weight							15.20		6.59		7.86		3.74		8.68

a Starting date of period.

b From 1200 June 20 until 2100 July 20 continous fishing was allowed in Main Bay west of a line from 60 32.3 N. latitude, 148 04.6 W. longitude to 60 31.9 N. latitude, 148 03.9 W. longitude. The entire Eshamy District was periodically open throughout this duration. From 1200 June 20 until 1200 June 24 and from 1200 June 27 until 1200 July 01 and from 1200 July 04 until 1200 July 08 and from 1200 July 11 until 1200 July 15 and from 0900 July 18 until 2100 July 20 the entire district was open.

c The waters of Eshamy Bay west of a line from 60 27.9 N. latitude, 147 57.6 W. longitude to 60 31.9 N. latitude, 148 03.9 N. longitude was open to fishing. Additionally, a portion of the Main Bay west of a line from 60 32.3 N. latitude, 148 04.6 W. longitude to 60 31.9 N. latitude, 148 03.9 W. longitude was also open to fishing.

d The waters of Eshamy Bay and Eshamy Lagoon west of a line 60 27.9 N. latitude, 147 57.6 W. longitude to 60 29.1 N. latitude, 147 58.3 W. longitude and east of 148 2.7 W. longitude was open to fishing. Additionally, a portion of Main Bay west of a line from 60 32.3 N. latitude, 148 04.6 W. longitude to 60 31.9 N. latitude, 148 03.9 W. longitude was also open to fishing.

Appendix D.2. Commercial salmon catch by species in the Eshamy District, Prince William Sound, 1974 - 1988.

Year	Catch by Species					
	Chinook	Sockeye	Coho	Pink	Chum	Total
DRIFT GILL NET						
1974	18	12,640	114	217,141	23,488	253,401
1975 a						
1976 a						
1977	22	16,916	49	63,036	8,344	88,367
1978 a						
1979 a						
1980	0	684	25	3,235	130	4,074
1981 a						
1982 a						
1983	1	924	8	162,541	3,427	166,901
1984	7	23,490	282	247,326	15,451	286,556
1985	1	667	0	24,899	1,021	26,588
1986	0	4	1	938	65	1,008
1987	2	642	3	3,225	7,060	10,932
1988	94	50,868	794	348,873	206,060	606,689
Ten Year Average (1978-87)	2	4,402	53	73,694	4,526	82,677
SET GILL NET						
1974	4	6,394	11	68,300	5,408	80,117
1975 a						
1976 a						
1977	9	9,889	2	24,743	4,218	38,861
1978 a						
1979 a						
1980	0	2,000	38	2,471	134	4,643
1981 a						
1982 a						
1983	1	1,328	10	167,942	4,463	173,744
1984	5	23,226	98	278,176	3,000	304,505
1985	1	3,439	74	33,284	1,295	38,093
1986	9	1,043	86	42,123	5,764	49,025
1987	31	5,387	336	86,677	45,099	137,530
1988	100	18,321	283	180,456	93,577	292,737
Ten Year Average (1978-87)	8	6,071	107	101,779	9,959	117,923
COMBINED GEAR						
1974	22	19,034	125	285,441	28,896	333,518
1975 a						
1976 a						
1977	31	26,805	51	87,779	12,562	127,228
1978 a						
1979 a						
1980	0	2,684	63	5,706	264	8,717
1981 a						
1982 a						
1983	2	2,252	18	330,483	7,890	340,645
1984	12	46,716	380	525,502	18,451	591,061
1985	2	4,106	74	58,183	2,316	64,681
1986	9	1,047	87	43,061	5,829	50,033
1987	33	6,029	339	89,902	52,159	148,462
1988	194	69,189	1,077	529,329	299,637	899,426
Ten Year Average (1978-87)	9	13,935	112	175,119	7,885	197,061

a Fishing was closed.

Appendix D.3. Daily salmon escapement at the Eshamy Lake weir, Prince William Sound, 1988.

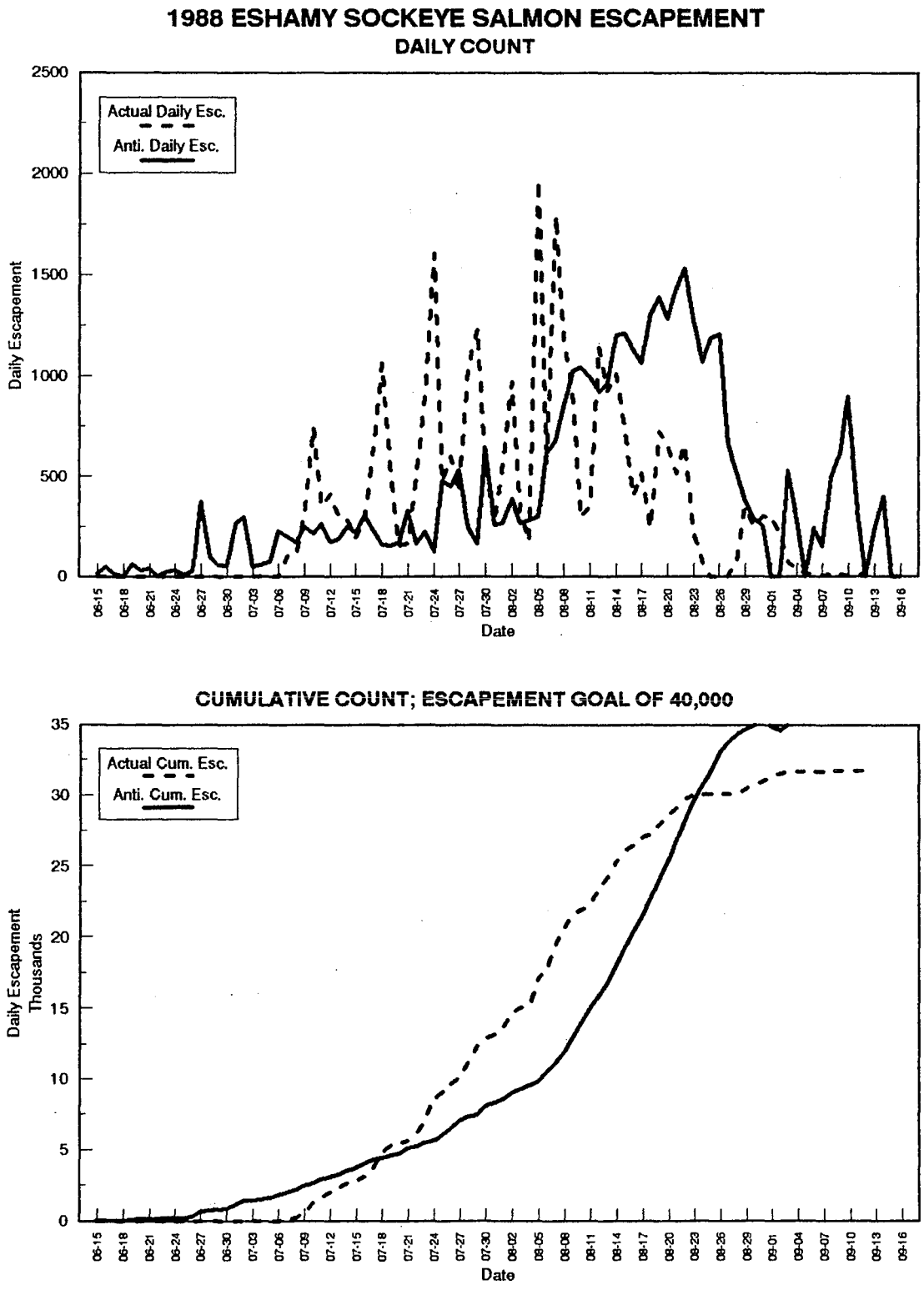
Date	Sockeye(a)		Sockeye Jacks		Pink		Chum		Coho		King	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
07/06	0	0	0	0	0	0	0	0	0	0	1	1
07/07	100	100	0	0	0	0	0	0	0	0	0	1
07/08	111	211	2	2	0	0	0	0	0	0	0	1
07/09	307	518	3	5	0	0	0	0	0	0	0	1
07/10	745	1263	0	5	0	0	0	0	0	0	0	1
07/11	353	1616	1	6	1	1	0	0	0	0	0	1
07/12	410	2026	0	6	0	1	0	0	0	0	0	1
07/13	309	2335	1	7	1	2	0	0	0	0	0	1
07/14	285	2620	0	7	3	5	0	0	0	0	0	1
07/15	191	2811	1	8	13	18	0	0	0	0	0	1
07/16	284	3095	0	8	13	31	0	0	0	0	0	1
07/17	637	3732	2	10	16	47	0	0	0	0	0	1
07/18	1061	4793	3	13	29	76	0	0	0	0	0	1
07/19	504	5297	0	13	5	81	0	0	0	0	0	1
07/20	155	5452	1	14	6	87	0	0	0	0	0	1
07/21	166	5618	0	14	7	94	0	0	0	0	0	1
07/22	496	6114	2	16	10	104	0	0	0	0	1	2
07/23	890	7004	3	19	6	110	0	0	0	0	0	2
07/24	1606	8610	1	20	13	123	0	0	0	0	0	2
07/25	474	9084	0	20	15	138	0	0	0	0	0	2
07/26	598	9682	1	21	14	152	0	0	0	0	0	2
07/27	424	10106	0	21	8	160	0	0	0	0	0	2
07/28	1030	11136	0	21	18	178	0	0	0	0	0	2
07/29	1230	12366	3	24	51	229	0	0	0	0	0	2
07/30	551	12917	0	24	28	257	0	0	0	0	0	2
07/31	267	13184	0	24	18	275	0	0	0	0	0	2
08/01	562	13746	1	25	23	298	0	0	0	0	0	2
08/02	967	14713	1	26	44	342	0	0	0	0	0	2
08/03	329	15042	0	26	14	356	0	0	0	0	0	2
08/04	178	15220	0	26	8	364	0	0	0	0	0	2
08/05	1969	17189	2	28	86	450	0	0	0	0	0	2
08/06	556	17745	0	28	22	472	0	0	0	0	0	2
08/07	1794	19539	1	29	43	515	0	0	0	0	0	2
08/08	1187	20726	2	31	53	568	0	0	0	0	0	2
08/09	918	21644	2	33	37	605	0	0	0	0	0	2
08/10	291	21935	2	35	22	627	0	0	1	1	0	2
08/11	345	22280	0	35	25	652	0	0	0	1	0	2
08/12	1140	23420	3	38	31	683	0	0	0	1	0	2
08/13	924	24344	0	38	59	742	0	0	0	1	0	2
08/14	1009	25353	1	39	55	797	0	0	0	1	0	2
08/15	749	26102	0	39	39	836	0	0	0	1	0	2

-continued-

Appendix D.3. (Page 2 of 2)

Date	Sockeye(a)		Sockeye Jacks		Pink		Chum		Coho		King	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
08/16	399	26501	1	40	31	867	0	0	2	3	0	2
08/17	513	27014	0	40	47	914	0	0	0	3	0	2
08/18	243	27257	1	41	40	954	0	0	0	3	0	2
08/19	719	27976	1	42	28	982	0	0	10	13	0	2
08/20	646	28622	1	43	17	999	0	0	0	13	0	2
08/21	510	29132	0	43	17	1016	0	0	1	14	0	2
08/22	656	29788	0	43	28	1044	0	0	0	14	0	2
08/23	219	30007	0	43	24	1068	0	0	2	16	0	2
08/24	66	30073	0	43	11	1079	0	0	1	17	0	2
08/25	0	30073	0	43	0	1079	0	0	0	17	0	2
08/26	0	30073	0	43	0	1079	0	0	0	17	0	2
08/27	0	30073	0	43	0	1079	0	0	0	17	0	2
08/28	81	30154	0	43	4	1083	0	0	0	17	0	2
08/29	349	30503	0	43	19	1102	0	0	0	17	0	2
08/30	250	30753	0	43	19	1121	0	0	4	21	0	2
08/31	299	31052	0	43	20	1141	0	0	6	27	0	2
09/01	304	31356	0	43	4	1145	0	0	13	40	0	2
09/02	213	31569	0	43	19	1164	0	0	0	40	0	2
09/03	72	31641	0	43	5	1169	1	1	0	40	0	2
09/04	35	31676	0	43	6	1175	0	1	1	41	0	2
09/05	18	31694	0	43	6	1181	0	1	2	43	0	2
09/06	4	31698	0	43	14	1195	0	1	1	44	0	2
09/07	3	31701	0	43	5	1200	0	1	0	44	0	2
09/08	10	31711	0	43	1	1201	0	1	2	46	0	2
09/09	8	31719	0	43	1	1202	0	1	0	46	0	2
09/10	4	31723	0	43	2	1204	0	1	1	47	0	2
09/11	5	31728	0	43	1	1205	0	1	0	47	0	2
09/12	13	31741	0	43	0	1205	0	1	1	48	0	2
Totals		31741		43		1205		1		48		2

(a) Sockeye count includes 43 jack salmon.



Appendix D.4. Anticipated and actual daily and cumulative sockeye salmon escapement at the Eshamy weir, Prince William Sound, 1988.

Appendix D.5. Salmon escapement by species at the Eshamy weir, Prince William Sound, 1967 - 1988.

Year	Escapement by Species [a]					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1967	0	10,821	192	10,433	1	21,447
1968	1	68,048	450	919	1	69,419
1969	0	61,196	96	3,095	2	64,389
1970	0	11,460	25	387	0	11,872
1971	0	954 [b]	97	3,179	0	4,230
1972		28,683				28,683
1973	0	10,202	205	1,698	0	12,105
1974		633				633
1975		1,724				1,724
1976		19,367				19,367
1977	0	11,746	230	32,080	0	44,056
1978	0	12,580	20	552	0	13,152
1979	0	12,169	5	3,654	1	15,829
1980	5	44,263	128	963	2	45,361
1981	1	23,048 [c]	249	5,956	13	29,267
1982	0	6,782 [d]	79	1,056	79	7,996
1983	0	10,348	40	7,047	4	17,439
1984	2	36,121 [e]	881	3,970	0	40,974
1985	0	26,178	96	6,271	0	32,545
1986	2	6,949	55	1,004	31	8,041
1987 [f]						
1988	2	31,747	48	1,205	1	33,003
20 Year Average	1	20,164	178	5,142	8	24,426

a Incidental passage of salmon other than sockeye were not recorded for each year.

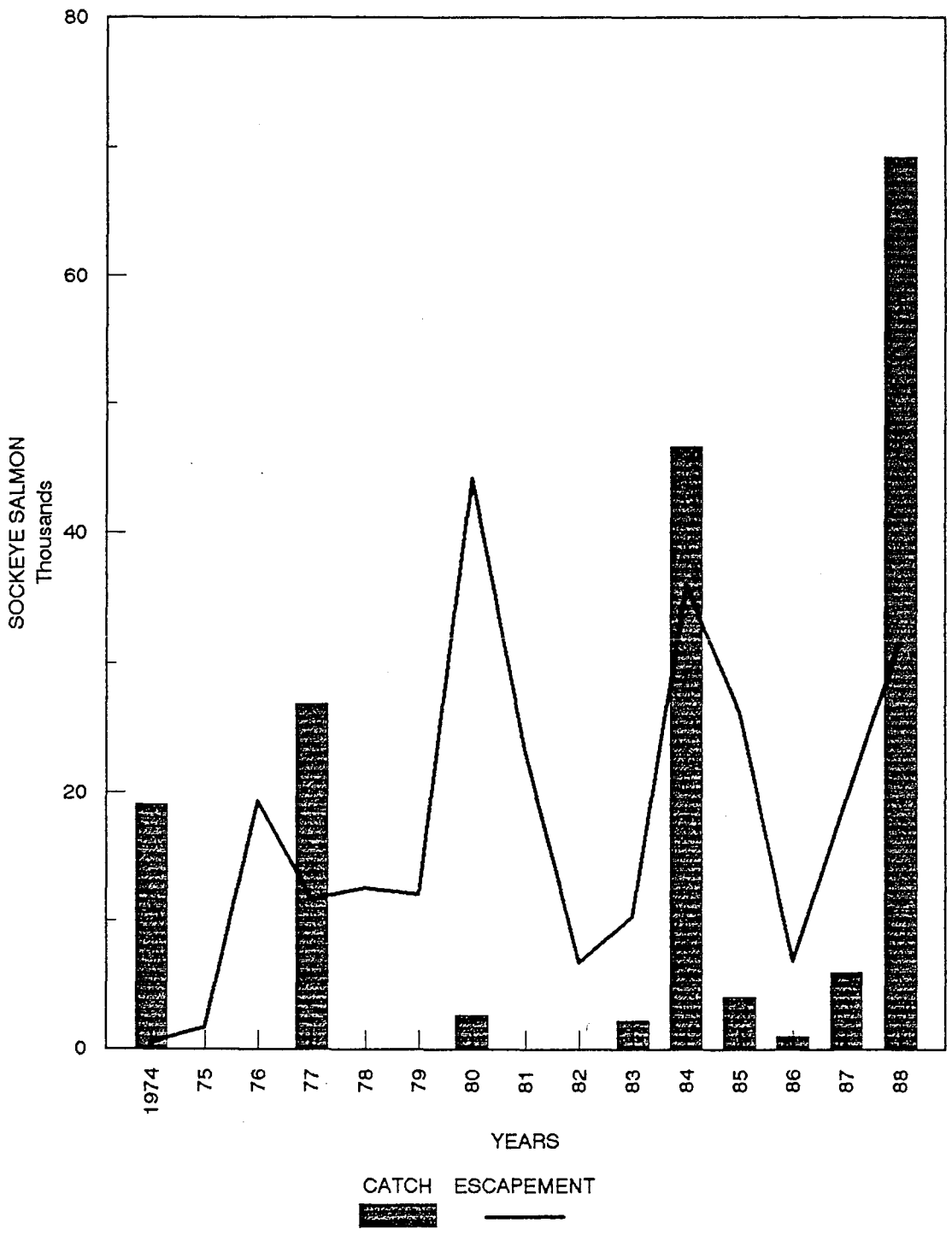
b Probably inaccurate because of holes in weir. Actual escapement is estimated to be at least 3,000.

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

d An estimated 270 sockeye below the weir when pulled is included in the total count.

e An estimated 25 sockeye below the weir at removal are included in the total count.

f The Eshamy weir was not in operation during 1987.



Appendix D.6. Sockeye salmon catch and escapement, Eshamy District, Prince William Sound, 1974 - 1988.

Appendix D.7. Estimated age and sex composition of the commercial sockeye salmon harvest in the Eshamy District and the sockeye salmon escapement to Eshamy Lake, Prince William Sound, 1988. Commercial samples include both drift gill net (74%) and set gill net (26%) catches.

		Brood Year and Age Group								
		1985		1984		1983		1982		
		0.2	1.1	0.3	1.2	1.3	2.2	1.4	2.3	Total
Catch Dates:	6/20 - 8/25 a									
Sample Dates:	7/19 - 8/27									
Sample Size:	1,797									
Female	Percent of Sample	0.3	0.0	0.3	38.6	10.2	1.2	0.1	0.4	51.2
	Number in Catch	213	14	196	26,727	7,073	826	98	245	35,392
Male	Percent of Sample	0.3	0.1	0.1	35.7	11.3	0.9	0.4	0.0	48.8
	Number in Catch	203	40	98	24,705	7,830	599	294	28	33,797
Total	Percent of Sample	0.6	0.1	0.4	74.3	21.5	2.1	0.6	0.4	100.0
	Number in Catch	416	54	294	51,432	14,903	1,425	392	273	69,189
	Standard Error	151	30	151	934	896	262	175	139	
Escapement Dates:	7/06-9/12									
Sample Dates:	7/15-9/01									
Sample Size:	1,741									
Female	Percent of Sample	0.2	0.4	0.0	51.5	1.4	0.6	0.0	0.0	54.1
	Number in Escapement	66	117	0	16,337	457	185	0	0	17,162
Male	Percent of Sample	0.0	0.7	0.0	43.2	1.0	1.1	0.0	0.0	45.9
	Number in Escapement	0	207	0	13,723	303	346	0	0	14,579
Total	Percent of Sample	0.2	1.0	0.0	94.7	2.4	1.7	0.0	0.0	100.0
	Number in Escapement	66	324	0	30,060	760	531	0	0	31,741
	Standard Error	38	90	0	187	130	100	0	0	
Catch and Escapement Combined										
Sample Dates:	7/15-9/01									
Sample Size:	3,539									
Female	Percent of Sample	0.3	0.1	0.2	42.7	7.5	1.0	0.1	0.2	52.1
	Catch & Escapement	279	131	196	43,064	7,530	1,011	98	245	52,554
Male	Percent of Sample	0.2	0.2	0.1	38.1	8.1	0.9	0.3	0.0	47.9
	Catch & Escapement	203	247	98	38,428	8,133	945	294	28	48,376
Total	Percent of Sample	0.5	0.3	0.3	80.8	15.6	1.9	0.4	0.2	100.0
	Catch & Escapement	482	375	294	81,492	15,663	1,956	392	273	100,930
	Standard Error	156	95	151	953	905	281	175	139	

a The first sampling strata (6/20-7/30) includes 15,948 sockeye salmon that were caught in the Eshamy District prior to July 10. Since there were no significant returns of sockeye salmon to the Eshamy weir before July 10th, we believe that these early sockeye catches were intercepted fish that were bound to other areas in Prince William Sound. These intercepted fish make up 33% of the catch in the first sampling strata.

Appendix D.8. Summary of periods, dates, hours fished, and emergency orders issued for the commercial salmon gill net fisheries in the Eshamy District and Main Bay Subdistrict, Prince William Sound, 1988.

Crafton Island Subdistrict (225-10,20,30)			Main Bay Subdistrict (225-21)			
Periods	Dates	Hours Fished	Periods	Dates	Hours Fished	Emergency Orders Issued
1	6/20 - 6/24	96	1	6/20 - 6/27	168	a 2-F-E-14-88
2	6/27 - 7/01	96	2	6/27 - 7/20	561	b 2-F-E-18-88
3	7/04 - 7/08	96				
4	7/11 - 7/15	96				
5	7/18 - 7/20	60				c 2-F-E-23-88
6	7/25 - 7/27	60	3	7/25 - 7/27	60	d 2-F-E-24-88
7	8/01 - 8/03	60	4	8/01 - 8/03	60	e 2-F-E-25-88
8	8/08 - 8/10	60	5	8/08 - 8/10	60	f 2-F-E-27-88
9	8/15 - 8/18	84	6	8/15 - 8/18	84	g 2-F-E-31-88
10	8/22 - 8/25	84	7	8/22 - 8/25	84	
	8/29	0		8/29	0	h 2-F-E-35-88

a The season was officially open beginning 12 Noon on Monday, June 20 with a 96 hour period in the Crafton subdistrict and continuous fishing in the Main Bay subdistrict until further notice.

b A weekly schedule for the Crafton Island subdistrict was established beginning 12 Noon, Monday, June 27 to 12 Noon Friday and continuing until further notice.

c Beginning 9 a.m., Monday, July 18, the weekly fishing schedule in the Eshamy District is revised to a single period open 9 a.m. Monday until 9 p.m. Wednesday and continuing until further notice. Main Bay closed Wednesday at 9 a.m. and reopened the following Monday on the district schedule.

d This announcement clarified the Eshamy district boundary commencing with the scheduled July 25 period.

e Commencing on the scheduled August 1 period, the open fishing area within the district was reduced to inside the bays. Outside district waters were closed.

f The open fishing areas were further restricted and defined inside Eshamy and Main Bays.

g The scheduled weekly periods in Eshamy district were increased to 84 hours effective Monday, August 15, starting at 9 a.m. to 9 p.m. Thursday and continuing until further notice.

h The Eshamy district salmon fishing season was officially closed effective 9 a.m. Monday, August 29.

Appendix E.1. Commercial purse seine catch of salmon by species, by period, Prince William Sound, 1988. Includes the common property commercial catch of salmon from all districts open to purse seines: Eastern, Northern, Coghill, Northwestern, Southwestern and Southeastern districts. Districts referenced as open may have been partially closed. See appendices C.12., E.16. and F.8. for more detailed closure information.

Period Dates		Hours Fished	Permits	Chinook		Sockeye		Coho		Pink		Chum	
				Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
6/29	a	12	195	47	434	2,083	12,707	6	35	60,005	193,308	219,653	1,829,189
7/05-7/09	b	96	239	64	864	5,039	31,622	156	973	179,798	614,252	403,016	3,357,275
7/10-7/15	c	141	238	53	595	3,050	18,486	306	2,101	150,685	502,460	189,987	1,627,950
						ALL SEINE AREAS CLOSED							
7/25	d	6	162	5	62	25	160	14	97	37,148	126,124	13,001	112,659
8/05-8/06	e	24	253	11	131	2,057	13,429	1,186	8,788	485,688	1,625,118	156,801	1,352,354
8/10-8/13	f	87	248	15	195	3,738	24,678	4,422	30,270	1,774,112	6,166,491	92,603	790,434
8/14-8/20	g	168	249	63	848	4,444	30,305	6,778	53,726	3,162,417	11,044,711	46,656	401,547
8/21-8/27	g	168	216	64	562	2,315	15,761	5,481	48,442	1,448,428	5,077,731	17,043	143,191
8/28-9/03	h	168	101	4	34	641	4,291	6,653	60,665	465,973	1,597,816	4,446	37,218
9/04-9/10	h	168	19	0	0	2	15	2,122	21,029	21,475	74,709	231	1,929
Totals			255	326	3,725	23,394	151,454	27,124	226,126	7,785,729	27,022,720	1,143,437	9,653,746
Ave. Weight					11.43		6.47		8.34		3.47		8.44

a The Eastern District and the Northern District, except Valdez Arm, were open for 12 hours.

b The Eastern District and the Northern District, except Valdez Arm and Wells Bay, were open for 36 hours. Portions of the Coghill District were open for 96 hours.

c The Eastern, Northern, Northwestern and Southeastern districts were open for 36 hours. The Coghill District was open for 141 hours.

d Only the Solomon Gulch Hatchery STHA was open for 6 hours.

e The Eastern, Northern, Coghill and Southwestern districts were open for 24 hours.

f The Eastern District was open for 36 hours. The Coghill and Southwestern districts were both open for 87 hours. The AFK Hatchery SHA was open for 6 hours.

g The Eastern District was open for 12 hours. The Coghill and Southwestern districts were both open to continuous fishing.

h The Coghill and Southwestern districts were both open to continuous fishing.

Appendix E.2. Commercial salmon harvest by all gear types, by species, Prince William Sound, 1971 - 1988. a

	Catch by Species					
Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	3,551	88,368	30,551	7,310,964	574,265	8,007,699
1972 b	547	197,526	1,634	54,783	45,370	299,860
1973	2,405	124,802	1,399	2,056,878	729,839	2,915,323
1974 b	1,590	129,366	801	448,773	88,544	669,074
1975	2,519	189,613	6,142	4,452,805	100,479	4,751,558
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
1979	2,015	150,040	6,843	15,607,620	326,414	16,092,932
1980	189	189,816	2,952	14,157,057	482,016	14,832,030
1981	404	251,222	4,383	20,524,470	1,878,716	22,659,195
1982	255	1,055,099	24,362	20,396,222	1,335,368	22,811,306
1983	1,048	92,111	10,496	14,038,796	1,041,309	15,183,760
1984	489	311,955	12,420	22,086,806	1,201,842	23,613,512
1985	1,104	493,278	19,753	25,056,663	1,280,093	26,850,891
1986	1,330	488,715	12,277	11,407,271	1,683,049	13,592,642
1987	874	540,109	47,751	29,198,507	1,904,494	31,691,735
1988	1,037	183,572	75,709	11,817,323	1,832,114	13,846,584
Ten Year Average (1978-87)	875	379,443	14,273	17,538,713	1,161,845	19,095,149

a Includes purse seine, drift gill net and set gill net catches from all Prince William Sound fishing districts; Eastern, Northern, Unakwik, Coghill, Northwestern, Eshamy, Southwestern, Montague and Southeastern. Also includes hatchery sales salmon harvest to offset operational costs for hatcheries, confiscated salmon and educational special use permits.

b General purse seine season closed.

Appendix E.3. Commercial pink salmon harvest for all gear types, by district, Prince William Sound, 1969-1988. Includes purse seine, drift gill net and set gill net catches from all Prince William Sound districts; Unakwik catches are included in the Northern District. Does not include hatchery cost recovery harvests.

	District								
Year	Eastern	Northern	Coghill	Northwestern	Eshamy	Southwestern	Montague	Southeastern	Total
1969	963,583	262,403	43,134	268,240	0	2,565,737		696,182	4,799,279
1970	358,326	308,797	100,338	371,528	0	1,518,700		90,438	2,748,127
1971 a	1,974,605	666,308	323,841	163,401		3,901,939		276,605	7,306,699
1972 b			9,408		54,781				64,189
1973	327,453	183,467	95,793	127,197	0	407,388	146,778	657,429	1,945,505
1974 b			163,328		285,441				448,769
1975	712,328	171,657	303,597	420,891		1,673,887	118,467	875,456	4,276,283
1976	1,380,943	384,267	217,696	207,190		589,458		82,366	2,861,920
1977	1,673,044	147,964	230,215	208,727	0	930,469	77,104	824,374	4,091,897
1978	1,516,076	933,013	13,059					216,696	2,678,844
1979	4,500,032	115,886	38,560	59,423		5,111,073	1,347,413	4,160,925	15,333,312
1980	3,140,134	1,271,177	134,876	306,109	0	7,507,776	950	1,271,389	13,632,411
1981	4,797,583	1,194,621	34,155	46,874		10,371,220	278,879	3,221,268	19,944,600
1982	2,959,601	2,331,903	1,000,524	520,972	3,997	10,801,771	6,444	747,116	18,372,328
1983	2,430,063	1,021,345	273,131	714,522		5,957,068	158,241	1,482,013	12,036,383
1984	4,525,029	2,194,904	996,483	1,412,822	544,082	10,197,349	11,587	1,245,042	21,127,298
1985	6,715,143	1,002,872	523,773	527,132	58,183	10,843,752	1,448,809	2,733,562	23,853,226
1986	2,488,540	944,871	214,593	285,184	43,061	6,374,535		147,268	10,498,052
1987	6,964,549	2,419,611	1,578,568	750,877	89,902	13,341,940	111,011	955,988	26,212,446
1988	481,324	286,743	2,932,072	7,738	529,329	5,411,424		1,776	9,650,406
10 year Average	4,003,675	1,343,020	480,772	513,768	317,118	8,945,165	420,417	1,618,127	16,368,890

a The Eshamy District was closed to fishing.

b The general purse seine district was closed to fishing.

Appendix E.4. Commercial catch and aerial escapement indices for pink and chum salmon by district, Prince William Sound, 1988.

	PINK SALMON			
District	Commercial Catch a	Desired Escapement Range	Escapement Index b	Min. Est. Total Run
Eastern	477,848	400,000 - 480,000	362,370	840,218
Northern/Unakwik	286,743	140,000 - 170,000	143,850	430,593
Coghill	2,932,072	125,000 - 175,000	37,070	2,969,142
Northwestern	7,738	104,000 - 172,000	73,780	81,518
Eshamy	529,329	9,000 - 12,000	490	529,819
Southwestern	5,411,424	69,000 - 115,000	126,440	5,537,864
Montague	0	106,000 - 128,000	67,990	67,990
Southeastern	1,776	225,000 - 270,000	152,540	154,316
Total	9,646,930	1,178,000 - 1,522,000	964,530	10,611,460

	CHUM SALMON			
District	Commercial Catch a	Desired Escapement Range	Escapement Index b	Min. Est. Total Run
Eastern	812,753	87,000 - 110,000	258,560	1,071,313
Northern/Unakwik	224,851	29,000 - 37,000	75,420	300,271
Coghill	358,494	49,000 - 61,000	39,240	397,734
Northwestern	14,083	3,000 - 4,000	40,780	54,863
Eshamy	299,637		0	299,637
Southwestern	79,020	3,000 - 4,000	2,350	81,370
Montague	0	11,000 - 14,000	500	500
Southeastern	2,479	20,000 - 25,000	66,930	69,409
Total	1,791,317	202,000 - 255,000	483,780	2,275,097

a Commercial catch does not include hatchery sales harvests.

b Based on weekly aerial survey counts of 209 index spawning streams in Prince William Sound. This does not represent the total spawning escapement but rather a comparable annual index.

Appendix E.5. Pink salmon harvests and escapement indices, including hatchery sales harvests and broodstock, Prince William Sound, 1960 - 1988.

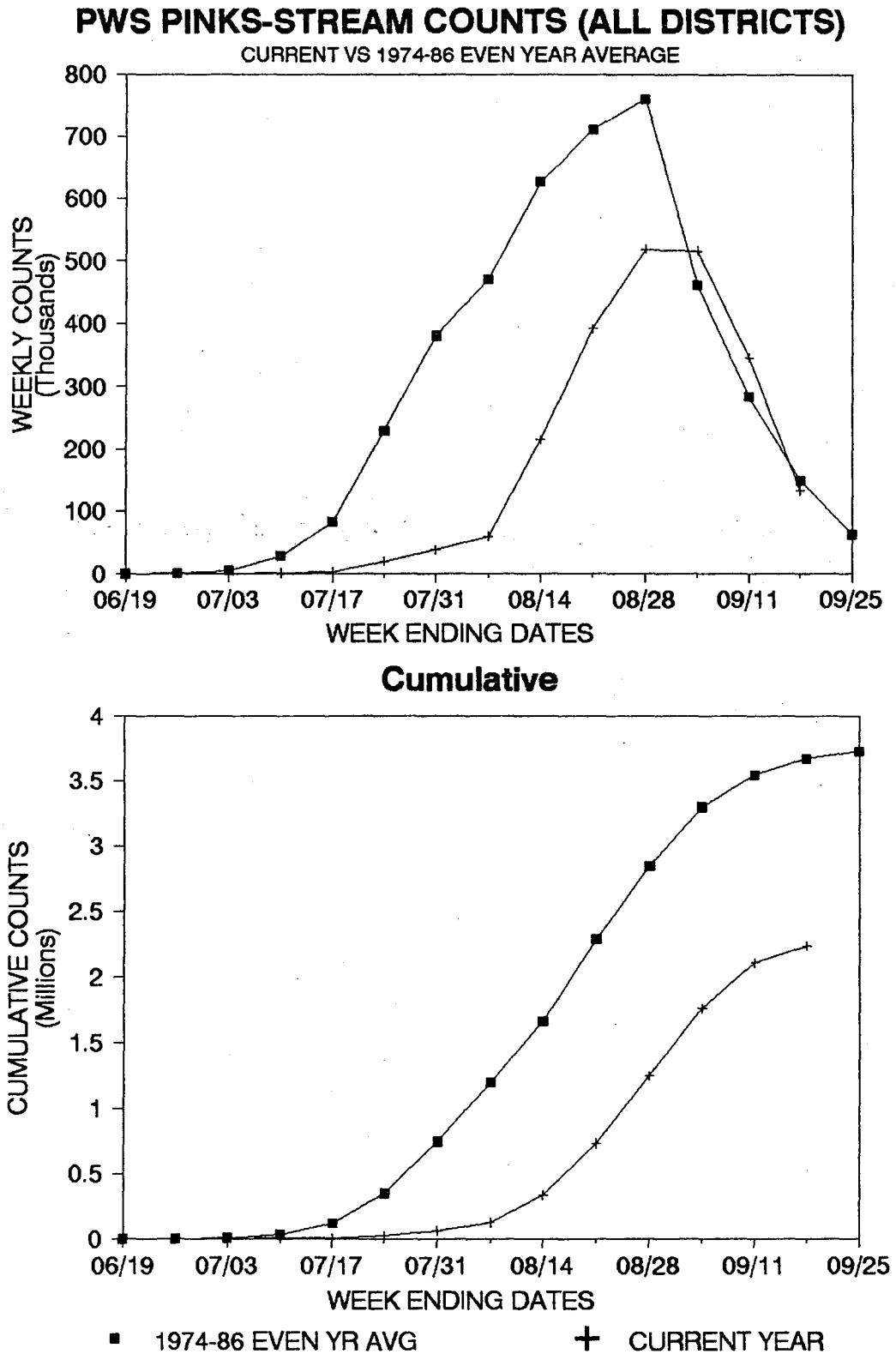
	PINK SALMON ESCAPEMENTS							Hatchery		Common Property	
Year	Eastern	Northern	Northwest Coghill	Southwest Eshamy	Montague	Southeastern	Total	Sales	Brood	Catch a	Total Run b
1960	475,073	133,653	203,575	155,788	214,987	167,646	1,350,722			1,841,896	3,192,618
61	706,790	123,900	448,180	133,990	289,290	496,830	2,198,980			2,298,218	4,497,198
62	650,300	253,490	417,190	107,950	317,360	271,720	2,018,010			6,742,316	8,760,326
62	378,050	77,760	354,230	49,760	78,750	417,190	1,355,740			5,295,378	6,651,118
64	485,470	349,010	353,030	172,800	121,220	360,150	1,841,680			4,206,896	6,048,576
1965	258,680	54,970	187,760	62,720	77,000	255,930	897,060			2,460,471	3,357,531
66	489,800	255,710	200,940	110,980	42,050	201,150	1,300,630			2,699,418	4,000,048
67	321,520	167,300	544,080	109,750	23,800	300,270	1,466,720			2,626,340	4,093,060
68	360,300	136,630	201,790	165,510	44,100	183,440	1,091,770			2,452,168	3,543,938
69	328,960	147,880	264,750	132,510	63,470	218,060	1,155,630			4,828,579	5,984,209
1970	328,730	109,240	170,130	69,260	73,190	139,640	890,190			2,809,996	3,700,186
71	529,820	161,540	614,530	104,080	337,540	373,900	2,121,410			7,310,964	9,432,374
72	317,450	91,610	66,270	27,680	28,860	75,550	607,420			54,783	662,203
73	264,850	44,840	563,510	66,030	106,340	184,340	1,229,910			2,056,878	3,286,788
74	229,370	186,130	200,520	141,750	11,800	89,170	858,740			448,773	1,307,513
1975	570,830	44,270	580,170	77,860	110,950	234,210	1,618,290		15,155	4,452,805	6,086,250
76	446,470	123,380	116,730	51,200	12,260	115,560	865,600		40,432	3,018,995	3,925,027
77	465,970	62,150	426,670	226,060	196,970	315,510	1,693,330		54,207	4,514,431	6,261,968
78	268,940	159,870	200,950	220,610	48,680	156,830	1,055,880	133,648	145,061	2,780,073	4,114,662
79	782,420	223,580	241,120	264,710	323,490	1,091,970	2,927,290	223,761	211,801	15,393,223	18,756,075
1980	515,380	171,410	338,100	134,860	114,170	302,190	1,576,110	346,928	270,745	13,434,024	15,627,807
81	768,000	259,850	588,880	193,750	506,140	594,890	2,911,510	707,037	379,178	19,286,542	23,284,267
82	566,530	325,890	429,750	189,190	125,870	470,000	2,107,230	1,355,315	563,431	18,858,647	22,884,623
83	504,480	180,040	521,010	182,520	247,260	634,890	2,270,200	765,924	458,513	13,309,461	16,804,098
84	1,209,050	591,700	959,160	397,790	193,020	801,540	4,152,260	402,825	358,806	21,683,076	26,596,967
1985	809,010	228,140	499,260	199,260	337,450	641,410	2,714,510	1,273,951	399,610	23,959,698	28,347,769
86	469,080	186,130	198,710	78,240	54,390	141,120	1,127,670	909,219	404,038	10,498,052	12,938,979
87	514,570	132,960	222,450	116,370	149,260	326,730	1,462,340	2,986,061	966,557	25,491,453	30,906,411
88	362,370	143,850	110,850	126,930	67,990	152,540	964,530	1,667,238	844,302	9,650,406	13,126,476

a Includes the common property harvest of both wild and hatchery stocks. Does not include hatchery sales harvests.

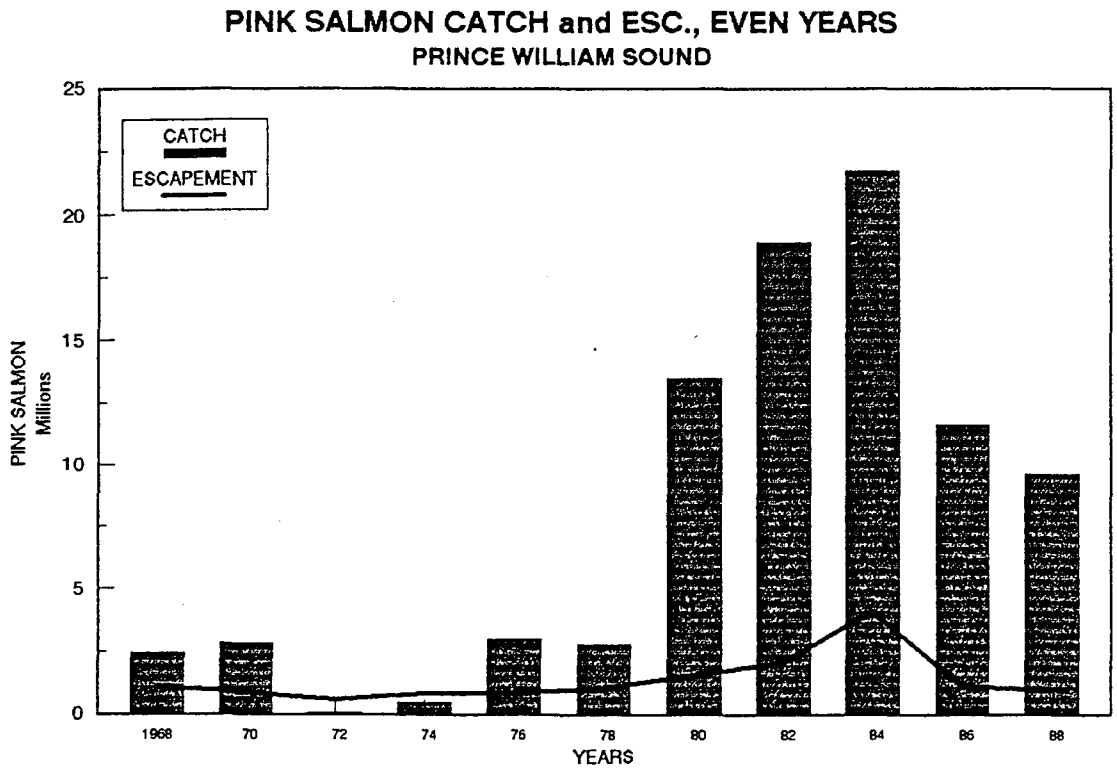
b Represents the sum of the commercial catch, hatchery sales and brood, plus the escapement index. Does not account for wild stock escapement into non-index streams.

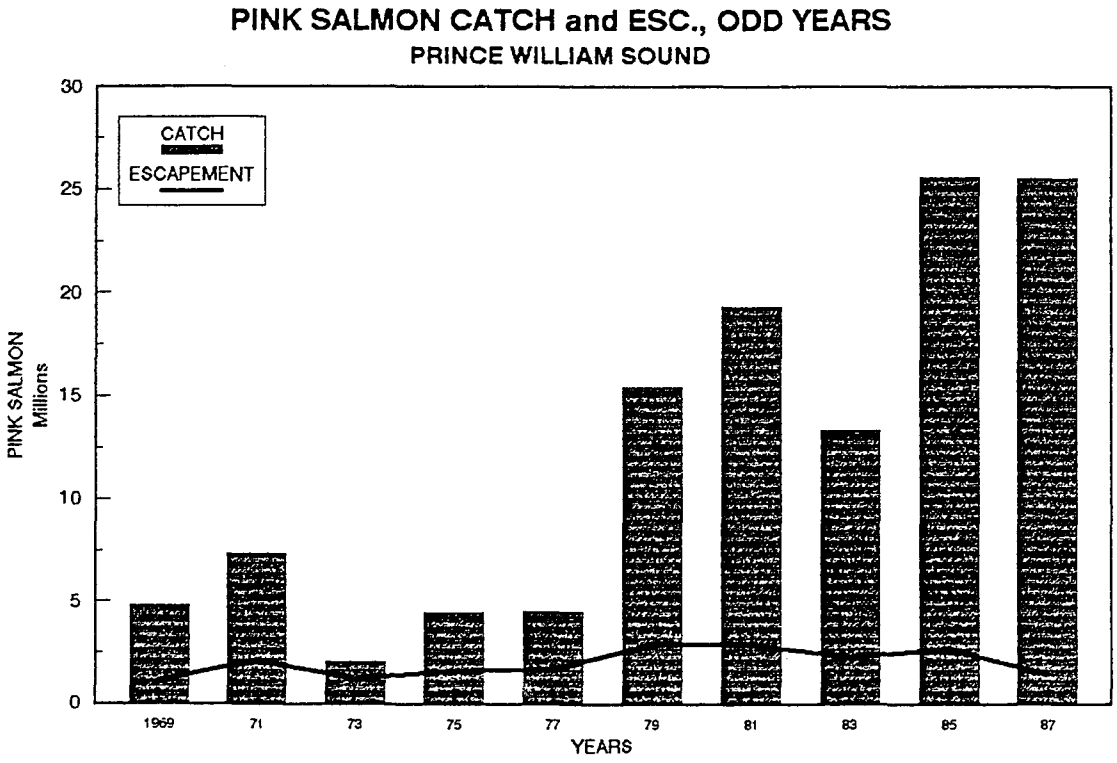
Appendix E.6. Weekly aerial estimates of pink salmon escapement by statistical area, Prince William Sound, 1988.

Location	Subdistrict	Survey Number: 1 Week ending: 6/18	2 6/25	3 7/02	4 7/09	5 7/16	6 7/23	7 7/30	8 8/06	9 8/13	10 8/20	11 8/27	12 9/03	13 9/10	14 9/17	15 9/24	TOTAL	ADJ.STREAM TOTAL
Orca Inlet	221-10	0	0	0	0	0	50	250	550	1,400	2,600	2,400	1,300	1,000	0	0	9,550	4,000
Simpson/Sheep	221-20	0	0	0	200	1,000	300	1,875	1,500	6,370	32,450	25,300	27,850	33,050	24,400	0	154,295	64,480
Gravina	221-30	0	60	400	400	1,060	1,020	2,150	2,310	7,450	30,400	64,200	75,360	41,300	10,500	0	236,610	95,280
Fidalgo	221-40	0	0	50	0	700	400	4,850	4,490	13,500	31,850	35,100	46,100	33,750	28,400	0	199,190	81,070
Valdez Arm	221-50	0	0	0	110	300	1,300	3,900	7,170	18,350	56,950	37,250	51,650	48,600	35,100	0	260,680	107,690
Port Valdez	221-60	0	0	10	100	210	650	2,450	3,300	10,900	2,800	600	150	370	0	0	21,540	11,680
Eastern District TOTAL		0	60	460	810	3,270	3,720	15,475	19,320	57,970	157,050	164,850	202,410	158,070	98,400	0	881,865	364,200
Columbia/Long	222-10	0	0	0	0	0	50	1,430	210	2,500	7,600	23,950	15,150	12,200	1,200	0	64,290	27,420
Wells/Unakwik	222-20	0	0	0	200	20	990	2,380	3,180	18,900	46,900	36,500	46,500	26,650	2,510	0	184,730	82,350
Eaglek	222-30	0	0	0	0	0	1,850	1,170	2,100	24,800	17,500	0	14,050	5,600	400	0	67,470	35,670
Unakwik District	222-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern District TOTAL		0	0	0	200	20	2,890	4,980	5,490	46,200	72,000	60,450	75,700	44,450	4,110	0	316,490	145,440
W. Port Wells	223-10	0	0	0	0	0	1,550	2,110	3,400	16,600	6,550	0	9,450	8,150	1,750	0	49,560	25,350
Esther Passage	223-20	0	0	0	0	0	0	20	100	400	900	0	200	150	0	0	1,770	1,150
E. Port Wells	223-30	0	0	0	0	3	376	200	1,000	12,150	14,200	0	50	0	0	0	27,979	14,676
Coghill District TOTAL		0	0	0	0	3	1,926	2,330	4,500	29,150	21,650	0	9,700	8,300	1,750	0	79,309	41,176
Passage/Cochrane	224-10	0	0	0	0	0	570	1,400	2,500	1,800	5,450	0	7,000	2,150	0	0	20,870	13,910
Culross Pass	224-30	0	0	0	0	0	1,500	2,050	1,350	6,000	5,350	0	16,420	8,700	1,000	0	42,370	23,110
Nellie Juan	224-40	0	0	0	100	0	3,450	2,750	2,300	17,200	20,000	0	18,200	4,900	1,500	0	70,400	37,870
Northwestern District TOTAL		0	0	0	100	0	5,520	6,200	6,150	25,000	30,800	0	41,620	15,750	2,500	0	133,640	74,890
Eshamy	225-30	0	0	0	0	18	92	147	215	270	257	80	90	35	0	0	1,204	490
Eshamy District TOTAL		0	0	0	0	18	92	147	215	270	257	80	90	35	0	0	1,204	490
Chenega	226-20	0	0	0	0	0	5,850	6,400	8,168	8,950	29,849	52,350	33,399	18,900	3,125	0	166,991	73,210
Knight Island	226-30	0	0	0	0	0	0	0	0	0	0	8,000	0	0	400	0	8,400	16,320
Bainbridge/Latouche	226-40	0	0	0	0	0	0	1,400	2,742	5,350	7,221	15,100	26,981	17,650	7,000	0	83,444	35,180
Port Bainbridge	226-50	0	0	0	0	0	40	400	400	800	400	1,500	1,100	300	0	0	4,940	2,000
Southwestern District TOTAL		0	0	0	0	0	5,890	8,200	11,310	15,100	37,470	76,950	61,480	36,850	10,525	0	263,775	126,710
S. Montague	227-10	0	0	0	0	0	0	120	100	1,420	2,200	7,300	5,900	2,850	0	0	19,890	9,520
N. Montague	227-20	0	0	0	0	0	0	0	1,075	5,430	15,490	46,220	39,970	22,220	6,900	0	137,305	59,090
Montague District TOTAL		0	0	0	0	0	0	120	1,175	6,850	17,690	53,520	45,870	25,070	6,900	0	157,195	68,610
S. Hawkins	228-10	0	0	0	0	0	0	0	900	700	1,600	2,300	1,100	900	0	0	7,500	3,540
Cutoff	228-20	0	0	0	0	0	0	0	2,450	4,600	5,850	7,450	3,750	4,700	0	0	28,800	13,660
N. Hawkins	228-30	0	0	0	0	0	0	750	3,500	12,800	17,100	36,000	27,300	16,400	1,400	0	115,250	48,590
Double Bay	228-40	0	0	0	0	0	0	0	1,100	5,100	8,000	25,700	14,600	13,950	1,350	0	69,800	30,340
Johnstone	228-50	0	0	0	300	0	0	200	3,000	3,800	5,300	9,500	7,400	3,900	0	0	33,400	14,110
Etches	228-60	0	0	0	0	0	0	0	700	7,150	18,000	30,900	25,550	17,150	5,700	0	105,150	43,320
Southeastern District TOTAL		0	0	0	300	0	0	950	11,650	34,150	55,850	111,850	79,700	57,000	8,450	0	359,900	153,560
TOTAL OF 8 DISTRICTS		0	60	460	1,410	3,311	20,038	38,402	59,810	214,690	392,767	467,700	516,570	345,525	132,635	0	2,193,378	975,076



Appendix E.7. Current year and historical weekly pink salmon escapement performance from index spawning streams,Prince William Sound, 1988





Appendix E.8. Pink salmon catch and escapement, even years (1968 - 1988), and odd years (1969 - 1987), Prince William Sound.

Appendix E.9. Chum salmon harvests and escapement indices, including hatchery sales harvests and broodstock, Prince William Sound, 1960 - 1988.

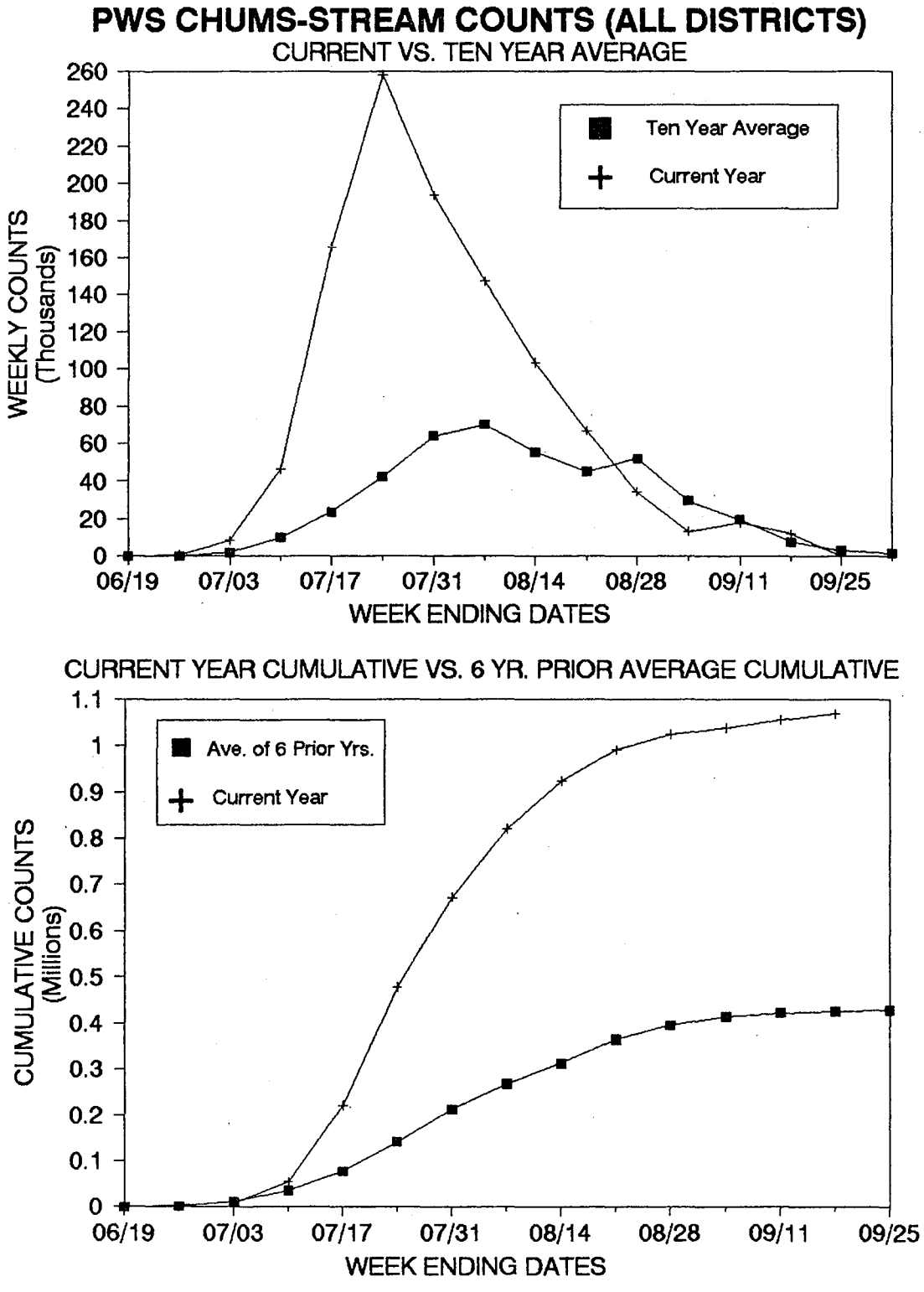
	CHUM SALMON ESCAPEMENTS							Hatchery		Common Property	
			Northwestern		Southwestern						
Year	Eastern	Northern	Coghill	Eshamy	Montague	Southeastern	Total	Sales	Brood	Catch a	Total Run b
1960	92,100	24,729	40,458	4,800	16,782	23,008	201,877			381,858	583,735
61	117,950	50,420	70,940	4,750	34,380	59,910	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
62	148,090	68,390	114,250	5,330	15,070	20,030	371,160			942,900	1,314,060
64	176,840	64,750	136,590	3,560	31,650	29,160	442,550			539,047	981,597
1965	69,180	20,980	39,690	1,840	17,500	46,480	195,670			201,043	396,713
66	85,480	39,440	42,150	3,420	32,720	20,160	223,370			426,628	649,998
67	97,420	50,930	15,290	2,360	11,060	10,700	187,760			274,234	461,994
68	99,350	31,530	37,310	5,100	1,590	21,400	196,280			342,939	539,219
69	81,140	9,770	43,390	2,170	1,710	26,310	164,490			320,977	485,467
1970	58,180	6,100	22,000	770	3,370	11,910	114,900			230,661	345,561
71	79,930	16,190	34,570	1,210	25,620	9,260	182,730			574,265	756,995
72	134,780	79,030	50,520	2,850	5,190	29,310	340,950			45,370	386,320
73	267,210	143,420	89,790	1,130	2,930	42,110	501,810			729,839	1,231,649
74	92,840	53,830	45,010	200	90	2,910	190,328			88,544	278,872
1975	28,220	7,820	7,410	580	0	2,760	46,790			100,479	147,269
76	17,870	26,520	38,460	90	0	950	83,890			370,478	454,368
77	53,200	36,360	41,640	4,480	560	8,370	144,610			575,839	720,449
78	102,290	25,410	27,650	500	0	6,030	161,880			485,147	647,027
79	57,450	17,040	18,660	80	0	4,450	97,680			324,040	421,720
1980	32,160	34,250	14,460	40	280	6,230	87,420	6		412,948	500,374
81	92,240	39,740	47,590	770	0	21,890	202,230	118		1,745,869	1,948,217
82	175,950	80,200	42,750	1,670	0	26,090	326,660	0	86,200	1,335,368	1,748,228
83	145,670	91,770	95,850	3,700	0	22,900	359,890	0	44,000	1,030,546	1,434,436
84	131,130	60,400	24,460	10	0	9,160	225,160	4,886	3,000	1,196,785	1,429,831
1985	98,170	35,080	37,330	640	0	4,610	175,830	3,840	0	1,302,090	1,481,760
86	148,990	60,570	39,400	2,950	0	14,180	266,090	20,683	12,523	1,662,366	1,961,662
87	183,620	38,700	50,970	1,690	0	44,020	319,000	2,549	15,574	1,902,063	2,239,186
88	258,560	75,420	80,020	2,350	500	66,930	483,780	42,694	108,271	1,792,616	2,427,361

a Includes the common property harvest of both wild and hatchery stocks. Does not include hatchery sales harvests.

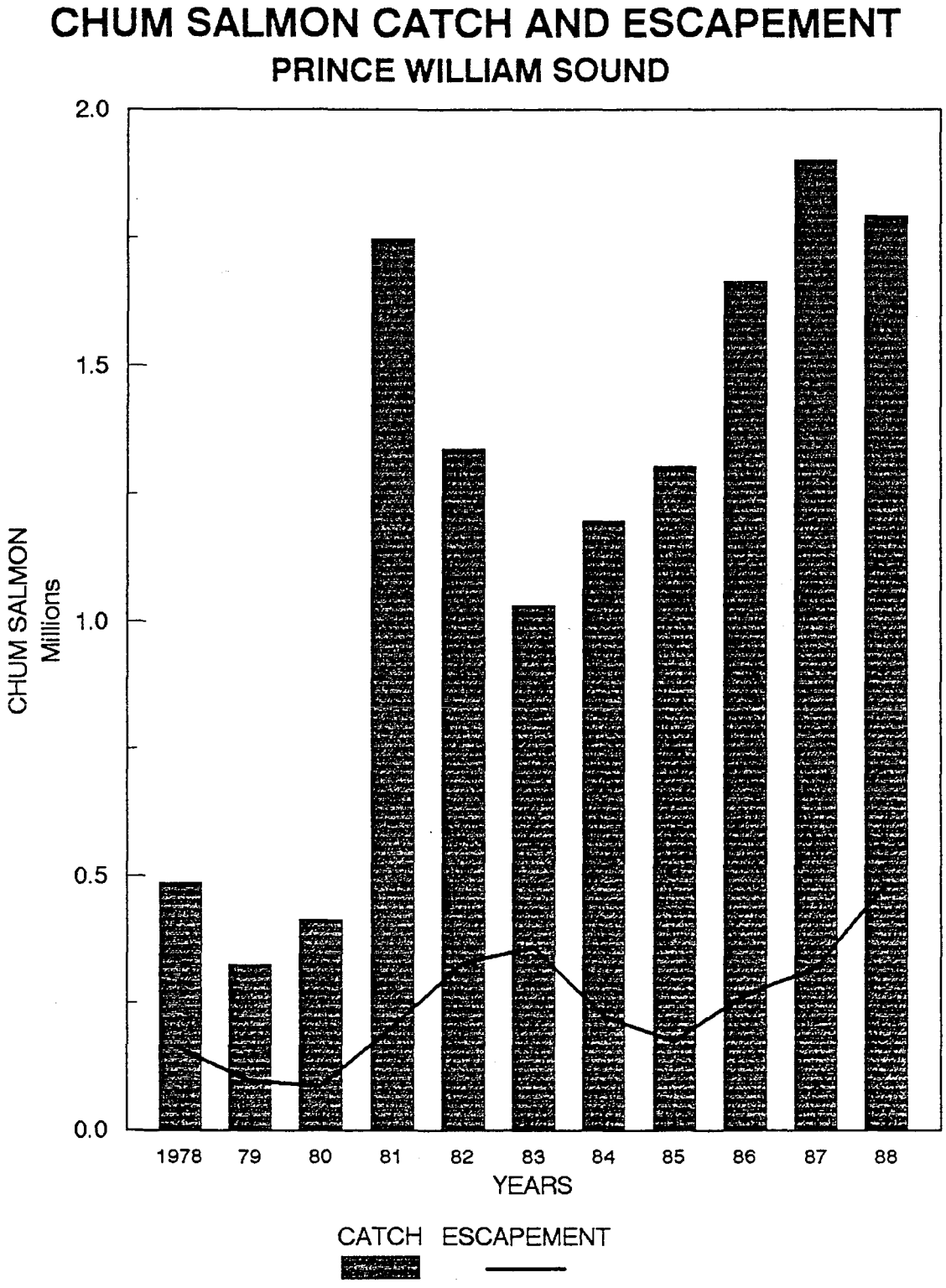
b Represents the sum of the common property catch, hatchery sales and brood, plus the escapement index. Does not account for wild stock escapement into non-index streams.

Appendix E.10. Weekly aerial estimates of chum salmon escapement by statistical area, Prince William Sound, 1988.

Location	Subdistrict	Survey Number: 1 Week ending: 6/18	2 6/25	3 7/02	4 7/09	5 7/16	6 7/23	7 7/30	8 8/06	9 8/13	10 8/20	11 8/27	12 9/03	13 9/10	14 9/17	15 9/24	TOTAL	ADJ.STREAM TOTAL
Orca Inlet	221-10	0	0	0	0	0	0	0	1,000	400	400	200	0	0	0	0	2,000	1,400
Simpson/Sheep	221-20	0	0	965	5,400	19,100	26,000	17,450	11,830	3,320	5,530	500	500	1,000	100	0	91,695	38,690
Gravina	221-30	0	710	5,100	20,250	61,600	60,100	39,900	21,010	20,950	1,500	1,000	0	0	300	0	232,420	93,750
Fidalgo	221-40	0	0	200	1,020	6,650	7,850	8,950	6,820	6,100	12,000	1,100	1,900	6,700	8,000	0	67,290	33,110
Valdez Arm	221-50	0	0	1,250	3,700	28,600	35,300	42,900	21,020	17,000	10,400	8,800	3,400	5,900	1,900	0	180,170	75,350
Port Valdez	221-60	0	10	110	600	3,550	6,450	5,600	3,200	5,100	3,200	3,150	3,400	4,000	100	0	38,470	16,620
Eastern District TOTAL		0	720	7,625	30,970	119,500	135,700	114,800	64,880	52,870	33,030	14,750	9,200	17,600	10,400	0	612,045	258,920
Columbia/Long	222-10	0	0	80	1,700	7,200	6,520	2,800	5,600	5,300	7,200	50	0	300	0	0	36,750	16,290
Wells/Unakwik	222-20	0	0	600	8,000	24,020	39,950	21,950	18,050	10,600	6,300	0	510	0	100	0	130,080	55,720
Eaglek	222-30	0	0	0	0	550	1,900	2,230	2,800	1,800	2,000	0	900	0	0	0	12,180	5,990
Unakwik District	222-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Northern District TOTAL		0	0	680	9,700	31,770	48,370	26,980	26,450	17,700	15,500	50	1,410	300	100	0	179,010	78,000
W. Port Wells	223-10	0	0	0	0	900	4,650	4,710	11,500	11,600	15,250	0	3,400	300	560	0	52,870	25,520
Esther Passage	223-20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E. Port Wells	223-30	0	0	35	14	29	2,260	2,000	7,000	10,000	10,000	0	0	0	0	0	31,338	13,860
Coghill District TOTAL		0	0	35	14	929	6,910	6,710	18,500	21,600	25,250	0	3,400	300	560	0	84,208	39,380
Passage/Cochrane	224-10	0	0	0	1,550	7,610	11,770	12,000	14,000	300	3,250	0	450	0	0	0	50,930	25,600
Culross Pass	224-30	0	0	0	0	300	1,500	0	900	2,000	1,000	0	0	0	1,000	0	6,700	3,120
Nellie Juan	224-40	0	0	0	50	2,200	3,700	2,700	12,350	4,900	1,700	0	0	0	0	0	27,600	14,220
Northwestern District TOTAL		0	0	0	1,600	10,110	16,970	14,700	27,250	7,200	5,950	0	450	0	1,000	0	85,230	42,940
Eshamy	225-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Eshamy District TOTAL		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chenega	226-20	0	0	0	0	0	170	250	300	1,305	755	0	0	0	0	0	2,780	1,850
Bainbridge/Latouche	226-40	0	0	0	0	0	0	0	0	200	0	319	0	0	0	0	519	510
Southwestern District TOTAL		0	0	0	0	0	170	250	300	1,505	755	319	0	0	0	0	3,299	2,360
S. Montague	227-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N. Montague	227-20	0	0	0	0	0	0	0	0	0	1	500	0	0	0	0	501	501
Montague District TOTAL		0	0	0	0	0	0	0	0	0	1	500	0	0	0	0	501	501
Cutoff	228-20	0	0	0	0	0	0	0	20	0	100	0	0	0	0	0	120	120
N. Hawkins	228-30	0	0	0	0	0	0	200	200	200	200	0	0	0	0	0	800	500
Double Bay	228-40	0	0	0	0	3,600	0	4,200	4,400	1,400	500	0	0	0	0	0	14,100	11,000
Johnstone	228-50	0	0	0	2,200	0	13,000	3,600	1,150	450	100	0	0	0	0	0	20,500	13,680
Etches	228-60	0	0	0	1,800	0	37,200	22,800	13,000	2,800	900	550	0	0	0	0	79,050	42,130
Southeastern District TOTAL		0	0	0	4,000	3,600	50,200	30,800	18,770	4,850	1,800	550	0	0	0	0	114,570	67,430
TOTAL OF 8 DISTRICTS		0	720	8,340	46,284	165,909	258,320	194,240	156,150	105,725	82,286	16,169	14,460	18,200	12,060	0	1,078,863	489,531



Appendix E.11. Current year and historical weekly chum salmon escapement performance from index spawning streams, Prince William Sound, 1988.



Appendix E.12. Chum salmon catch and escapement, Prince William Sound, 1978 - 1988.

Appendix E.13. Sockeye salmon escapement counts from selected systems, Prince William Sound, 1988. a

Stream Name	Stream Number	Weekly Count (week ending dates)									
		16-Jul	23-Jul	30-Jul	06-Aug	13-Aug	20-Aug	27-Aug	03-Sep	10-Sep	17-Sep
Robe River b	137										
Billy's Hole	218			800	700	500	300	100			
Red Lake	300	600	900	1,100	1,200	500	400				
Halferty Creek a	454										
Cochrane Creek	461									25	
Shrode Lake	476						500			300	200
Jackpot Lakes	608					150	400	500	200	50	50
Bainbridge	630			300	100	150	200	100		50	
Point Creek a	702										
Cabin Creek	747						50	100	200	50	
Udall Creelk	770								10		
Pautzke Creek	775							10			
Total		600	900	2,200	2,000	1,300	1,850	810	410	475	250

a Counts contained in this table are obtained in conjunction with the regular pink and chum aerial survey program. Many of these sockeye systems are difficult to survey by air and thus the counts do not necessarily represent total live abundance at a particular time.

b No sockeye counts obtained in 1988.

Appendix E.14. Estimated age and sex composition of the commercial sockeye salmon harvest in the Southwestern District purse seine fishery, Prince William Sound, 1988.

		Brood Year and Age Group					
		1985	1984		1983		
		1.1	0.3	1.2	1.3	2.2	Total
Catch Dates:	8/05 - 9/06						
Sample Dates:	8/11 - 8/19						
Sample Size:	545						
Female	Percent of Sample	0.0	0.0	50.1	2.0	0.9	53.0
	Number in Catch	0	0	5,568	222	100	5,890
Male	Percent of Sample	0.2	0.2	43.8	1.5	1.3	47.0
	Number in Catch	22	22	4,868	167	145	5,224
Total	Percent of Sample	0.2	0.2	93.9	3.5	2.2	100.0
	Number in Catch	22	22	10,436	389	245	11,114
	Standard Error	21	21	114	88	70	

Appendix E.15. Estimated age and sex composition of the commercial chum salmon harvest in the purse seine and gill net fisheries, Prince William Sound, 1988.

		Brood Year and Age Group					
		1985	1984	1983	1982	1981	
		0.2	0.3	0.4	0.5	0.6	Total
PURSE SEINE a							
Catch Dates:	6/29-8/26						
Sample Dates:	6/30-8/20						
Sample Size:	4,207						
Female	Percent of Sample	0.3	17.3	37.8	0.5	0.0	55.9
	Number in Catch	3,509	191,388	419,448	5,212	42	619,599
Male	Percent of Sample	0.4	13.1	30.0	0.6	0.0	44.1
	Number in Catch	4,182	145,389	332,123	6,479	0	488,173
Total	Percent of Sample	0.7	30.4	67.8	1.1	0.0	100.0
	Number in Catch	7,733	336,626	751,202	12,010	42	1,107,613
	Standard Error	1,673	9,898	10,100	2,461	39	
COGHILL PURSE SEINE AND GILL NET							
Catch Dates:	6/20-9/24						
Sample Dates:	6/21-7/11						
Sample Size:	1,602						
Female	Percent of Sample	0.3	26.1	40.2	0.4	0.0	67.0
	Number in Catch	943	96,000	148,138	1,512	0	246,593
Male	Percent of Sample	0.0	11.4	21.3	0.3	0.0	33.0
	Number in Catch	166	41,990	78,639	1,128	0	121,923
Total	Percent of Sample	0.3	37.5	61.5	0.7	0.0	100.0
	Number in Catch	1,109	137,990	226,777	2,640	0	368,516
	Standard Error	424	4,551	4,579	854	0	
ESHAMY DRIFT AND SET GILL NET							
Catch Dates:	6/20-8/25						
Sample Dates:	6/22-8/04						
Sample Size:	777						
Female	Percent of Sample	1.2	25.0	30.4	0.6	0.0	57.2
	Number in Catch	3,681	74,943	91,108	1,736	0	171,468
Male	Percent of Sample	0.2	15.3	26.1	1.2	0.0	42.8
	Number in Catch	669	45,715	78,105	3,680	0	128,169
Total	Percent of Sample	1.5	40.3	56.5	1.8	0.0	100.0
	Number in Catch	4,350	120,658	169,213	5,416	0	299,637
	Standard Error	950	5,467	5,481	1,489	0	

a This is a weighted pool of temporally stratified catch at sex and age estimates for the purse seine fisheries in the Eastern, Northern, Northwestern, Southwestern and Southeastern districts.

Appendix E.16. Summary of periods, dates, hours fished, and emergency orders issued by district, for the commercial purse seine salmon fishery, Prince William Sound, 1988.

Stat. Week	Eastern (221)		Northern (222)		Northwestern (224)		Southwestern (226)		Emergency Orders Issued
No.	Dates	Hours Fished	Dates	Hours Fished	Dates	Hours Fished	Dates	Hours Fished	
27	6/29	12 a	6/29	12 a					2-F-E-18-88
28	7/05 - 7/06	36 b	7/05 - 7/06	36 b					2-F-E-19-88
29	7/11 - 7/12	36 c	7/11 - 7/12	36 c	7/11 - 7/12	36 c	7/11 - 7/12	36 c	2-F-E-21-88
32	8/05 - 8/06	24 d	8/05 - 8/06	24 d					2-F-E-26-88
33	8/11 - 8/12	36 e							2-F-E-29-88
33	8/19	12 f							2-F-E-32-88
35	8/26	12 g							2-F-E-34-88

a The season was officially open for a 12 hour period beginning 9 a.m. until 9 p.m., Wednesday, June 29 in portions of the Eastern and Northern districts to harvest the surplus buildup of early chum salmon.

b A 36 hour period was announced beginning 9 a.m., Tuesday, July 5 until 9 p.m., Wednesday, July 6 to harvest the surplus buildup of early chums.

c Beginning 9 a.m., Monday, July 11 until 9 p.m., Tuesday, July 12 there was a 36 hour period announced for harvesting surplus chum salmon. Areas near hatchery terminal areas remained closed for the protection of broodstock.

d Restricted areas in the Northern district and the Pt. Fidalgo subdistrict were opened for a 24 hour period beginning 12 Noon, Friday, August 5 until 12 Noon, Saturday, August 6.

e The Pt. Fidalgo subdistrict was opened for a 36 hour period beginning 9 a.m., Thursday, August 11 until 9 p.m., Friday, August 12.

f The Pt. Fidalgo subdistrict was opened for a 12 hour period beginning 9 a.m. until 9 p.m., Friday, August 19.

g The Pt. Fidalgo subdistrict was opened for a 12 hour period beginning 9 a.m. until 9 p.m., Friday, August 26.

Appendix F.1. Daily pink salmon sales harvests, sex ratios, revenue and brood stock collection at the Esther Island Hatchery, 1988. Does not include carcass sales.

Date	Fish Sales (numbers) Daily	Fish Sales (numbers) Cumulative	Pounds Sold	Average Fish Wt	Price/ Pound	Revenue Daily	Revenue Cumulative	Brood Stock a Fish/Day	Brood Stock a Cumulative	% Female
07/23								4,780	4,780	14.4
07/24								0	4,780	
07/25								0	4,780	
07/26								0	4,780	
07/27	16,943	16,943	58,626	3.46	$0.910	$53,343.80	$53,344	0	4,780	
07/28	17,257	34,200	57,983	3.36	$0.964	$55,889.81	$109,234	0	4,780	
07/29	11,208	45,408	37,661	3.36	$1.000	$37,661.00	$146,895	0	4,780	
07/30	16,685	62,093	60,235	3.61	$1.050	$63,047.97	$209,943	0	4,780	
07/31	20,429	82,522	68,845	3.37	$1.100	$75,722.62	$285,665	0	4,780	
08/01	27,037	109,559	94,630	3.50	$1.124	$106,335.73	$392,001	0	4,780	
08/02		109,559					$392,001	0	4,780	
08/03	49,875	159,434	171,707	3.44	$1.193	$204,807.09	$596,808	0	4,780	
08/04	43,067	202,501	152,066	3.53	$1.242	$188,805.15	$785,613	0	4,780	
08/05		202,501					$785,613	0	4,780	
08/06		202,501					$785,613	5,000	9,780	21.4
08/07	107,495	309,996	367,632	3.42	$1.000	$367,632.00	$1,153,245	12,000	21,780	21.4
08/08	96,507	406,503	337,654	3.50	$1.278	$431,516.62	$1,584,762	6,100	27,880	22.2
08/09		406,503					$1,584,762	8,450	36,330	23.9
08/10	32,744	439,247	116,240	3.55	$1.119	$130,072.56	$1,714,834	8,125	44,455	25.3
08/11		439,247					$1,714,834	11,150	55,605	25.3
08/12		439,247					$1,714,834	17,750	73,355	33.8
08/13	600	439,847	2,040	3.40	$0.700	$1,428.00	$1,716,262	13,500	86,855	33.8
08/14	600	440,447	2,040	3.40	$0.700	$1,428.00	$1,717,690	10,225	97,080	35.5
08/15		440,447					$1,717,690	7,281	104,361	35.5
08/16	600	441,047	2,040	3.40	$0.700	$1,428.00	$1,719,118	2,758	107,119	38.3
08/17		441,047					$1,719,118	2,838	109,957	38.3
08/18	600	441,647	2,040	3.40	$0.700	$1,428.00	$1,720,546	6,993	116,950	49.7
08/19		441,647					$1,720,546	6,215	123,165	49.7
08/20	630	442,277	2,142	3.40	$0.700	$1,499.40	$1,722,046	7,785	130,950	60.3
08/21		442,277					$1,722,046	14,575	145,525	60.3
08/22	600	442,877	2,040	3.40	$0.700	$1,428.00	$1,723,474	32,450	177,975	63.2
08/23		442,877					$1,723,474	16,151	194,126	63.2
08/24	330	443,207	1,122	3.40	$0.700	$785.40	$1,724,259	25,250	219,376	67.4
08/25		443,207					$1,724,259	25,075	244,451	67.4
08/26	621	443,828	2,111	3.40	$0.700	$1,477.70	$1,725,737	49,829	294,280	74.8
08/27								15,050	309,330	74.8
08/28								0	309,330	
08/29								0	309,330	
08/30								1,500	310,830	74.8
08/31								0	310,830	
09/01								0	310,830	
09/02								0	310,830	
09/03								0	310,830	
09/04								3,200	314,030	74.8
09/05								850	314,880	74.8
09/06								750	315,630	74.8
Totals	443,828		1,538,854	3.47	$1.121	$1,725,737		315,630		

a Inseason estimates. May include overmature/green fish, holding mortalities and fish excess to spawning needs Actual number of adults used for broodstock in 1988 was 137,204 pink salmon.

Appendix F.2. Daily pink salmon sales harvests, sex ratios, revenue and brood stock collection at the Armin F. Koernig Hatchery, 1988. Does not include carcass sales.

Date	Fish Sales (numbers) Daily	Fish Sales (numbers) Cumulative	Pounds Sold	Average Fish Wt	Price/ Pound	Revenue Daily	Revenue Cumulative	Brood Stock a Fish/Day	Brood Stock a Cumulative	% Female
07/22	11,282	11,282	39,389	3.49	$0.846	$33,320.58	$33,321			
07/24	9,804	21,086	31,558	3.22	$0.813	$25,644.03	$58,965			
07/25	12,441	33,527	43,175	3.47	$0.826	$35,645.28	$94,610			
07/26	21,087	54,614	73,716	3.50	$0.852	$62,769.17	$157,379			
07/27	15,502	70,116	54,192	3.50	$0.953	$51,619.51	$208,999			
07/28	31,347	101,463	100,042	3.19	$1.000	$100,042.00	$309,041			
07/29	20,994	122,457	70,239	3.35	$1.049	$73,673.69	$382,714			
07/30	36,541	158,998	123,785	3.39	$1.101	$136,287.29	$519,002			
07/31	31,863	190,861	122,404	3.84	$1.151	$140,911.48	$659,913			
08/01	16,663	207,524	66,054	3.96	$1.177	$77,745.56	$737,659			
08/02	37,622	245,146	154,776	4.11	$1.205	$186,536.04	$924,195			
08/03	65,908	311,054	239,495	3.63	$1.242	$297,356.99	$1,221,552			
08/04	55,778	366,832	186,452	3.34	$1.560	$215,538.51	$1,437,090			
08/05	33,695	400,527	112,635	3.34	$0.923	$103,905.79	$1,540,996			
08/06	36,512	437,039	125,730	3.44	$1.212	$152,384.76	$1,693,381			
08/07	114,481	551,520	401,848	3.51	$1.264	$507,947.02	$2,201,328			
08/08	82,060	633,580	281,684	3.43	$1.217	$342,751.81	$2,544,080			
08/09	39,401	672,981	136,903	3.47	$1.018	$139,353.56	$2,683,433			
08/10		672,981					$2,683,433			
08/11		672,981					$2,683,433	37,310	37,310	25.0
08/12	523	673,504	1,778	3.40	$0.700	$1,244.60	$2,684,678	20,970	58,280	33.7
08/13		673,504					$2,684,678	13,571	71,851	33.7
08/14	691	674,195	2,322	3.36	$0.700	$1,625.40	$2,686,303	20,299	92,150	35.2
08/15		674,195					$2,686,303	13,185	105,335	35.2
08/16	646	674,841	2,152	3.33	$0.700	$1,506.40	$2,687,809	13,566	118,901	40.4
08/17		674,841					$2,687,809	15,667	134,568	40.4
08/18	600	675,441	2,160	3.60	$0.700	$1,512.00	$2,689,321	20,251	154,819	51.3
08/19		675,441					$2,689,321	26,028	180,847	51.3
08/20	619	676,060	1,995	3.22	$0.700	$1,396.50	$2,690,718	12,734	193,581	47.2
08/21		676,060					$2,690,718	13,866	207,447	47.2
08/22	641	676,701	2,243	3.50	$0.700	$1,570.10	$2,692,288	35,377	242,824	54.6
08/23		676,701					$2,692,288	9,601	252,425	54.6
08/24	607	677,308	2,055	3.39	$0.700	$1,438.50	$2,693,727	16,361	268,786	64.8
08/25		677,308					$2,693,727	19,869	288,655	64.8
08/26		677,308					$2,693,727	19,148	307,803	64.8
08/27	625	677,933	2,150	3.44	$0.700	$1,505.00	$2,695,232	24,337	332,140	69.8
08/28	645	678,578	2,200	3.41	$0.700	$1,540.00	$2,696,772	29,100	361,240	64.5
08/29		678,578					$2,696,772	7250	368,490	64.5
08/30		678,578					$2,696,772	7500	375,990	64.5
08/31		678,578					$2,696,772		375,990	
09/01		678,578					$2,696,772		375,990	
09/02		678,578					$2,696,772	15000	390,990	64.5
09/03		678,578					$2,696,772	13000	403,990	64.5
Totals	678,578		2,383,132	3.51	$1.132	$2,696,772		403,990		

a Inseason estimates. May include overmature/green fish, holding mortalities and fish excess to spawning needs. Actual number of adults used for broodstock in 1988 was 186,680 pink salmon.

Appendix F.3. Daily pink salmon sales harvests, sex ratios, revenue and brood stock collection at the Solomon Gulch Hatchery, 1988. a

Date	Fish Sales		Pounds Sold	Average Fish Wt	Price/ Pound	Revenue		Brood Stock b		% Female
	Daily	Cumulative				Daily	Cumulative	Fish/Day	Cumulative	
06/29	37,692	37,692	126,268	3.35	$0.734	$92,684.14	$92,684			14.0
06/30	25,480	63,172	85,359	3.35	$0.731	$62,397.32	$155,081			18.2
07/01	14,809	77,981	49,610	3.35	$0.725	$35,972.21	$191,054			31.0
07/02	46,002	123,983	155,029	3.37	$0.729	$113,018.09	$304,072			29.2
07/03	36,282	160,265	122,269	3.37	$0.721	$88,207.50	$392,279			36.0
07/04	55,988	216,253	189,239	3.38	$0.699	$132,201.91	$524,481			30.0
07/05	43,042	259,295	143,526	3.33	$0.741	$106,366.97	$630,848			40.0
07/06	4,597	263,892	17,929	3.90	$0.754	$13,517.60	$644,366			40.5
07/07	43,422	307,314	169,652	3.91	$0.730	$123,790.13	$768,156			31.3
07/08	74,820	382,134	265,664	3.55	$0.725	$192,606.39	$960,762	1500	1,500	37.6
07/09	21,509	403,643	75,284	3.50	$0.740	$55,710.16	$1,016,472	15500	17,000	38.4
07/10	16,322	419,965	55,820	3.42	$0.740	$41,307.13	$1,057,780		17,000	48.3
07/11	17,892	437,857	71,568	4.00	$0.740	$52,960.32	$1,110,740	15,000	32,000	40.7
07/12	35,369	473,226	138,701	3.92	$0.740	$102,678.70	$1,213,419		32,000	51.6
07/13	15,623	488,849	54,682	3.50	$0.757	$41,366.94	$1,254,786		32,000	44.0
07/14	7,511	496,360	26,289	3.50	$0.757	$19,887.63	$1,274,673		32,000	
07/15		496,360					$1,274,673	6,700	38,700	62.5
07/16		496,360					$1,274,673	33,900	72,600	
07/17		496,360					$1,274,673		72,600	
07/18		496,360					$1,274,673		72,600	51.3
07/19		496,360					$1,274,673	55,000	127,600	
07/20	13,000	509,360	45,498	3.50	$0.608	$27,681.98	$1,302,355	23,000	150,600	59.0
07/21	9,631	518,991	33,709	3.50	$0.510	$17,202.01	$1,319,557	8,000	158,600	
07/22		518,991					$1,319,557		158,600	60.0
07/23	14,041	533,032	49,144	3.50	$0.582	$28,599.51	$1,348,157		158,600	
07/24		533,032					$1,348,157		158,600	
07/25		533,032					$1,348,157	17,046	175,646	
07/26	4,963	537,995	17,370	3.50	$0.360	$6,248.60	$1,354,405		175,646	
07/27		537,995					$1,354,405		175,646	
07/28	6,837	544,832	23,930	3.50	$0.371	$8,868.85	$1,363,274		175,646	
Totals	544,832		1,916,540	3.52	$0.711	$1,363,274		175,646		

a Data provided by Valdez Fisheries Development Association. Does not include carcass sales.

b May include overmature/green fish, holding mortalities and fish excess to spawning needs. Actual number of adults used for broodstock in 1988 was 122,028 pink salmon.

Appendix F.4. Sales harvests of salmon by species from private nonprofit hatcheries, Prince William Sound, 1978 - 1988. a

Year	Hatchery b	Catch by Species			
		Coho	Pink	Chum	Total
1978	AFK		133,648		133,648
1979	AFK		223,761		223,761
1980	AFK, N		346,928	6	346,934
1981	AFK		707,037	118	707,155
1982	AFK		1,355,315		1,355,315
1983	AFK		765,924		765,924
1984	AFK, SG		402,825	4,886	407,711
1985	AFK, SG		1,273,951	3,840	1,277,791
1986	AFK, SG	2,156	909,219	20,683	932,058
1987 c	AFK, SG, E, CC	7,015	2,986,061	2,549	2,995,625
1988	AFK, SG, E	6,110	1,667,238	42,694	1,716,042
TOTAL		15,281	10,771,907	74,776	10,861,964

a Includes salmon harvested by private nonprofit hatcheries in Prince William Sound to generate revenues to offset operational costs. Does not include carcass sales.

b Hatchery codes: AFK = Armin F. Koernig Hatchery (PWSAC)
E = Esther Hatchery (PWSAC)
SG = Solomon Gulch Hatchery (VFDA)
N = NERKA Inc.
CC = Cannery Creek

c PWSAC administered a sales harvest at the state owned Cannery Creek hatchery. A majority of the coho salmon sold were carcasses and surplus brood fish from the Solomon Gulch hatchery.

Appendix F.5. Summary of pink and chum salmon returns to Prince William Sound hatcheries, 1988.

Pink salmon returns to P.W.S. hatcheries. a

Hatchery	1987 Fry Release (millions)	1988 Forecast Return	Estimated Total Return	Marine Survival	C.P.F. Comm Catch	Sales Harvest b	Escmt. and Brood c	Eggs Taken (millions)
Solomon Gulch	59.7	3,180,000	1,126,996	1.9%	370,000	544,832	212,164	154.6
A. F. Koernig	116.1	6,150,000	6,108,238	5.3%	5,148,000	678,578	281,660	218.7
Esther	75.9	3,710,000	3,866,618	5.1%	3,200,000	443,828	222,790	151.7
Cannery Creek	45.8	2,120,000	227,688	0.5%	100,000	0	127,688	66.9
Main Bay	2.1	100,000	100,000	5.0%	100,000	-	-	-
Total Pink	299.7	15,260,000	11,429,540		8,918,000	1,667,238	844,302	591.9

Chum salmon returns to P.W.S. hatcheries.

Hatchery	1988 Forecast Return	Estimated Total Return	C.P.F. Comm Catch	Sales Harvest b	Escmt. and Brood c	Eggs Taken (millions)
Solomon Gulch	52,100	9,025	6,900	0	2,125	1.6
A. F. Koernig	187,000	119,224	73,000	31,772	14,452	4.3
Esther	229,000	299,749	200,000	10,922	88,827	101.5
Cannery Creek	-	5,174	2,300	0	2,874	0.4
Main Bay	194,000	200,000	200,000	0	0	0.0
Total Chum	662,100	633,172	482,200	42,694	108,278	107.8

a Estimates of the common property catch of pink salmon from the Sound's hatcheries are based on timing and location of catch as reported on fish tickets.

b Does not include carcass sales. Data is from PWSAC and VFDA annual reports.

c May include stream escapement, overmature/green fish, holding mortalities and excess fish as well as broodstock harvests. Data is from PWSAC and VFDA annual reports.

Appendix F.6. Estimated total hatchery and wild stock production of pink salmon, Prince William Sound, 1978 to 1988. a

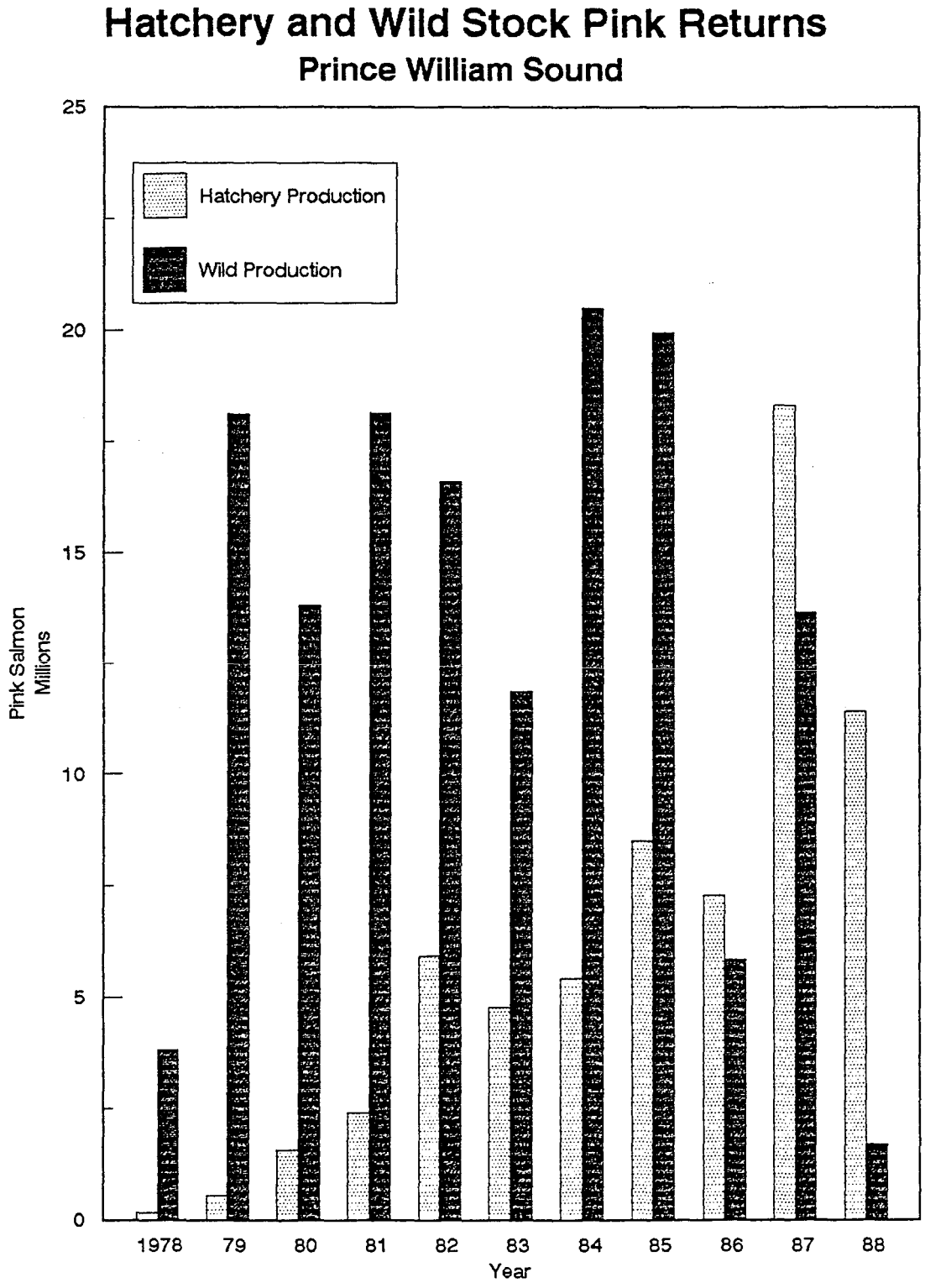
	Total Return by Hatchery b							
Year	Solomon Gulch (VFDA)	Armin F. Koernig (PWSAC)	Esther (PWSAC)	Main Bay (ADF&G)	Cannery Cr. (ADF&G - PWSAC)	Total Hatchery	Total Wild Stock Component c	
1978		154,620				154,620	3,835,953	
1979		552,955				552,955	18,125,908	
1980		1,493,489			90,348	1,583,837	13,801,072	
1981		2,264,854			141,328	2,406,182	18,147,878	
1982		5,134,363		35,000	760,389	5,929,752	16,605,877	
1983	92,000	3,722,502		496,850	469,436	4,780,788	11,876,652	
1984	200,000	2,900,000		1,200,000	1,139,000	5,439,000	20,497,336	
1985	421,000	5,030,000		383,000	2,686,000	8,520,000	19,947,862	
1986	1,240,000	4,964,000		232,000	853,000	7,289,000	5,847,146	
1987	5,156,000	7,659,000	3,035,000	328,000	2,123,000	18,301,000	13,653,014	
1988	d 1,126,996	6,108,238	3,866,618	100,000	227,688	11,429,540	1,696,936	d

a Prior to 1987, there was no definitive or statistically valid method of separating hatchery and wild stock composition in the commercial catch. The above estimates are based on presumed wildstock exploitation rates which in turn are determined by the wild stock escapement estimate. The wild stock escapement index is only a minimum estimate. The true wild stock escapement is not known. Consequently estimates prior to 1987 may exaggerate hatchery contributions somewhat. In 1987 returning adults from the Cannery Creek, Armin F. Koernig and and Esther hatcheries were marked with half length coded wire tags. In a jointly funded program conducted by ADF&G and PWSAC, these marked fish were recovered and analyzed to estimate hatchery contributions to the fishery (Peltz, 1988).

b Hatchery totals include terminal harvests, brood stock collection, escapement and estimated common property fishery interception.

c Total wild stock return represents the estimated wild stock catch plus the aerial escapement index.

d 1988 wildstock component = 732,406 catch plus 964,530 escapement index.



Appendix F.7. Estimated total pink salmon returns to hatcheries and wild stock systems, Prince William Sound, 1978 - 1988.

Appendix F.8. Summary of periods, dates, hours fished, and emergency orders issued for the hatchery harvest areas, Prince William Sound, 1988.

Stat. Week	Solomon Gulch Hatchery (221-62)		Cannery Creek Hatchery (222-210)		Esther Hatchery (223-61)		Main Bay Subdistrict (225-21)		Armin F. Koernig Hatchery (226-61 & 226-62)		Emergency Orders Issued
No.	Dates	Hours Fished	Dates	Hours Fished	Dates	Hours Fished	Dates	Hours Fished	Dates	Hours Fished	
25	6/17 - 7/25	a									2-F-E-16-88
27					6/27 - 6/29	48 b	6/26 - 7/02	132 b			2-F-E-18-88
28 c							7/03 - 7/09	168			2-F-E-19-88
29 d							7/10 - 7/16	168			2-F-E-21-88
30							7/17 - 7/20	93 e			2-F-E-23-88
31	7/25	6 f					7/25 - 7/27	60			2-F-E-24-88
32	8/05 - 8/06	24 g			8/05 - 8/06	24 g	8/01 - 8/03	60	8/05 - 8/06	24 g	2-F-E-26-88
33	8/11 - 8/12	36 j			8/10 - 8/13	87 i	8/08 - 8/10	60 h	8/10 - 8/13	87 i&j	2-F-E-27-88, 2-F-E-28-88
34					8/14 - 8/20	168	8/15 - 8/18	84 l	8/14 - 8/20	168 j&k	2-F-E-29-88, 2-F-E-30-88
35					8/21 - 8/27	168 m	8/22 - 8/25	84 l	8/21 - 8/27	168	2-F-E-31-88, 2-F-E-33-88
36					8/28 - 9/03	168 o&q	8/29	0 n	8/28 - 9/03	168 p	2-F-E-35-88, 2-F-E-36-88
37					9/04 - 9/05	36 r			9/04 - 9/10	168 r	2-F-E-37-88, 2-F-E-38-88
37					9/07 - 9/10	84 r					2-F-E-39-88
38					9/11 - 9/17	168 s			9/11 - 9/17	168	2-F-E-41-88
39					9/18 - 9/24	168			9/18 - 9/24	168	
40					9/25	0 t			9/25	0 t	2-F-E-42-88

a Solomon Gulch Hatchery Special Harvest Area (SHA) was opened 12 Noon, Friday, June 17, to the taking of salmon by the hatchery operator.

b Main Bay subdistrict was opened June 27 at 12 Noon for seven day a week continuous fishing until further notice. In addition, the Esther Secondary Terminal Harvest Area(STHA) was opened 12 Noon Monday, June 27 until 12 Noon Wedn. for 48 hours. Solomon Gulch STHA and SHA remain closed because the predicted pink run had not yet materialized.

c Esther Subdistrict STHA remain closed during a district opener for the conservation of broodstock. Waters in north Valdez Arm remain closed to seining in order to conserve returning broodstock to Solomon Gulch.

d North Valdez arm remains closed for broodstock protection as well as the Esther subdistrict.

e The Main Bay subdistrict was put on a weekly schedule to close 9 p.m., Wednesday, July 20 and reopened Monday, July 25 9 a.m. to 9 p.m. Wednesday for 60 hours on a weekly basis until further notice.

f Solomon Gulch SHA and STHA was opened for 6 hours from 3 - 9 p.m., July 25 to harvest surplus salmon.

g Six isolated areas around the Sound were opened for 24 hours beginning 12 Noon, Friday August 5 until Saturday, 12 Noon, including the Port San Juan subdistrict, the Esther Primary (PTHA) and Secondary (STHA) Terminal Harvest Areas, the Solomon Gulch STHA and Valdez Narrows subdistrict. The Cannery Creek STHA remained closed.

h Main Bay continues its 60 hour a week fishing schedule, commencing 9 a.m., Monday, August 8.

i The Port San Juan subdistrict and Esther STHA opened 9 a.m., Wednesday, August 10 for seven day a week continuous fishing until further notice. The Sanctuary Zones of both AFK and Esther hatcheries are open.

j The AFK SHA opened for 6 hours from 12 Noon to 6 p.m., Thursday, August 11. The Valdez Arm subdistrict and Solomon Gulch STHA opened for 36 hours beginning 9 a.m., Thursday, August 11 until 9 p.m., Friday, August 12.

k Waters withing 500 yards of anadromous streams in Sawmill and Crab Bays were closed to commercial seiners to protect wild stock in those streams.

l Main Bay weekly periods were expanded until further notice to 84 hours commencing 9 a.m., Monday August 15 and closing 9 p.m. on Thursday.

m The Sanctuary Zone of Esther Hatchery closed as of 12 Noon, Sunday, August 21.

n Main Bay subdistrict closed for the season as of 9 a.m., Monday, August 29.

o The Sanctuary Zone at Esther reopened as of 12 Noon, Sunday, August 28 until further notice.

p A portion of the AFK SHA opened after 12 Noon, Tuesday, August 30 until further notice.

q A portion of the Esther SHA opened after 12 Noon, Thursday, September 1 until further notice.

r The Esther Hatchery SHA and Sanctuary Zone was closed as of 12 Noon, Monday, September 5. The SHA of AFK closed as of 12 Noon, September 7, however the Sanctuary Zone and Port San Juan subdistrict remain open to fishing seven days a week continuous fishing. The Sanctuary Zone up to the SHA of Esther was reopened to continuous fishing after 12 Noon, Wednesday, September 7.

s The Sanctuary Zone at Esther was closed until further notice commencing 12 Noon, Monday, September 19.

t All areas in the Esther and Port San Juan subdistricts were closed for the season, with the rest of Prince William Sound effective 12 Noon, Sunday, September 25.

Appendix G.1. Subsistence salmon harvest by species and gear type, Prince William Sound, 1988.

Area	Permits Issued	Permits Fished	Gear a Type	KING	SOCKEYE	COHO	OTHER b	TOTALS
PRINCE WILLIAM	7	4	D.G.N.	2	51	7	19	79
SOUND	0	0	P.S.	0	0	0	0	0
	0	0	S.N.	0	0	0	0	0
P.W.S. TOTAL	7	4		2	51	7	19	79
COPPER RIVER FLATS	114	57	D.G.N.	59	226	42	113	440
TATITLEK c	10	5	MX.	1	50	8	545	604
SOUTHWESTERN c	17	9	MX.	2	210	249	390	851
AREA TOTAL	148	75		64	537	306	1,067	1,974

a D.G.N. = Drift gill net; P.S. = Purse seine; S.N. = Set net; MX. = Combination of gear (drift gill net and dip net).

b Includes cutthroat and Dolly Varden as well as misc. salmon species.

c The "other" species catch column is composed of approximate 50/50 pink and chum salmon. This is the first year of use of these special subsistence permits.

Appendix G.2. Salmon catch and effort in the Copper River District subsistence gill net fishery, 1960 - 1988.

Year	Total Issued	Permits Returned				Catch				
		Unused	Unsuccessful	Successful	Total	Chinook	Sockeye	Coho	Total	
1960	13	No Record	No Record	Unknown	No Record			158	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	a
1983	87	42	4	27	73	79	107	57	254	b
1984	118	47	14	43	104	68	324	135	549	c
1985	94	27	9	58	94	88	261	83	433	d
1986	88	28	9	48	85	86	348	47	481	e
1987	95	50	5	34	89	49	359	14	510	f
1988	114	40	17	40	97	59	226	42	440	g

a Includes 1 pink and 1 chum.
b Includes 11 pinks.
c Includes 22 pinks.
d Includes 1 chum.
e Includes 23 Dolly Varden.
f Includes 73 Dolly Varden, 6 Whitefish and 9 Cutthroat
g Includes 4 chum, 87 Dolly Varden, 15 Whitefish and 7 Cutthroat

Appendix G.3. Salmon catch and effort in the Prince William Sound subsistence fishery, 1960 - 1988. a

	Permits		Catch						
Year	Issued	Returned	Chinook	Sockeye	Coho	Pink	Chum	Unknown	Total
1960	50		1	139	505	1292	75	150	2162
1961	12		3	41	123	732	3		902
1962	9				119	214	142		475
1963	9				406	298	24		728
1964	15			11		900			911
1965	22	16				179	25		204
1966	3	3		3	19	20	50		92
1967	4	3			4	4			8
1968	4	3			20	156		22	198
1969	7	3			16				16
1970	1	1							0
1971	3	2				46			46
1972	0								0
1973	19	16			289				289
1974	3	1							0
1975	2	0							0
1976	0								0
1977	4	4							0
1978	3	2							0
1979	15	2							0
1980	26	15		7	6				13
1981	12	8		3	29		2		34
1982	35	27		84	4	31	24		143
1983	26	21		22	36	9	79		146
1984	8	8		10		11	2		23
1985	22	16	1	27	16	14	26		84
1986	25	14		5	15				20
1987	18	17	5	31	6		16		58
1988	7	7	2	51	7	10	9		79

a Includes only catches from Prince William Sound proper.

Appendix G.4. Salmon catch by species and numbers of permits by gear type for the Copper River subsistence and personal use fisheries, 1965 - 1988.

	Permits Issued			Reported Catch			Reported Catch by Species			Total Catch	
Year	Dip Net	Fish Wheel	Total	Dip Net	Fish Wheel	Total	Chinook	Sockeye	Coho	Reported	Estimated
1965	982	143	1,125	7,215	5,813	13,028	664	12,760	52	13,476	16,818
1966	1,132	138	1,270	7,452	9,188	16,640	555	16,718		17,273	21,896
1967	1,166	154	1,320	6,146	8,360	14,506	419	14,457		14,876	19,007
1968	1,235	143	1,378	8,040	6,071	14,111	644	14,819	233	15,696	20,383
1969	1,415	167	1,582	18,054	6,220	24,274	719	27,604	224	28,547	29,266
1970	3,220	267	3,487	22,700	9,886	32,586	427	36,500	554	37,481	42,757
1971 (a)	4,168	374	4,542	28,115	9,370	37,485	1,363	37,517	363	39,243	48,449
1972 (b)	3,485	205	3,690	18,996	7,854	26,850	1,501	26,850	248 2	28,599	32,468
1973 (c)	3,840	305	4,145	16,407	10,943	27,350	1,846	27,350	51 3	29,247	29,248
1974 (d)	3,305	288	3,593	15,143	7,657	22,800	1,141	22,800	163 4	24,104	26,001
1975	2,452	350	2,802	7,694	5,626	13,320	1,705	13,320		15,025	15,357
1976	2,512	451	2,963	12,130	8,321	20,451	2,017	20,451	17	22,485	23,623
1977	3,526	540	4,066	22,612	12,751	35,363	2,171	35,363	454	37,988	41,815
1978	3,313	392	3,705	12,569	6,638	19,207	2,050	19,207	633	21,890	22,029
1979	2,730	470	3,200	11,887	10,251	22,138	2,372	22,138	705	25,215	30,963
1980	2,804	399	3,203	14,650	9,805	24,455	2,256	21,437	639	24,332	35,081
1981	3,555	523	4,078	28,872	26,924	55,796	1,913	53,008	849	55,770	68,746
1982 (e)	5,475	615	6,090	62,614	38,120	100,734	2,532	96,799	1,246	100,577	110,006
1983	6,911	630	7,541	72,257	35,791	108,228	5,421	100,995	1,690	108,106	118,728
1984 s	104	458	562	1,288	20,374	21,662	415	20,999	237	21,651	23,093
p	5,311	17	5,328	46,018	223	46,241	1,592	44,079	552	46,223	49,940
s&p	5,415	475	5,890	47,306	20,597	67,903	2,007	65,078	789	67,874	73,033
1985	4,153	533	5,686	29,856	22,877	52,733	1,673	50,488	544	52,705	64,200
1986 s(f)	39	366	405	645	25,136	25,781	622	24,890	264	25,776	28,423
p	3,966	65	4,031	41,641	1,054	42,695	2,294	39,794	521	42,609	44,047
s&p	4,005	431	4,436	42,286	26,190	68,476	2,916	64,684	785	68,385	72,470
1987 s(f)	59	372	431	1,148	21,821	22,969	541	22,286	100	22,969	35,035
p	4,186	73	4,259	42,301	470	42,771	2,739	39,614	398	42,771	46,115
s&p	4,245	445	4,690	43,449	22,291	65,740	3,280	61,900	498	65,740	81,150
1988 s	70	339	409	1,860	18,955	20,815	672	19,761	245	20,678	30,514
p	4,205	46	4,251	40,492	1,238	41,730	2,723	38,533	450	41,730	45,921
s&p	4,275	385	4,660	42,352	20,193	62,545	3,395	58,294	695	62,545	76,435

(a) Last use of Dip Net/Fishwheel combination permits.

(b) First issue of permits at Chitina

(c) Last "Blacklist" used

(d) Issue of permits at Chitina and Glennallen only.

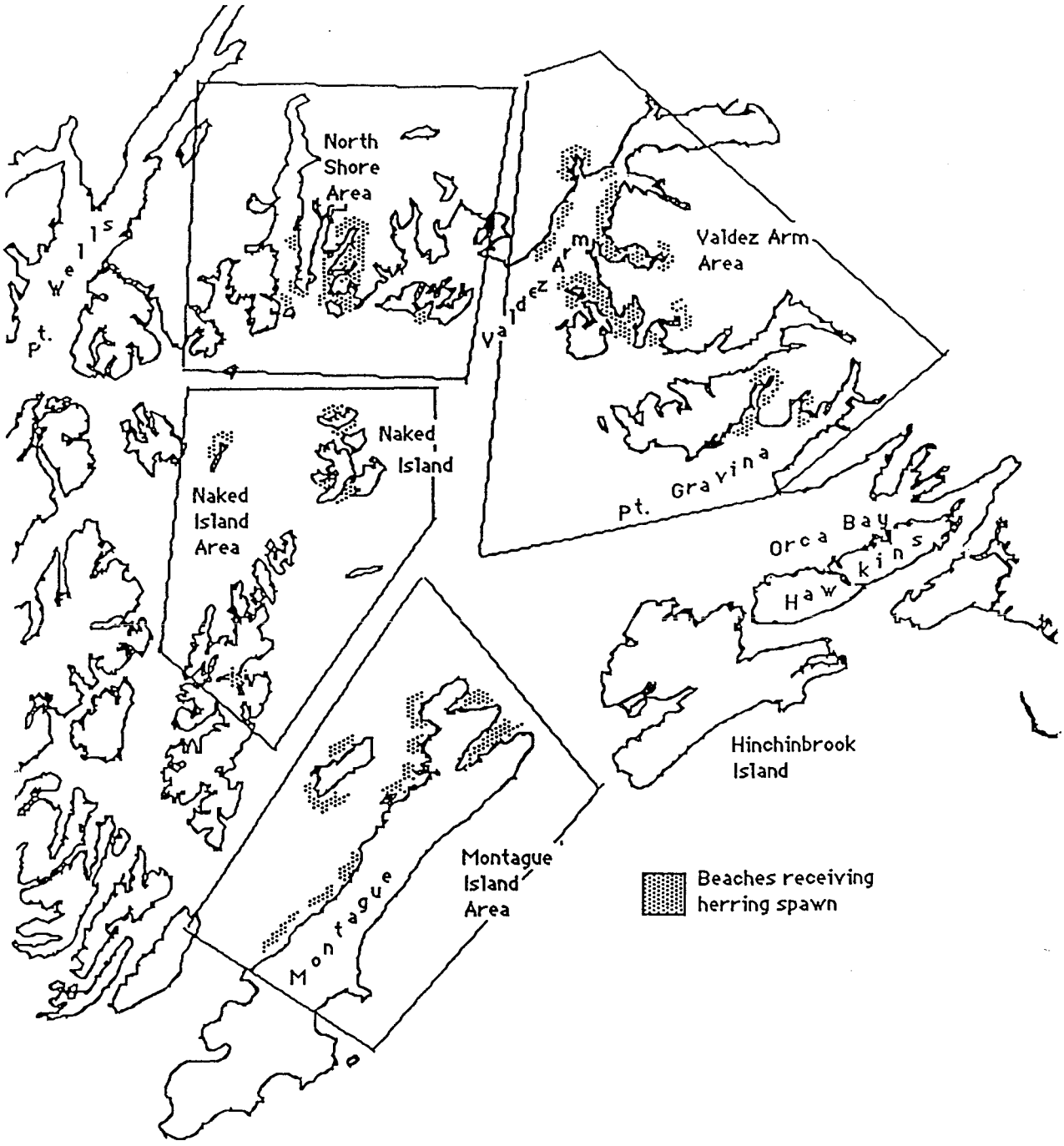
(e) Return requirement enforced.

(f) Subsistence dip net catch estimated.

s = subsistence

p = personal use

s&p = total catch (1984,1986,1987, and 1988)



Appendix H.1. Map of the Prince William Sound herring fishing districts and general area open to production of herring spawn on kelp.

Appendix H.2. Commercial herring harvest summary with fishing locations and effort by gear type, Prince William Sound, 1988.

		Fishing			Harvest (short tons)		
Fishery	Area	Date(s)	Duration	Effort	Roe on Kelp	Herring	
Sac Roe Seine	North Shore	4/21	1 hr.	86		3,436.8	
		4/22	1 hr.	95		4,459.1	
	Total		2 hrs.	105		7,895.9	
Sac Roe Gillnet	North Shore	4/23	5.5 hrs.	24		358.1	
	Total		5.5 hrs.	24		358.1	
Spawn on Kelp a	Valdez Arm	4/29	4 hrs.	113	35.1		
	Frmnt/Wells	4/30	8 hrs.	121	61.5		
	Total		12 hrs.	158	96.6 b	772.8	c
Pound Kelp d	Galena Bay Tatitlek	4/12-4/23		122	124.4		
	Total			122	124.4	1,555.0	e
Bait/Food	General	11/01-11/05/88		7		1,335.3	
	Total Equivalent harvest of herring					11,917.1	

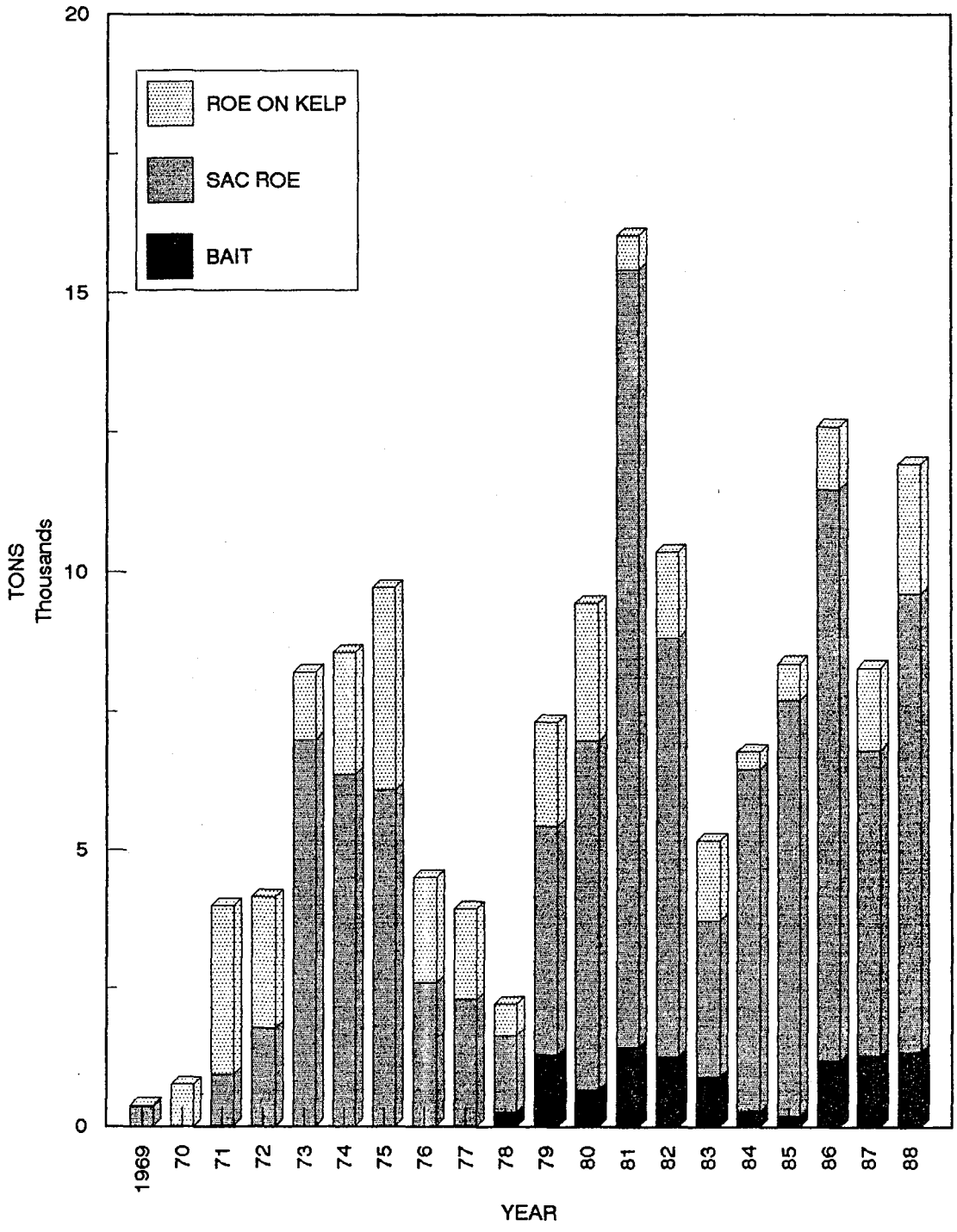
a The harvest by divers of naturally occurring herring roe on native kelp species in P.W.S.

b The harvest consisted of approximately 64% ribbon kelp, 24% sieve and 12% hair kelp.

c The equivalent harvest of herring due to the removal of reproductive capacity from the population based on the assumption that the average fish roe recovery is 10%, and 80% of the spawn on kelp harvest weight consists of eggs.

d The harvest of herring roe on kelp produced in net pens or pounds.

e The equivalent harvest of herring due to stress mortality and the removal of reproductive capacity of the population based on the assumption that 12.5 tons of herring are used to produce 1 ton of roe on kelp.



Appendix H.3. Commercial herring harvest by fishery, Prince William Sound, 1969 - 1988.

Appendix H.4. Herring sac roe seine and gill net fishery effort, anticipated and actual harvest, and peak aerial estimate, Prince William Sound, 1969 - 1988.

	Seine Fishery						Gillnet Fishery					Combined Fisheries	
Year	Seine Fishery Opening Dates		Hours	Effort (Boats)		Anticipated Harvest a	Harvest (Tons)	Gillnet Fishery Opening Dates	Hours	Effort (Boats)	Anticipated Harvest a	Harvest (Tons)	Peak Aerial Est. (Tons)	Harvest (Tons)
1969	3/01 - 6/30			6			355.7							355.7
1970	3/01 - 6/30			1										
1971	3/01 - 6/30			14			919.3							919.3
1972	3/01 - 6/30			15			1,772.6							1,772.6
1973	4/23 - 5/09			28			6,984.4							6,984.4
1974	4/10 - 4/17			72			6,368.2			3		3.8		6,372.0
1975	4/15 - 4/22		14	76			6,081.5		14				1,323	6,081.5
1976	5/08 & 6/01		13	66			2,584.5		13				8,809	2,584.5
1977	4/09 - 4/10		38	60			2,282.9		38	1		1.6	18,643	2,284.5
1978	4/17 - 4/21	b	106	75			1,329.6			38		61.7	9,228	1,391.4
1979	4/07 - 4/19			89			4,138.6						31,631	4,138.6
1980	4/01 - 4/09			74			6,043.2	4/17 - 5/05		16		264.5	49,844	6,307.7
1981	4/01 - 4/03		60	101			13,770.6	4/16 - 4/18	53	18		234.6	51,090	14,005.1
1982	4/23		2	104			7,148.3	4/24 - 4/26	54	18		393.9	34,861	7,542.2
1983	4/13		1	103	c		2,724.2	4/21 - 4/22	24	22		105.4	33,803	2,829.6
1984	4/14		3	105	d	5,000	5,836.9	4/18 - 4/22	59	24	250	342.9	45,655	6,179.8
1985	4/28 - 4/29		4	103	e	5,000	6,924.8	4/29 - 5/01	34	21	250	413.3	26,162	7,493.6
1986	4/17		3	105		5-7,000	9,828.1	4/24 - 4/28	90	25	3-400	448.6	15,150	10,276.7
1987	4/08 - 4/09		1.5	96		3-5,000	4,982.2	4/10 - 4/11	24	25	2-300	533.3	24,090	5,515.5
1988	4/21 - 4/22		2	105		4-5,500	7,895.9	4/23	5.5	24	275	358.1	34,270	8,254.0

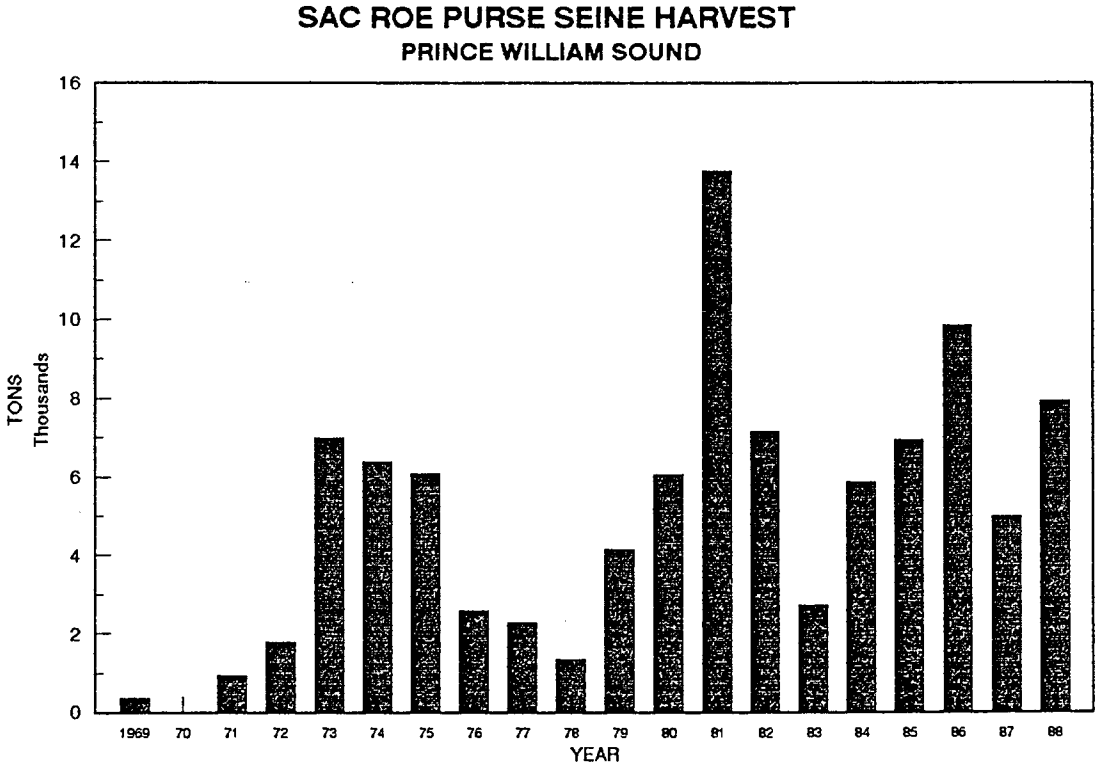
a Anticipated harvest figures based on pre season harvest outlook projections.

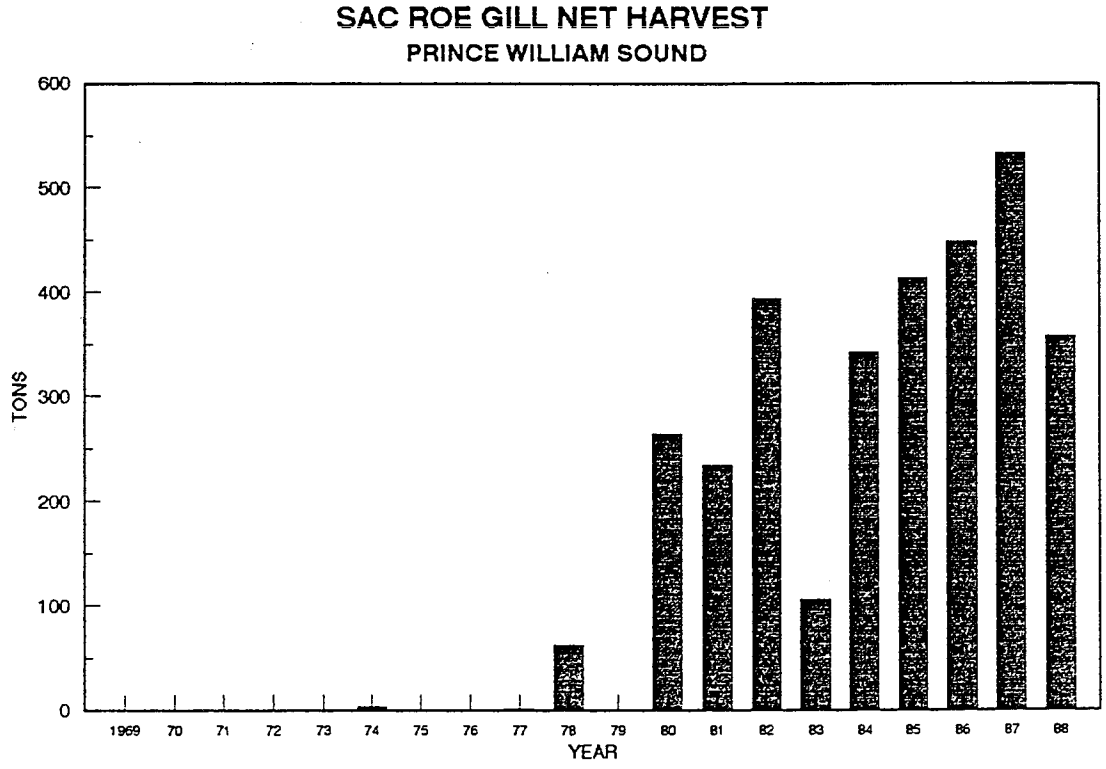
b An additional opening was scheduled on 6/14 for 6 hours, but resulted in no harvest.

c 103 boats participating but only 72 actually made deliveries.

d 105 boats participating but only 101 actually made deliveries.

e 103 boats participating; 62 made deliveries at Montague and 90 made deliveries in the Northern District.





Appendix H.5. Herring sac roe purse seine and gill net harvests, Prince William Sound, 1969 - 1988.

Appendix H.6. Herring eggs on kelp harvests from natural spawning, Prince William Sound, 1969 - 1988.

Year	Fishery Dates	Hours	Effort (Divers)	Harvest Pounds a	Harvest Tons	Herring Utilized b Tons
1969	5/18-5/31		3	5,300	2.7	21.2
1970	4/19-6/06		29	190,300	95.2	761.2
1971	4/18-5/15		34	769,300	384.7	3,077.2
1972	4/30-5/20		397	599,300	299.7	2,397.2
1973	4/23-5/26		176	306,300	153.2	1,225.2
1974	4/22-5/04		166	552,100	276.1	2,208.4
1975	4/25-5/10		437	917,100	458.6	3,668.4
1976	4/21- ?		357	484,900	242.5	1,939.6
1977	4/27-12/31		164	417,000	208.5	1,668.0
1978	4/20-4/30		66	140,900	70.5	563.6
1979	4/25-5/03		198	473,200	236.6	1,892.8
1980	4/23-4/30	10	469	612,300	306.2	2,449.2
1981	4/25	12	214	122,400	61.2	489.6
1982	5/05-5/08	73	151	309,600	154.8	1,238.4
1983	4/27	12	186	303,200	151.6	1,212.8
1984	SEASON CLOSED		225 c			0.0
1985	5/06&5/08	20	95	41,300	20.7	165.2
1986	4/30-5/03	86	29	95,200	47.6	380.8
1987	4/15-4/17	44	60	176,400	88.2	705.6
1988	4/29&4/30	12	158	193,200	96.6	772.8

a Rounded to nearest 100 pounds.

b Indicates the annual removal of reproductive capacity from the population based on the assumption that average fish roe recovery is 10% and 80% of spawn on kelp harvest weight consists of eggs.

c Permits issued.

Appendix H.7. Herring eggs on kelp produced in pounds, Prince William Sound, 1979 - 1988.

Year	a Fishery Dates	b Permits Issued	c Pounds Constructed	d Producing Pounds	Herring e Utilized (Tons)	Ribbon lbs.	Ribbon Tons	Macrocystis lbs.	Macrocystis Tons	Total f lbs.	Total f Tons
1979		2	0								
1980	4/14	14	4	2	27 - 44	1,771	0.9	880	0.4	2,651	1.3
1981	4/14	18	18	7	193 - 322	17,217	8.6	2,100	1.1	19,317	9.7
1982	4/29-5/10	25	20	18	511 - 851	50,165	25.1	900	0.5	51,065	25.5
1983	4/30-5/04	47	38	26	555 - 924	35,364	17.7	20,100	10.1	55,464	27.7
1984	4/24-5/08	65	45	37	504 - 840	12,839	6.4	37,572	18.8	50,411	25.2
1985	4/25-5/07	81	59	50	803 - 1,338	24,199	12.1	56,131	28.1	80,262	40.1
1986	4/21-4/28	104	82	81	1,444 - 2,407	0	0	144,400	72.2	144,400	72.2
1987	4/10-4/21	111	111	108	1,224 - 2,040	0	0	122,400	61.2	122,400	61.2
1988	4/12-4/23	122	122	119	2,480 - 4,133	0	0	248,000	124.0	248,000	124.0

a Dates that the fishery was opened to seine herring for placement into pounds.

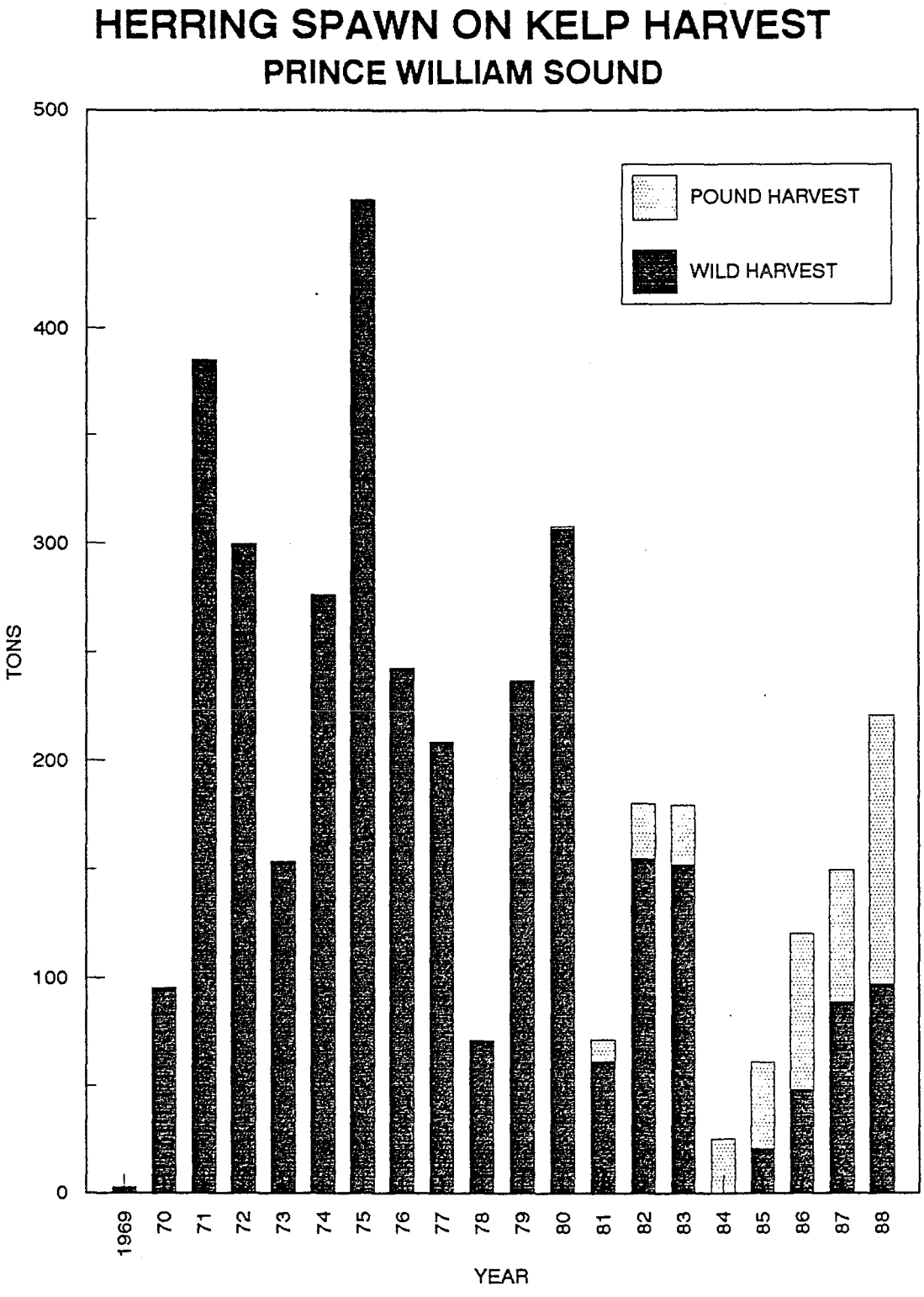
b Permits issued to applicants on register prior to the March 1 deadline.

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

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

e Minimum tonnage based on the following assumptions: 100% of the harvest is roe; equal amounts of roe on web as on the kelp; 10% herring with 100% spawning success.
Maximum tonnage based on the following assumptions: 100% of the harvest is roe; equal amounts of roe on web as on the kelp; 10% herring with 60% spawning success.

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



Appendix H.8. Herring spawn on kelp harvest, Prince William Sound, 1969 - 1988.

Appendix H.9. Daily commercial herring food and bait harvest as reported on fish tickets, Prince William Sound, 1988.

			Harvest a		Cumulative Harvest	
Year	Date	Effort	lbs.	Tons	lbs.	Tons
1988	11/01	3	279,620	139.8	279,620	139.8
"	11/02	7	443,575	221.8	723,195	361.6
"	11/03	6	646,283	323.1	1,369,478	684.7
"	11/04	4	644,440	322.2	2,013,918	1007.0
"	11/05	5	656,625	328.3	2,670,543	1335.3
Totals		7	2,670,543	1,335.3		

a All harvests from the General District. Effort was concentrated in the vicinity of Knowles Head.

Appendix H.10. Commercial herring bait and food harvests in short tons, Prince William Sound, 1970 - 1988. a

	Seine		Pair Trawl		Mid-Water Trawl		Otter Trawl		
Year a	Effort	Harvest Tons	Effort	Harvest Tons	Effort	Harvest Tons	Effort	Harvest Tons	Total Tons
1970	1	10.0							10.0
1971	2	20.0							20.0
1972	1	4.9							4.9
1973	1	8.5							8.5
1977-78 b	2	17.0	2	145.3	1	90.4			252.7
1978-79 c	2	195.4	2	988.8	1	103.2	1	2.5	1,289.9
1979-80 d	1	510.9	2	145.1					656.0
1980-81 e	3	1,030.5	3	386.0					1,416.5
1981-82 f	6	1,189.5	2	73.1					1,262.6
1982-83	5	883.2							883.2
1983-84	2	273.6							273.6
1984-85	2	1,021.7							1,021.7
1985-86 g	5	1,118.1							1,118.1
1986-87 h	5	1,276.2							1,276.2
1987-88 i	7	1,189.4							1,189.4
1988-89 j	7	1,335.3							1,335.3

a -No harvest in years not listed.

b -Starting 1977 bait herring season includes portions of two calendar years, unless closed by E.O.

c -Fishery opened by emergency order on October 16,1979 and extended on January 7, 1980. Deliveries made through March 2.

d -Fishery season opened by emergency order September 15,1979, closed Dec. 31, 1979, and reopened by emergency order from Feb. 16 - 28, 1980.

e -Fishing season opened by regulation on September 15,1980 and closed by emergency order on November 7,1980.

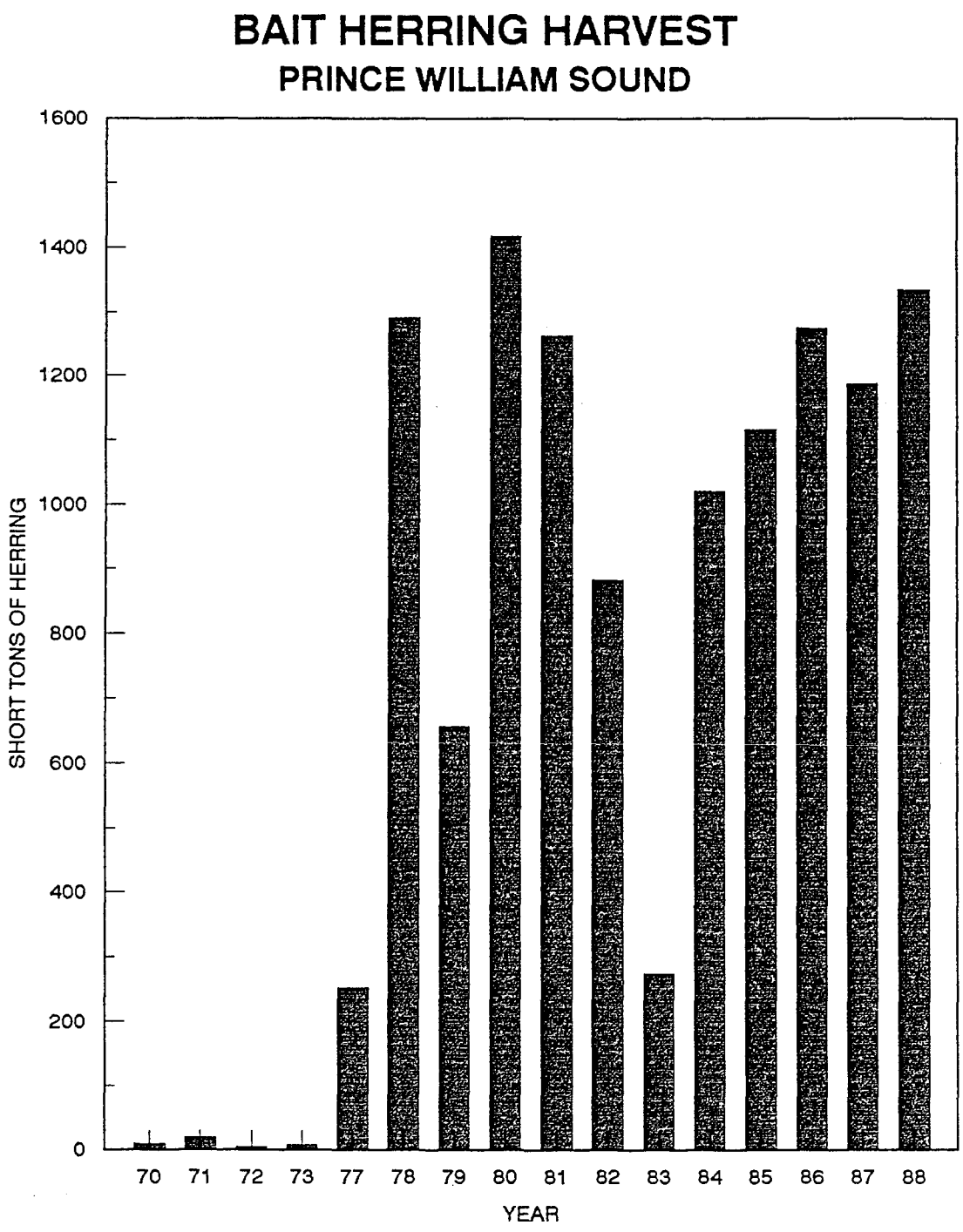
f -Fishing season opened by regulation on September 15,1981 and closed by emergency order on September 30,1981.

g -Fishing season opened by regulation on September 1,1985 and closed by emergency order on February 15,1986.

h -Fishing season opened by regulation on September 1,1986 and closed by emergency order on October 24,1986.

i -Fishing season opened by regulation on September 1, 1987 in the General District. The Northern and Eastern Herring Districts opened on September 23. The season was then closed by emergency order on October 6 for a period of five weeks, reopened on November 9, and closed for the duration of the 1987-88 season on November 12, 1987.

j -Fishery open from November 1 until November 5.



Appendix H.11. Food and bait herring harvests, Prince William Sound, 1970 - 1988.

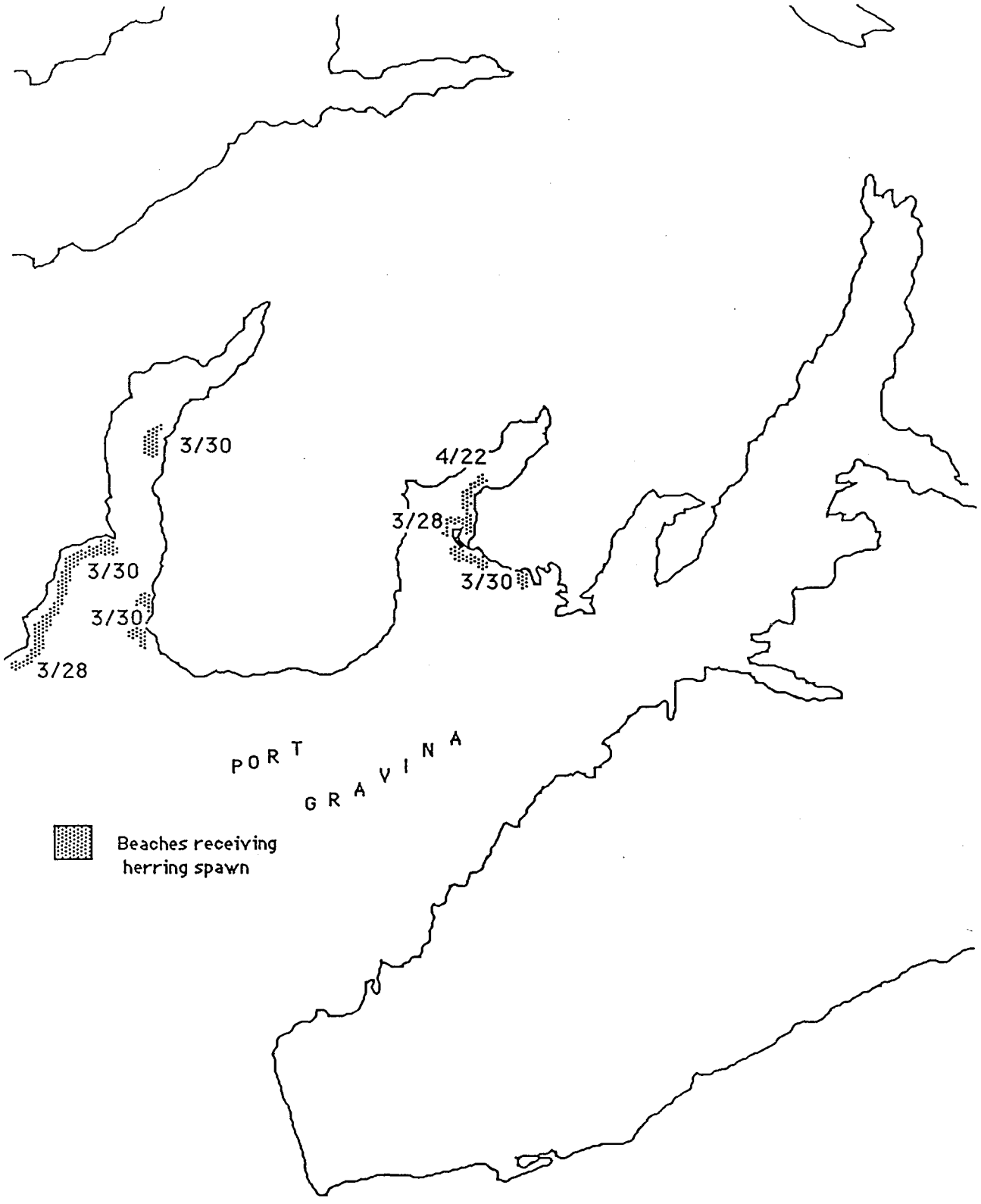
Appendix H.12. Peak aerial survey herring biomass and miles of spawn by area, Prince William Sound, 1988.

Survey Area	Peak Aerial Survey Date a	Peak Aerial Biomass Est.(tons)		Spawn Deposition Biomass Est.(tons) b	Total Miles of Spawn
VALDEZ AREA					
Simpson Bay		0			
Sheep Bay		0			
Port Gravina	3/28	580			
Port Fidalgo	4/6 & 4/24	140	c		
Tatitlek Area	4/21 & 4/29	490	c		
Valdez Arm	4/5 & 4/22	5,830	c		
AREA TOTAL		7,040		5,418	60.6
NORTH SHORE					
Pt.Free.-Granite Pt.	3/28,4/8 & 4/22	950	c		
Granite Pt.-Esther Pass	4/8,4/22 & 5/1	11,350	c		
AREA TOTAL		12,300		3,925	15.4
NAKED ISLAND AREA					
Perry Island		0			2.7
Naked Island Group	4/19	1,450			14.2
Knight Island Area		0			1.4
AREA TOTAL		1,450		10,129	18.3
MONTAGUE AREA					
Montague Island	4/14 & 4/19	13,480	c		
Green Island		0			
AREA TOTAL		13,480		24,109	72.0
ALL AREAS TOTAL		34,270		43,581	166.3

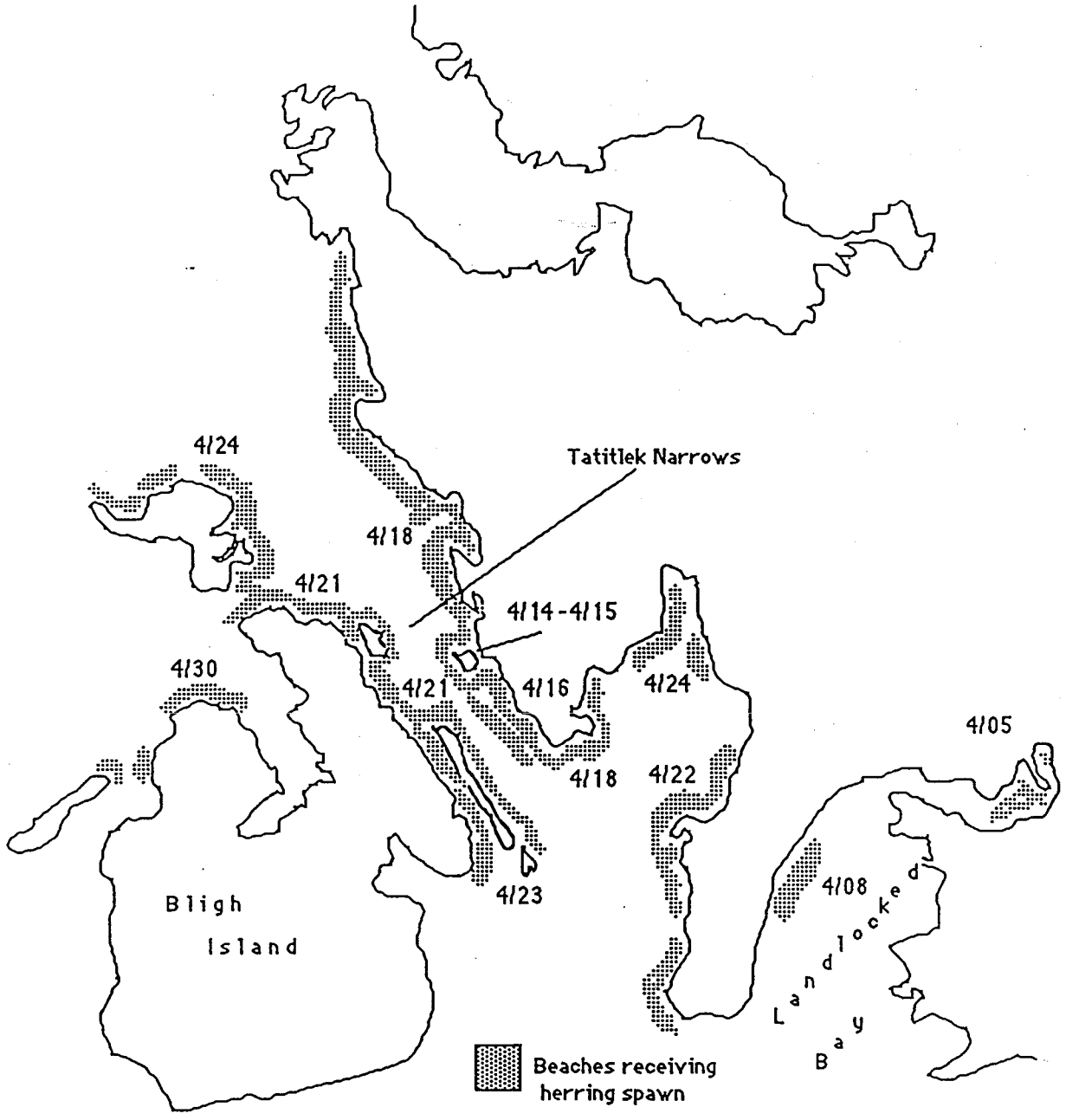
a Date or dates that the peak biomass observations were made.

b Herring spawner biomass estimates based on dive surveys. This estimate does not include the commercial catch.

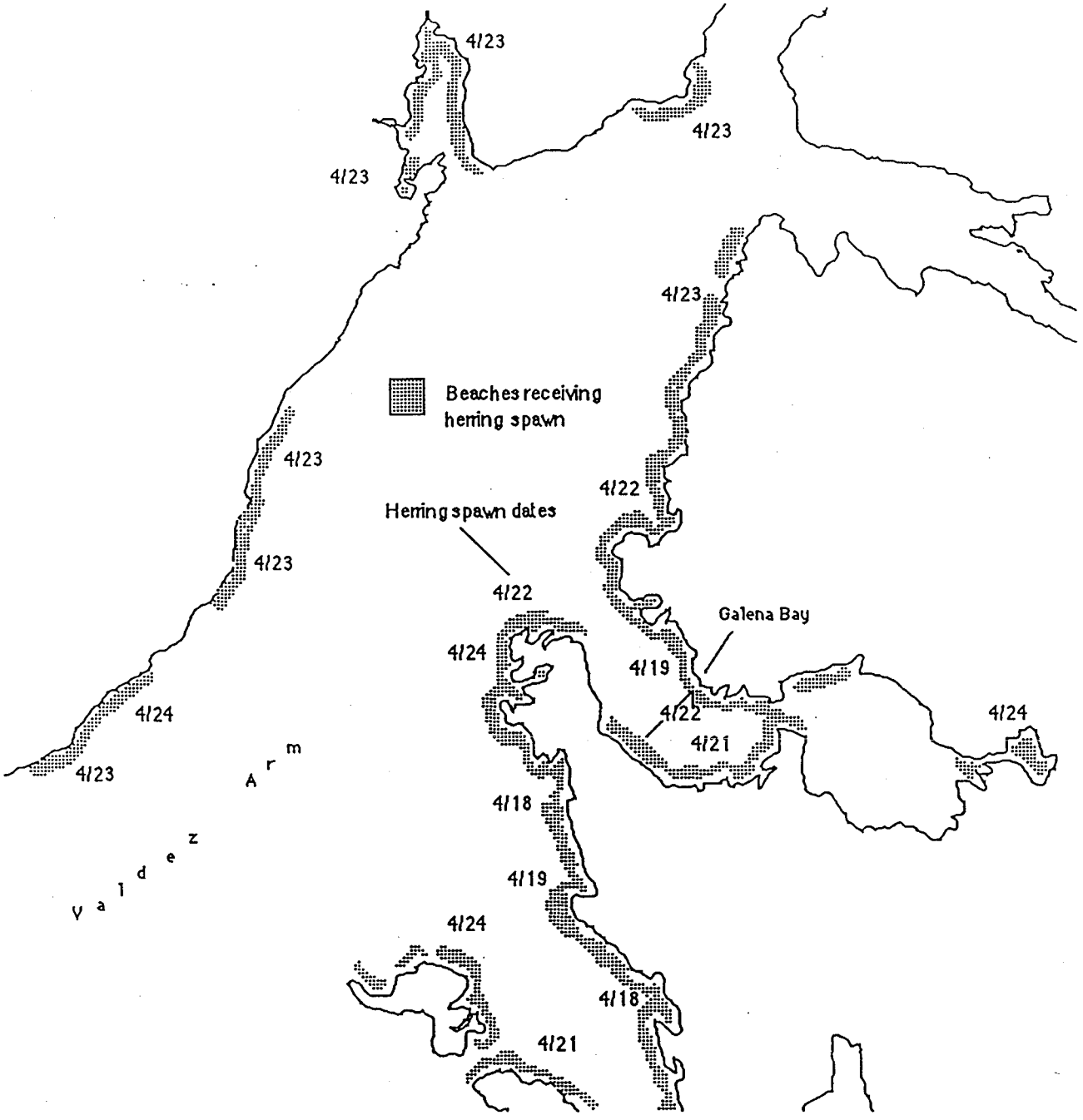
c Aerial estimates that are based on more than one peak or date.



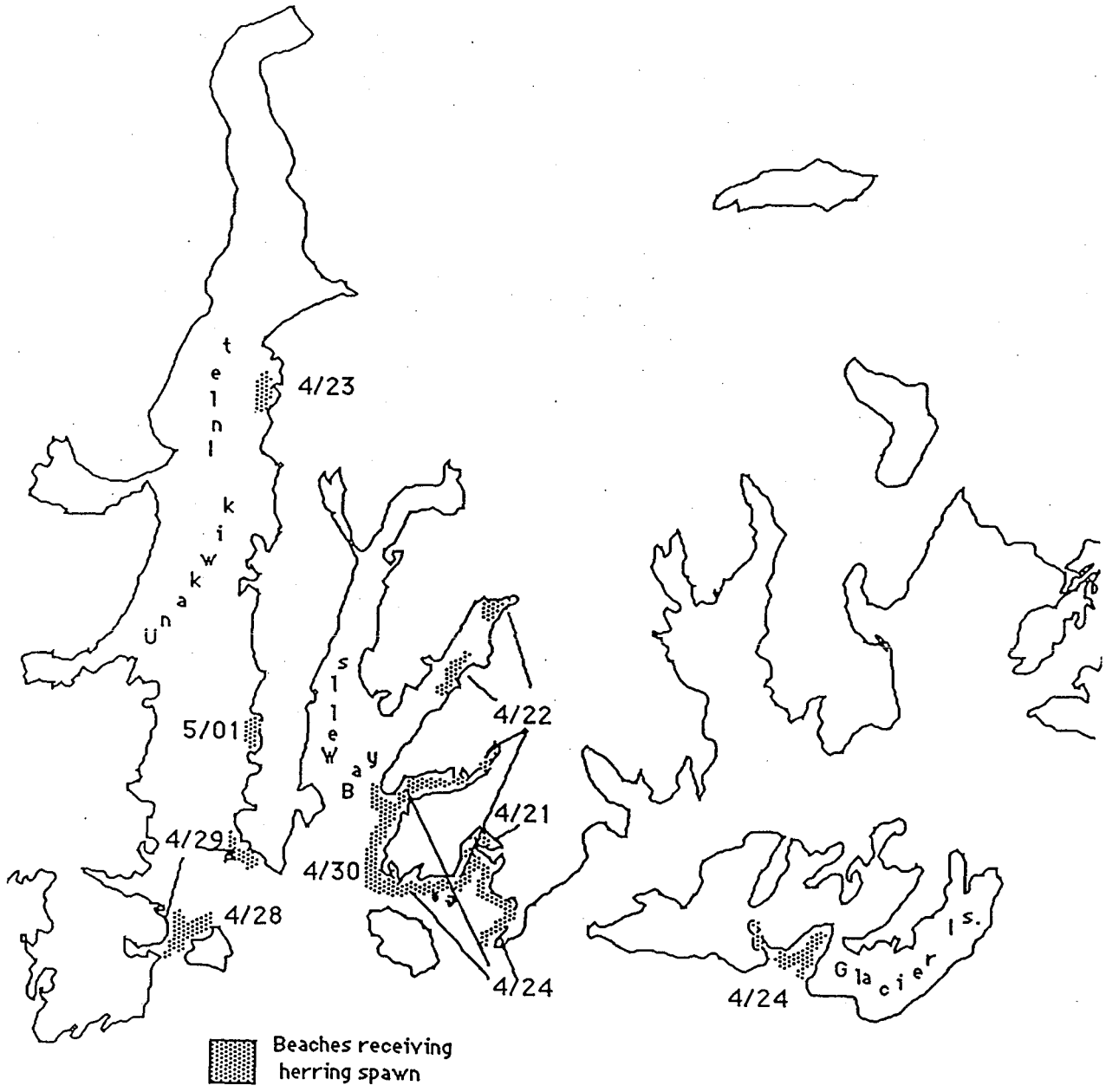
Appendix H.13. Beach areas receiving herring spawn in Port Gravina, Prince William Sound, March 28 to April 22, 1988.



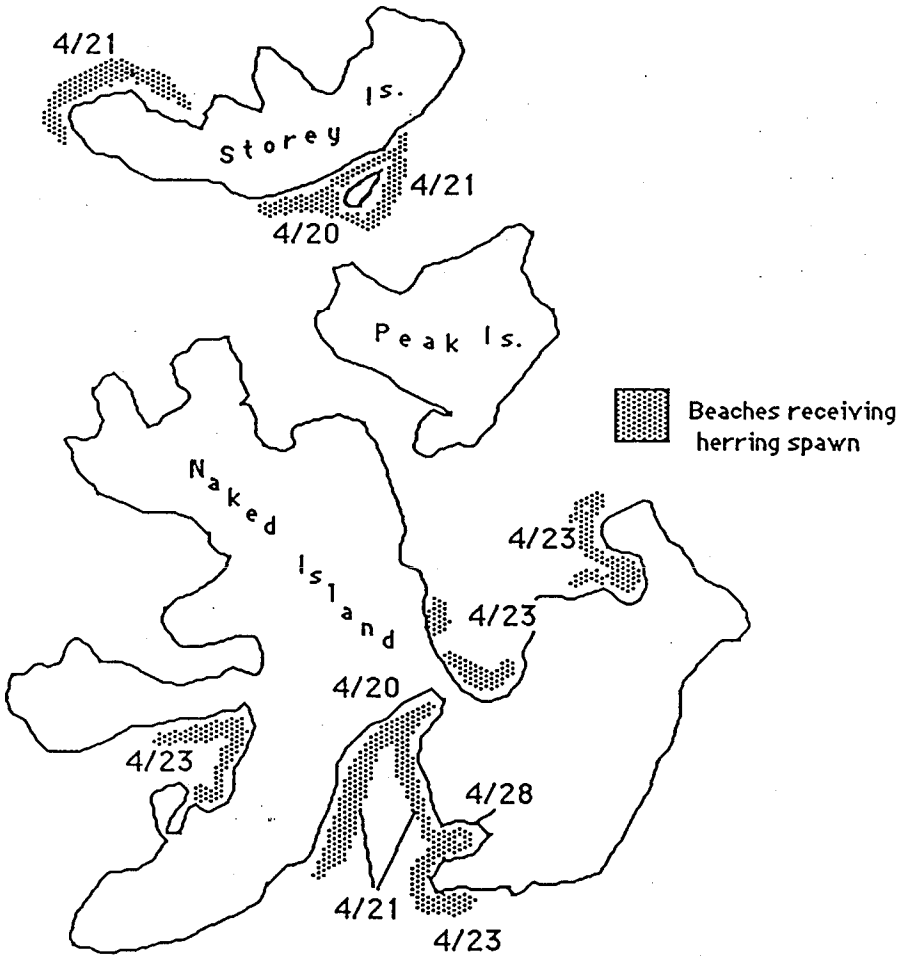
Appendix H.14. Beach areas receiving herring spawn in Tatitlek Narrows, Prince William Sound, April 5 to April 30, 1988.



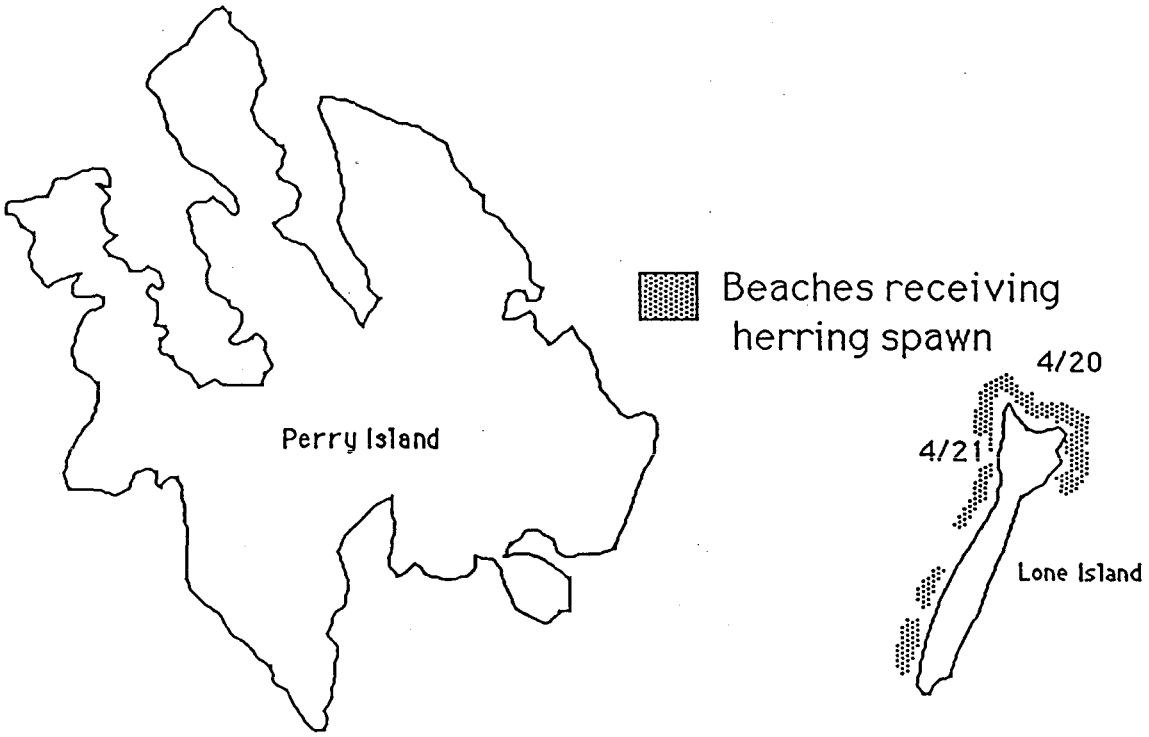
Appendix H.15. Beach areas receiving herring spawn in Valdez Arm, Prince William Sound, April 19 to April 24, 1988.



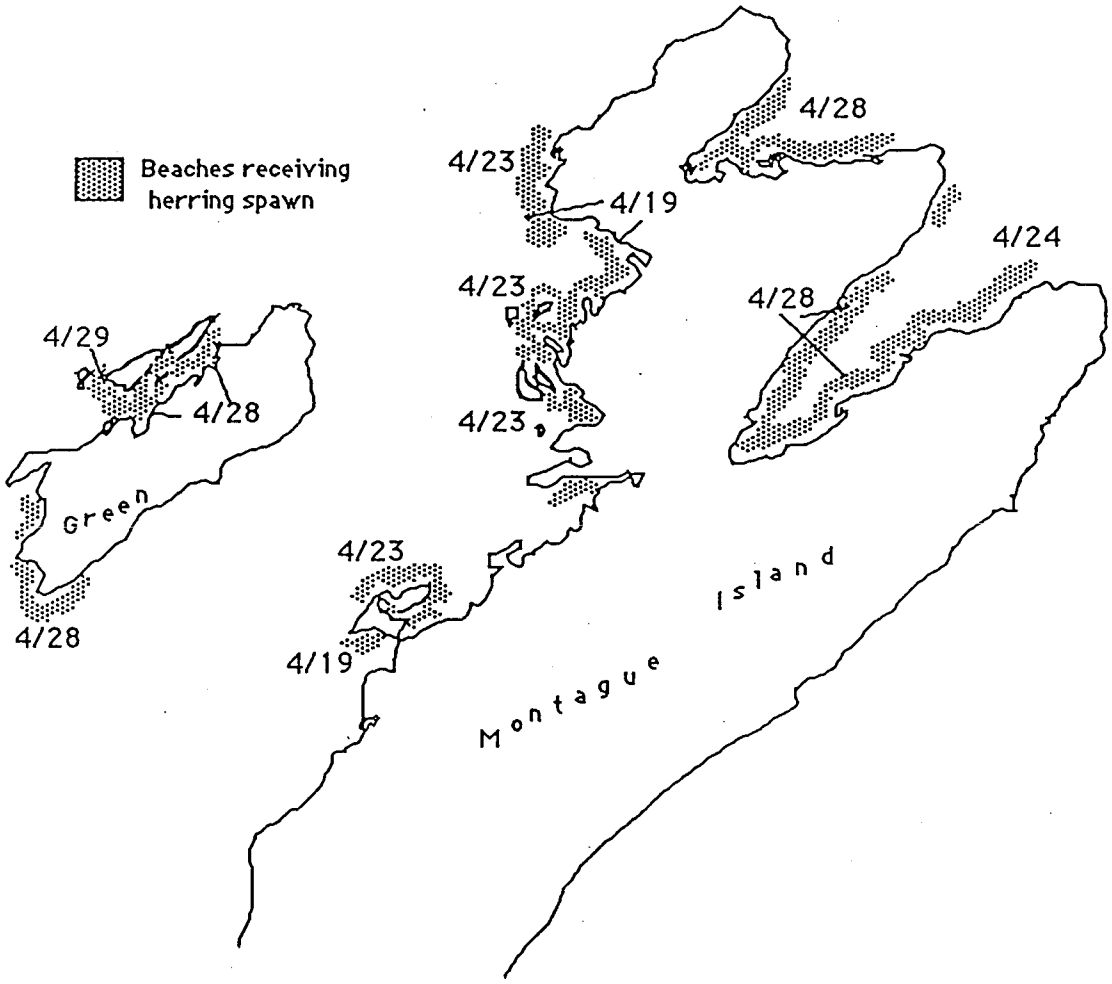
Appendix H.16. Beach areas receiving herring spawn in the North Shore area, Prince William Sound, April 21 to May 1, 1988.



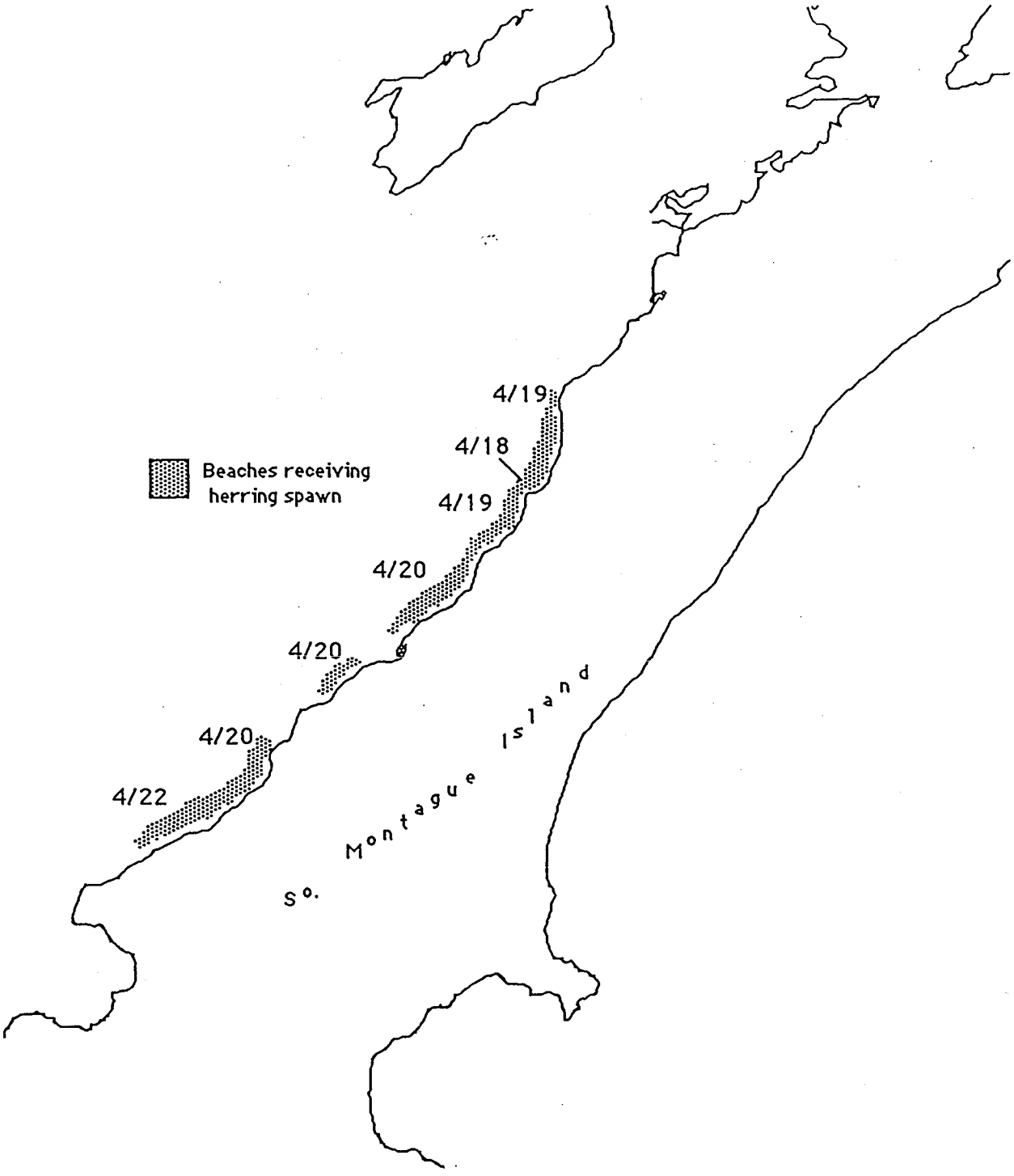
Appendix H.17. Beach areas receiving herring spawn in the Naked and Storey Island area, Prince William Sound, April 20 to April 23, 1988.



Appendix H.18. Beach areas receiving herring spawn on Lone Island, Prince William Sound, April 20 and April 21, 1988.



Appendix H.19. Beach areas receiving herring spawn in the Northern Montague and Green Island area, Prince William Sound, April 19 to April 29, 1988.



Appendix H.20. Beach areas receiving herring spawn on Southern Montague Island, Prince William Sound, April 18 to April 22, 1988.

Appendix H.21. Annual herring biomass indices, Prince William Sound, 1978 - 1988.

Year	Total Sac Roe Harvest a	Peak Aerial Estimate b	Maximum Possible Observed Biomass c	Miles of Spawn d	Mile Days of Spawn e	Est. Biomass from Spawn Surveys f
1978	1,391	9,228	36,060	47.4	36.3	
1979	4,139	31,631	107,390	67.1	72.2	
1980	6,308	49,844	122,020	53.3	73.9	
1981	14,005	51,090	161,690	99.7	140.1	
1982	7,542	34,861	97,620	59.1	65.1	
1983	2,830	33,803	107,710	49.7	99.7	22,000
1984	6,180	45,655	158,760	65.8	86.8	79,710
1985	7,494	26,162	60,784	83.2	149.5	
1986	10,277	15,150	54,820	78.6	152.3	
1987	5,516	24,090	52,192	72.8	155.9	
1988	8,254	34,270	67,175	166.3	236.9	43,581

a Represents the combined seine and gillnet sac roe harvest in short tons.

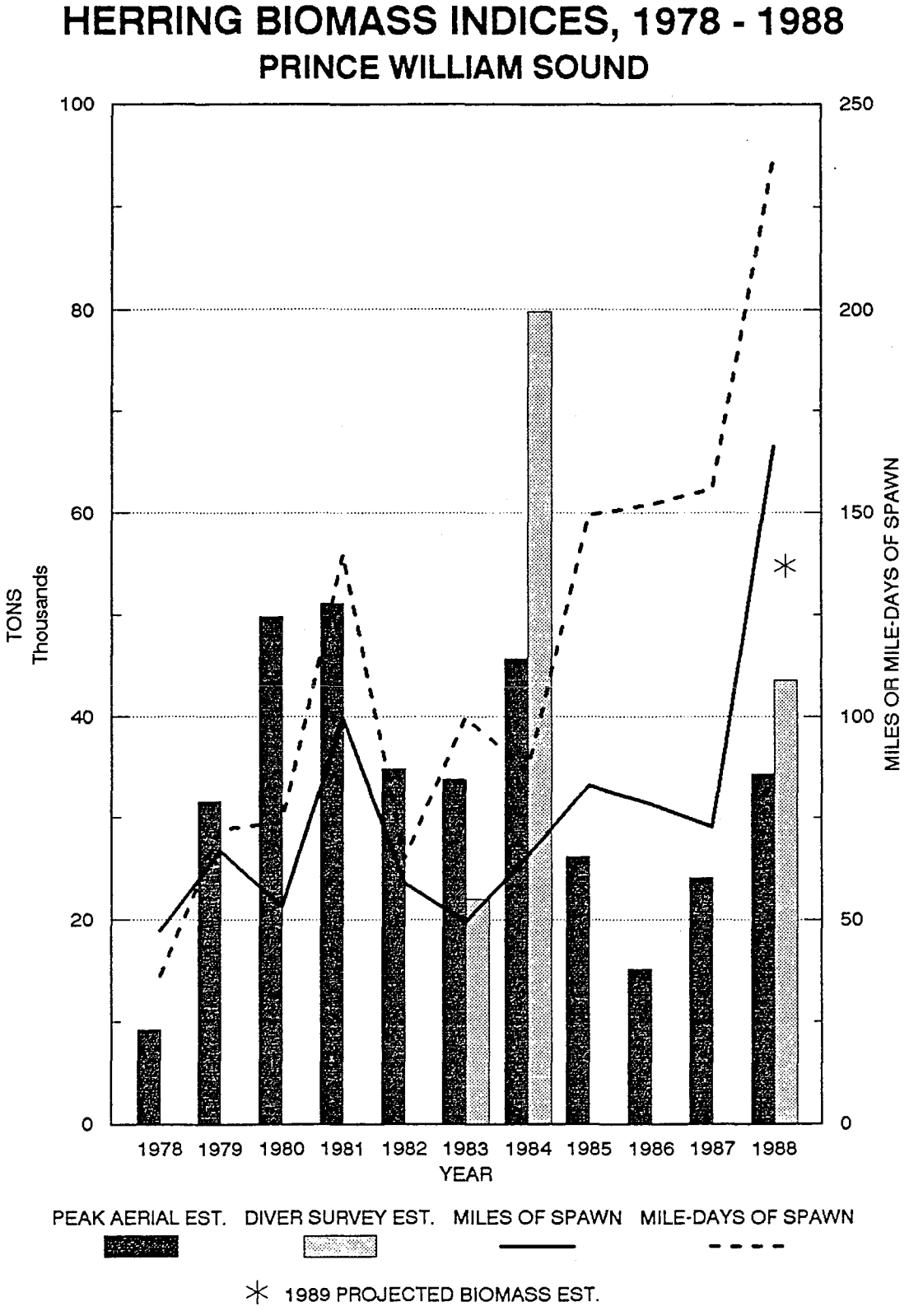
b Largest single day aerial estimate of herring biomass in short tons. Peak estimates for different areas (ie. Valdez Arm vs. Montague) may occur on different days.

c The sum of all daily aerial biomass estimates for a given year.

d Total linear miles of spawn.

e The sum of the daily observed linear miles of herring spawn.

f Estimates are made from underwater surveys of spawn deposition; 1983 is a partial estimate of the spawning biomass, while 1984 and 1988 estimates are of the entire spawning biomass.

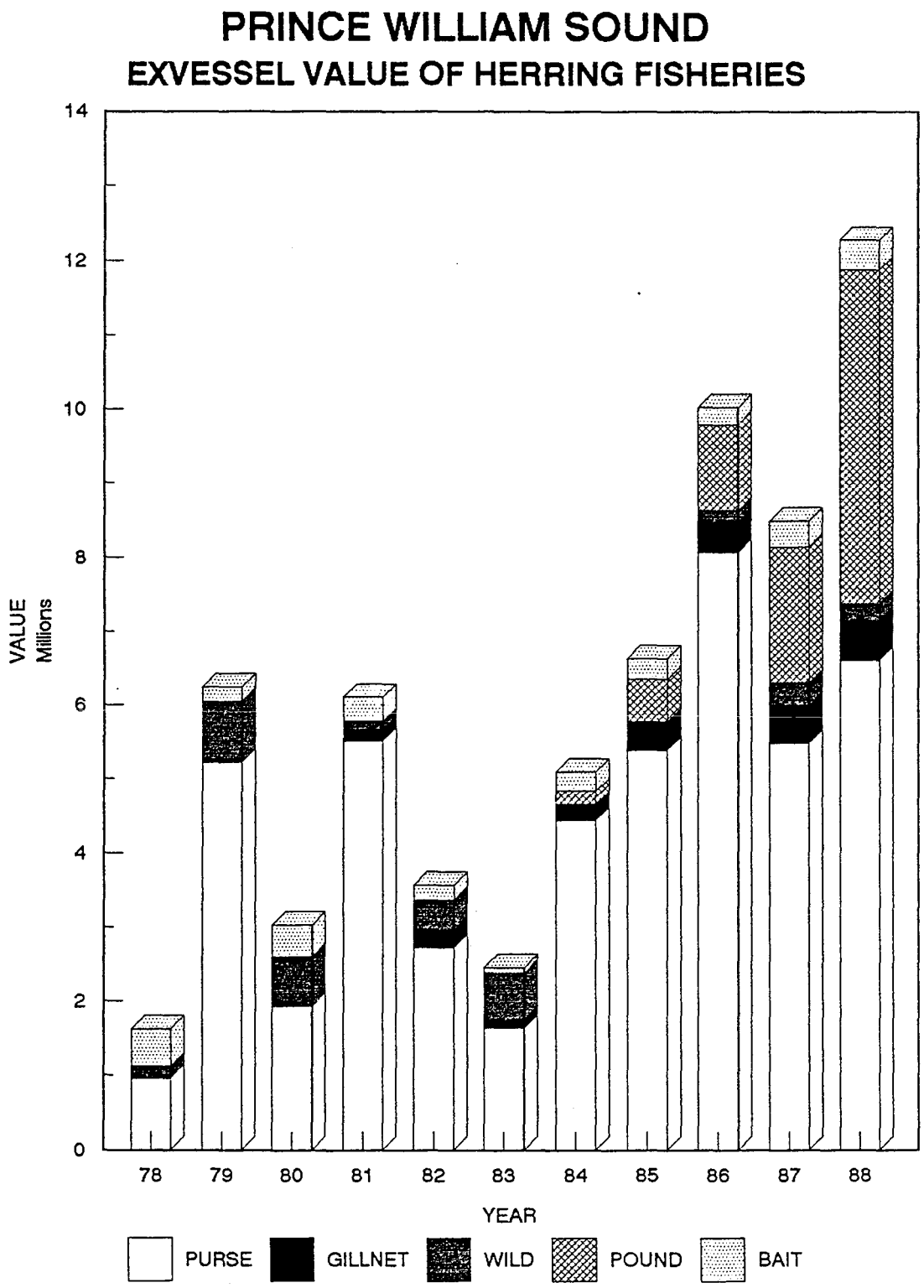


Appendix H.22. Annual herring biomass indices, Prince William Sound, 1978 - 1988.

Appendix H.23. Mean price and estimated exvessel value of the commercial herring harvest by gear type, Prince William Sound,1978 - 1988. a

	Sac Roe Fisheries				Roe on Kelp Fisheries				Food and Bait Fishery		
	Purse Seine		Gillnet		Wild Harvest		Pounding		Mixed Gear		
Year	Price per ton	Total Value	Price per ton	Total Value	Price per pound	Total Value	Price per pound	Total Value	Price per ton	Total Value	TOTAL VALUE
1978	$720	$956,800		$0	$1.25	$175,000		$0	$380	$489,820	$1,621,700
1979	$1,260	$5,213,880		$0	$1.74	$821,280		$0	$300	$196,800	$6,231,960
1980	$320	$1,933,760		$0	$1.09	$667,080		$0	$300	$424,800	$3,025,640
1981	$400	$5,508,000	$580	$135,720	$1.00	$122,000		$0	$260	$328,120	$6,093,840
1982	$380	$2,716,240	$640	$251,520	$1.29	$397,320		$0	$220	$194,260	$3,559,340
1983	$600	$1,634,400	$1,040	$109,200	$2.10	$634,200		$0	$260	$70,980	$2,448,780
1984	$760	$4,435,360	$640	$218,880		$0	$3.50	$176,439	$260	$265,460	$5,096,139
1985	$760	$5,380,800	$900	$371,700	$0.48	$19,200	$7.09	$569,058	$250	$279,500	$6,620,258
1986	$820	$8,058,960	$920	$412,160	$1.70	$159,800	$8.00	$1,155,200	$180	$229,680	$10,015,800
1987	$1,100	$5,480,200	$960	$511,680	$1.70	$299,200	$15.00	$1,836,000	$300	$356,700	$8,483,780
1988	$840	$6,600,000	$1,400	$537,000	$1.20	$232,000	$18.00	$4,500,000	$300	$400,590	$12,236,500

a Value of harvest and price per ton are estimates based on verbal reports from processors and fishermen obtained post season.



Appendix H.24. Annual exvessel value of commercial herring fisheries, Prince William Sound, 1978 - 1988.

Appendix H.25. Age, sex and size composition of Pacific herring sampled from the spring purse seine sac roe fishery, Prince William Sound, 1988.

SAMPLE LOCATION AND DATE	AGE	MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
		NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
Cedar Bay 21 Apr. 1988	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	4	1.4	169	8	66	7	1	0.3	176	0	76	0	5	1.7	170	8	68	8
	4	109	37.5	191	7	95	12	91	31.3	192	9	100	15	200	68.7	191	8	97	14
	5	14	4.8	206	11	120	21	13	4.5	203	6	122	12	27	9.3	205	9	121	17
	6	8	2.7	216	6	140	14	5	1.7	221	4	150	10	13	4.5	218	6	144	13
	7	14	4.8	216	11	149	22	12	4.1	225	4	167	11	26	8.9	220	10	157	20
	8	6	2.1	222	6	157	7	9	3.1	227	6	177	21	15	5.2	225	7	169	19
	9	2	0.7	229	3	186	13	0	0.0	NA	NA	NA	NA	2	0.7	229	3	186	13
	10	1	0.3	252	0	215	0	0	0.0	NA	NA	NA	NA	1	0.3	252	0	215	0
	11	1	0.3	231	0	213	0	0	0.0	NA	NA	NA	NA	1	0.3	231	0	213	0
	12	1	0.3	241	0	212	0	0	0.0	NA	NA	NA	NA	1	0.3	241	0	212	0
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	160	55.0	196	14	106	28	131	45.0	198	15	113	30	291	100.0	197	15	109	29
	UNAGED	5	55.6	209	11	135	25	4	44.4	214	9	145	28	9	100.0	211	11	139	27
Granite Bay 21 Apr. 1988	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	3	1.0	172	6	63	7	2	0.7	171	2	66	7	5	1.7	172	5	64	7
	4	126	42.9	189	8	88	12	112	38.1	193	9	96	12	238	81.0	191	9	92	13
	5	7	2.4	206	8	119	17	10	3.4	205	8	115	18	17	5.8	205	8	116	17
	6	4	1.4	214	11	135	27	4	1.4	218	9	132	22	8	2.7	216	10	134	25
	7	8	2.7	213	11	131	21	7	2.4	223	7	160	16	15	5.1	217	11	144	23
	8	3	1.0	225	4	146	5	5	1.7	225	5	170	12	8	2.7	225	4	161	15
	9	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	10	1	0.3	243	0	191	0	0	0.0	NA	NA	NA	NA	1	0.3	243	0	191	0
	11	1	0.3	245	0	165	0	1	0.3	227	0	160	0	2	0.7	236	9	163	3
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	153	52.0	193	14	95	23	141	48.0	197	13	104	25	294	100.0	195	14	99	24
	UNAGED	3	50.0	195	4	89	7	3	50.0	198	19	105	34	6	100.0	197	14	97	26

Appendix H.25. (page 2 of 2)

SAMPLE LOCATION AND DATE	AGE	MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
		NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
Unakwik Inlet 21 Apr. 1988	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	4	92	31.4	192	9	96	13	82	28.0	196	8	104	14	174	59.4	194	8	100	14
	5	12	4.1	207	12	128	25	11	3.8	208	13	126	22	23	7.8	207	12	127	24
	6	8	2.7	225	7	161	21	6	2.0	227	6	172	17	14	4.8	226	7	166	20
	7	27	9.2	224	9	163	21	11	3.8	225	10	163	24	38	13.0	225	9	163	22
	8	17	5.8	225	13	162	26	16	5.5	230	9	179	22	33	11.3	227	11	170	26
	9	3	1.0	234	6	179	9	0	0.0	NA	NA	NA	NA	3	1.0	234	6	179	9
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	3	1.0	239	5	193	16	0	0.0	NA	NA	NA	NA	3	1.0	239	5	193	16
	12	2	0.7	242	10	197	30	3	1.0	243	9	209	28	5	1.7	242	10	204	29
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	164	56.0	206	19	124	38	129	44.0	206	17	126	36	293	100.0	206	18	125	37
	UNAGED	4	57.1	214	12	138	28	3	42.9	230	5	177	7	7	100.0	221	12	155	29
North Shore 22 Apr. 1988	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	6	1.0	174	6	65	10	2	0.3	182	3	76	2	8	1.3	176	6	68	10
	4	225	36.6	192	9	90	13	219	35.6	195	9	97	14	444	72.2	193	9	93	14
	5	15	2.4	208	7	115	14	15	2.4	212	9	129	20	30	4.9	210	9	122	19
	6	6	1.0	220	10	142	20	11	1.8	221	6	145	20	17	2.8	220	8	144	20
	7	32	5.2	223	8	154	16	32	5.2	226	9	161	21	64	10.4	225	8	158	19
	8	18	2.9	233	7	171	16	18	2.9	237	8	182	25	36	5.9	235	8	177	21
	9	4	0.7	238	2	177	11	3	0.5	242	7	206	30	7	1.1	240	5	190	26
	10	3	0.5	241	3	193	11	0	0.0	NA	NA	NA	NA	3	0.5	241	3	193	11
	11	3	0.5	238	6	179	32	1	0.2	247	0	243	0	4	0.7	241	7	195	39
	12	0	0.0	NA	NA	NA	NA	2	0.3	252	9	217	25	2	0.3	252	9	217	25
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	312	50.7	200	18	106	33	303	49.3	203	17	115	35	615	100.0	202	18	110	35
	UNAGED	7	46.7	205	15	112	30	8	53.3	198	20	110	37	15	100.0	201	18	111	34

Appendix H.26. Age, sex and size composition of Pacific herring sampled from the spring gill net sac roe fishery, Prince William Sound, 1988.

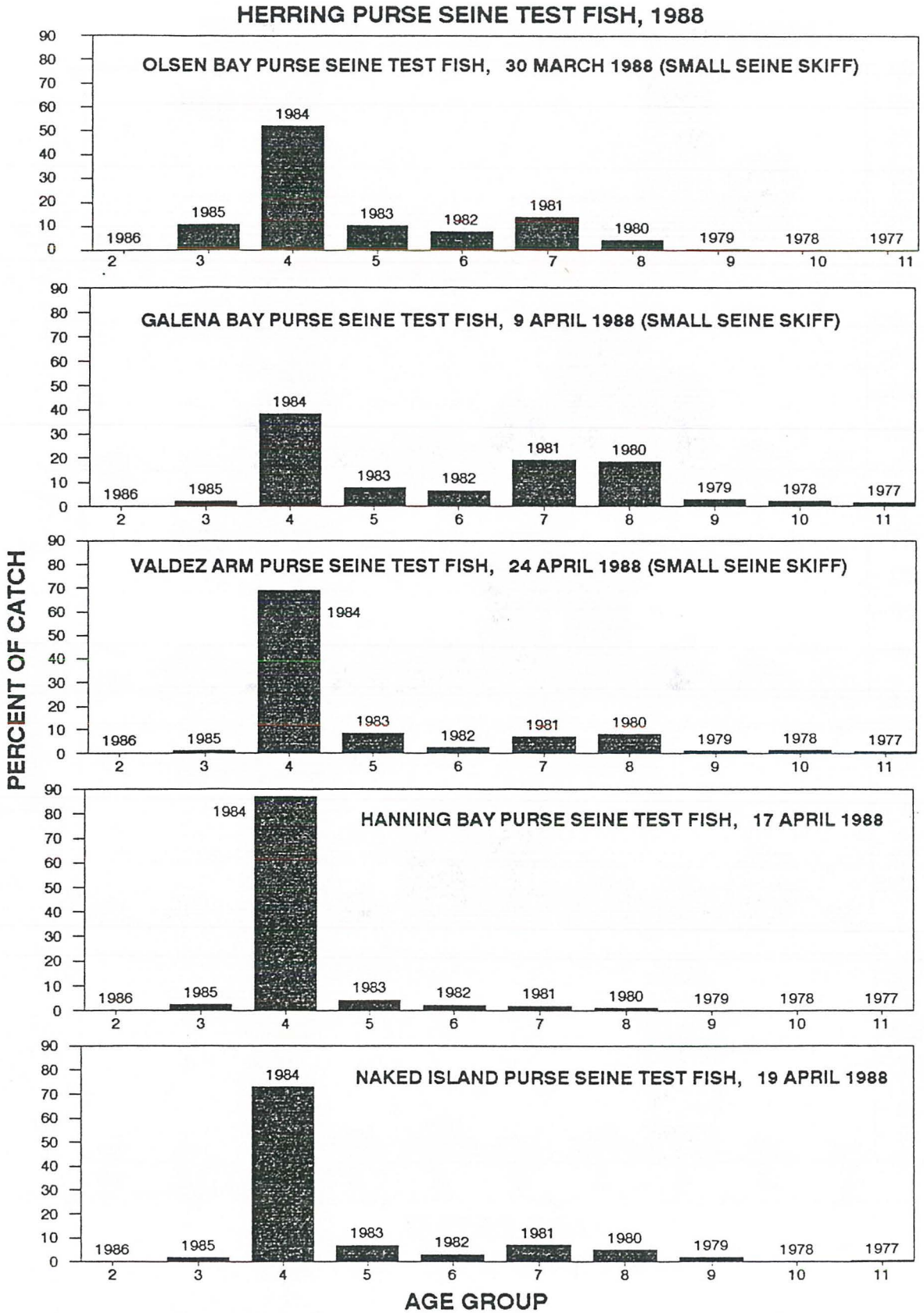
SAMPLE LOCATION AND DATE	AGE	MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
		NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	4	5	0.9	205	6	120	10	6	1.1	206	4	129	5	11	1.9	206	5	125	9
	5	9	1.6	213	5	134	10	12	2.1	213	9	138	15	21	3.7	213	7	136	13
North Shore	6	25	4.4	219	8	150	16	23	4.1	224	6	157	12	48	8.5	221	7	153	15
23 Apr. 1988	7	115	20.4	224	7	161	16	85	15.0	226	8	168	19	200	35.4	225	8	164	18
	8	98	17.3	228	8	170	19	82	14.5	230	7	178	21	180	31.9	229	8	174	20
	9	24	4.2	235	7	186	19	15	2.7	237	7	200	20	39	6.9	235	7	191	21
	10	12	2.1	240	7	201	25	12	2.1	240	8	196	26	24	4.2	240	8	199	25
	11	8	1.4	232	11	178	23	13	2.3	237	9	195	17	21	3.7	235	10	188	21
	12	9	1.6	239	4	190	15	12	2.1	243	7	210	21	21	3.7	241	6	202	21
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	305	54.0	226	10	166	23	260	46.0	229	10	174	26	565	100.0	227	10	170	24
	UNAGED	19	54.3	224	10	164	25	16	45.7	224	12	164	26	35	100.0	224	11	164	25

Appendix H.27. Age, sex and size composition of Pacific Herring sampled from purse seine catches in the spring roe on kelp in pounds fishery, Prince William Sound, 1988.

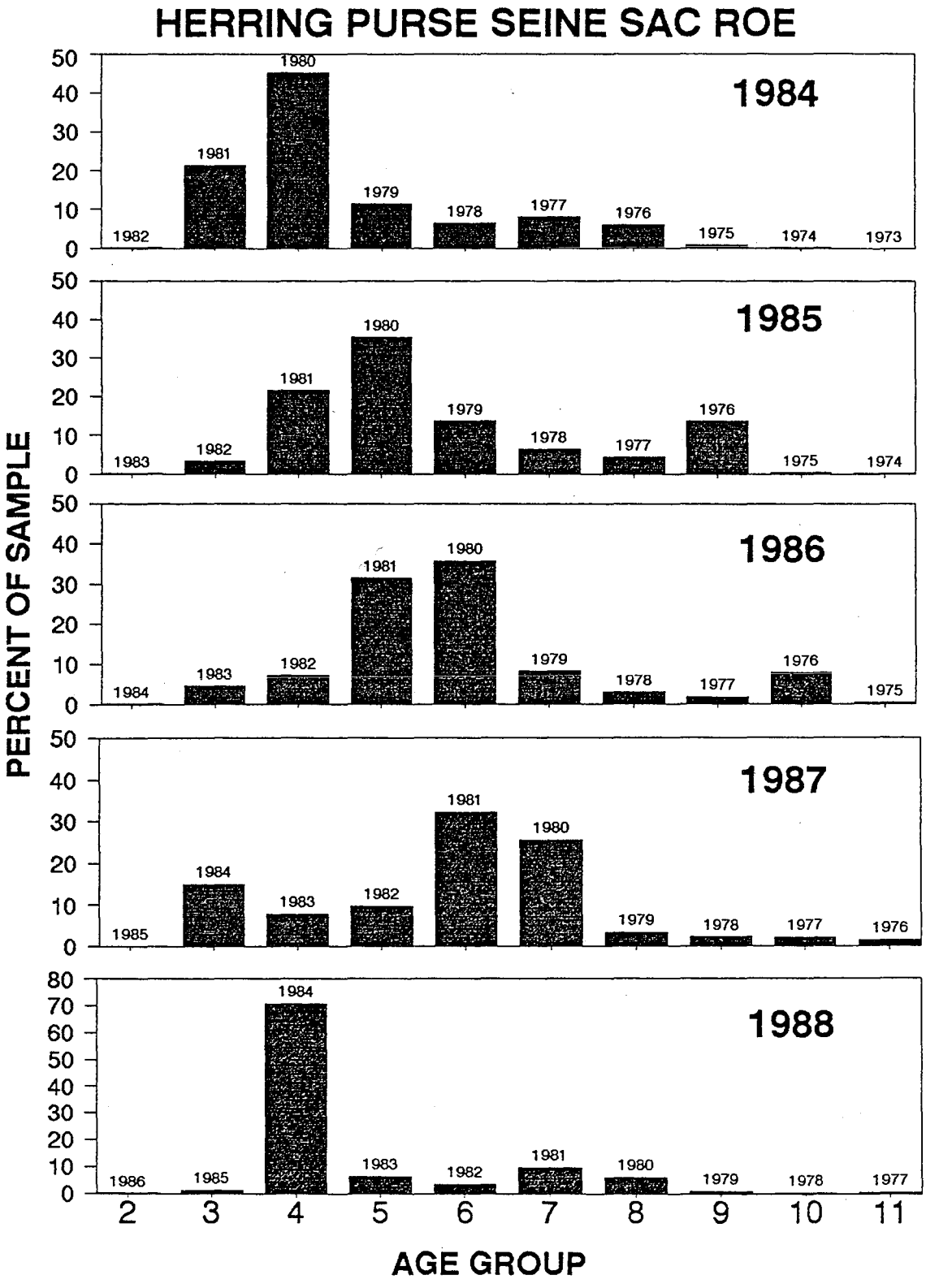
SAMPLE LOCATION AND DATE	AGE	MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
		NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	2	0.7	172	4	71	5	2	0.7	179	2	72	2	4	1.4	175	4	71	3
	4	107	37.7	191	9	92	17	121	42.6	191	8	97	13	233	82.0	191	8	94	15
	5	7	2.5	199	13	104	22	6	2.1	204	7	115	13	13	4.6	201	11	109	19
Galena Bay	6	3	1.1	173	40	113	14	2	0.7	209	3	142	8	6	2.1	191	34	120	19
16 Apr. 1988	7	7	2.5	212	8	127	17	9	3.2	228	7	178	16	16	5.6	221	11	156	30
	8	5	1.8	228	7	173	25	4	1.4	231	6	173	12	9	3.2	229	6	173	20
	9	0	0.0	NA	NA	NA	NA	2	0.7	235	1	187	21	2	0.7	235	1	187	21
	10	0	0.0	NA	NA	NA	NA	1	0.4	185	0	87	0	1	0.4	185	0	87	0
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	131	46.1	194	14	98	25	147	51.8	196	14	106	28	284	100.0	195	14	102	27
	UNAGED	11	68.8	202	17	108	27	5	31.3	197	9	109	19	16	100.0	200	15	108	25
	2	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	3	3	1.0	182	7	74	7	1	0.3	162	0	56	0	4	1.4	177	10	70	10
	4	127	43.3	186	11	84	19	129	44.0	188	12	91	22	256	87.4	187	12	87	20
	5	6	2.0	196	18	100	31	9	3.1	195	10	97	13	15	5.1	195	14	98	22
Virgin Bay	6	2	0.7	185	1	85	3	1	0.3	162	0	56	0	3	1.0	177	11	75	14
16 Apr. 1988	7	2	0.7	230	8	168	10	4	1.4	220	16	146	31	6	2.0	224	14	153	27
	8	6	2.0	202	20	118	38	1	0.3	198	0	98	0	7	2.4	201	18	115	36
	9	1	0.3	233	0	192	0	1	0.3	183	0	84	0	2	0.7	208	25	138	54
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	147	50.2	188	14	88	25	146	49.8	189	14	92	23	293	100.0	188	14	90	24
	UNAGED	2	28.6	179	4	70	4	5	71.4	194	5	93	10	7	100.0	189	8	86	14

Appendix H.28. Age, sex and size composition of Pacific herring sampled from the fall bait and food fishery, Prince William Sound, 1988.

SAMPLE LOCATION AND DATE	AGE	MALES						FEMALES						SEXES COMBINED					
				LENGTH		WEIGHT				LENGTH		WEIGHT				LENGTH		WEIGHT	
		NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD	NUMBER	PERCENT	MEAN	STD	MEAN	STD
	2	37	6.9	166	11	68	15	35	6.5	164	9	66	12	72	13.4	165	10	67	14
	3	63	11.8	176	7	84	13	51	9.5	177	8	82	13	114	21.3	177	8	83	13
	4	97	18.1	182	8	95	14	105	19.6	184	8	93	15	202	37.7	183	8	94	15
	5	42	7.8	187	9	102	19	32	6.0	187	10	97	16	74	13.8	187	9	100	18
Red Head	6	26	4.9	194	11	111	21	16	3.0	195	6	111	14	42	7.8	194	9	111	18
01 Nov. 1988	7	14	2.6	181	9	109	19	5	0.9	206	9	134	25	19	3.5	197	10	116	23
	8	4	0.7	196	7	120	10	4	0.7	202	1	124	3	8	1.5	199	6	122	8
	9	3	0.6	196	12	110	16	2	0.4	193	7	110	7	5	0.9	194	10	110	13
	10	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	11	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	12	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	13	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA	0	0.0	NA	NA	NA	NA
	TOTAL	286	53.4	181	12	93	20	250	46.6	181	12	90	20	536	100.0	181	12	91	20
	UNAGED	35	54.7	179	11	86	18	29	45.3	180	13	86	21	64	100.0	179	12	86	19



Appendix H.29. Percent contribution by age class in the herring test fishery, Prince William Sound, 1988.



Appendix H.30. Percent contrribution by age class in the purse seine herring sac roe fishery,Prince William Sound, 1984 - 1988.