1989 LOWER COOK INLET AREA

ANNUAL FINFISH MANAGEMENT REPORT

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ANNUAL MANAGEMENT REPORT
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COMMERCIAL SALMON FISHERY

INTRODUCTION

The Lower Cook Inlet management area is comprised of all waters west of the longitude of Cape Fairfield, north of the latitude of Cape Douglas and south of the latitude of Anchor Point and has been divided into five fishing districts (Figure 1). The Barren Islands District is the only non-salmon and herring producer and the remaining four districts have been divided into 30 subdistricts and sections to facilitate management of discrete stocks of salmon and herring.

The 1989 Lower Cook Inlet salmon fishery had mixed results due to the Exxon Valdez oil spill, poor sockeye returns to two lake enhancement projects and the excellent pink salmon returns to Tutka Bay and Halibut Cove Lagoon. Total harvest for all species of 1,485,484 was the eighth highest in the past 30 years and 39% above average (Tables 1 and 11; Figure 2). FRED enhancement projects involving the Tutka Bay Hatchery and sockeye lake stocking accounted for 68% of the total harvest.

While king salmon are a relatively minor species, the 1989 record harvest of 1,893 fish was more than three and a half times the average. Sockeye harvests were double the average harvests in both the Southern and Kamishak Bay Districts, but harvests in the Outer and Eastern Districts were 35-40% below average (Appendix A.20). The total harvest of 163,271 sockeye was 65% above average and was the ninth consecutive year of above average harvests (Table 1; Figure 3; Appendix A.20).

Pink salmon returns to Tutka Bay and Halibut Cove Lagoon accounted for 877,500 fish or 65% of the total pink salmon harvest of 1,296,926 fish. These enhancement projects, bolstered by strong returns to Humpy Creek and returns to Kamishak Bay District spawning streams, were the primary producers of pink salmon that resulted in the fifth largest salmon harvest in the last 30 years (Table 11; Figure 6). Chum salmon returns were generally weak and the harvest of 11,305 fish was the lowest on record and 91% below the pre-season projected harvest and 30 year average harvest for Lower Cook Inlet (Figure 8; Appendix A.23).

Presence of oil in much of the Kamishak Bay District and in certain subdistricts of the Outer District resulted in entire season closures in large portions of these districts. Subdistrict closures due to oil and decreased fishing effort by seiners resulted in excessive escapements of pink salmon to several major spawning streams. Lost pink salmon harvest has been estimated at over half a million fish, primarily in the Kamishak Bay District.

Pink salmon escapements were generally considered good in the Southern and Outer Districts (Table 2) with many minor spawning streams, not listed in Table 2, receiving good numbers of fish. Escapements to the three major streams in the Kamishak Bay District were extremely excessive, whereas, returns to Eastern District spawning streams were poor and accounted for less than 30% of the goal. Chum salmon escapements were poor to most major spawning systems with only the Kamishak Bay District receiving acceptable numbers of fish (Table 3). Sockeye salmon escapements were generally considered good to the major spawning systems, with the exception of the English Bay Lake system (Table 3). Returns to the English Bay Lake system continued to be poor, resulting in complete set gill net and subsistence closures. The Delight and Desire Lakes returns did not materialize as expected. While the escapements to

these two lakes of 7,700 and 9,000 sockeye salmon, respectively, were below the goals of 10,000 fish, both escapements were above average. The Mikfik Lake escapement of 11,500 sockeye was about double the goal of 5,000 to 7,000 fish, but the majority of the excess escapement resulted from a fishery closure due to the presence of oil.

Fishing effort was down from 1988 levels with only 64 seine and 23 set gill net permit holders making deliveries. Seine fishing effort was concentrated in the Southern District because of displacement from other fishing areas due to oil related closures.

SOUTHERN DISTRICT

Set Gill Net Fishery

Set gill net fishermen experienced their lowest harvest since 1971 (Appendix A.13). For the second consecutive year, the set gill net catch of pink salmon exceeded that of sockeye salmon, which historically comprised over half of the catch by this gear type. The total harvest of 38,130 salmon was 26% below average and only the harvests of king and coho salmon, which typically comprise only 5% of the total harvest, were above average (Table 1; Appendix A.13). The king salmon harvest of 1,281 fish was almost four times the average and was due entirely to enhancement projects at Halibut Cove Lagoon, the Homer Spit and Seldovia Bay. Sockeye, pink and chum salmon harvests were 46%, 20% and 33% below average respectively (Table 1; Appendix A.13).

Several factors contributed to the below average set gill net harvests in 1989. The sockeye salmon return to the English Bay Lakes system was extremely weak for the fifth consecutive year. In anticipation of this weak return, the Port Graham - English Bay

Subdistrict was closed to commercial set gill net fishing on June 1 prior to the scheduled opening on June 5. Even with a complete subsistence, commercial and recreational fishery closure, the sockeye salmon escapement to the English Bay system reached only 4,500 fish, 55% below the low end of the desired escapement range (Table 4). The set gill net fishery would have opened on June 13 after the sockeye run was over, but local villagers requested that only the subsistence fishery be reopened to provide local family food requirements and because oil from the Exxon Valdez spill was still in the area.

Seldovia Bay was closed to set gill net fishing from July 15 until August 10 due to a weak pink salmon return. This closure reduced the set gill net harvest by approximately 800 sockeye and 2,000 pink salmon. However, an additional 24 hours of fishing per week was allowed in the Halibut Cove area from July 10 through July 31 and resulted in increased harvests of all species in this area.

Fishing effort also affected the set gill net harvest in the Southern District. Set gill net effort was reduced 15% from the previous year and increased seine effort throughout the Southern District probably lowered the set gill net catches in certain areas.

Perhaps the single, most significant effect on the lower set gill net catches was the absence of movement of Upper Cook Inlet sockeye salmon through Kachemak Bay. In 1989, only 1,657 sockeye, less than 12% of the season total, had been caught by June 25. The 30 year average harvest through June 25 has been 30% of the total or close to 10,500 sockeye salmon. Catches and average weights of sockeye salmon caught after June 25 appeared to reflect harvests of sockeye returning to Leisure Lake, rather than Upper Cook Inlet spawning systems.

Coho catches by gill nets were the highest since 1982. The catch of 4,792 coho was double the average (Table 1; Appendix A.13). Catches in the Halibut Cove and Tutka Bay areas in late July to mid August appeared to reflect the strength of coho enhancement production in the Kachemak Bay area and the exceptionally strong coho returns to lower Kenai Peninsula streams, primarily the Anchor River.

Seine Fishery

Sockeye Salmon

Seiners accounted for over 85% of the 98,052 sockeye salmon harvested in the Southern District in 1989 (Table 1). The catch was the fifth highest on record for the district (Appendix A.15) with sockeye returning to the Leisure Lake stocking and fertilization project contributing 81% of the total sockeye catch (Table 8; Figure 4). Fish returning to this project contributed significantly to the seine catches in the Halibut Cove and Tutka Bay Subdistricts, as well as the China Poot Bay Subdistrict.

The Halibut Cove, China Poot Bay and Tutka Bay Subdistricts were all opened on Monday June 26 on a five day per week basis in anticipation of a record return to the Leisure Lake project. Seine catches during the first week of fishing were minor, but by the end of the second week, over 12,600 sockeye had been harvested , 60% above average (Table 9). Compared to the 1980-1988 average harvest and the 1988 harvest, the 1989 harvest was progressing towards a total catch of 87,000-112,000, considerably below the pre-season forecasted harvest of 150,000 sockeye salmon. The final adjusted commercial harvest of Leisure Lake sockeye salmon was 79,714 fish, fourth highest on record, but 46% below the forecasted harvest.

Pink Salmon

Returns of pink salmon to the Tutka Bay Hatchery, a Tutka Hatchery satellite rearing project in Halibut Cove Lagoon and to Humpy Creek resulted in a harvest of 987,488 pink salmon, second highest in Southern District history (Table 1; Appendix A.15). While no seining was allowed in either Port Graham Bay or Seldovia Bay, spawning escapements to these systems were considered excellent (Table 2). The Humpy Creek escapement of 93,000 pink salmon was very excessive, but typical for this stream which is very difficult to fish due to extensive tidal flats that hinder fishing on an ebbing tide.

Tutka Bay was opened to fishing five days per week on June 26. Catches started out very strong and were double the average odd-year catch through the first week of July (Table 7). Aerial surveys of Tutka Lagoon indicated a buildup of pink salmon by July 4. Since the majority of the early returning fish are usually males, fishery management strategy over the past four years has been to allow this early accumulation of fish to be harvested commercially. This has prevented a large excess of male pink salmon from being seined up for hatchery brood stock, has simplified sorting of fish by sex and has decreased holding pen mortalities.

Tutka Lagoon was opened for an hour and a half on July 7. Twenty seiners harvested 18,800 pink salmon, but by July 11 over 20,000 pink salmon had again accumulated in the lagoon. Part of the reason for this quick buildup was the announced closure for waters of Tutka Bay outside the Homer Electric Association powerlines on July 10 because of the presence of oil. The outer portion of the bay was only closed for 6 hours and the area was reopened at 12:00 noon July 10 after all beaches in the area were walked and

certified as clean of oil. Although oil and oiled debris continued to be picked up on the Homer Spit, continual checks of set gill nets and seines in Tutka Bay did not show any signs of fouling of gear or product.

A second Tutka Lagoon opening was allowed for 30 minutes on July 12 and 20 boats took 23,400 pink salmon. The total pink salmon harvest of 383,400 fish through July 15 was 65% above the odd year average harvest and 10% above the 1981 record harvest of 1.0 million pink salmon. However, catches dropped off drastically the following week and the rate of fish accumulating in the lagoon forced a closure of waters south of the HEA powerlines on July 19.

The latter portion of the Tutka Hatchery return was either weak or the overall run timing was early. Only 25,000 fish were seined up for hatchery brood stock on July 21 and a complete closure of the Tutka Bay Subdistrict was announced for July 22. Aerial surveys of the lagoon indicated that the accumulation of pink salmon in Tutka Lagoon increased from 14,000 fish on July 24 to over 35,000 on July 25. This increase provided more than adequate numbers of fish for natural spawning and the remaining hatchery broodstock. The Tutka Subdistrict was reopened to seining on July 26, but fishing was restricted to the standard two 48 hour weekly periods.

A third lagoon opening for one hour was allowed on July 31 and 13 boats caught 18,200 pink salmon. The lagoon was opened on a continual basis on August 10, but catches and fishing effort dropped off rapidly and the subdistrict was closed on August 14. The final seine catch of pink salmon in Tutka Bay reached 622,012 and was the third highest on record (Table 7; Figure 7). Pink salmon escapement to Tutka Creek of 11,900 was considered excellent (Table 2).

An extremely strong pink salmon return occurred to the secondary rearing and release project in Halibut Cove Lagoon. Halibut Cove was opened to seining on June 26 and Halibut Cove Lagoon was opened on July 3 after the majority of the king salmon return was over. This year's catch of 249,600 fish was the largest return to this project to date and represented an ocean survival of 8.3% from a release of 3.0 million fry (Appendix A.9 and A.10).

A total of 23 different vessels fished Halibut Cove Lagoon during the return with 10 or 11 fishing the area regularly during the peak of the return. The combination of pink salmon returning to both Halibut Cove and Tutka Bay made the 1989 return the second largest return of Tutka Hatchery produced fish on record.

Humpy Creek produced the only significant natural return of pink salmon in the Southern District with a harvestable surplus in 1989. The return began very slowly with no fish being present in the creek during an aerial survey on July 9. A ground survey on July 14 indicated over 1,400 pink salmon in the creek and that fish were just beginning to move into the stream. Normally, during years of strong returns to Humpy Creek, escapement levels begin building in mid July with large movements of fish into the creek not occurring until July 17 to July 21. Years of weak returns have not shown much timing difference except that the increased rate of escapement in late July is much less. Therefore, extensive fishing time cannot be allowed until the actual run strength is confirmed.

An aerial survey conducted on the afternoon of July 21 indicated over 23,000 fish in the creek. The Humpy Creek Subdistrict was opened Monday morning July 24 with fishing allowed up to the marker buoy placed at the mouth of the creek. A ground survey of Humpy Creek on July 24 indicated 21,000 pink salmon present in the creek.

Fishing effort was good during the first day of fishing with 12 vessels harvesting over 14,000 pink salmon. However, effort dropped off quickly to between one and three vessels between July 26 and August 7. Even an increase in fishing time to seven days per week on July 31 did not increase fishing effort in the area. Pink salmon were moving so rapidly into the stream that the few boats present could not slow the rate of movement into the stream. By July 28 aerial surveys estimated a total of 47,000 pink salmon in Humpy Creek and over 64,000 by August 8. A fence was constructed across the stream during the low, high-tide series on August 8 and did facilitate harvest of the return. However, as tides built, fish began to move around the ends of the weir. A total of 91,400 pink salmon were caught during the season (Appendix A.9), but the escapement of 93,000 was very excessive and almost double the upper end of the escapement range (Table 2). Construction of the fence in the intertidal portion of Humpy Creek a week earlier could have facilitated harvest of the excess pink salmon, but would not have been very effective due to the large 18 to 19 foot high tides during the July 31 to August 6 period.

Other Species

Southern District chum salmon returns were very poor and related to the very poor 1987 pink salmon returns (Appendix A.15). Only 3,141 chum salmon were harvested, 60% below average for the district. The catch was evenly distributed between set gill net and seine gear (Table 1) with 80% of the harvest occurring in the Tutka Bay Subdistrict (Appendix A.12).

The king salmon harvest of 1,889 was a record. While minor in total numbers of fish, the majority of the harvest has occurred as a result of interceptions of enhancement returns to three separate projects in the Southern District. The coho salmon harvest of 6,667 was the sixth highest on record with set gill nets taking 72% of the harvest (Table 1; Appendix A.15).

OUTER DISTRICT

Exxon Oil Spill

Fishing in the Outer District in 1989 was severely compromised by the presence of oil from the Exxon Valdez oil spill. Most bays in this district were heavily hit with emulsified oily "mousse". Oil was present on most beaches and in rip tides within the fishing areas.

Based on the Memorandum of Understanding between the Department of Fish & Game and the Department of Environmental Conservation, before areas could be opened to fishing, test fishing had to be conducted and beaches surveyed to confirm the presence or absence of oil. As a result the Department did not open fisheries because of oil in Port Dick Bay and Windy Bay and delayed the opening of the Port Chatham Subdistrict which resulted in excessive escapement.

Spawning escapements of pink salmon were generally very good to all systems (Table 2). Only Rocky River was far below the goal. While many streams were still below their escapement goals, the escapements that were achieved were considered adequate to produce harvestable returns in 1991 depending on natural survival conditions. Port Dick Creek received a very large over escapement of pink salmon. While the escapement of 55,400 fish was within the range of 20,000 to 100,000 fish, the 1989 return was primarily an intertidal spawning return. When pinks do not move above the intertidal spawning area in Port Dick Creek, the escapement goal is kept close to the lower end of the goal.

Chum salmon returns to all streams in the Outer District were poor. No fishing was allowed on any return and the total spawning escapement estimate of 12,100 chum salmon was less than 30% of the

lower end of the escapement range (Table 3).

Sockeye Salmon

Delight and Desire Lakes located in the East Nuka Subdistrict continue to be the only major sockeye salmon systems in the Outer District. The discovery of sockeye in the newly created lake north of Desire Lake was a tremendous emotional boost. This lake, which has temporarily been named Ecstasy Lake, has been created since 1975 due to a receding glacier. Two separate lakes exist in this system and the interconnecting and outflowing rivers could provide excellent spawning depending on winter water flows. Approximately 2,000 sockeye were estimated in the system and all appeared to be beach spawners.

Aerial surveys were first flown of Delight and Desire Lakes on June 16. No fish were seen at Delight, but 1,200 sockeye were seen along the beach at Desire with an additional 100 fish already in the lake. Surveys on June 20 and June 26 showed little change at Delight, but the escapement in Desire Lake increased to an estimate of 3,500 fish. However, there appeared to be no real strength to the return as few fish were observed along the beach near the mouth of the creek.

An opening was announced for a two mile radius around the mouth of Desire Lake Creek for July 3. Catches were negligible as most of the fleet stayed near Aialik Lagoon, which was opened simultaneously with Desire Lake. By July 9 less than 100 sockeye salmon had been caught near Desire Lake. The sockeye escapement was estimated to have increased to 7,000 fish and approximately 3,400 fish had moved into the freshwater lagoon at Delight Lake. Waters north of Moonlight Bay were opened on July 10, but waters south were kept closed due to the presence of oil. McCarty Lagoon remained closed to protect additional schooled sockeye salmon

needed to meet the desired escapement goal.

Only one vessel fished the Delight and Desire Lakes area between July 10 and July 12 and only 700 sockeye salmon were harvested. McCarty Lagoon was opened on July 13 and fishing was allowed up to the mouth of Desire Lake Creek. This resulted in catches jumping dramatically over the next seven days. Surveys on July 21 indicated escapements were not increasing during the normal weekly closed periods and the subdistrict was closed to fishing on July 22 to allow additional sockeye escapement to both lakes.

A reopening for pink salmon in August resulted in some sockeye harvest but the majority of the 10,286 sockeye salmon harvest (Table 1) occurred between July 10 and July 21. This harvest was considerably below the projected harvest of 35,000 sockeye salmon. Escapements to Delight and Desire Lakes of 9,000 and 7,700 fish were below the goals of 10,000 fish for each system, but were still above average for these systems (Table 4; Appendix A.7).

Pink Salmon

The July 22 closure of the East Nuka Subdistrict occurred just as pink salmon were beginning to enter Desire Lake Creek. Aerial surveys monitored the rate of pink salmon movement into Desire Lake Creek which increased from 100 fish on July 21 to 4,000 on July 28. A survey on August 1 indicated the pink salmon escapement had increased to between 16,000 and 18,000 fish and an announcement was issued reopening the area to seining on August 3.

Again due to the presence of oil, only waters north of Moonlight Bay were opened to fishing, McCarty Lagoon was opened and fishing was allowed up to the mouth of Desire Lake Creek. Only three boats fished the area and one boat left after the first week. Limited

fishing effort resulted in a harvest of only 43,000 pink salmon (Appendix A.9) while the spawning escapement burgeoned to 47,000 fish, more than twice the upper end of the escapement range of 10,000-20,000 fish (Table 2).

Port Chatham was the only other subdistrict in the Outer District to be opened to fishing in 1989. The pink salmon return developed very slowly with only 4,000-6,000 fish observed on July 17 and July 24 aerial surveys. Weather hampered surveys continuously in late July and early August and when the subdistrict was flown again on August 4 over 26,000 pink salmon were observed in the bay. Fishing was allowed on August 7 in the Port Chatham Subdistrict, but most fish were holding well inside the closed waters markers or were moving into the spawning streams. Only 9,700 pink salmon were harvested and the final escapement of 31,700 was considerably above the upper end of the escapement range (Table 2; Appendix A.9).

KAMISHAK BAY DISTRICT

Oil present on beaches and in rip tides also prevented fishery openings in much of the Kamishak Bay District. Although a limited fishery occurred in early June, the discovery of oil on a net and along beaches in the area, prompted a closure of the entire Kamishak Bay District on June 9. Waters of the Kamishak Bay District south of Contact Point and in the Rocky Cove Subdistrict near Sunday Creek were never reopened in 1989 due to the presence of oil.

Commercial harvests of chum and coho salmon in the southern portion of the district were impacted. Although most chum salmon returns were weak, some harvest would have occurred prior to determining the actual run strengths of particular returns. The closure due to the presence of oil actually resulted in very good chum salmon escapements being achieved in the Kamishak River system and in

McNeil River (Table 3). Large over escapements of pink salmon in the three major pink salmon producing systems of Bruin Bay, Sunday Creek and Brown's Peak Creek were due to oil related closures (Table 2).

Sockeye Salmon

The entire Kamishak Bay District opened to salmon seining by regulation on June 1. Effort was minimal at Mikfik Creek in the McNeil River area until June 5 when four boats averaged 100 sockeye salmon each. The return was just beginning and aerial surveys confirmed that no fish had moved into Mikfik Creek over the weekend closure from June 3 to June 5. Nine vessels harvested 5,500 sockeye on June 6 and an additional 1,000 fish before the 6:00 a.m. Wednesday June 7 closure.

With the commercial seine harvest at 7,000 fish, an additional closure for the McNeil River and Paint River Subdistricts was announced for June 8 due to the lack of any escapement or movement of sockeye salmon into the lagoon area. Sockeye began moving into the lagoon on June 7 and by June 10 approximately 600 fish had moved upriver past the falls. The escapement built rapidly from a total of 800 fish on June 10 to 3,400 on June 12 and an estimated escapement of 7,500 to 8,000 fish on June 14. Additional fishing time normally would have been allowed on June 14 with a lagoon opening to harvest fish surplus to escapement requirements on June 15 or June 16. However, the presence of oil in the immediate area precluded any additional fishing time. The final escapement of 11,500 sockeye salmon to Mikfik Lake was about double the 5,000 to 7,000 fish goal (Table 4).

The commercial fishery on the district's primary sockeye return at Chenik Lake was prohibited due to the presence of oil. A terminal harvest arrangement with the Cook Inlet Aquaculture Association to

harvest sockeye salmon returning to Paint River was expanded to include the Chenik Lake return. One vessel was hired to harvest fish for the Association that were excess to escapement requirements and a total of 38,900 sockeye were harvested in July. The spawning escapement of 12,000 fish was considered excellent (Table 4).

Sockeye salmon returns to spawning areas in the Douglas River and Kamishak River systems were not strong in 1989. Spawning escapements were below average for these streams (Table 4), but were hindered by poor escapement survey conditions.

Pink Salmon

Pink salmon returns to the Kamishak Bay District were expected to be strong with a pre-season projected harvest of 200,000 fish. Bruin Bay River, Sunday Creek located in Rocky Cove and Brown's Peak Creek located in Ursus Cove have always been the primary producing systems. Spawning escapements in 1987 to these three streams ranged from 24,000 to 40,000 and were considered excellent.

Good numbers of pink salmon were first observed in all three streams and schooled in the bays during aerial surveys on July 18. The Bruin Bay Subdistrict was opened to seining on July 20 on the regular two 48 hour weekly periods and the Ursus Cove Subdistrict was opened for one 48 hour period from July 20 to July 22 with fishing allowed up to the mouth of Brown's Peak Creek. Rocky Cove remained closed due to the presence of oil along the beach near Sunday Creek. Only one vessel fished this period at Ursus Cove and no effort occurred at Bruin Bay. An additional 48 hour period was allowed in Ursus Cove from July 24 to July 26 and two additional vessels moved to the area. In spite of fishing effort at Ursus Cove, aerial surveys of Brown's Peak Creek on July 24 indicated the escapement had increased from 3,200 pink salmon to over 30,000 with

a commercial harvest of only 14,000 fish. Bruin Bay River was beginning to fill up quickly with over 47,000 fish already in the river and numerous schools of fish throughout the bay. It was obvious that fishermen unfamiliar with these fishing districts were never going to be able to stop or even appreciably slow down the rate of movement of fish into these streams.

Fishing time was extended to seven days per week on July 25 in both the Bruin Bay and Ursus Cove Subdistricts, fishing was allowed up to the "pothole" in Bruin Bay River and up to the mouth of Brown's Peak Creek and a portion of the Rocky Cove Subdistrict was opened from Fortification Bluff to the Kirschner Lake water falls to assist harvesting the Bruin Bay return. Very little effort occurred inside Bruin Bay or in the "pothole" where major harvests have occurred in past years. A maximum of 10 vessels were observed in the district during the peak of the returns, but with the settlement agreement arranged with Exxon, there was simply no incentive for a fisherman to fish intensely to harvest fish, possibly risking damage to his gear or vessel. Such fishing activity would have been commonplace during a more normal fishing season. The entire Kamishak Bay District was closed to salmon seining on August 14 after it was determined the pink salmon returns were through in order to allow for maximum chum salmon escapements to spawning streams in the northern portion of the district.

Final harvests of pink salmon in the Kamishak Bay District reached 256,669, the second highest on record and 4-1/2 times the average for the district (Table 1; Appendix A.17). A total of 202,800 and 53,800 were harvested in Bruin Bay and Ursus Cove (Appendix A.9). Escapements to these three major streams were all extremely excessive and based on past returns it is unlikely that significant harvestable returns will be produced by these spawning escapements in 1991 (Table 2; Appendix A.5).

No specific chum salmon openings were allowed in the Kamishak Bay District in 1989. The harvest of 7,809 fish occurred incidental to the directed pink salmon returns to Bruin Bay and Ursus Cove with the harvest evenly split between the two subdistricts. Chum salmon spawning escapements were considered good to all of the northern spawning streams with the exception of the 5,900 fish escapement to Iniskin River, which is considered low compared to the escapement goal of 10,000 fish and the past average escapement of 7,200 fish (Table 3; Appendix A.6).

EASTERN DISTRICT

Aialik Lake produced the only harvestable salmon return in the Eastern District in 1989. Approximately 1,800 sockeye salmon were first observed in Aialik Lagoon on a June 20 aerial survey. During the following six days, little buildup in the lagoon occurred and half of the fish observed on June 20 moved into the lake. An aerial survey on June 30 finally indicated an accumulation of several thousand sockeye in the lagoon and the escapement into the lake had reached 4,000 fish.

Aialik Lagoon and waters of Aialik Bay within a one mile radius of the lagoon were opened to seining on July 3 five days per week. Since the escapement goal of 2,500-5,000 fish had been achieved, the area was left open until July 22. Over 4,400 sockeye were harvested by 10 vessels during the first day of fishing and catches remained at 100-200 fish per boat through July 11 with vessel effort dropping to 4 or 5 boats after the July 3 opening. The final sockeye harvest reached 8,500 fish and the escapement of 6,500 fish was considered excellent (Table 4; Appendix A.12).

No other commercial harvests were allowed in the Eastern District in 1989. Catches listed on Table 1 reflect deliveries from the recreational Seward Silver Salmon Derby and for the first time a cost recovery delivery of 3,913 coho salmon from the Bear Lake weir project. Pink salmon escapements to streams in Resurrection Bay were very poor with only Thumb Cove achieving its escapement goal (Table 2). The chum salmon escapement of 3,000 fish to Tonsina Creek was good, but was below the goal and the run strength was typical of other Lower Cook Inlet chum salmon returns (Table 3).

SUBSISTENCE AND PERSONAL USE FISHERIES

Kachemak Bay Personal Use

The Kachemak Bay personal use salmon gill net fishery was open from August 17 until September 15. A total of 466 permits were issued, an increase of 6% from the previous year (Tables 12 and 13). Increased permit issuance during the past two years has resulted in a larger numbers of permits not being fished at all due to the lack of available beach area for people to set their nets. This year's harvest of 8,396 fish was the second highest on record and was only slightly below the 1982 record of 8,474 fish (Table 13). Coho salmon comprised 86% of the catch followed by pink salmon at 10.5%. The sockeye catch of 156 fish was a record for this fishery. Aerial surveys of the Clearwater Slough area were unsuccessful due to flooding. Again, as in 1988, the Caribou Lake and Seldovia Lake coho stocking projects were considered to have contributed significantly to the personal use catches.

English Bay-Port Graham Subsistence

Sockeye salmon returns to the English Bay Lake system were expected to be very poor again. In an attempt to increase the spawning escapement and to provide brood stock for the rehabilitation project, the area was closed to subsistence and sport fishing on May 31. The final sockeye salmon escapement was estimated at only 4,500 fish (Table 4). The area was reopened to subsistence fishing on July 13, however, concern about oil tainted fish from the Exxon Valdez spill prevented most villagers from putting nets back in the water. Harvests were the lowest on record for both villages. The set gill net catches totalled only 504 fish with 69% of the harvest being coho and pink salmon and 97% of the harvest being taken by residents of the village of Port Graham, which was not as heavily impacted by oil (Tables 14 and 15).

ENHANCEMENT AND REHABILITATION

Tutka Hatchery - Halibut Cove Lagoon

Poor returns to Tutka Bay resulted in a very low egg take in 1987. Only 15.2 million fry were released in Tutka Bay in 1988 but the 1989 return of 705,000 fish was the third highest return on record to this facility (Table 7). An additional 249,000 fish returned to the secondary release site for Tutka Hatchery fry in Halibut Cove Lagoon. The total return of 954,000 pinks represented a total ocean survival rate of 6.3%, third highest to date. Ocean survival rates at Halibut Cove Lagoon were 8.3%, over 40% higher than Tutka, more than justifying the necessity for, and cost of, secondary release locations.

The Tutka Hatchery released a total of 30.1 million pink salmon fry in 1989 and an additional 2.1 million chum salmon fry. An additional 6.0 million pink salmon fry were released in Halibut Cove Lagoon after the normal short term rearing program and pink salmon fry were again released on the Homer Spit and in Ingram Creek for recreational fishermen.

Leisure Lake

The Leisure Lake sockeye salmon return did not materialized as expected. The total return of 87,714 sockeye (Table 8) was 41% below the pre-season projected return of 150,000. Personal use dip net fishermen had a banner year as fish readily moved through the commercial fishing fleet and into China Poot Creek. Leisure Lake was again stocked with 20 million sockeye salmon fry in 1989 and the lake was fertilized. No smolt outmigration project was operated this spring, but limited sampling indicated smolt sizes ranging from 64-84 mm and 2.2-6.1 g, similar to 1988 data.

Chenik Lake

Chenik Lake was stocked with 3.5 million sockeye fry in 1989 and was fertilized as in 1987. A smolt project initiated this year could not be started until after the ice breakup on Chenik Lake due to the lack of a cabin to house personnel, which had to be brought in by float plane. Only 3,100 smolt were counted due to the late start of the camp. Sizes of smolt sampled were 56 - 104 mm and 1.0 - 8.9 g for age-1 smolt and 70 - 135 mm and 2.6 - 18.0 g for age-2 smolt. It was felt that most smolt emigrated under the ice. The 1989 adult return was only one third of the projected return. More accurate forecasting will occur in the future as smolt data are gathered and additional adult returns are sampled for age composition. FRED limnology staff feel that with the increased stocking levels coupled with lake fertilization, that Chenik Lake should produce 2.2 million sockeye salmon smolt and an adult return of 260,000 fish.

Other Lake Stocking Projects

Upper Paint, Lower Paint, Elusivak, Kirschner, Port Dick and Hazel Lakes were stocked with 3.7 million sockeye salmon fry in 1989 (Table 16). Stocking levels were adjusted slightly from 1988 levels in Kirschner, Port Dick and Hazel Lakes based on smolt data gathered this year. Smolt from Kirschner Lake ranged from 55 - 72 mm and from 1.2 - 3.0 g, Port Dick smolt ranged from 59 - 72 mm and 1.7 - 3.1 g and Hazel Lake smolt were the largest ranging from 59 - 81 mm and 1.7 - 3.8 g.

Several other stocking projects will come on-line in 1990. Over 350,000 eggs were taken from the English Bay Lake system in 1989 and were put in the Tutka Hatchery. Fry will be released back into the lake system in the spring of 1990. FRED will also be stocking

two additional lakes in the Bruin Bay and Ursus Cove areas in 1990. The Cook Inlet Aquaculture Association will be stocking 2.2 million fry into Bear Lake in the Resurrection Bay area and will be fertilizing the lake as well.

Recreational stocking and release programs were also continued as in past years. Coho fry were stocked in Seldovia and Caribou Lakes, coho smolt were released on the Homer Spit and king salmon smolt were released in Seldovia Bay, Halibut cove Lagoon and on the Homer Spit (Table 16).

COMMERCIAL HERRING FISHERY

Introduction

The Lower Cook Inlet area (Figure 1) was opened to commercial purse seining for sac roe herring for the fifth consecutive year. Management was similar to 1988 with only minor adjustments based on Board of Fisheries direction. The Southern District was opened for the first time since 1979 for a harvest of 150 - 200 tons. The pre-season harvest guideline for the Kamishak Bay District was 5,000 tons.

Seiners harvested 4,972 tons of sac roe herring in Lower Cook Inlet in 1989. Roe recovery averaged 9.51% for the 4,801 tons taken in the Kamishak Bay District and 8.93% for the 171 tons taken in the Southern District (Table 17). The Outer and Eastern Districts were not opened to fishing in 1989 due to the presence of oil from the Exxon Valdez oil spill. All 74 permit holders made deliveries during the season. Preliminary ex-vessel price paid for herring was only $500.00 per ton for 10% roe, down considerably from the 1988 price of $1,650.00 per ton. A retroactive settlement brought the price up to $750.00 per ton for an ex-vessel value of just over $3.5 million.

SOUTHERN DISTRICT

The Southern District of Lower Cook Inlet opened to commercial herring sac roe seining on April 20, for the first time since poor stock conditions brought about an area closure in 1979. Approximately 10 vessel participated in harvesting a total of 171 tons. Final mature roe averaged only 8.93%

The district was first opened at 6:00 a.m. on April 20, but low roe recoveries obtained from commercial and test samples, necessitated an emergency closure on April 29 at 12:00 Noon. Approximately 19.5 tons were harvested by 4 boats, and roe recoveries averaged approximately 8.7%. Local processors expressed an unwillingness to purchase additional herring harvested from the Southern District yielding less than 9% mature roe.

Volunteer test fishing was conducted between May 3 and May 8 and the development of roe was monitored. Results from test fishing on May 3 yielded roe recoveries of 6.1% with additional testing on May 8 resulting in roe recoveries of 9.5%. As a result of improved roe recoveries, the entire district was opened to commercial sac roe seining effective May 10 from 8:00 a.m. to 12:00 Noon. Higher than expected catches in the first hour of the fishery necessitated an emergency order closure of the district at 10:30 a.m. In the two and one half hour opening, five boats harvested 151.5 tons of herring from the Mallard Bay portion of upper Kachemak Bay bringing the final catch for the season to 171 tons. Five additional boats fished in upper Tutka Bay during the opening, but were unable to successfully catch any herring despite approximately 300 tons of fish visible from the air in that area. Results from a department shellfish trawl survey working in the upper portion of Tutka Bay on May 16 indicated a large concentration of age-2 herring. These smaller fish and the fact that fish were schooling away from

shallow, in-shore areas may have been why vessels operating in this area were unable to successfully harvest any fish.

Aerial surveys of the Southern District conducted throughout the month of May indicated major concentrations of herring in the upper portion of Kachemak Bay. Approximately 1,600 tons of the 2,000 ton biomass estimate extrapolated from aerial survey estimates was observed in the Aurora Lagoon to Mallard Bay area on the southeastern side of the upper bay. Approximately 400 tons were observed in Halibut Cove, China Poot Bay, upper Tutka Bay and at Glacier Spit just south of Mallard Bay.

KAMISHAK BAY DISTRICT

The Research Vessel (R/V) Pandalus and Commercial Fisheries staff headed to Kamishak Bay on April 17. The approved management plan presented to the Alaska Board of Fisheries in December 1988 called for short openings beginning on, or about, April 18 in order to collect information on the early portion of the stock. Waters in management areas 5 through 11 were opened for three hours, 7:00 to 10:00 a.m., April 18. The majority of the fleet was located from Fortification Bluff south to Chenik Reef. Several sets were made by a few boats remaining in Iniskin Bay, but all were small and no deliveries were made. One sample taken contained 244 g fish, 9.5% roe and a high percentage of male herring. The district was reopened for a second three hour fishery from 12:00 noon to 3:00 p.m., but again no catches were made.

With snow, a low ceiling and terrible weather the third planned opening for the evening was cancelled and the fleet sought shelter. Fishing for Wednesday April 19 was cancelled due to weather and the lack of catches on April 18. Another three hour opening was announced for 7:00 until 10:00 a.m. Thursday April 20. The Protection Vessel (P/V) Vigilant was located at Nordyke Island and

monitored the fishery there while the P/V Balaena and Rance Morrison stayed in Iniskin Bay and the R/V Pandalus headed to Fortification Bluff.

A few sets were made early in the morning, but most activity off Fortification Bluff and Augustine Island started around 9:00 a.m. Fishing was extended until 3:00 p.m. in areas 5 through 10, but area 11 around Augustine Island was not extended due to the likelihood of contamination of gear or product due to oil sheen and "mousse" reported in the area. The fishery was allowed to close at 3:00 p.m. due to low roe recoveries. The harvest totalled 252 tons with 211 tons from area 5, 18 tons from area 7, 15 tons from area 9 and 8 tons from area 11. Roe percentages ranged from 7.5 - 10.5% with some immature roe. The high male percentages which averaged 57-59% for the four areas was the primary cause of the low recoveries. Strong westerly winds blowing on April 21 prevented aerial surveys of the area, but the decision had already been made to hold off one additional day to allow roe recoveries to improve. A two hour fishery was announced in areas 5 through 10 for Saturday April 22 from 9:00 until 11:00 a.m. The opening was scheduled for the last hour of the ebb tide and during low slack tide, to minimize the catch, which was expected to reach 800 to 1,200 tons unless fish were visible from the air.

The fishery was allowed to close at 11:00 a.m. on April 22 and no additional periods were announced. Preliminary harvest was reported as 1,038 tons. All catches came from areas 5 through 7 and roe recoveries ranged from 8.5 to 11%, but appeared to average just under 10%. High male percentage of 59% was still observed in samples taken from the harvest. The decision was made to hold off any additional fishing until samples were obtained from the Chenik and Fortification Bluff areas. Arrangements were made with four processors to have vessels make test sets in these areas and in Iniskin Bay.

Very strong winds prevented any sampling effort in the southern part of the district on April 23. Three samples from Iniskin Bay had roe percentage of 3.8 - 5.7% with immature roe of 2.1 - 3.7% and males making up 66% of the samples. One vessel was able to make a test set at Nordyke Island on April 24. Roe recoveries from three samples ranged from 10.2 - 12.2%, with some blood in the roe, and fish averaging 208 g. Something appeared very "fishy" about airplane and radio traffic monitored near Chenik and there was a strong suspicion that fish were being observed from the air.

An announcement was made at 9 p.m. on April 24 that the next informational update would be at 9:00 a.m. April 25. Weather was supposed to improve on Tuesday April 25 which could allow fishing. Samples worked up for April 20 and April 22 harvests showed age class composition as expected except for almost a total lack of age-3 and age-4 herring. During the 9:00 a.m. informational update, the fleet was informed of the weather forecast, that vessels should be ready for fishing on short notice and that any fishing would probably be restricted to areas 5-7. At that time all attempts at obtaining test samples by fishermen ceased.

A fishing period for three hours from 1:00 until 4:00 p.m. on Tuesday April 25 in areas 5-7 was announced at 12:00 noon and the entire fleet concentrated in the Chenik to Nordyke Island area. Excellent catches were made and roe recoveries appeared to be averaging 10-10 1/4% overall. Spawning was occurring in the area at the time and some reports were still being received of low roe and high male percentages. A fishery extension for two hours would have achieved the desired harvest, but there was still concern about taking the entire harvest from one area. Preliminary harvest for the period was 2,380 tons which brought the accumulative catch to 3,700 tons, leaving only 1,300 tons remaining on the pre-season harvest level of 5,000 tons.

An additional opening was announced for the same area on April 26, but the one hour opening from 8:00 until 9:00 a.m. was scheduled during the ebb tide to limit the fleet's efficiency. A half hour extension was also allowed, but this opening on the ebb tide back-fired and resulted in poor roe quality due to large quantities of spawned out fish in the catch. Only 300 tons were harvested during the 1 1/2 hour period. Areas 5 through 7 were announced closed for the season. Fishermen were put on a 12 hour notice for additional fishing in the Kamishak Bay District and the fleet moved north to Iniskin Bay.

The 6:00 p.m. April 26 informational update to the fleet announced a plan to test fish in areas 8 and 9 and that no reduction in the 12 hour notice for additional fishing time would occur until sampling data indicated good quality roe. On April 27, after further review of the age composition of our catch samples, the total allowable harvest was reduced 500 tons to 4,500 tons, which left 500 tons remaining on the adjusted harvest level. Age-3 herring were totally absent in the population and age-4 herring, which were forecasted to comprise 10% of the harvest, were comprising only 2-3%. These two age classes were expected to provide 600 tons of the pre-season harvest of 5,000 tons.

Samples were obtained from Ursus Cove, Black Reef and Iniskin Bay on April 27. Ursus Cove samples had roe recoveries of 7.5-10.3% (8.43% average) and 2.7-5.5% immature roe, but sex ratios were good with 55% females. Black Reef samples had 10% roe, some immature and 55% males and Iniskin Bay samples averaged 9.6% roe, 1.1% immature roe, 1:1 sex ratio and had one spawned out fish. No announcement was made concerning fishing time and test boats were sent out again on April 29. Sixteen samples taken from two test sets in Iniskin Bay on April 29 averaged 10% roe, 51% males and 1.3% immature roe. Average weight of fish was 224 grams.

Therefore, at 9 p.m. April 29 fishermen were put on a one hour notice for additional fishing time effective at 9:00 a.m. Sunday April 30. After an aerial survey of Iniskin Bay on the morning of April 30, a two hour opening was announced for area 9 from 10:00 a.m. until 12:00 noon.

Catches in Iniskin Bay on April 30 started out small and by 11:00 a.m. the catch was estimated at 150 tons. The fishery was extended for two hours and closed at 2:00 p.m. The catch ran 800 tons, 300 tons over the adjusted harvest level, as larger catches were made during the last 1 1/2 hours of the fishery. Once the tide started ebbing, difficulty fishing on the shallow mud flats at the head of the bay forced fishermen out the bay near the deeper main channel. Many sets in this area were released due to extensive presence of spawned out fish in the sets, which lowered roe recoveries in all deliveries during the last 2 1/2 hours of fishing. It appears obvious that even test fish samples with good roe do not guarantee good roe recoveries during a commercial fishery (i.e. test samples in Iniskin on April 29 averaged 10% roe whereas the fishery averaged only 8.9%).

The final Kamishak Bay District herring sac roe harvest totalled 4,801.1 tons and averaged 9.51% roe. Catches and average roe recoveries by area and date are presented in Table 20. Final spawning biomass was estimated at 30,800 with 32.5 miles of spawn observed (Table 18). However, over 10,000 tons observed on June 12 could not be sampled to determine actual age composition. While the April and May commercial fishery and test fishing indicated almost a complete absence of age-3 and age-4 herring, historical sampling indicate that it is very likely that this late biomass contained significant quantities of these age classes of herring. Without age

class data for this late spawning segment of the population, the 1990 forecasted biomass of 28,658 tons (Table 19) is based only on the spawning biomass of 20,800 tons observed prior to June (Yuen 1989).

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Table 1. Lower Cook Inlet salmon catch by species, district and gear, 1989.

DISTRICT	KING	SOCKEYE	COHO	PINK	CHUM	TOTAL
SOUTHERN						
Set Net	1,281	13,970	4,792	16,210	1,877	38,130
Seine	608	84,082	1,875	971,278	1,264	1,059,107
Total	1,889	98,052	6,667	987,488	3,141	1,097,237
OUTER						
Total	1	10,286	72	52,677	43	63,079
KAMISHAK BAY						
Seine	3	7,490	3	256,615	7,801	271,912
Hatchery	0	38,905	1	54	8	38,968
Total	3	46,395	4	256,669	7,809	310,880
EASTERN						
Seine	0	8,538	0	92	312	8,942
Derby	0	0	1,433	0	0	1,433
Hatchery	0	0	3,913	0	0	3,913
Total	0	8,538	5,346	92	312	14,288
Total	1,893	163,271	12,089	1,296,926	11,305	1,485,484
Percent	0.13	10.99	0.81	87.31	0.76	100.00
Average	528	98,786	8,558	833,997	126,648	1,068,518

Table 2. Lower Cook Inlet escapement goals, average observed, and 1989 escapements of pink salmon.

SOUTHERN DISTRICT	ESC. GOAL	AVE. ESC. [a]	1989 ESC
Humpy Creek	25,000 - 50,000	50,900	93,000
Tutka Lagoon	6,000 - 10,000	12,600	11,900
Tutka Hatchery	50,000	50,000	51,000
Seldovia Creek	25,000 - 35,000	33,800	26,200
Port Graham River	20,000 - 40,000	15,100	19,100
China Poot Bay	5,000	6,300	8,500
Barabara Creek	18,000 - 24,000	3,500	4,500
Total	149,000 - 214,000	172,200	214,200
OUTER DISTRICT			
Port Chatham Streams	10,000 - 20,000	6,700	31,700
Rocky River	50,000	26,600	10,300
Windy Left River	30,000 - 50,000	12,900	25,200
Windy Right River	10,000	5,300	6,600
Port Dick Creek	20,000 - 100,000	42,100	55,400
Island Creek	12,000 - 18,000	8,300	6,700
South Nuka Creek	10,000	7,700	7,300
Desire Lake Creek	10,000 - 20,000	8,900	47,000
James Lagoon	5,000 - 10,000	1,900	4,900
Total	157,000 - 288,000	120,400	195,100
KAMISHAK DISTRICT			
Big Kamishak River	20,000	10,700	-
Little Kamishak River	20,000	6,300	-
Amakdedori Creek	5,000	7,000	2,000
Bruin Bay River	25,000 - 50,000	101,000	350,000
Sunday Creek	10,000 - 20,000	13,800	103,000
Brown's Peak Creek	10,000 - 20,000	11,200	120,000
Total	90,000 - 135,000	150,000	575,000
EASTERN DISTRICT			
Aialik Lagoon	5,000	1,900	800
Bear Creek	5,000	2,900	1,700
Salmon Creek	10,000	2,900	1,600
Mayor Creek	2,000	700	-
Clear Creek	2,000	200	-
Thumb Cove	4,000	1,600	4,200
Humpy Cove	2,000	800	1,000
Tonsina Creek	5,000	3,000	500
Total	35,000	14,000	9,800
LOWER COOK INLET TOTAL	431,000 - 672,000	456,600	994,100

[a] Average escapement figures are based on weir counts and ground and aerial surveys conducted between 1951 and 1989. For many streams only several years data exist.

Table 3. Lower Cook Inlet escapement goals, average observed and 1989 escapements for chum salmon.[a]

SOUTHERN DISTRICT	ESCAPEMENT GOAL (RANGE)	AVE. OBS. ESCAPE.	1989 Escape
Tutka Creek	[b]	1,100	200
Seldovia River	[b]	900	1,300
Port Graham River	4,000 - 8,000	1,700	1,300
Total	4,000 - 8,000	3,700	2,800
OUTER DISTRICT			
Dogfish Lagoon	5,000 - 10,000	5,700	1,800
Port Chatham (streams)	[b]	1,100	300
Windy Right River	[b]	1,900	200
Windy Left River	[b]	900	0
Rocky River	20,000	6,800	1,200
Head End Creek	4,000	5,000	3,300
Island Creek	10,000 - 15,000	9,600	4,800
Middle Creek	[b]	1,700	300
Petrof River	2,000 - 5,000	2,400	200
Total	41,000 - 54,000	35,100	12,100
KAMISHAK BAY DISTRICT			
Silver Beach (streams)	[b]	2,500	1,200
Main Left (streams)	5,000 - 10,000	3,800	700
Big Kamishak River	20,000	10,800	30,000
Little Kamishak River	20,000	8,000	12,000
McNeil River	20,000 - 40,000	17,600	34,000
Bruin River	5,000 - 10,000	5,100	8,000
Rocky Cove (Sunday Creek)	[b]	1,000	400
Ursus Cove (streams)	5,000 - 10,000	4,800	6,300
Cottonwood Creek	10,000	5,900	8,000
Cottonwood Creek Egg take	3,000	2,500	2,600
Iniskin River	10,000	7,200	5,900
Total	98,000 - 133,000	69,200	109,100
EASTERN DISTRICT			
Tonsina Creek	5,000	2,800	3,000
Total	5,000	2,800	3,000
LOWER COOK INLET TOTAL	148,000 - 200,000	110,800	127,000

[a] Average escapement figures are based on weir counts and ground and aerial surveys conducted between 1951 and 1989. For many streams, only several years of data exist.

[b] No established goal.

Table 4. Lower Cook Inlet escapement goals, average observed and 1989 escapements for sockeye salmon.

	Escapement Goal	Average Escape.	1989 Escape
SOUTHERN DISTRICT			
English Bay	10,000 - 20,000	7,100	4,500
Total	10,000 - 20,000	7,100	4,500
OUTER DISTRICT			
Desire Lake	10,000	8,100	9,000
Delight Lake	10,000	6,600	7,700
Ecstasy Lake	[a]	[a]	2,000
Anderson Beach	2,000	200	-
Total	22,000	14,900	18,700
KAMISHAK BAY DISTRICT			
Mikfik Lake	5,000	6,200	11,500
Chenik Lake	10,000 - 20,000	2,900	12,000
Kamishak River	[a]	900	500
Douglas River	[a]	400	600
Douglas Beach	[a]	100	200
Total	15,000 - 25,000	10,500	24,800
EASTERN DISTRICT			
Aialik Lake	2,500 - 5,000	6,600	6,500
Bear Lake	1,000	4,300	100
Total	3,500 - 6,000	10,900	6,600
LOWER COOK INLET TOTAL	50,500 - 73,000	43,400	54,600

[a] Data not available.

Table 5. Emergency Order commercial fishing periods in Lower Cook Inlet, 1989.

Number	Issue Date	Description
2-F-H-001-89	April 17	Opens waters of the Kamishak Bay District in management areas 5-11 to herring sac roe seining for three hours from 7:00 until 10:00 a.m. Tuesday April 18.
2-F-H-002-89	April 18	Reopens waters of the Kamishak Bay District in management areas 5-11 to herring sac roe seining for an additional three hours from 12:00 noon until 3:00 p.m. Tuesday April 18.
2-F-H-003-89	April 19	Opens the Southern District to herring sac roe seining at 6:00 a.m. Thursday April 20.
2-F-H-004-89	April 19	Opens waters of the Kamishak Bay District in management areas 5-11 to herring sac roe seining for three hours from 7:00 until 10:00 a.m. Thursday April 20.
2-F-H-005-89	April 20	Extends fishing time in waters of the Kamishak Bay District in management areas 5-10 for five hours from 10:00 a.m. until 3:00 p.m. Thursday April 20. Area 11 will remain closed.
2-F-H-006-89	April 21	Opens waters of the Kamishak Bay District in management areas 5-10 to herring sac roe seining for two hours from 9:00 until 11:00 a.m. Saturday April 22.
2-F-H-007-89	April 24	Closes waters of the Outer and Eastern Districts of the Cook Inlet management area to commercial fishing for bottom fish, sablefish and rockfish and smelt as of 12:00 noon April 30.
2-F-H-008-89	April 25	Opens waters of the Kamishak Bay District in management areas 5,6 and 7 to herring sac roe seining for three hours from 1:00 until 4:00 p.m. Tuesday April 25.

Table 5. Continued.

2-F-H-009-89	April 25	Opens waters of the Kamishak Bay District in management areas 5,6 and 7 to herring sac roe seining for one hour from 8:00 until 9:00 a.m. Wednesday April 26.
2-F-H-010-89	April 26	Extends fishing time in waters of the Kamishak Bay District in management areas 5,6 and 7 for 30 minutes from 9:00 until 9:30 a.m. Wednesday April 26.
2-F-H-011-89	April 27	Closes the Southern District to herring sac roe seining effective at 12:00 noon Saturday April 29.
2-F-H-012-89	April 30	Opens waters of the Kamishak Bay District in management area 9 to herring sac roe seining for two hours from 10:00 a.m. until 12:00 noon Sunday April 30.
2-F-H-013-89	April 30	Extends fishing time for herring sac roe seining in management area 9 of the Kamishak Bay District for two hours from 12:00 noon until 2:00 p.m. Sunday April 30.
2-F-H-014-89	May 9	Opens waters of the Southern District to herring sac roe seining for four hours from 8:00 a.m. until 12:00 noon Wednesday May 10.
2-F-H-015-89	May 10	Closes waters of the Southern District to herring sac roe seining effective at 10:30 a.m. May 10.
2-F-H-016-89	May 22	Closes the Dogfish Bay (Koyuktolik) Subdistrict to subsistence gill net fishing at 6:00 a.m. Saturday May 27 and closes the Port Graham-English Bay Subdistrict to subsistence fishing at 6:00 a.m. Wednesday May 31.
2-F-H-017-89	May 22	Closes the Port Graham and English Bay area to commercial set gill net fishing effective June 1.

Table 5. Continued.

2-F-H-018-89	June 1	Closes the Southern District to commercial set gill netting before the scheduled opening date of June 5.
2-F-H-019-89	June 4	Opens the Southern District except for the Port Graham Subdistrict to commercial set gill net at 6:00 a.m. Monday June 5. Fishing will be allowed on the standard two hour weekly periods.
2-F-H-020-89	June 6	Reopens waters of the Outer and Eastern Districts to the taking of bottomfish, except sablefish, effective at 12:00 noon June 12.
2-F-H-020a-89	June 7	Closes the McNeil River and Paint River Subdistricts to salmon seining at 6:00 a.m. Thursday June 8 until further notice.
2-F-H-021-89	June 9	Closes the entire Kamishak Bay District to salmon seining at 6:00 p.m. Friday June 9.
2-F-H-022-89	June 21	Opens the Halibut Cove (excluding Halibut Cove Lagoon), China Poot and Tutka Bay Subdistricts to salmon seining on a five day per week basis from 6:00 a.m. Monday to 6:00 a.m. Saturday effective at 6:00 a.m. Monday June 26. The markers at the HEA powerline in China Poot Bay will not be in effect and fishing is allowed up to the Department marker at the mouth of China Poot Creek. Halibut Cove Lagoon will open to seining on a 5 day per week basis effective at 6:00 a.m. Monday July 3.

Table 5. Continued.

2-F-H-023-89	July 3	Opens Aialik Lagoon and waters of the Aialik Bay Subdistrict within a one mile radius of the entrance to Aialik Lagoon to salmon seining at 6:00 a.m. Monday July, 3 five days per week from 6:00 a.m. Monday until 6:00 a.m. Saturday. It also opens waters of the East Nuka Subdistrict within a 2 mile radius of Desire Lake Creek effective at 6:00 a.m. Monday July 3.
2-F-H-024-89	July 1	Opens the Paint River Special Harvest Area to salmon seining on a 7 day per week basis effective 6:00 a.m. Sunday July 2 until 6:00 a.m. Wednesday August 30.
2-F-H-025-89	July 5	Opens Tutka Lagoon to salmon seining by flare for 1 1/2 hours from approximately 9:00 until 10:30 p.m. Friday July 7.
2-F-H-026-89	July 8	Opens waters of the East Nuka Subdistrict north of the latitude of Moonlight Bay to salmon seining effective at 6:00 a.m. Monday July 10.
2-F-H-027-89	July 9	Closes waters of the Tutka Bay Subdistrict north of the HEA powerlines in Tutka Bay effective at 6:00 a.m. Monday July 10.
2-F-H-028-89	July 10	Reopens all waters of the Tutka Bay Subdistrict to salmon seining effective at 12:00 noon Monday July 10 and extends fishing time for set gill nets in the Halibut Cove Subdistrict to five days per week from 6:00 a.m. Monday until 6:00 a.m. Saturday.
2-F-H-029-89	July 11	Reopens the Port Graham and English Bay area to subsistence fishing, opens McCarty Lagoon to salmon seining and removes the markers at Desire Lake Creek effective at 6:00 a.m. Thursday July 13.

Table 5. Continued.

2-F-H-030-89	July 11	Opens Tutka Lagoon by flare to salmon seining for 30 minutes from approximately 9:00 p.m. until 9:30 p.m. Wednesday July 12.
2-F-H-031-89	July 13	Closes the Seldovia Bay Subdistrict to commercial set gill net fishing effective at 6:00 a.m. Saturday July 15.
2-F-H-032-89	July 19	Closes waters of the Tutka Bay Subdistrict to salmon seining southeast of the HEA powerlines in Tutka Bay effective 6:00 p.m. Wednesday July 19.
2-F-H-033-89	July 19	Opens the Bruin Bay Subdistrict to salmon seining effective 6:00 a.m. Thursday July 20, and opens the Ursus Cove Subdistrict for one 48 hour period from 6:00 a.m. Thursday July 20 until 6:00 a.m. Saturday July 22 and allows fishing up to the mouth of Brown's Peak Creek effective at 6:00 a.m. Thursday July 20.
2-F-H-034-89	July 21	Closes the Outer and Eastern Districts to salmon seining at 6:00 a.m. Saturday July 22.
2-F-H-035-89	July 21	Opens the Ursus Cove Subdistrict to salmon seining for an additional 48 hour period from 6:00 a.m. Monday July 24 until 6:00 a.m. Wednesday July 26 and allows fishing up to the mouth of Brown's Peak Creek effective 6:00 a.m. Monday July 24.
2-F-H-036-89	July 21	Closes the Tutka Bay Subdistrict to salmon seining effective 6:00 a.m. Saturday July 22 and opens the Humpy Creek Subdistrict to salmon seining at 6:00 a.m. Monday July 24. Fishing at Humpy Creek will be on the regular two 48 hour weekly periods and fishing will be allowed up to the Department marker buoy in Humpy Creek.

Table 5. Continued.

2-F-H-037-89	July 25	Extends fishing time in the Ursus Cove, Rocky Cove and Bruin Bay Subdistricts to seven days per week until further notice and allows fishing up to the "Pothole" in Bruin Bay River effective at 12:00 noon Tuesday July 25. It also opens waters of the Rocky Cove Subdistrict from the Bruin Bay Subdistrict north to Fortification Bluff at 12:00 noon Tuesday July 25.
2-F-H-038-89	July 26	Reopens the Tutka Bay Subdistrict to salmon seining at 6:00 a.m. Thursday July 26.
2-F-H-039-89	July 31	Closes waters of China Poot Bay south and east of the Kachemak Bay Wilderness Lodge to salmon seining at 6:00 a.m. Wednesday August 2.
2-F-H-040-89	July 31	Increases fishing time in the Humpy Creek Subdistrict to seven days per week and reduces fishing time in the Tutka Bay, China Poot and Halibut Cove Subdistricts back to the standard two 48 hour weekly fishing periods for all gear types effective July 31.
2-F-H-041-89	July 31	Opens Tutka Lagoon, by flare, to salmon seining for one hour from approximately 8:00 until 9:00 p.m. Monday July 31.
2-F-H-042-89	August 2	Reopens waters of the East Nuka Subdistrict north of the latitude of Moonlight Bay to salmon seining, opens McCarty Lagoon to fishing and allows fishing up to the mouth of Desire Lake Creek effective at 6:00 a.m. Thursday August 3.
2-F-H-043-89	August 5	Opens the Port Chatham Subdistrict to salmon seining at 6:00 a.m. Monday August 7.

Table 5. Continued.

2-F-H-044-89	August 8	Reopens the Seldovia Bay Subdistrict to commercial set gill net fishing effective at 6:00 a.m. Thursday August 10.
2-F-H-045-89	August 8	Closes all of China Poot Bay to personal use set gill net fishing effective at 6:00 a.m. Thursday August 17.
2-F-H-046-89	August 10	Opens Tutka Lagoon by flare to salmon seining at approximately 7:30 p.m. Thursday August 10 until further notice on the regular two 48 hour weekly fishing periods.
2-F-H-047-89	August 11	Reopens all waters of the China Poot Subdistrict to salmon seining effective at 12:00 noon Friday August 11 and reestablishes the closed waters area south and east of the Homer Electric Association powerline in China Poot Bay.
2-F-H-048-89	August 14	Closes the entire Kamishak Bay District and the Port Chatham, Tutka Bay, China Poot and Halibut Cove Subdistricts to salmon seining effective at 6:00 p.m. Monday August 14.

Table 6. Preliminary estimate of adult pink salmon return to Tutka Bay and Lagoon, 1989.

Commercial Harvest:	
Seine	622,012
Set Net	10,135
Sub-Total	632,147
Sport Catch	10,000
Escapement:	
Tutka Creek and Channel	11,900
Egg-Take	51,000
Total Return	705,047

Table 7. Tutka Bay (241-16) pink salmon seine catch by statistical week.

Stat Week	1978 Entire Subdistrict	1978 Lagoon Only	1979 Entire Subdistrict	1979 Lagoon Only	1980 Entire Subdistrict	1980 Lagoon Only	1981 Entire Subdistrict	1981 Lagoon Only
25								
26			3,786		3,691		8,647	
27			129,659		17,630		101,301	
28	24,683		178,178	68,500	76,810		239,547	
29	19,077		50,873	24,000	130,608	35,074	301,919	42,000
30	83,681	47,143	22,574	20,700	34,669		166,796	35,000
31	19,980	17,143	15,392	14,500	22,014	20,500	107,918	12,000
32	12,357	11,100			22,755	21,481	47,096	10,000
33	818						19,071	13,700
34							7,543	7,243
Total Catch Seine	160,596	75,386	400,462	127,700	308,177	77,055	999,838	119,943
Set Net	7,266		21,354		13,336		26,736	
Sport	---		2,000		5,000		6,000	
Egg Take	21,100		21,200		26,897		22,000	
Escapement	15,000		10,600		17,300		28,000	
Total Return	203,962		455,616		370,710		1,082,574	

Stat Week	1982 Entire Subdistrict	1982 Lagoon Only	1983 Entire Subdistrict	1983 Lagoon Only	1984 Entire Subdistrict	1984 Lagoon Only	1985 Entire Subdistrict	1985 Lagoon Only
25								
26					7,312		17,656	
27	3,560		13,782		40,700		63,632	
28	49,703	8,500	92,230		91,774	38,200	129,020	31,300
29	40,730		152,038	35,000	76,639	44,700	111,211	34,800
30	24,933		247,119	35,000	14,629		40,583	
31	44,326	24,000	68,522	18,000			45,644	22,200
32	4,091		28,380	10,000			44,685	17,600
33	10,434	11,000	1,751				23,397	13,800
34	--						8,771	5,200
Total Catch Seine	177,777	57,100	603,822	98,000	231,054	82,900	484,599	124,900
Set Net	7,099		11,637		10,000		6,888	
Sport	2,000		5,000		8,000		8,000	
Egg Take	41,200		53,800		41,000		43,000	
Escapement	18,500		12,900		10,500		14,000	
Total Return	246,576		687,159		300,554		556,487	

Table 7. (continued)

Stat Week	1986 Entire Subdistrict	1986 Lagoon Only	1987 Entire Subdistrict	1987 Lagoon Only	1988 Entire Subdistrict	1988 Lagoon Only	1989 Entire Subdistrict	1989 Lagoon Only
25								
26	1,992		107				29,060	
27	49,948		6,685		8,507		131,122	18,800
28	175,863	47,000	27,738		77,026	28,000	223,256	23,400
29	134,039	36,900	14,758		293,572		171,765	
30	32,504	14,500	3,507		182,644		18,777	
31	570				123,308	50,000	33,629	18,200
32	26				28,141	10,900	11,400	9,400
33							3,003	3,000
34								
Total Catch Seine	394,942	98,400	52,795		713,198	88,900	622,012	72,800
Set Net	5,228		3,670		10,731		10,135	
Sport	8,000		500		8,500		10,000	
Egg Take	43,000		22,000		65,000		51,000	
Escapement	13,400		4,800		11,200		11,900	
Total Return	464,570		83,765		808,629		705,047	

Stat Week	Weekly Avg.	Accum. Avg.	Even Year Wkly Avg	Even Year Accum	Odd Year Wkly Avg	Odd Year Accum
25	0	0	0	0	0	0
26	6,021	6,021	2,166	2,166	9,876	9,876
27	47,211	53,231	20,058	22,223	74,364	84,240
28	115,486	168,717	82,643	104,867	148,328	232,568
29	124,769	293,486	115,778	220,644	133,761	366,328
30	72,701	366,188	62,177	282,821	83,226	449,554
31	40,109	406,296	35,033	317,854	45,184	494,739
32	16,578	422,878	11,228	329,082	21,927	516,665
33	4,873	427,746	1,875	330,957	7,870	524,536
34	1,360	429,106	0	330,957	2,719	527,255
TOTALS	429,106	429,106	330,957	330,957	527,255	527,255

Table 8. Harvest of China Poot Bay (Leisure Lake) sockeye salmon returns by user group.

Return Year	Sport Harvest	Personal Use	Commercial Harvest	Total Return [a]
1979	650	0	[b]	650
1980	1,000	1,000	12,000	14,000
1981	1,500	0	10,000	11,500
1982	450	1,320	200	3,400
1983	480	5,910	84,020	90,420
1984	500	2,000	114,360	117,360
1985	500	3,000	61,500	65,920
1986	100	150	18,350	18,800
1987	200	2,000	21,500	23,700
1988	500	1,500	91,469	93,939
1989	1,000	7,000	79,714	87,714
Totals	6,880	23,880	493,113	527,403

[a] Total return counts include estimates for escapements (i.e. non-harvested fish).

[b] No data.

Table 9. China Poot Bay sockeye salmon seine catch by statistical week. [a]

Stat Week	Year 1980	1981	1983	1984	1985	1986
25	0	0	0	0	0	0
26	0	201	0	8,952	857	74
27	0	7,107	2,668	19,462	6,547	435
28	3,569	8,753	15,935	39,714	19,582	2,524
29	6,226	1,762	26,553	31,895	20,347	3,288
30	0	41	24,231	4,850	10,321	3,587
31	0	0	3,724	0	0	1,250
32	0	0	79	0	0	42
33	0	0	0	0	0	11
Total	9,795	17,864	73,190	104,873	57,654	11,211

Stat Week	Year 1987	1988	1989	Weekly Average	Accum.
25	0	0	0	0	0
26	117	0	732	1,215	1,215
27	2,909	9,353	11,899	6,709	7,924
28	8,771	19,412	26,215	16,053	23,924
29	21,090	32,749	28,608	19,169	43,145
30	23,742	15,755	7,477	10,000	53,145
31	1,805	6,002	437	1,469	54,614
32	0	12	110	27	54,644
33	0	4	14	3	54,644
Total	58,434	83,287	75,492	54,644	54,644

[a] Data are not final and only reflect preliminary, adjusted catches for these statistical areas.

Table 10. Commercial seine harvest and natural escapement of Chenik Lake sockeye salmon returns.

Year	Escapement	Harvest [a]	Total Return
1975	100		100
1976	900	Closed	900
1977	200		200
1978	100	To	100
1979	ND		ND
1980	3,500	Fishing	3,500
1981	2,500		2,500
1982	8,000		8,000
1983	11,000	2,800	13,800
1984	13,000	16,500	29,500
1985	3,500	10,500	14,000
1986	7,000	111,000	118,000
1987	10,000	102,000	112,000
1988	9,000	164,200	173,200
1989	12,000	38,905	50,905

[a] Preliminary data.

Table 11. Lower Cook Inlet salmon catch by species, 1960-1989. [a]

Year	King	Red	Coho	Pink	Chum	Total
1960	27	24,726	2,692	611,647	116,082	755,174
1961	41	22,776	1,619	303,377	55,593	383,406
1962	60	25,286	7,727	2,248,341	179,259	2,460,673
1963	96	15,121	6,736	203,616	138,510	364,079
1964	91	20,654	9,460	1,055,417	323,335	1,408,957
1965	10	14,002	862	115,598	28,076	158,548
1966	62	15,333	5,411	579,240	129,062	729,108
1967	176	29,044	2,726	375,488	85,445	492,879
1968	64	95,242	4,883	585,441	75,134	760,764
1969	64	122,796	623	202,444	61,203	387,130
1970	106	20,898	4,696	716,212	242,427	984,339
1971	73	22,234	4,561	392,871	148,602	568,341
1972	88	57,897	2,234	28,663	75,543	164,425
1973	145	29,136	2,101	307,403	115,513	454,298
1974	183	27,428	6,514	50,601	19,210	103,936
1975	142	28,142	6,211	1,063,338	21,646	1,119,479
1976	450	58,159	3,216	136,445	50,822	249,092
1977	217	101,597	1,798	1,293,932	145,789	1,543,333
1978	1,747	156,404	6,529	352,561	73,518	590,759
1979	1,238	64,417	12,393	2,990,929	218,490	3,287,467
1980	424	69,442	14,505	889,703	73,492	1,047,566
1981	1,086	110,255	10,776	3,279,183	336,093	3,737,393
1982	1,066	131,320	46,892	551,589	198,185	929,052
1983	873	187,645	11,219	927,607	192,319	1,319,663
1984	714	268,950	16,797	700,622	92,540	1,079,623
1985	1,043	278,694	10,327	1,229,708	30,640	1,550,412
1986	796	234,861	18,852	1,408,293	82,688	1,745,490
1987	1,179	248,848	14,354	201,429	157,018	622,828
1988	1,694	319,008	7,946	921,296	321,911	1,571,855
1989	1,893	163,271	12,089	1,296,926	11,305	1,485,484
Total	15,848	2,963,586	256,749	25,019,920	3,799,450	32,055,553
Average	528	98,786	8,558	833,997	126,648	1,068,518
Percent	0.05	9.25	0.80	78.05	11.85	100.00

[a] Data source: final IBM computer runs, 1960-1989 and processor catch reports.

Table 12. Summary of personal use fishermen in Lower Cook Inlet by area of residence.

Area Residence of Permittee	Homer		Anchorage Area		Halibut Cove		Anch. Pt. Ninilchik		Seldovia		Pt Graham/ Eng. Bay		Kenai/ Soldotna		Other		Total Permits Issued
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%	
1974	108	73.0	20	13.5	6	4.1	4	2.7	1	0.7	3	2.0	5	3.4	1	0.7	148
1975	118	75.2	13	8.3	6	3.8	7	4.5	5	3.2	2	1.3	4	2.5	2	1.3	157
1976	182	70.0	24	9.2	9	3.5	25	9.6	5	1.9	4	1.5	6	2.3	5	1.9	260
1977	153	77.3	8	4.0	8	4.0	17	8.6	7	3.6	0	0	2	1.0	3	1.6	198
1978	214	68.8	40	12.9	5	1.6	30	9.6	12	3.8	3	1.0	4	1.3	3	1.0	311
1979	276	62.7	67	15.2	2	0.5	61	13.9	3	0.7	0	0	11	2.5	20	4.6	440
1980	310	58.2	81	15.2	0	0	80	15.0	7	1.3	0	0	42	7.9	13	2.4	533
1981	274	71.4	43	11.2	8	2.1	37	9.6	3	0.8	1	0.3	14	3.6	4	1.0	384
1982	295	74.7	19	4.8	9	2.3	44	11.1	0	0	0	0	7	1.8	21	5.3	395
1983	267	77.9	24	7.0	3	0.9	33	9.6	8	2.3	0	0	0	0	8	2.3	343
1984	266	72.0	20	5.4	6	1.6	62	16.8	5	1.4	1	0.3	5	1.4	4	1.1	369
1985	251	79.4	15	4.8	6	1.9	33	10.4	6	1.9	0	0	2	0.6	3	1.0	316
1986	280	82.8	18	5.3	4	1.2	29	8.6	1	0.3	0	0	1	0.3	5	1.5	338
1987	284	78.7	25	6.9	3	0.8	37	10.3	7	1.9	0	0	2	0.6	3	0.8	361
1988	338	77.2	36	8.2	5	1.1	43	9.8	6	1.4	0	0	10	2.3	0	0	438
1989	348	74.7	36	7.7	5	1.1	51	10.9	8	1.7	0	0	6	1.3	12	2.6	466
Total	3,964	-	489	-	85	-	593	-	84	-	14	-	121	-	107	-	5,457
Average	264	72.6	33	9.0	6	1.5	40	10.9	6	1.5	1	0.3	8	2.2	7	2.0	364

Table 13. Personal use fishery catches for the Southern District of Cook Inlet, 1969-1989.

Year	Issued	Returned	Permits Not Fished	Returned	King	Sockeye	Coho	Pink	Chum	Other	Total
1969	47	44	9	93.6	0	9	752	38	0	17	816
1970	78	73	18	93.6	0	12	1,179	143	13	39	1,386
1971	112	95	42	84.8	2	16	1,549	44	7	20	1,638
1972	135	105	41	77.8	1	11	975	48	69	19	1,123
1973	143	128	46	89.5	0	18	1,304	84	40	9	1,455
1974	148	118	66	80.3	0	16	376	43	77	27	539
1975	292	276	55	94.5	4	47	1,960	632	61	95	2,799
1976	242	221	83	91.3	16	46	1,962	1,513	56	75	3,668
1977	197	179	42	90.9	12	46	2,216	639	119	84	3,116
1978	311	264	113	84.9	4	35	2,482	595	34	89	3,239
1979	437	401	163	91.8	6	37	2,118	2,251	41	130	4,583
1980	533	494	195	92.7	43	32	3,491	1,021	25	153 1/	4,765
1981	384	374	100	97.4	25	64	4,314	732	89	+100	5,324
1982	395	378	71	95.7	39	46	7,303	955	123	8	8,474
1983	360	328	118	91.1	4	21	2,525	330	40	2	2,922
1984	390	346	127	88.7	4	25	3,666	821	87	25	4,628
1985	316	302	97	95.6	5	43	3,372	166	35	3	3,624
1986	338	310	63	91.7	7	68	3,831	3,132	56	0	7,094
1987	361	338	89	93.6	5	50	3,977	279	61	0	4,372
1988	438	404	117	92.2	14	60	4,877	1,422	75	0	6,448
1989	466	452	120	97.0	41	156	7,215	882	53	49	8,396
Total	5,616	5,174	1,657	-	193	702	54,229	14,888	1,108	895	72,013
Average	280	259	83	92.1	10	35	2,711	744	55	45	3,601

1/ Steelhead.

Table 14. Port Graham subsistence set gill net salmon harvest by year.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	116	1,694	625	298	150	2,883
1982	98	798	508	851	193	2,448
1983	57	1,066	440	169	65	1,797
1984	21	2,095	166	215	6	2,503
1985	156	469	190	42	22	879
1986	118	279	179	234	13	823
1987	21	170	251	139	25	606
1988	28	369	635	660	40	1,732
1989	48	78	168	178	17	489
Totals	663	7,018	3,162	2,786	531	14,160
Average	74	780	351	310	59	1,573

Table 15. English Bay subsistence salmon harvest by year.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1981	24	1,075	314	621	19	2,053
1982	13	1,584	1,305	1,850	36	4,788
1983	0	1,784	367	363	10	2,524
1984	18	1,225	385	404	0	2,032
1985	5	696	530	313	2	1,546
1986	4	378	296	825	2	1,505
1987	1	563	178	183	4	929
1988	72	430	199	613	36	1,350
1989	0	15	0	0	0	15
Totals	137	7,750	3,574	5,172	109	16,742
Average	15	861	397	575	12	1,860

Table 16. FRED division salmon stocking projects in Lower Cook Inlet and releases of salmon fry, fingerling and smolt by year in millions of fish.

Lake, River or Bay	Species	1984	1985	1986	1987	1988	1989
Leisure Lake	Sockeye	2.110	2.018	2.350	2.022	2.100	2.000
Chenik Lake	Sockeye	-	-	0.839	1.000	2.600	3.500
Paint River Lakes							
Upper	Sockeye			0.500	-	1.100	1.000
Lower	Sockeye			0.320	-	0.552	0.500
Elusivak	Sockeye					0.521	0.500
Kirschner Lake	Sockeye				0.867	0.521	0.250
Port Dick Lake	Sockeye				0.705	0.222	0.430
Hazel Lake	Sockeye					0.783	1.000
Bear Lake		a					
English Bay Lakes		a					
Bruin Bay Lake #1		a					
Ursus Lagoon Lake		a					
Gore Point Lake		a					
Petrof Lake		a					
Grewingk Lake		a					
Nuka Island Lake		a					
Bruin Bay Lake #2		a					
Rocky River Lake		a					
Spotted Glacier Lake		a					
Total Sockeye Stocked		2.110	2.018	4.009	4.594	8.399	9.180
Tutka Bay Hatchery	Pink	14.730	19.560	22.500	19.570	12.000	30.100
	Chum	0.026	0.018	0.449	4.050	3.180	2.103
Caribou Lake	Coho		0.139	0.138	0.150	0.150	0.182
Seldovia Lake	Coho		0.083	0.072	0.045	0.045	0.080
Seldovia Bay	King				0.084	0.084	0.108
Hal. Cove Lag.	King		0.098	0.101	0.094	0.094	0.115
	Pink			2.000	3.000	3.000	6.000
Homer Spit	King		0.152	0.104	0.104	0.104	0.212
	Pink				0.295	0.300	0.332
	Coho					0.060	0.143

[a] Potential systems for stocking in future.

Table 17. Lower Cook Inlet Pacific herring catches in tons by district, 1961-1989. [a]

Year	District				
	Southern	Kamishak	Eastern	Outer	Total
1961	0	0	1	0	1
1962	0	0	0	0	0
1963	1	0	0	0	1
1964	+	0	0	0	+
1965	2	0	0	0	2
1966	0	0	7	0	7
1967	0	0	0	0	0
1968	20	0	0	0	20
1969	551	0	758	38	1,347
1970	2,709	0	2,100	0	4,809
1971	13	0	831	0	844
1972	1	0	30	0	31
1973	204	243	831	301	1,579
1974	110	2,114	47	384	2,655
1975	24	4,119	0	0	4,143
1976	0	4,842	0	0	4,842
1977	291	2,908	0	0	3,199
1978	17	402	0	0	419
1979	13	415	0	0	428
1980	0	0	0	0	0
1981	0	0	0	0	0
1982	0	0	0	0	0
1983	0	0	0	0	0
1984	0	0	0	0	0
1985	0	1,132	204	12	1,348
1986	0	1,959	167	28	2,154
1987	0	6,132	584	202	6,918
1988	0	5,548	0	57	5,605
1989	171	4,801	0	0	4,972
Total	4,127	34,615	5,560	1,022	45,325
Average	295	2,885	505	146	1,563

[a] Data Source: Final IBM runs.

Table 18. Pacific herring biomass estimates in tons and harvest rates for the Kamishak Bay District of Lower Cook Inlet.

Year	Spawning Biomass [a]	Commercial Harvest	Total Biomass	Harvest Rate %
1978	800	402	1,202	33.4
1979	2,900	415	3,315	12.5
1980	-	0	-	-
1981	5,130	0	5,130	-
1982	4,835	0	4,835	-
1983	4,750	0	4,750	-
1984	2,885 [b]	0	6,500	-
1985	12,188	1,132	13,320	8.5
1986	24,042	1,959	26,001	7.5
1987	29,200	6,132	35,332	17.4
1988	24,000	5,548	29,548	18.8
1989	30,900	4,801	35,701	13.5

[a] Spawning biomass estimates are minimal estimates based on aerial surveys and an attempt not to duplicate tonnages.

[b] Spawning had already begun on first survey. Total spawning estimate was felt to be above 6,500 ton level. Peak survey estimate was only 2,885 tons.

Table 19. Kamishak Bay District age class composition of Pacific herring in the commercial sac roe seine fishery and spawning biomass in 1989 and 1990 forecasted harvest.

	Age Class Composition				
Age Class	Commercial Catch	Test Samples	Estimated Late Biomass	Total Commercial Harvest	1990 Forecasted Biomass
3	+	-	0.8		251
4	1.8	5.1	19.2	55.2	127
5	36.1	26.4	46.3	1,323.1	1,563
6	22.1	26.9	18.6	1,024.0	12,611
7	3.9	5.3	4.2	208.1	6,901
8	13.2	14.8	5.1	749.1	1,010
9	7.8	9.5	2.5	462.3	2,768
10	5.5	7.2	1.4	341.3	1,443
11	4.5	2.8	0.9	297.5	902
12	3.2	2.1	0.6	215.5	666
13	1.3	-	0.3	89.6	411
14	0.1	-	-	10.1	-
15	0.4	-	0.1	25.6	-
				4,801.4	28,658

Table 20. Commercial sac roe seine harvest in the Kamishak Bay District by area and date with average roe recovery, 1989.

Area	Date	Tons	Roe %
Augustine Island	4/20	8.5	10.1
Kamishak Reef	4/20	108.2	9.4
Chenik Area	4/20	82.3	8.9
	4/22	613.2	9.5
	4/25	2,406.4	9.9
	4/26	267.6	9.6
Contact Point	4/22	48.3	9.3
	4/26	13.5	9.9
Bruin Bay	4/22	93.5	7.8
Fortification Bluff	4/20	83.3	8.9
	4/22	157.0	8.8
Ursus Cove (Test Fish)	5/4	59.6	10.2
Cottonwood Bay	4/20	7.0	8.1
	4/30	6.9	11.0
Iniskin Bay	4/20	42.5	8.6
	4/30	803.6	8.9
		4,801.4	9.5

FIGURES

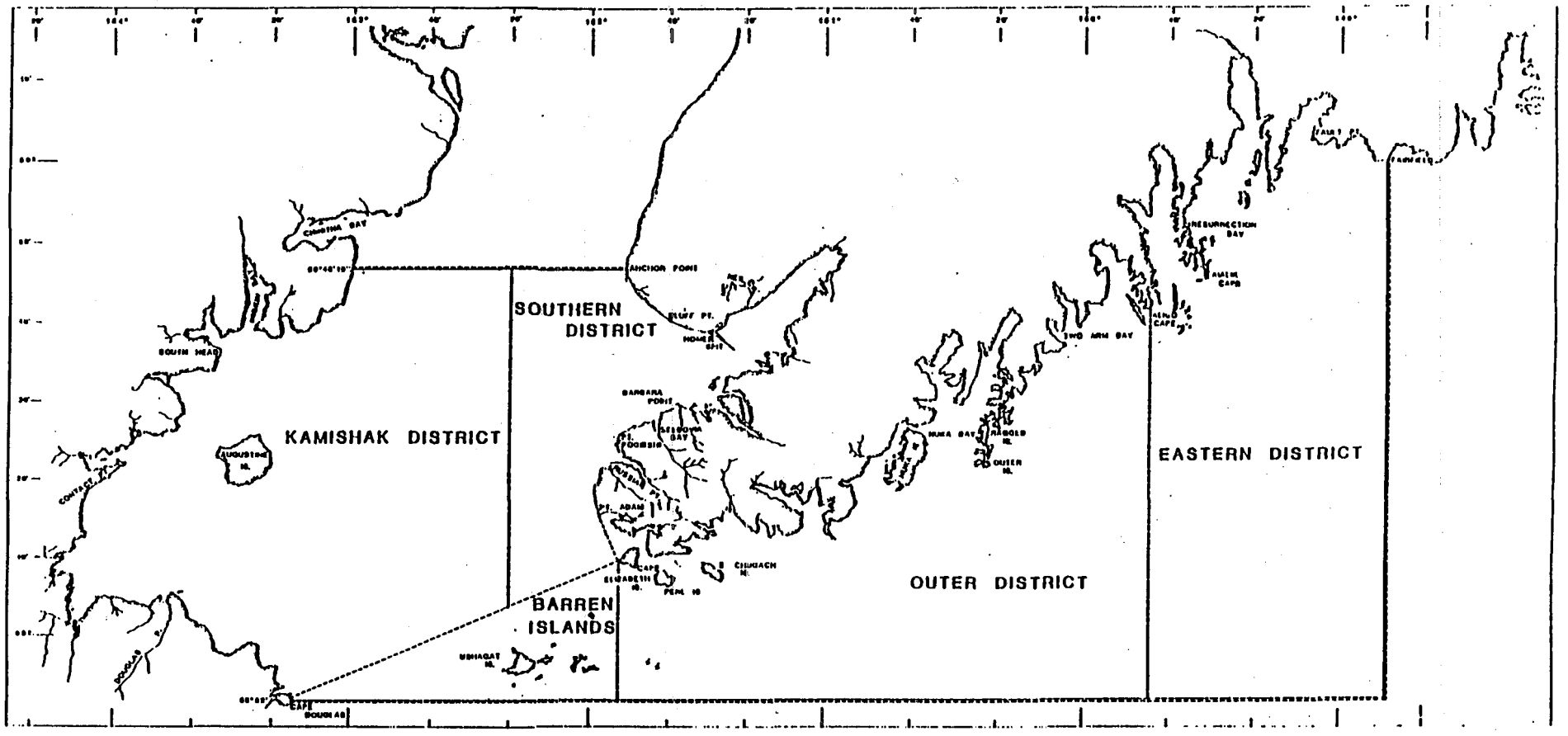


Figure 1. Lower Cook Inlet management area.

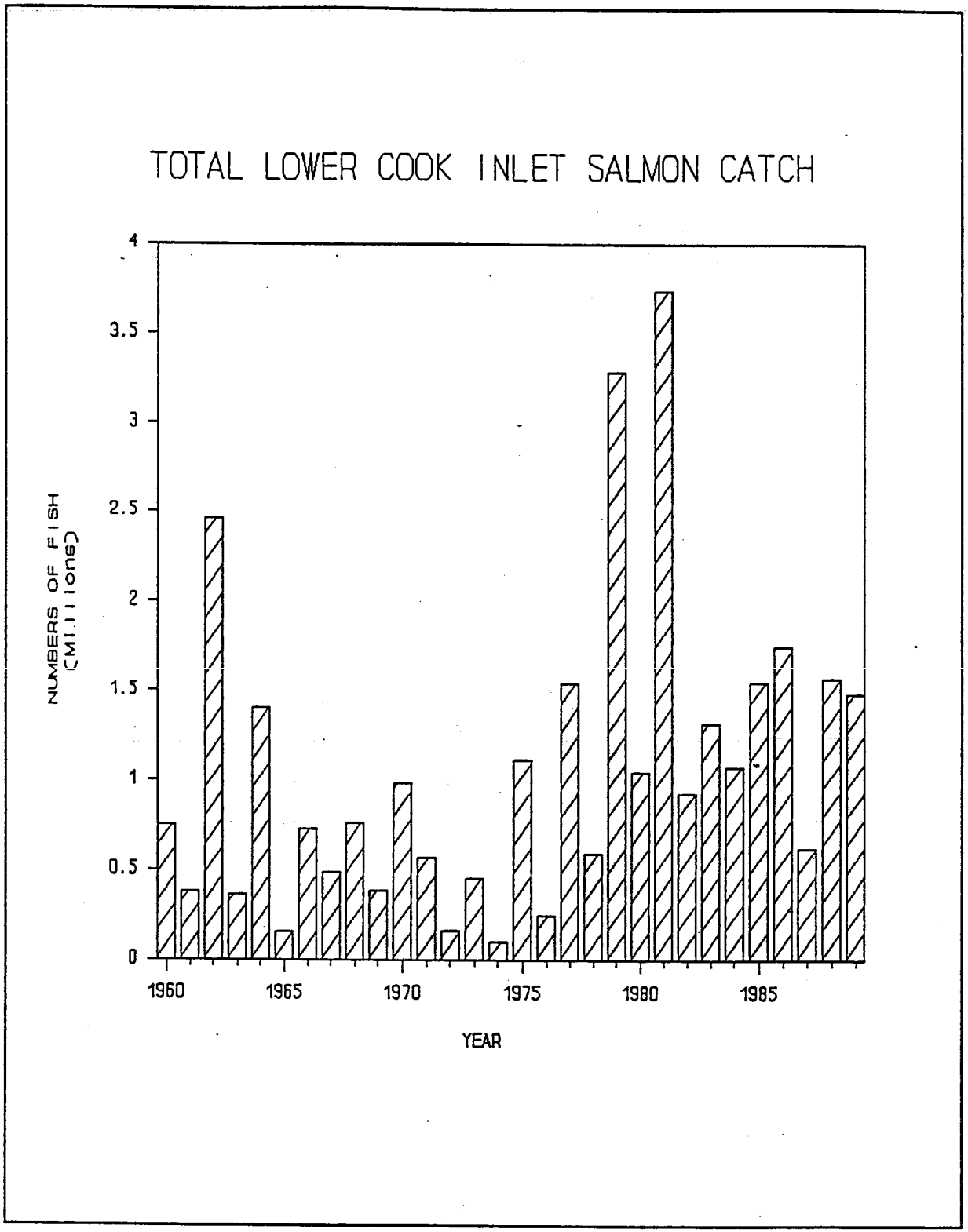


Figure 2. Lower Cook Inlet total salmon catch, 1960-1989.

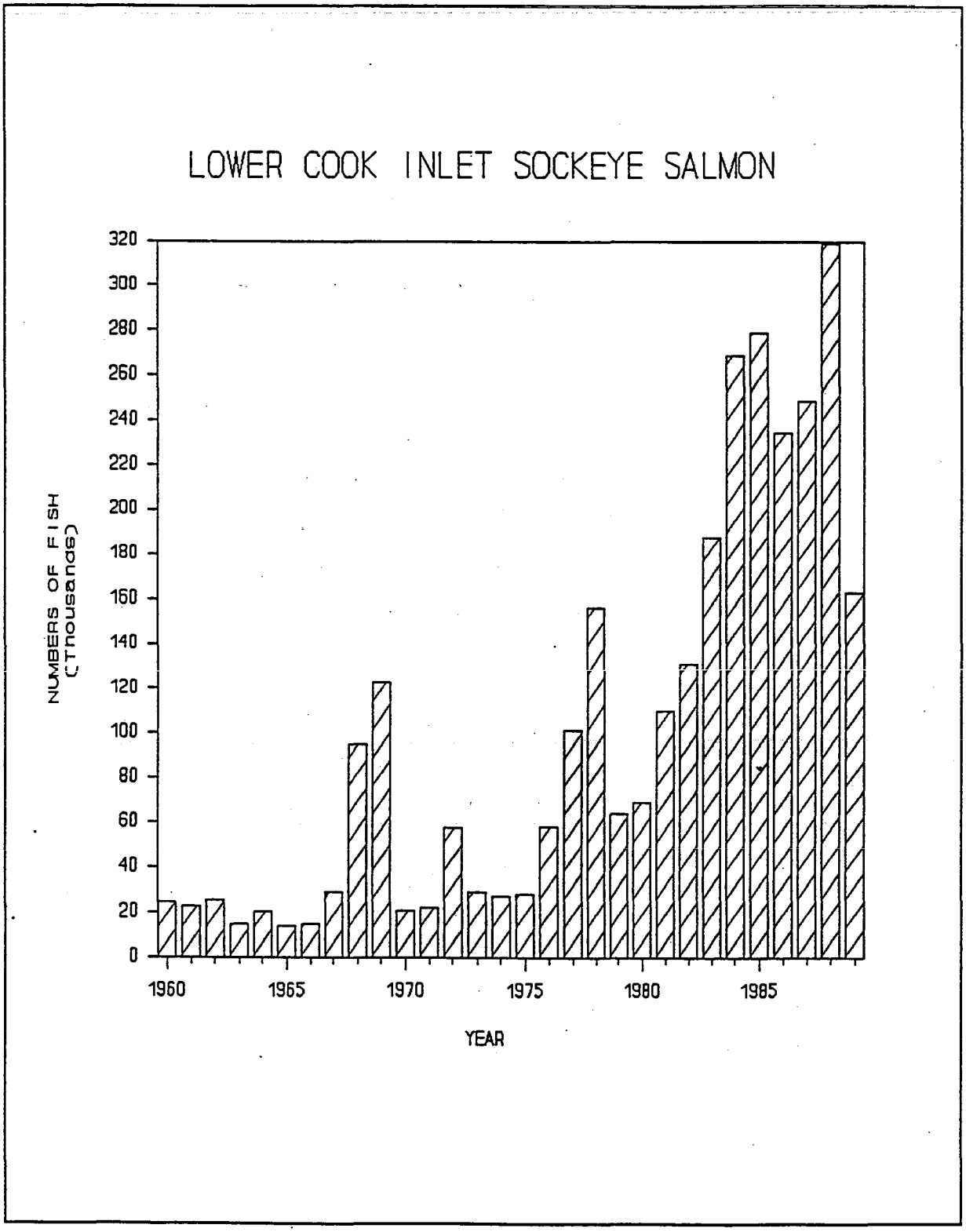


Figure 3. Lower Cook Inlet sockeye salmon catch, 1960-1989.

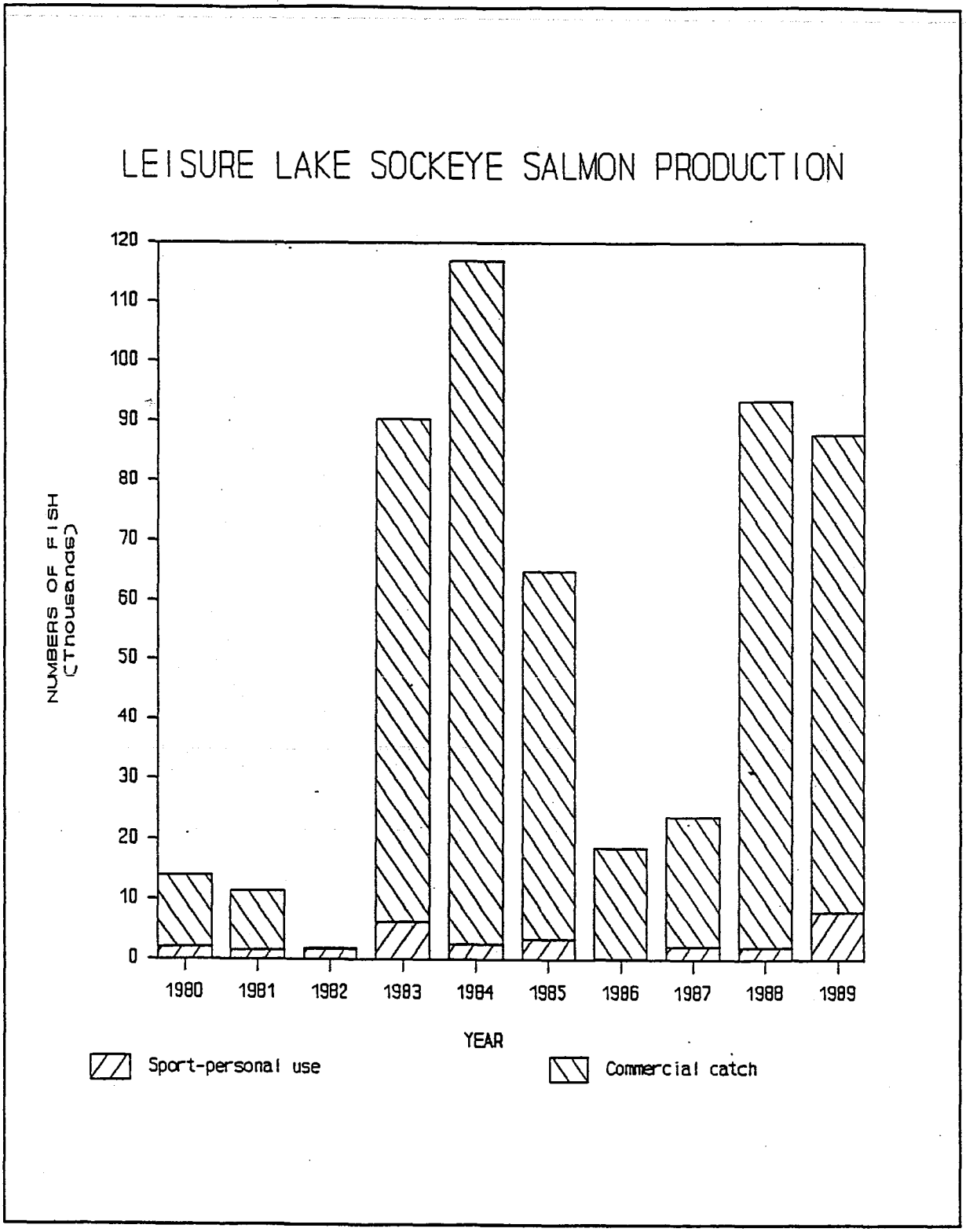


Figure 4. Leisure Lake sockeye salmon returns.

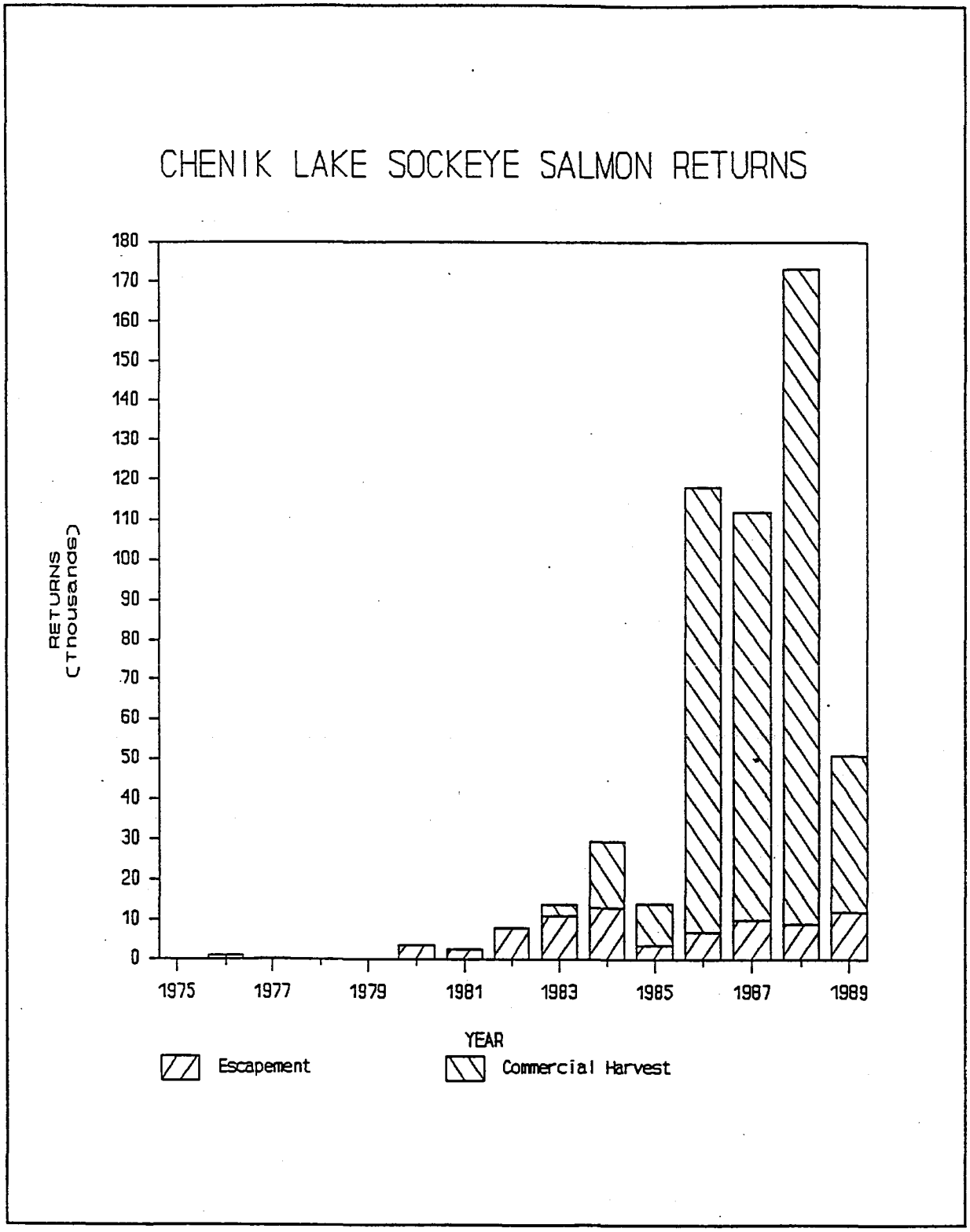


Figure 5. Chenik Lake sockeye salmon returns.

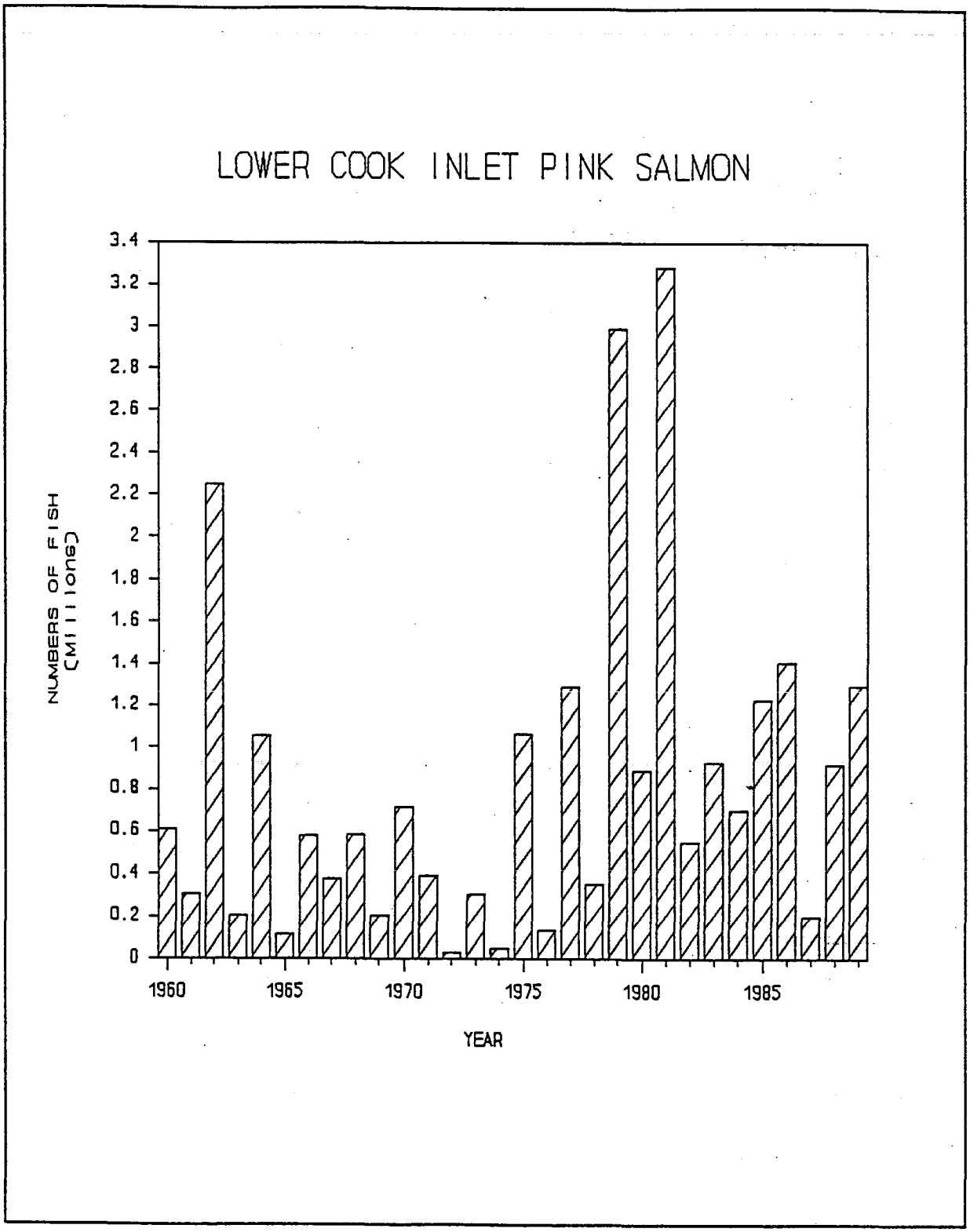


Figure 6. Lower Cook Inlet pink salmon catch, 1960-1989.

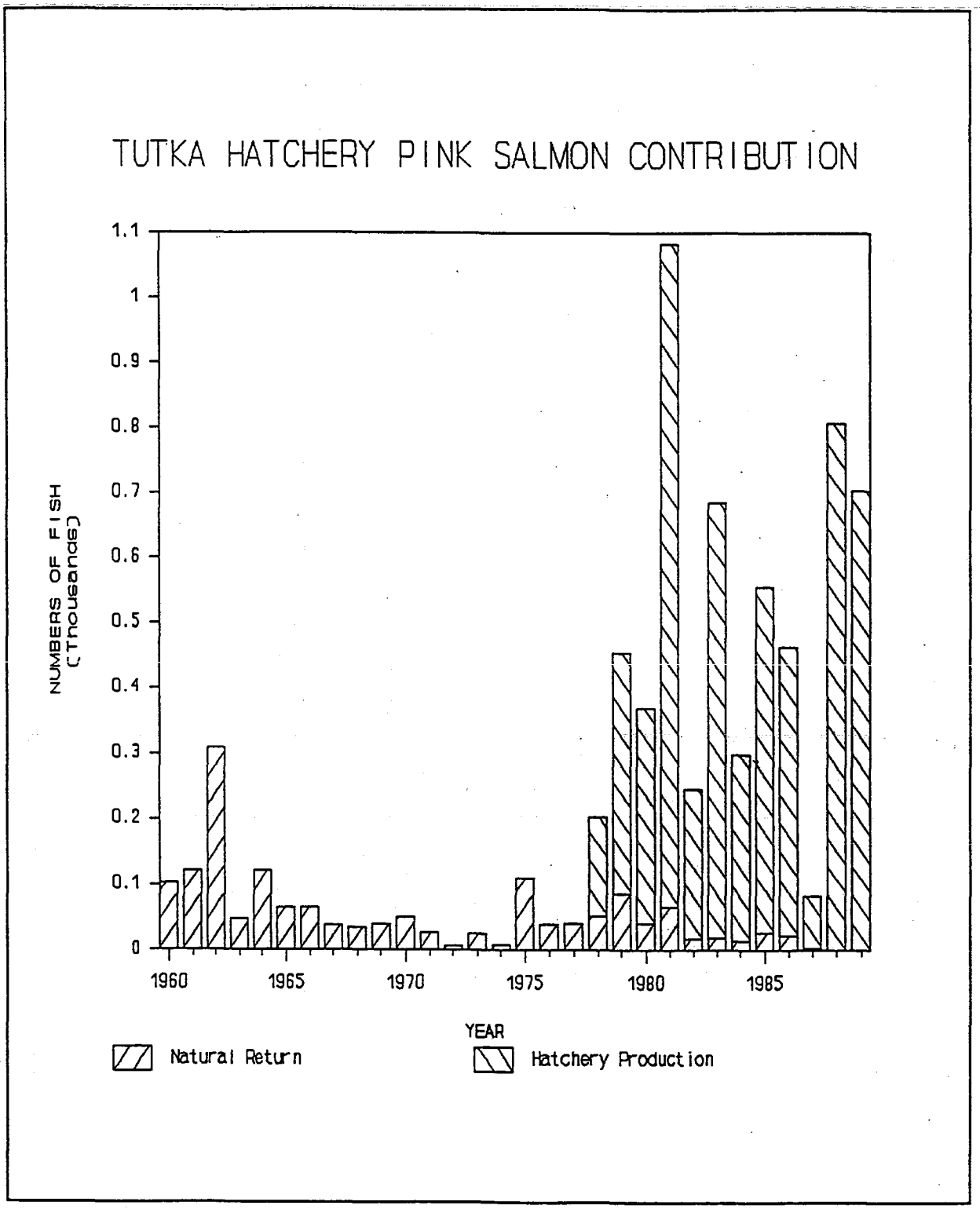


Figure 7. Tutka Creek natural pink salmon return with recent years' hatchery contributions.

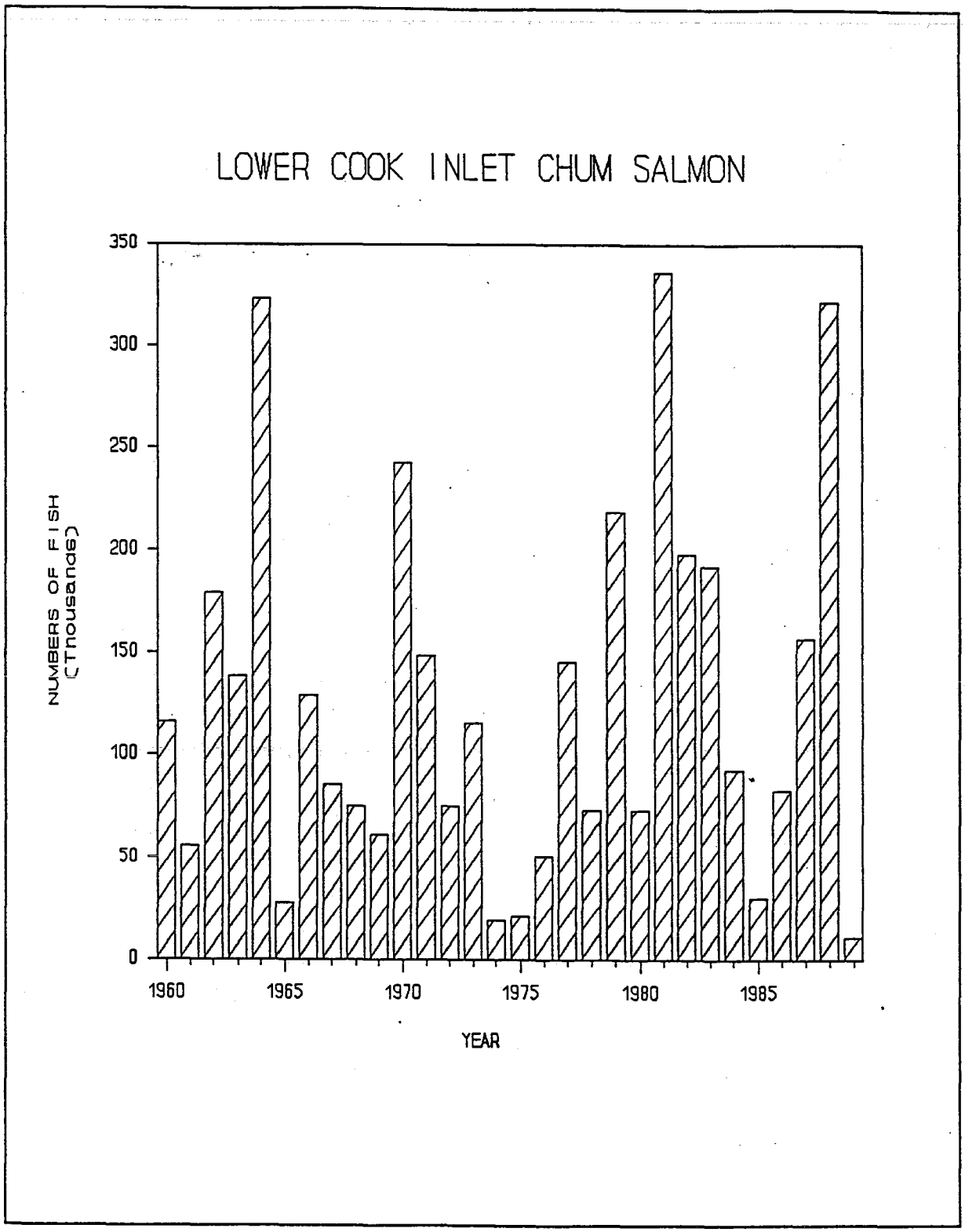


Figure 8. Lower Cook Inlet chum salmon catch, 1960-1989.

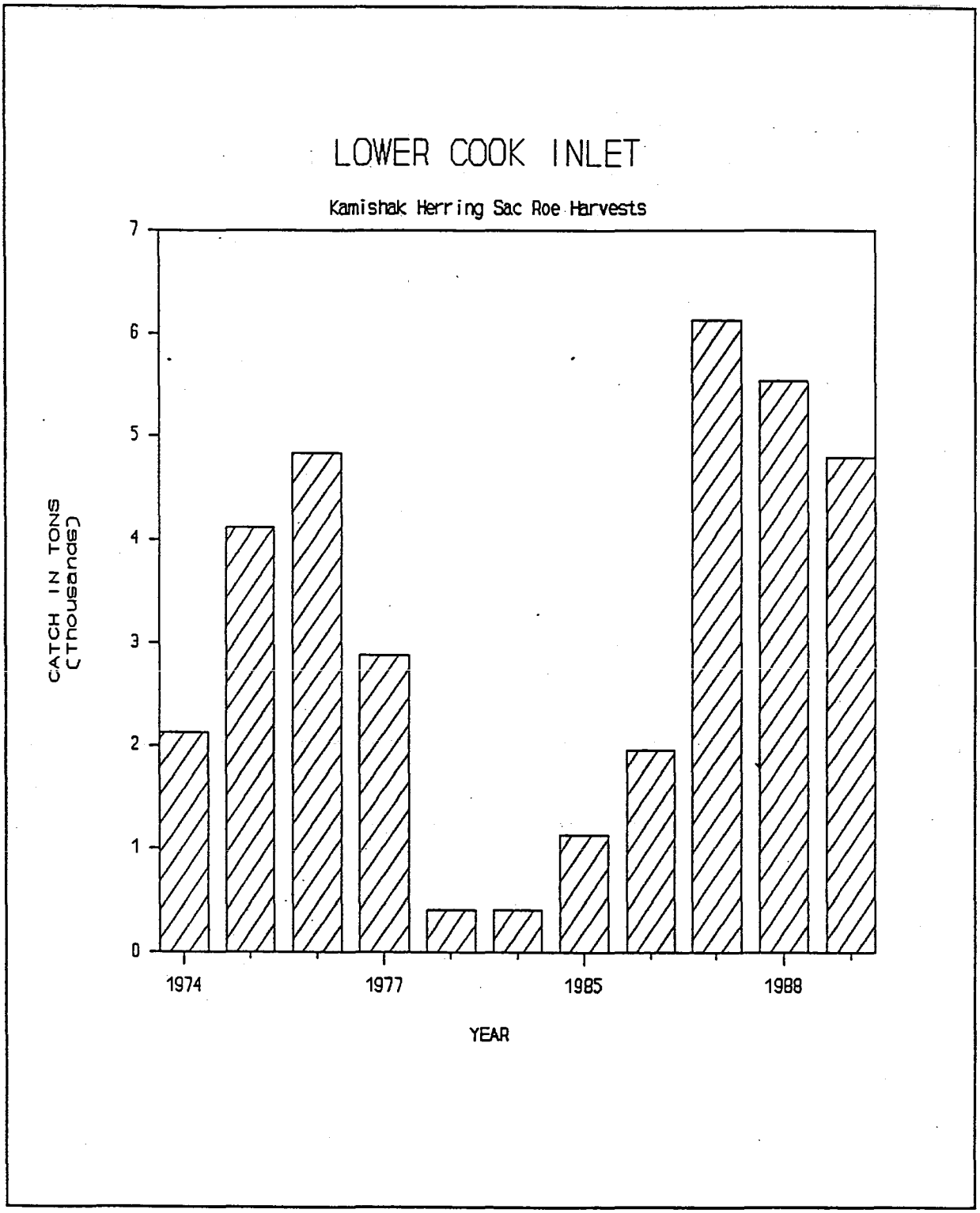


Figure 9. Kamishak Bay District Pacific herring sac roe harvest.

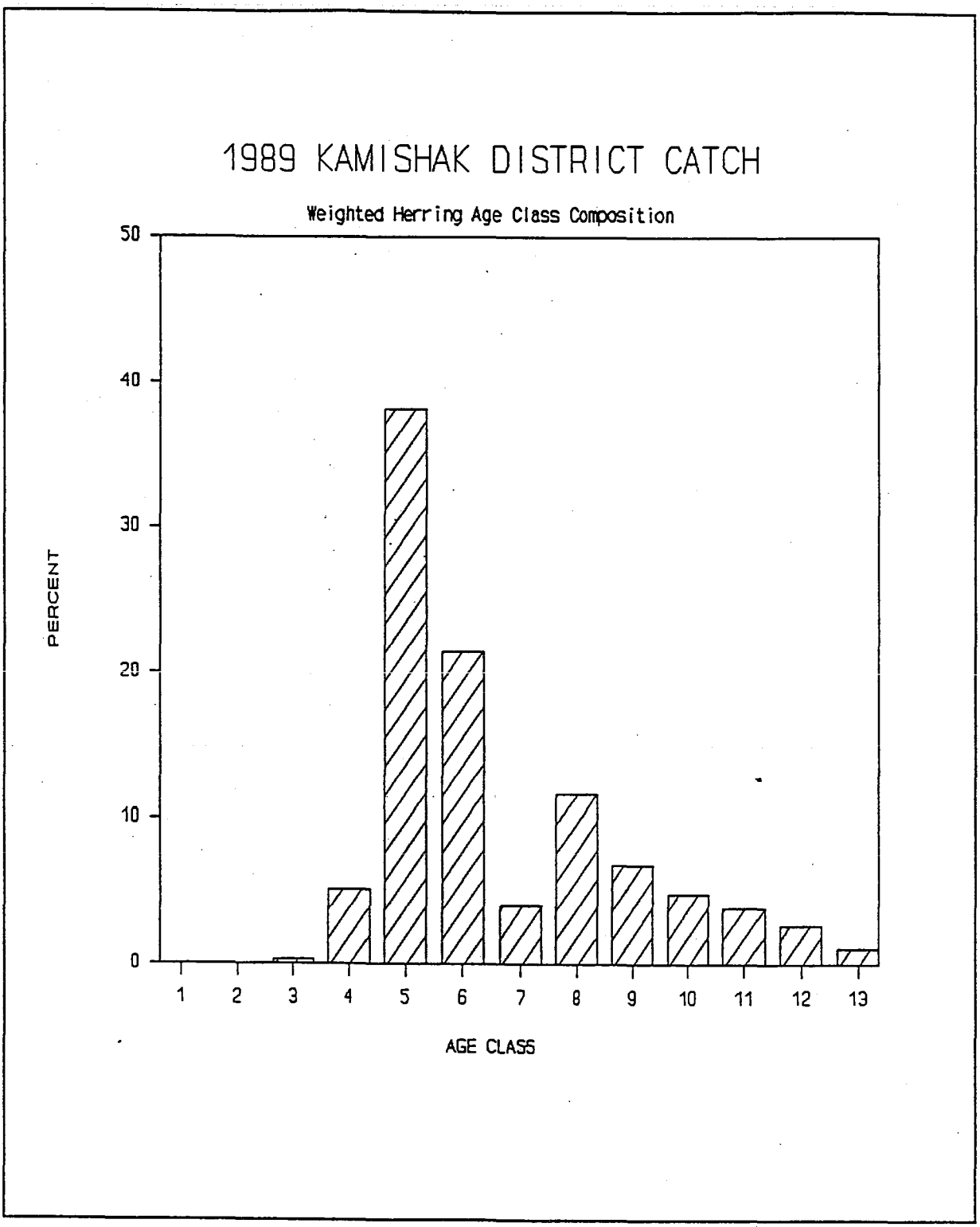


Figure 10. Weighted age class composition of the Kamishak Bay District Pacific herring sac roe harvest, 1989.

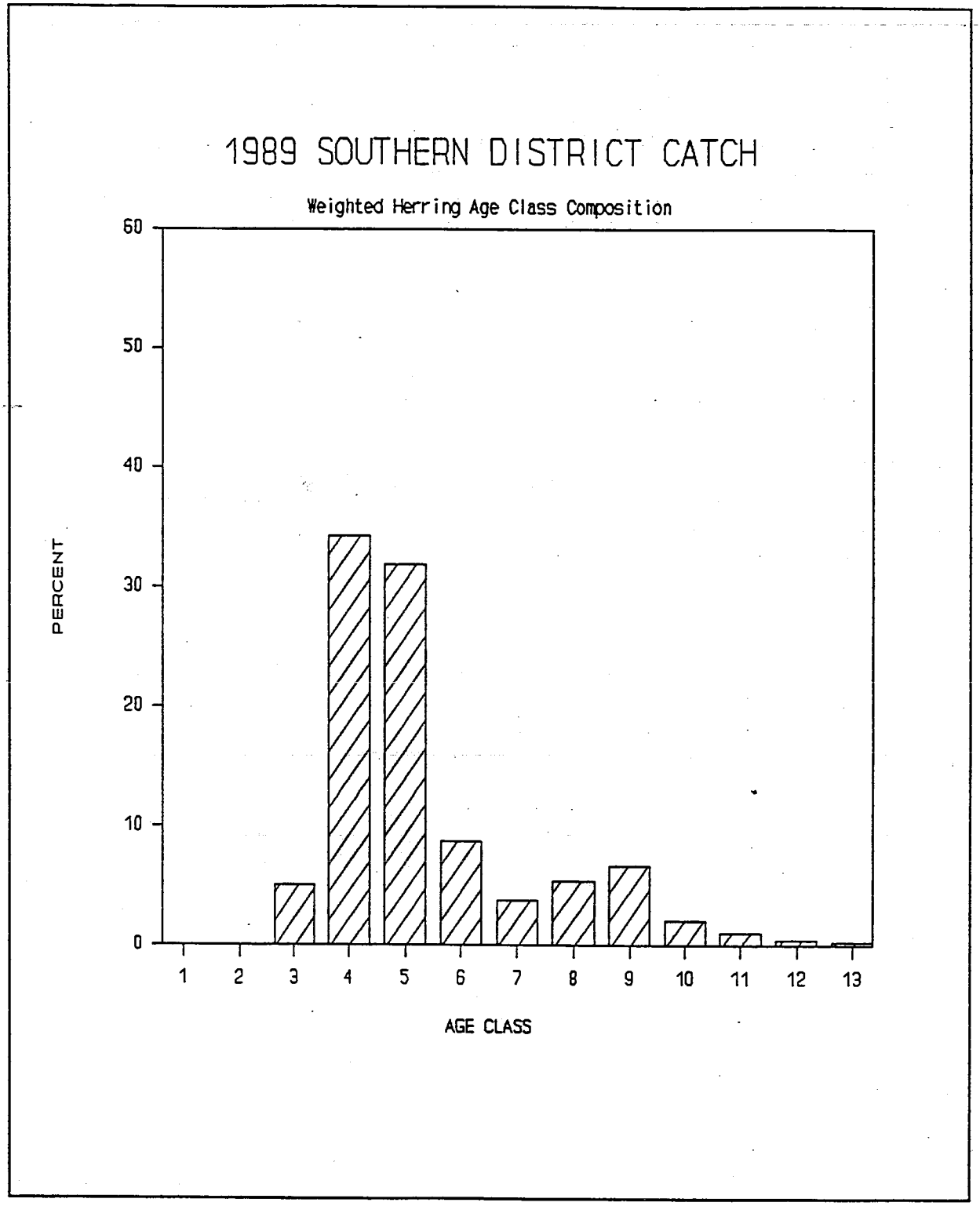
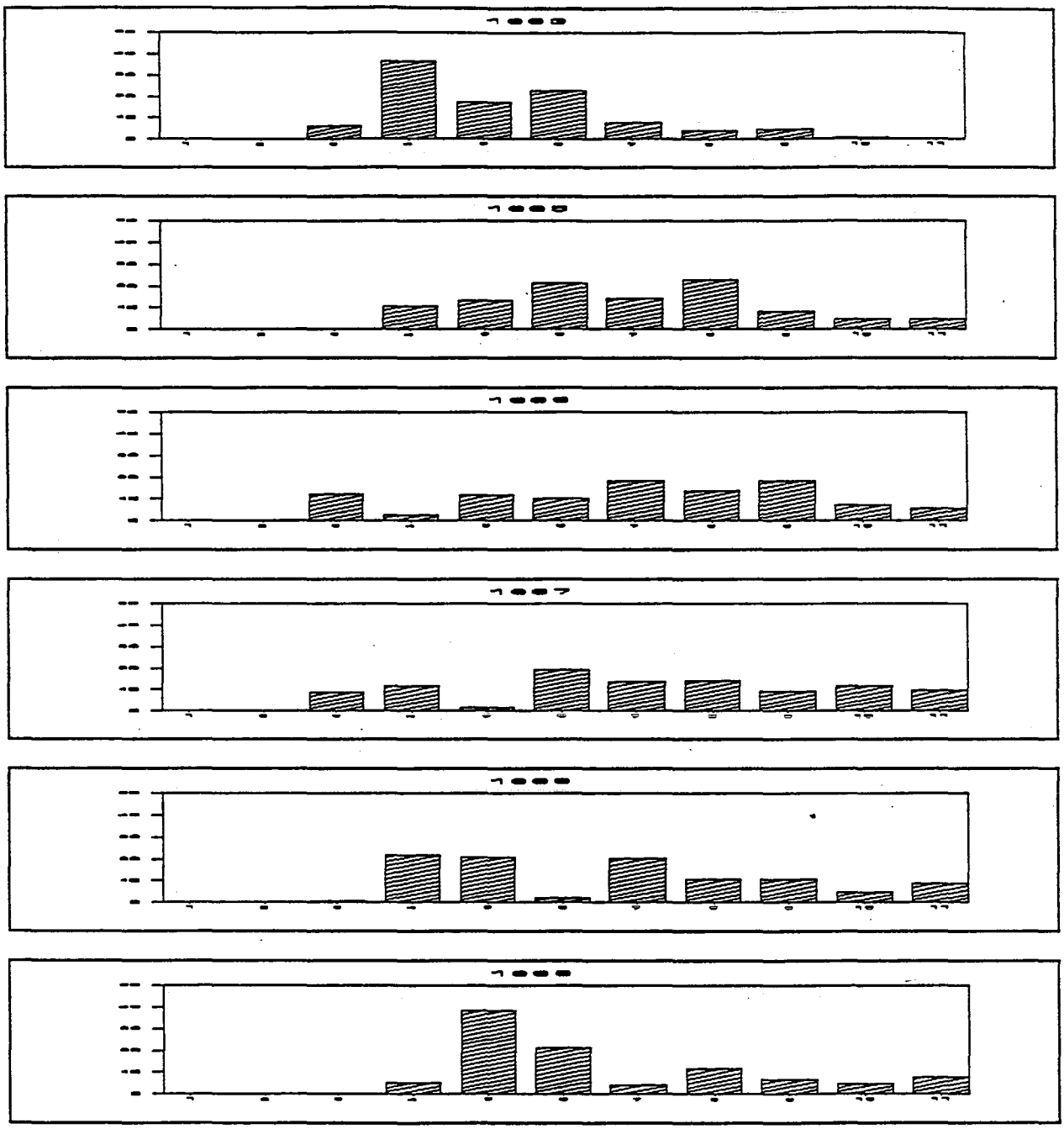


Figure 11. Weighted age class composition of the Southern District Pacific herring sac roe harvest, 1989.



AGE

Figure 12. Comparison of the age class compositions of the 1983 test fishing samples and the 1985-1989 Kamishak Bay District Pacific herring sac roe harvests.

Appendix A.1. Salmon fishing licenses and permits issued and fished in Lower Cook Inlet, 1960-1989. [a]

	Seines					
Year	Gear License	Permanent Permit	Interim Permit	Total	Seines Fished	Set Nets Fished
1960	95			95		
1961	89			89		
1962	91			91		
1963	112			112		
1964	108			108		
1965	72			72		
1966	77			77	75	
1967	58			58	54	
1968	91			91	88	
1969	75			75	17	
1970	89			89	9	
1971	81			81	32	
1972	83			83	52	
1973	86			86	49	
1974	110			110	49	32
1975		49	51	100	63	27
1976		63	16	79	53	25
1977		72	10	82	72	26
1978		74	9	83	72	39
1979		75	9	84	75	38
1980		75	9	84	83	40
1981		75	10	85	85	40
1982		77	7	84	69	39
1983		78	5	83	83	24
1984		78	3	81	54	35
1985		80	1	81	51	34
1986		79	0	79	62	34
1987		79	0	79	66	29
1988		79	0	79	71	27
1989		83	0	83	64	23
Total		1,031	130	2,478	1,382	483
Average		69	9	83	58	30

[a] Data source: CFEC microfiche printouts and final IBM computer runs.

Appendix A.2. Ex-vessel value of Lower Cook Inlet commercial salmon harvest in thousands of dollars by species, 1960-1989. [a]

Year	King	Sockeye	Coho	Pink	Chum	Total
1960	0	36	3	287	127	453
1961	0	33	2	144	36	215
1962	0	37	8	1,056	108	1,209
1963	1	22	7	87	84	201
1964	0	30	9	369	194	602
1965	0	21	1	34	20	76
1966	0	23	5	237	82	347
1967	1	45	3	157	58	264
1968	0	152	5	311	57	525
1969	0	219	1	137	46	403
1970	1	35	6	273	215	530
1971	1	38	7	248	144	438
1972	1	130	6	22	146	305
1973	3	113	5	310	251	682
1974	5	283	30	100	77	495
1975	3	106	27	1,456	71	1,663
1976	7	287	13	207	217	731
1977	7	620	9	1,719	604	2,959
1978	62	1,516	52	370	341	2,341
1979	36	621	68	4,495	1,097	6,317
1980	12	336	64	1,196	298	1,906
1981	18	740	69	5,334	1,346	7,507
1982	28	827	367	406	820	2,448
1983	20	704	57	696	513	1,990
1984	23	1,393	120	635	242	2,413
1985	47	1,637	86	974	78	2,822
1986	21	1,414	132	1,245	201	3,013
1987	27	1,951	118	295	598	2,989
1988	32	3,812	127	2,237	2,548	8,756
1989	33	1,213	59	1,660	39	2,936
Total	389	18,394	1,466	26,637	10,658	57,544
Average	13	613	49	888	355	1,918

[a] Values obtained by using the formula: average price per lb. x average weight of fish x catch = Ex-vessel value.

Appendix A.3. Average salmon price per pound by species in dollars, Lower Cook Inlet, 1960-1989.

Year	King	Sockeye	Coho	Pink	Chum
1960	0.25 2/	0.27	0.18	0.15	0.16
1961	0.24 2/	0.24	0.15	0.11	0.08
1962	0.23 2/	0.27	0.16	0.15	0.07
1963	0.25 2/	0.27	0.15	0.13	0.08
1964	0.24 2/	0.27	0.15	0.10	0.07
1965	0.22 2/	0.24	0.11	0.08	0.08
1966	0.22 2/	0.24	0.14	0.11	0.08
1967	0.26	0.26	0.15	0.11	0.08
1968	0	0.25	0.17	0.18	0.09
1969	0	.27	0.23	0.17	0.13
1970	0.35	0.27	0.18	0.12	0.13
1971	0.53	0.28	0.24	0.18	0.15
1972	0.45	0.36	0.44	0.20	0.28
1973	0.93	0.48	0.39	0.27	0.29
1974	0.76	1.54	0.72	0.48	0.56
1975	0.61	0.61	0.49	0.37	0.43
1976	0.91	0.77	0.59	0.37	0.48
1977	1.07	0.86	0.55	0.35	0.45
1978	1.09	1.31	0.97	0.30	0.54
1979	1.54	1.53	0.89	0.43	0.60
1980	1.30	0.88	0.85	0.42	0.52
1981	1.35	1.10	0.75	0.44	0.49
1982	1.29	1.05	0.87	0.23	0.46
1983	1.00	0.75	0.70	0.25	0.29
1984	1.29	1.05	0.77	0.26	0.28
1985	1.60	1.25	0.85	0.22	0.31
1986	1.25	1.40	0.85	0.26	0.30
1987	1.25	1.60	1.00	0.42	0.46
1988	1.25	2.50	1.80	0.80	0.84
1989	1.25	1.60	0.70	0.40	0.40

Appendix A.4. Salmon average weight per fish in pounds, Lower Cook Inlet, 1960-1989. [a]

Year	King	Sockeye	Coho	Pink	Chum
1960	20.2	5.4	6.2	3.2	6.8
1961	20.5	6.0	8.2	4.5	7.8
1962	21.5	5.4	6.4	3.2	8.0
1963	19.7	5.4	7.1	3.4	7.2
1964	20.8	5.4	6.3	3.5	8.4
1965	22.2	6.2	10.1	3.6	8.7
1966	23.1	5.9	6.4	3.6	7.5
1967	21.9	6.0	7.2	3.9	8.1
1968	26.2	6.3	5.9	3.0	8.3
1969	18.2	6.7	7.0	3.9	7.3
1970	26.6	5.8	6.8	3.9	7.1
1971	25.9	6.0	6.3	3.5	6.6
1972	25.0	6.2	6.1	3.9	6.9
1973	22.3	8.1	6.1	3.7	7.4
1974	36.1	6.7	6.4	4.1	7.2
1975	33.2	6.2	8.8	3.7	7.6
1976	16.1	6.4	7.0	4.1	8.9
1977	30.1	7.2	5.9	3.8	9.2
1978	32.3	7.4	8.2	3.5	8.6
1979	18.9	6.3	6.2	3.5	8.2
1980	21.7	5.5	5.2	3.2	7.8
1981	12.5	6.1	8.5	3.7	8.1
1982	20.6	6.0	9.0	3.2	9.0
1983	22.8	5.0	7.2	3.0	9.2
1984	28.8	4.7	8.8	3.5	8.9
1985	28.0	4.7	9.8	3.5	8.2
1986	20.6	4.3	8.6	3.4	8.1
1987	18.1	4.9	8.2	3.5	8.3
1988	15.3	4.8	8.9	3.0	9.4
1989	14.1	4.6	7.0	3.1	8.6
Total	658.3	175.6	219.8	106.6	241.4
Average	21.9	5.9	7.3	3.6	8.0

[a] 1960-1974 values obtained from commercial fish catch & production statistical leaflets. Remaining years from IBM computer runs.

Appendix A.5. Estimated pink salmon escapements in thousands of fish in the major spawning systems in Lower Cook Inlet.[a]

Stream	Year 1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Humpy Creek	10.0	22.6	56.0	34.7	18.5	28.0	30.0	25.0	24.7	5.4	55.2	45.0
China Poot	9.0	2.0	26.0	-	-	-	-	2.5	6.0	0.2	1.5	2.1
Tutka Lagoon	15.0	15.0	30.0	10.0	20.0	20.0	12.0	7.0	7.9	6.5	6.5	16.7
Barabara Creek	2.0	0.1	1.5	0.1	-	-	5.0	-	2.0	0.9	0.4	4.0
Seldovia River	25.0	25.0	50.0	13.0	60.0	30.0	86.0	55.0	53.2	60.0	23.0	31.1
Port Graham River	15.0	5.0	50.0	2.0	16.0	1.5	24.0	2.0	24.4	4.0	16.6	13.2
Dogfish Lagoon	2.0	-	3.0	-	-	-	-	-	-	-	-	0.3
Port Chatham Creeks	4.0	7.0	7.0	-	-	-	10.0	-	-	-	3.0	15.5
Windy Right Creek	8.0	10.0	12.5	4.9	6.2	2.0	7.0	6.0	2.8	3.2	2.1	13.0
Windy Left Creek	8.0	5.0	12.5	4.5	7.7	10.0	7.0	6.0	6.9	23.0	13.0	35.4
Rocky River	130.0	2.0	200.0	12.0	80.0	0.3	44.0	1.0	43.1	1.0	32.0	1.6
Port Dick Creek	35.0	14.0	40.0	16.0	31.5	50.0	35.0	20.0	29.0	12.0	34.5	97.8
Island Creek	23.2	2.0	15.0	3.6	30.0	0.5	7.0	0.5	4.3	0.1	5.5	0.1
South Nuka Creek	20.0	2.0	22.0	0.1	10.0	-	10.0	-	10.0	3.0	11.0	14.0
Desire Lake Creek	-	-	18.0	-	1.3	-	-	-	-	-	-	30.0
James Lagoon	-	-	-	-	-	-	-	-	-	-	-	-
Aialik Lagoon	-	-	25.0	0.3	-	-	2.0	-	-	-	-	-
Bear Creek	1.4	-	3.1	-	6.4	-	-	-	3.1	-	-	-
Salmon Creek	-	-	-	-	-	-	-	-	-	-	-	-
Mayor Creek	-	-	-	1.4	-	-	-	-	1.6	-	-	-
Clear Creek	-	-	0.2	-	1.5	-	-	-	-	0.1	-	-
Thumb Cove	-	-	-	-	-	-	-	-	-	-	-	-
Humpy Cove	-	-	-	-	-	-	-	-	-	-	-	-
Tonsina Creek	-	-	-	-	-	-	-	-	2.9	0.1	-	-
Big Kamishak River	-	-	100.0	75.0	75.0	-	33.0	-	-	-	-	-
Little Kamishak River	-	-	100.0	24.0	-	-	28.0	3.5	-	0.5	2.0	-
Amakdedori Creek	60.0	-	80.0	-	10.0	-	8.0	-	-	1.0	13.0	-
Bruin Bay River	18.0	-	300.0	25.0	-	-	20.0	0.5	-	5.0	40.0	22.0
Sunday Creek	1.5	-	5.0	2.0	-	-	20.0	-	-	1.0	2.0	43.0
Brown's Peak Creek	-	-	25.0	10.0	20.0	10.0	11.0	-	-	2.0	-	8.0
Total	387.1	111.7	1181.8	238.6	394.1	152.3	379.0	129.0	221.9	129.0	261.3	392.8

Appendix A.5. (Continued)

Stream	Year 1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Humpy Creek	13.8	36.9	17.4	64.0	27.2	86.0	46.1	200.0	64.4	115.0	31.9	104.0
China Poot	1.0	6.0	5.2	21.6	2.0	3.9	11.2	20.6	12.3	5.0	3.1	14.1
Tutka Lagoon	1.5	6.5	2.6	17.6	11.5	14.0	15.0	10.6	17.3	21.1	18.5	12.9
Barabara Creek	0.6	-	0.2	22.7	0.2	5.7	1.4	10.0	5.8	16.8	2.1	14.8
Seldovia River	5.8	14.5	13.7	36.2	25.6	35.7	24.6	43.7	65.5	62.7	38.4	27.9
Port Graham River	2.4	7.0	2.8	27.3	6.5	20.6	6.7	32.7	40.2	18.4	28.9	4.6
Dogfish Lagoon	-	1.0	-	2.3	-	8.1	0.6	7.3	0.3	2.6	2.6	1.0
Port Chatham Creeks	1.0	5.0	0.2	7.7	-	14.2	0.3	20.8	7.7	11.2	2.0	3.5
Windy Right Creek	0.1	4.6	0.1	18.7	0.2	11.1	0.3	10.4	3.3	4.7	4.7	4.3
Windy Left Creek	0.4	12.9	0.1	9.7	0.2	47.3	1.1	74.8	10.9	31.3	4.4	11.9
Rocky River	8.2	2.0	1.5	4.4	2.7	36.7	8.2	85.0	6.4	25.0	6.6	16.6
Port Dick Creek	10.0	26.4	1.5	62.8	12.7	109.3	44.9	116.0	56.1	106.0	19.9	64.1
Island Creek	1.7	0.5	0.5	0.1	-	0.6	0.4	0.6	2.2	25.0	15.0	15.3
South Nuka Creek	0.3	16.0	-	28.0	-	12.0	-	15.0	0.3	16.0	0.4	22.2
Desire Lake Creek	0.3	3.0	-	0.4	0.6	0.8	1.0	3.0	16.0	5.0	12.0	8.5
James Lagoon	-	-	-	-	-	-	-	-	4.6	14.0	6.0	5.1
Aialik Lagoon	-	-	0.1	-	0.4	-	-	-	-	-	5.0	3.0
Bear Creek	0.5	-	4.9	-	10.0	-	7.8	-	13.3	0.4	7.9	0.8
Salmon Creek	-	-	-	-	16.9	-	11.0	-	15.5	0.1	21.0	0.5
Mayor Creek	0.4	-	0.5	-	4.3	-	2.9	-	3.8	0.6	3.4	-
Clear Creek	0.2	-	-	-	0.3	0.2	-	-	0.5	-	0.2	-
Thumb Cove	-	-	1.1	-	2.0	-	2.0	-	1.2	1.0	7.9	4.9
Humpy Cove	-	-	0.6	-	1.4	-	0.9	-	5.7	0.4	4.0	2.0
Tonsina Creek	-	-	1.4	-	5.7	-	1.5	-	0.7	0.2	7.5	5.4
Big Kamishak River	-	15.0	1.0	-	8.0	-	12.0	10.0	2.0	-	5.0	-
Little Kamishak River	-	13.0	-	-	6.0	-	0.4	3.5	0.6	-	2.2	-
Amakdedori Creek	0.2	3.0	1.0	5.0	-	-	0.9	6.0	3.8	1.5	6.3	0.2
Bruin Bay River	2.5	2.0	0.6	20.0	13.5	60.0	33.0	200.0	400.0	95.0	75.0	4.0
Sunday Creek	2.0	5.0	0.1	20.0	0.3	9.0	0.2	12.0	5.2	14.2	12.0	4.7
Brown's Peak Creek	1.2	3.2	0.1	10.0	1.2	13.0	0.9	15.0	2.3	17.7	3.5	1.7
Total	54.1	183.5	57.2	378.5	159.4	488.2	235.3	897.0	767.9	610.9	357.4	358.0

Appendix A.5. (Continued)

Stream	Year 1984	1985	1986	1987	1988	1989	Total	Avg.	Goal
Humpy Creek	84.2	117.0	49.7	26.6	21.4	93.0	1,527.1	50.9	25-50
China Poot	8.4	1.9	11.5	3.1	3.9	8.5	189.5	6.3	5
Tutka Lagoon	10.5	14.0	13.4	4.8	11.2	11.9	376.7	12.6	6-10
Barabara Creek	1.0	1.6	1.8	0.3	0.7	4.5	105.9	3.5	18-24
Seldovia River	14.2	22.8	28.2	7.6	16.9	26.2	1,013.9	33.8	25-35
Port Graham River	10.9	26.3	17.5	3.8	7.9	19.1	453.5	15.1	20-40
Dogfish Lagoon	0.6	0.2	0.4	1.2	0.3	0.2	32.8	1.1	-
Port Chatham Creeks	7.8	8.9	11.5	10.2	21.0	31.7	201.0	6.7	10-15
Windy Right Creek	3.4	5.4	2.5	2.0	1.3	6.6	158.9	5.3	10
Windy Left Creek	2.5	8.9	2.2	5.6	3.4	25.2	386.2	12.9	30-50
Rocky River	9.0	12.1	12.0	4.5	5.4	10.3	799.1	26.6	50
Port Dick Creek	44.6	65.3	41.6	4.5	12.0	55.4	1,263.4	42.1	20-100
Island Creek	35.0	27.9	16.6	0.1	7.2	6.7	249.2	8.3	12-18
South Nuka Creek	0.6	3.6	7.0	2.8	1.2	7.3	232.0	7.7	10
Desire Lake Creek	23.0	62.5	32.0	11.0	2.5	47.0	266.9	8.9	10-20
James Lagoon	4.0	9.0	6.6	1.1	1.7	4.9	55.9	1.9	5-10
Aialik Lagoon	4.0	9.4	6.0	1.5	0.7	0.8	56.7	1.9	5
Bear Creek	7.7	4.1	14.0	3.5	0.2	1.7	87.3	2.9	5
Salmon Creek	10.2	2.1	8.3	1.7	0.1	1.6	87.3	2.9	10
Mayor Creek	1.5	0.5	1.9	-	-	-	22.3	0.7	2
Clear Creek	0.8	0.3	0.4	-	-	-	4.7	0.2	2
Thumb Cove	4.2	14.5	4.0	2.7	0.3	4.2	47.3	1.6	4
Humpy Cove	2.5	5.0	0.9	0.3	0.4	1.0	24.8	0.8	2
Tonsina Creek	6.0	48.2	11.2	3.4	0.1	0.5	91.4	3.0	5
Big Kamishak River	-	-	5.0	-	1.0	-	322.0	10.7	20
Little Kamishak River	0.1	1.6	2.0	-	0.5	-	187.9	6.3	20
Amakdedori Creek	-	1.0	6.0	0.4	1.0	2.0	209.9	7.0	5
Bruin Bay River	110.0	3.5	1200.0	24.0	29.0	350.0	3,028.6	101.0	25-50
Sunday Creek	12.0	11.4	109.0	29.7	18.0	103.0	412.6	13.8	10
Brown's Peak Creek	6.8	7.0	28.0	40.2	17.0	120.0	334.6	11.2	10
Total	425.5	496.0	1651.2	196.6	186.3	943.3	12,229.9	407.7	381-597

[a] Most of these estimated escapements are either peak counts from aerial surveys or adjusted figures from aerial surveys based on survey conditions and time of surveys.

Appendix A.6. Estimated chum salmon escapements in thousands of fish in the major spawning systems in Lower Cook Inlet. [a]

Year	Port Grah	Dogfish Lagoon	Rocky River	Pt.Dk Head	Is. Creek	Big Kam	Little Kam	McNeil River	Bruin Bay	Ursus Cove	Cotton. Creek	Inisk Bay	Total
1964	1.0	12.0	5.0	8.0	8.0	25.0	-	90.0	-	-	-	11.0	160.0
1965	-	3.5	-	3.5	4.0	-	-	-	-	-	-	0.7	11.7
1966	-	11.0	7.0	4.0	6.0	5.0	0.5	-	-	-	-	-	33.5
1967	-	15.0	5.0	3.0	5.0	-	-	-	-	-	-	-	28.0
1968	1.5	1.5	3.0	20.0	1.5	-	-	-	-	-	5.0	5.0	37.5
1969	-	-	3.0	4.5	4.0	-	-	-	-	-	-	-	11.5
1970	0.9	5.0	-	6.0	8.5	-	-	-	-	-	0.6	-	21.0
1971	1.0	5.0	7.0	3.0	3.5	-	-	-	1.0	-	9.0	13.0	42.5
1972	1.5	3.0	3.0	6.0	2.0	-	-	-	1.0	1.6	4.0	10.0	32.1
1973	2.0	1.0	2.0	9.0	7.0	4.0	1.0	10.0	8.0	3.0	4.0	12.0	63.0
1974	0.5	0.6	1.0	0.8	5.0	7.1	0.6	1.5	3.0	3.5	2.5	7.0	33.1
1975	3.0	5.0	25.0	4.0	7.4	1.1	1.9	1.5	1.5	5.0	8.0	7.0	70.4
1976	0.4	3.0	12.0	1.5	1.0	24.0	21.0	10.0	4.0	6.0	5.0	13.5	101.4
1977	5.2	6.4	10.5	5.0	11.1	-	-	20.0	18.0	9.3	10.0	4.4	99.9
1978	4.8	9.3	6.3	8.9	16.9	23.0	30.0	45.0	4.0	9.7	12.5	11.4	181.8
1979	2.2	8.2	35.0	4.0	16.8	15.0	15.0	8.0	15.0	5.0	2.5	4.0	130.7
1980	1.1	4.0	23.0	4.2	10.9	10.0	13.0	8.0	15.0	8.0	4.2	9.3	110.7
1981	4.8	11.5	12.5	4.1	17.5	11.0	6.0	30.0	10.0	10.0	9.0	9.0	135.4
1982	2.5	8.5	2.8	1.7	8.7	25.0	18.0	25.0	10.0	9.0	7.0	12.8	131.0
1983	1.9	5.3	4.0	4.5	36.2	25.0	25.0	48.0	5.5	7.7	8.3	12.0	183.4
1984	2.1	8.6	3.5	2.7	25.6	19.0	12.0	21.0	8.0	7.0	6.5	9.8	125.8
1985	0.5	4.9	2.5	1.0	9.1	6.0	4.5	9.5	2.0	3.0	3.0	5.0	51.0
1986	0.6	2.5	2.0	1.7	8.6	24.0	17.0	22.0	2.0	11.0	11.0	5.9	108.3
1987	1.5	2.0	0.2	6.1	13.2	12.0	18.0	26.0	10.0	9.9	17.0	9.1	125.0
1988	3.5	8.6	0.3	9.0	7.8	15.0	13.0	49.0	7.0	9.4	16.0	9.5	148.1
1989	1.3	1.8	1.2	3.3	4.8	30.0	12.0	34.0	8.0	6.3	8.0	5.9	116.6
Total	43.8	147.2	176.8	129.5	250.1	281.2	208.5	458.5	133.0	124.4	153.1	187.3	2,293.4
Average	1.7	5.7	6.8	5.0	9.6	10.8	8.0	17.6	5.1	4.8	5.9	7.2	88.2
Es.Goal	4-8	5-10	20	4	10-15	20	20	20-40	5-10	5-10	10	10	133-177

[a] Most of these estimated escapements are either peak counts from aerial surveys or adjusted figures from aerial surveys based on survey conditions and time of surveys.

Appendix A.7. Estimated sockeye salmon escapements in thousands of fish in major spawning systems in Lower Cook Inlet.[a]

Year	English Bay	Ander. Beach	Delight Lake	Desire Lake	Bear Lake	Aialik Lake[b]	Mikfik Lake	Chenik Lake	Amakde. Creek	Kam. River	Doug. River	Doug. Beach	Total
1959	5.0	-	5.0	-	-	-	1.0	-	-	-	-	-	11.0
1960	16.0	-	1.0	4.0	9.3	-	-	0.8	1.5	-	0.4	-	33.0
1961	10.0	1.0	10.0	10.0	3.0	10.0	3.0	0.1	2.5	-	-	-	49.6
1962	2.0	0.2	5.0	4.0	3.6	16.0	2.6	1.5	2.5	-	2.5	-	39.9
1963	10.0	-	8.0	1.4	8.9	20.0	0.2	0.3	7.0	-	-	-	55.8
1964	-	-	0.3	10.0	4.7	2.0	-	-	-	-	-	-	17.0
1965	3.0	-	-	-	3.8	-	-	-	-	-	-	-	6.8
1966	3.0	-	4.3	9.0	1.9	4.0	-	0.2	2.0	-	-	-	24.4
1967	6.0	-	-	0.3	3.3	-	-	2.5	0.2	-	-	-	12.3
1968	-	-	-	0.3	59.0	-	0.7	-	-	-	-	-	60.0
1969	5.0	-	-	8.0	21.2	-	-	-	1.5	-	-	-	35.7
1970	8.0	-	4.6	2.0	5.8	-	1.0	-	0.3	-	-	-	21.7
1971	6.5	-	5.0	5.0	0.4	3.0	5.0	2.0	1.2	-	-	-	28.1
1972	14.5	-	10.0	8.0	0.7	0.6	13.0	0.7	1.0	-	-	-	48.5
1973	4.4	-	2.5	5.2	0.2	1.5	2.7	0.3	2.2	-	-	-	19.0
1974	-	-	-	-	0.1	2.2	0.9	0.1	0.4	-	-	-	3.7
1975	2.5	-	2.0	6.5	0	8.0	6.0	0.1	0.8	-	-	-	25.9
1976	6.0	-	6.0	11.0	0.6	8.0	10.0	0.9	1.6	-	0.2	0.1	44.4
1977	12.5	-	5.2	10.7	0	5.0	9.8	0.2	2.6	-	2.6	0.4	49.0
1978	13.5	0.6	8.0	10.0	0	3.0	12.0	0.1	2.6	1.0	-	0.1	47.4
1979	4.4	-	8.0	12.0	0	5.0	6.0	0	1.0	0.4	-	0.3	37.1
1980	12.0	0.3	10.0	17.0	1.5	6.6	6.5	3.5	2.6	0.1	0.4	0.5	61.0
1981	10.5	-	7.3	12.0	0.7	1.8	5.3	2.5	1.9	0.8	0.2	0.3	43.3
1982	20.0	0.6	25.0	18.0	0.5	22.4	35.0	8.0	3.2	10.0	4.2	1.6	148.5
1983	12.0	0.5	7.0	12.0	0.7	20.0	7.0	11.0	1.2	5.0	0.5	0.4	77.3
1984	11.1	1.2	10.5	15.0	0.5	22.0	6.0	13.0	1.4	2.5	0	0.1	83.3
1985	5.0	0.1	26.0	18.0	1.1	8.0	20.0	3.5	0.9	0.8	0	0	83.4
1986	2.8	0.9	13.0	10.0	0.8	7.6	7.8	7.0	1.9	5.0	0.2	0.2	57.2
1987	7.0	0.2	10.5	13.4	0.3	9.2	9.0	10.0	1.1	-	0.1	-	60.8
1988	2.5	0.3	1.2	9.0	0.1	13.0	10.1	9.0	0.4	0.5	0	0.1	46.2
1989	4.5	-	7.7	9.0	0.1	6.5	11.5	12.0	1.2	0.5	0.6	0.2	53.8
Total	219.7	5.9	203.1	250.8	132.5	205.4	192.1	89.3	46.7	26.6	11.9	4.3	1,324.6
Ave.	7.1	0.2	6.6	8.1	4.3	6.6	6.2	2.9	1.5	0.9	0.4	0.1	42.7
Esc.Goal	10-20	1	10	10	1	2.5-5	5-7	10	1	*	*	*	51.5-66

[a] Most escapements are estimated from peak aerial survey counts or are adjusted figures from aerial surveys based on weather conditions.

[b] Limited by Bear Lake Management Plan since 1971.

Appendix A.8. Lower Cook Inlet pink salmon catch in thousands of fish, 1936- 1989. [a]

Year	Catch	Year	Catch	Year	Catch
1936	526	1956	208	1976	136
1937	457	1957	286	1977	1,294
1938	345	1958	950	1978	353
1939	292	1959	124	1979	2,991
1940	1,659	1960	612	1980	890
1941	692	1961	303	1981	3,279
1942	695	1962	2,248	1982	552
1943	1,361	1963	204	1983	928
1944	1,446	1964	1,055	1984	701
1945	1,302	1965	116	1985	1,230
1946	870	1966	579	1986	1,408
1947	1,396	1967	375	1987	201
1948	591	1968	585	1988	921
1949	366	1969	202	1989	1,297
1950	311	1970	716		
1951	378	1971	393		
1952	972	1972	29		
1953	513	1973	307		
1954	271	1974	51		
1955	1,184	1975	1,063		

	Total	Average
54 Year	42,214	782
Odd-Year (27)	22,534	835
Even-Year (27)	19,680	729

[a] Data source: 1953-63 data very sketchy - U.S.F.& W.S. Statistical Digest #50 and INPFC Document #1134, Rich & Ball; ADF&G computer runs, 1960-1989.

Appendix A.9. Pink salmon catch for Lower Cook Inlet in thousands of fish by bay during odd numbered years. [a]

Catch Location	1959	1961	1963	1965	1967	1969	1971	1973	1975	1977	1979
Humpy Creek	13.2	67.9	57.4	13.8	40.4	0.6	11.4	44.3	339.3	42.7	304.0
Tutka Bay	14.4	106.8	37.7	44.6	31.6	32.9	10.3	20.0	89.2	21.9	416.8
Seldovia Bay	4.9	15.1	1.6	19.2	11.7	28.8	27.3	19.4	429.6	47.6	140.8
Port Graham Bay	5.3	1.0	2.7	12.4	5.1	2.0	1.0	13.9	18.3	44.8	124.7
Dogfish Bay	1.6	0	0	0.1	2.3	0	10.4	0.3	0	5.0	7.4
Port Chatham	1.2	0	0.8	0	0	0	26.3	20.6	16.0	1.4	174.4
Windy Bay	3.1	2.2	0	5.4	0	0	57.3	68.5	18.1	173.2	552.7
Rocky Bay	2.3	0	1.4	0.1	0	0	0.1	0.2	0	11.6	122.2
Port Dick Bay	28.2	92.9	19.0	15.3	259.9	51.5	94.6	96.6	90.3	881.7	964.8
Nuka Bay	33.3	2.0	0.3	0	0.1	0	119.7	8.1	35.4	56.3	121.7
Resurrection Bay	8.4	0	0	0	1.2	0	0	0	0	0	0
Bruin Bay	0	0	12.3	0.9	2.1	0	11.7	0	0	6.2	40.3
Rocky-Ursus Coves	3.7	2.7	44.2	0	13.0	52.8	16.4	7.9	0	0	14.4
Iniskin and Cottonwood Bays	1.5	3.3	21.8	0	0.1	26.0	0	4.7	0	0.1	0.2
Miscellaneous	3.6	9.5	4.4	3.8	8.0	7.8	6.4	2.9	27.1	1.4	6.5
Total	124.7	303.4	203.6	115.6	375.5	202.4	392.9	307.4	1,063.3	1,293.9	2,990.9

Catch Location	1981	1983	1985	1987	1989
Humpy Creek	250.9	26.9	11.4	2.0	91.4
Halibut Cove	0	0	0	28.5	249.6
Tutka Bay	1,026.6	616.0	491.2	56.5	632.1
Seldovia Bay	126.4	43.3	3.8	1.2	1.1
Port Graham Bay	45.9	4.1	12.5	2.3	0
Dogfish Bay	22.9	0.2	0	0	0
Port Chatham	55.8	3.3	7.0	0	9.7
Windy Bay	2.9	0	4.8	0	0
Rocky Bay	16.5	1.3	0	0	0
Port Dick Bay	1,140.9	140.0	455.6	3.0	0
Nuka Bay	395.1	55.0	150.8	20.9	43.0
Resurrection Bay	32.6	27.1	74.6	11.8	0
Bruin Bay	51.9	0.3	0	1.2	202.8
Rocky-Ursus Cove	14.1	0	0	69.4	53.8
Iniskin and Cottonwood Bays	0	0.3	0	0.2	0
Miscellaneous	16.7	9.8	18.0	4.4	13.4
Total	3,279.2	927.6	1,229.7	201.4	1,296.9

[a] Data source IBM computer runs, 1959-89.

Appendix A.10. Pink salmon catch for Lower Cook Inlet in thousands of fish by bay during even numbered years. [a]

Catch Location	1960	1962	1964	1966	1968	1970	1972	1974	1976	1978	1980	1982
Humpy Creek	71.6	108.8	82.4	40.7	43.9	114.1	2.1	35.4	73.1	44.0	53.3	6.0
Tutka Bay	87.6	279.5	100.9	53.5	26.9	43.9	5.2	5.5	18.0	167.9	312.5	184.9
Seldovia Bay	42.6	142.8	37.4	44.1	23.6	29.0	0.2	3.5	3.0	35.8	81.7	70.3
Port Graham Bay	7.1	18.1	38.4	5.1	23.0	19.6	1.1	4.5	3.9	4.0	30.5	35.4
Dogfish Bay	1.8	1.4	0.1	7.1	0	9.8	0.3	0	0	0.3	4.7	1.7
Port Chatham	15.7	102.2	67.1	6.7	10.0	1.9	0	0	0	0	1.8	12.6
Windy Bay	29.2	85.5	68.6	20.1	3.4	0.8	0	0	0	0	0	0
Rocky Bay	17.0	225.9	53.2	0	10.8	36.8	0	0	0	0	1.4	0
Port Dick Bay	257.4	1,118.3	526.3	296.8	55.0	336.5	0	0.6	0	63.6	133.3	44.0
Nuka Bay	26.6	129.8	23.8	0	90.2	48.4	0.3	0.7	0.1	6.3	12.8	8.7
Resurrection Bay	5.8	0.1	0.3	0	37.4	40.2	18.2	0	35.4	29.7	155.8	137.4
Bruin Bay	2.6	0	0	0	126.2	10.2	0	0	0	0	100.6	13.3
Rocky-Ursus Coves	6.6	3.2	13.5	2.9	18.0	7.5	0	0	0	0.1	0	20.2
Iniskin and Cottonwood Bays	2.1	3.2	4.3	0	9.9	3.5	0	0	0.1	0.1	0.1	0.4
Miscellaneous	37.9	29.5	39.1	102.2	107.1	14.0	1.3	0.4	2.8	0.8	0.2	16.7
Total	611.6	2,248.3	1,055.4	579.2	585.4	716.2	28.7	50.6	136.4	352.6	889.7	551.6

Catch Location	1984	1986	1988
Humpy Creek	53.5	116.7	0
Halibut Cove	10.9	0	111.0
Tutka Bay	262.0	400.2	723.9
Seldovia Bay	2.2	2.8	5.5
Port Graham Bay	8.0	8.8	10.7
Dogfish Bay	0.1	0	0
Port Chatham	0	0	0
Windy Bay	0	0	0
Rocky Bay	0	0	0
Port Dick Bay	84.6	304.0	5.9
Nuka Bay	4.4	97.8	0.2
Resurrection Bay	122.3	36.5	0.5
Bruin Bay	125.2	349.7	5.0
Rocky-Ursus Coves	8.5	71.1	49.9
Iniskin and Cottonwood Bays	0.4	0.2	1.3
Miscellaneous	18.5	20.5	7.4
Total	700.6	1,408.3	921.3

[a] Data resource IBM computer runs, 1960-89.

Appendix A.11. Chum salmon catch for Lower Cook Inlet in thousands of fish by bay by year. [a]

Catch Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Tutka	0.1	2.4	1.8	2.9	2.4	5.6	1.1	3.9	4.0	1.3	0.7	1.6
Port Graham	2.3	1.8	0.5	4.0	3.8	2.1	0.9	5.3	3.0	2.3	1.3	4.8
Dogfish	4.9	0.4	0.1	0	0.2	0	0	7.0	15.3	0.1	0	50.9
Port Chatham	1.0	2.5	0	2.8	4.3	5.2	0	17.8	0	1.0	0	0.1
Rocky-Windy	14.9	6.4	2.2	8.5	0.3	33.8	8.1	1.7	0	0.5	0	39.4
Port Dick	42.4	51.0	36.8	112.0	110.8	227.4	14.2	60.9	36.0	10.9	5.4	41.2
Nuka	1.7	8.4	1.7	0.5	1.5	0	0	0	1.5	6.9	0	5.9
Resurrection	0.1	0.5	0	0	0	0	0	0	0.1	0.7	0	0.6
Douglas River	0.2	0	0	0	0	0	0	0	0	0	0	0
Kamishak River	0	0	0	0	0	0	0	0	0	3.7	0.4	0
McNeil River	0	0.4	0	0	0	2.7	0.9	0	0.4	8.3	4.4	1.9
Bruin	0	0.3	0.5	0	0.1	0	0.4	0	1.0	7.5	0	12.8
Ursus-Rocky Coves	8.5	8.6	1.8	1.1	2.8	1.2	0	4.0	2.9	1.0	3.6	8.9
Cottonwood and Iniskin	12.1	33.4	10.2	41.7	10.9	38.4	0	0	19.0	25.5	44.4	71.9
Miscellaneous	22.6	0	0	5.8	1.4	6.9	2.5	28.5	2.2	5.4	1.0	2.4
Total	110.8	116.1	55.6	179.3	138.5	323.3	28.1	129.1	85.4	75.1	61.2	242.4

Catch Location	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Tutka	0.5	1.3	0.8	1.4	2.0	0.9	0.8	2.6	2.7	1.8	7.9	8.3
Port Graham	2.0	3.2	2.6	1.0	2.2	0.5	5.0	2.4	4.3	2.5	11.2	7.4
Dogfish	114.5	41.1	0.4	0	0	0	9.4	0	8.5	2.1	71.8	15.6
Port Chatham	2.4	0	0.4	0	0.6	0	0.1	0	1.7	1.3	59.6	16.2
Rocky-Windy	1.4	0	0.9	0	0.3	0	17.7	0	76.7	2.1	7.4	0
Port Dick	0.7	0	33.4	8.1	6.8	0	25.6	10.3	79.0	19.0	95.8	30.3
Nuka	0.1	2.3	40.8	3.9	3.6	0.4	17.4	0.4	14.7	7.8	3.8	0.9
Resurrection	0.4	0.7	0	0	0	0	0	0.1	0	0.7	2.4	7.7
Douglas River	0	0	0	0	0.1	7.1	4.0	2.9	0.7	10.0	46.7	37.1
Kamishak River	0	2.4	0	1.8	0	10.5	0	23.9	17.8	2.8	8.6	9.2
McNeil River	0	2.3	0	2.0	0	16.9	38.5	4.9	6.5	6.3	11.6	32.6
Bruin	1.6	1.8	0	0.7	0	0	0	0	4.0	11.0	1.7	1.3
Ursus-Rocky Coves	10.3	0.2	5.7	0	2.0	2.8	7.8	1.9	0.5	0.3	1.5	13.5
Cottonwood and Iniskin	14.5	19.7	29.9	0	2.8	11.5	15.3	14.9	0.2	5.4	3.5	21.6
Miscellaneous	0.2	0.5	0.6	0.3	1.2	0.2	4.2	9.2	1.2	0.4	2.6	3.5
Total	148.6	75.5	115.5	19.2	21.6	50.8	145.8	73.5	218.5	73.5	336.1	198.0

Appendix A.11. (Continued)

Catch Location	1983	1984	1985	1986	1987	1988	1989
Tutka	9.9	3.4	3.2	3.9	3.9	4.7	2.5
Port Graham	1.7	3.6	1.3	0.8	0.4	1.2	0
Dogfish	2.8	1.1	0	0	0	0	0
Port Chatham	2.1	0	1.3	0	0	0	0
Rocky-Windy	3.2	0	0	0	0	0	0
Port Dick	18.0	1.9	9.6	10.4	27.1	64.4	0
Nuka	0.8	0.2	0.8	1.3	1.6	6.8	0
Resurrection	6.9	3.0	3.0	3.5	13.9	23.9	0
Douglas River	27.2	9.2	8.0	11.6	23.7	24.8	0
Kamishak River	23.9	16.2	0.1	0.1	24.6	26.7	0
McNeil River	67.9	12.0	0	13.7	32.9	104.0	0.1
Bruin	2.6	5.9	0	5.4	0.1	2.8	4.4
Ursus-Rocky Coves	0	3.7	0	22.1	17.2	20.7	3.4
Cottonwood and Iniskin	21.4	23.0	0	8.8	9.7	39.2	0
Miscellaneous	3.9	9.3	3.3	1.1	1.9	2.7	0.9
Total	192.3	92.5	30.6	82.7	157.0	321.9	11.3

[a] Data source IBM computer runs, 1959-89.

Appendix A.12. Sockeye salmon catch for Lower Cook Inlet in thousands of fish by bay by year. [a]

Catch Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Resurr. Bay	0	0.1	0	0	0	0	0	0	0	74.5	99.4	1.8
Aialik Bay	1.3	0.2	4.3	2.6	0.5	0	0	0	0	0	0	3.1
Nuka Bay	8.3	6.7	8.2	5.1	0.5	0	2.0	0	2.2	1.5	0	1.0
Humpy Creek	1.3	1.4	0.8	2.0	1.1	0.7	1.4	1.5	1.9	2.7	1.7	1.3
Tutka Bay	1.1	1.7	3.0	5.2	2.9	9.0	5.2	6.0	11.8	6.3	5.6	6.0
Seldovia Bay	0.4	1.2	1.2	1.7	1.2	2.1	0.9	1.0	2.2	1.9	1.1	1.2
Port Graham Bay	6.6	7.8	5.2	6.8	7.8	5.5	3.5	2.7	10.4	7.7	4.3	3.7
Kamishak-Douglas	0	0	0	0	0	0	0	0	0	0	0	0
Mikfik Creek	0	0.7	0	0	0	1.9	0.2	0	0	0	8.9	2.8
Chenik Creek	0	0	0	0	0	0	0	0	0.2	0	1.9	0
Miscellaneous	2.6	4.9	0.1	1.9	1.1	1.5	0.8	4.1	0.3	0.6	0.1	0
Total	21.6	24.7	22.8	25.3	15.1	20.7	14.0	15.3	29.0	95.2	122.8	20.9

Catch Location	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Resurr. Bay	2.2	0.1	0	0	0	0	0	0	0	0	0.6	0
Aialik Bay	0	0.3	3.1	0.2	0.6	0	5.8	0	0	0.1	8.7	3.0
Nuka Bay	1.6	26.1	1.1	0.1	0	18.9	31.1	10.6	24.4	21.5	17.2	66.3
Humpy Creek	1.3	3.7	2.1	3.0	3.5	5.4	3.8	12.9	6.2	11.5	11.3	1.2
Tutka Bay	10.0	14.8	8.1	10.8	12.6	14.2	21.3	92.1	15.6	13.2	41.0	15.8
Seldovia Bay	1.5	2.3	2.2	2.3	2.1	2.1	3.0	5.6	2.6	1.6	5.3	5.0
Port Graham Bay	5.6	10.5	11.7	10.9	9.2	13.6	26.6	30.5	12.9	16.5	20.3	21.5
Kamishak-Douglas	0	0	0	0	0	0.2	5.3	4.6	0.5	0	4.9	0
Mikfik Creek	0	0	0	0	0	3.8	2.1	0	1.2	3.9	0	17.8
Chenik Creek	0	0	0	0	0	0	0	0	0	0	0	0.3
Miscellaneous	0	0.1	0.8	0.1	0.1	0	2.6	0.1	1.0	1.1	1.0	0.4
Total	22.2	57.9	29.1	27.4	28.1	58.2	101.6	156.4	64.4	69.4	110.3	131.3

Catch Location	1983	1984	1985	1986	1987	1988	1989
Resurr. Bay	0	3.4	0.3	0	0.2	0	0
Aialik Bay	25.9	50.8	24.1	3.0	3.5	20.2	8.5
Nuka Bay	16.8	29.2	91.8	48.4	31.8	9.5	10.3
Port Dick	0	0	0	0	0	0	0
China Poot	84.0	116.3	61.5	18.4	21.5	91.5	79.7
Tutka Bay	29.5	26.7	14.9	13.2	14.7	6.9	9.5
Seldovia Bay	6.7	4.9	2.6	3.2	3.5	2.5	1.8
Port Graham Bay	13.4	12.5	3.5	2.0	2.4	1.4	0
Kamishak-Douglas	2.8	0	0.7	7.6	2.3	5.0	0
Mikfik Creek	5.8	10.7	67.0	27.5	21.4	14.6	7.0
Paint River	0	0	0	0	0	0	0
Chenik Creek	2.7	13.9	10.6	111.3	98.5	164.2	38.9
Kirschner	0	0	0	0	0	0	0.2
Miscellaneous	0	0.6	1.7	0.3	49.2	3.2	7.4
Total	187.6	269.0	278.7	234.9	248.8	319.0	163.3

[a] Data source IBM computer runs, 1959-89.

Appendix A.13. Salmon catch by species for set gill nets in the Southern District of Lower Cook Inlet, 1960-1989. [a]

Year	Kings	Reds	Cohos	Pinks	Chums	Total
1960	6	7,007	398	3,894	347	11,652
1961	15	8,631	216	8,201	425	17,488
1962	13	11,793	1,281	12,207	1,558	26,852
1963	9	8,305	314	1,490	812	10,930
1964	5	16,632	1,576	25,935	1,972	46,120
1965	9	10,998	314	7,267	679	19,267
1966	31	10,317	505	24,981	1,790	37,624
1967	112	22,097	504	13,962	1,929	38,604
1968	31	15,741	1,431	12,614	1,289	31,106
1969	33	11,570	246	10,717	1,298	23,864
1970	26	11,455	1,154	18,512	1,575	32,722
1971	41	18,398	1,449	8,564	1,352	29,804
1972	69	31,340	323	6,303	2,819	40,854
1973	134	23,970	1,089	20,222	2,374	47,789
1974	175	26,996	3,010	11,097	2,713	43,991
1975	96	26,588	2,337	49,490	4,020	82,531
1976	176	33,993	1,321	13,412	1,353	50,255
1977	175	54,404	869	38,064	2,765	96,277
1978	1,052	86,934	3,053	11,556	4,117	106,712
1979	483	34,367	7,595	69,368	5,266	117,079
1980	225	29,922	8,038	26,613	2,576	67,374
1981	222	53,665	6,735	68,794	8,524	137,940
1982	894	42,389	5,557	15,838	7,113	71,791
1983	822	41,707	1,799	20,533	4,377	69,238
1984	639	40,987	2,862	17,836	5,008	67,332
1985	958	23,188	3,908	22,898	4,221	55,173
1986	745	21,807	2,827	14,244	2,426	42,049
1987	653	28,209	2,025	9,224	2,419	42,530
1988	1,145	14,758	2,819	29,268	4,423	52,413
1989	1,281	13,970	4,792	16,210	1,877	38,130
Total	10,279	782,138	70,347	609,314	83,417	1,555,491
Average	343	26,071	2,345	20,310	2,781	51,850
Percent	0.66	50.28	4.52	39.17	5.36	100.00

[a] Data source: final IBM computer runs 1960-1989.

Appendix A.14. Lower Cook Inlet total salmon catch by district, 1960-1989. [a]

Year	Southern	Outer	Kamishak	Eastern	Total
1960	227,577	460,754	56,698	10,145	755,174
1961	206,075	158,832	18,499	0	383,406
1962	591,850	1,821,382	43,654	3,787	2,460,673
1963	124,593	140,915	96,309	2,262	364,079
1964	304,213	1,038,790	65,098	856	1,408,957
1965	104,646	46,345	7,557	0	158,548
1966	223,357	489,849	15,902	0	729,108
1967	145,110	302,028	41,818	3,923	492,879
1968	181,884	213,746	248,307	116,827	760,764
1969	86,475	57,036	144,196	99,423	387,130
1970	231,693	573,393	121,405	57,848	984,339
1971	74,518	431,500	58,545	3,778	568,341
1972	46,759	70,545	26,794	20,327	164,425
1973	126,614	273,666	48,181	5,837	454,298
1974	81,865	13,452	7,517	1,102	103,936
1975	929,617	171,387	17,370	1,105	1,119,479
1976	138,961	19,398	55,060	35,673	249,092
1977	219,859	1,233,262	79,498	10,714	1,543,333
1978	404,203	100,280	55,854	30,422	590,759
1979	1,044,517	2,151,556	91,098	296	3,287,467
1980	537,535	208,827	144,157	157,047	1,047,566
1981	1,561,782	1,971,187	146,416	58,008	3,737,393
1982	366,546	197,600	209,527	155,379	929,052
1983	842,497	243,900	162,652	70,614	1,319,663
1984	509,168	121,609	246,511	202,335	1,079,623
1985	613,816	725,252	88,613	122,731	1,550,412
1986	588,790	466,986	641,889	47,825	1,745,490
1987	188,535	86,893	312,836	34,564	622,828
1988	970,068	86,804	467,835	47,148	1,571,855
1989	1,097,237	63,079	310,880	14,288	1,485,484
Total	12,770,360	13,940,253	4,030,676	1,314,264	32,055,553
Average	425,679	464,675	134,356	43,809	1,068,518
Percent	39.84	43.49	12.57	4.10	100.00

[a] Data source: Final IBM computer runs, 1960-1989 and processor catch reports.

Appendix A.15. Southern District salmon catch by species, 1960-1989. [a]

Year	King	Sockeye	Coho	Pink	Chum	Total
1960	12	12,239	1,237	209,989	4,100	227,577
1961	39	10,104	1,149	191,867	2,916	206,075
1962	58	16,569	2,095	564,050	9,078	591,850
1963	88	13,142	4,020	99,820	7,523	124,593
1964	84	17,283	8,905	266,412	11,529	304,213
1965	10	11,185	733	90,260	2,458	104,646
1966	60	12,192	4,807	177,544	28,754	223,357
1967	173	26,349	2,379	92,793	23,416	145,110
1968	61	18,716	4,671	154,033	4,403	181,884
1969	59	12,578	485	70,753	2,600	86,475
1970	90	12,120	3,544	208,066	7,873	231,693
1971	41	18,403	3,151	50,066	2,857	74,518
1972	69	31,345	1,283	9,126	4,936	46,759
1973	139	24,072	1,241	97,574	3,588	126,614
1974	182	27,029	3,054	48,875	2,725	81,865
1975	142	27,393	3,039	893,615	5,428	929,617
1976	442	35,280	1,905	99,817	1,517	138,961
1977	182	54,663	1,255	157,025	6,734	219,859
1978	1,511	141,088	4,318	251,761	5,525	404,203
1979	1,199	37,342	10,846	986,909	8,221	1,044,517
1980	414	42,929	11,568	478,019	4,605	537,535
1981	1,024	77,880	7,976	1,453,982	20,920	1,561,782
1982	926	43,433	7,165	296,556	18,466	366,546
1983	858	133,671	3,433	690,254	14,281	842,497
1984	661	160,654	3,193	336,595	8,065	509,168
1985	1,007	84,149	4,258	518,889	5,513	613,816
1986	776	36,838	3,095	542,521	5,560	588,790
1987	1,158	89,662	2,163	90,522	5,030	188,535
1988	1,655	105,302	2,987	852,382	7,742	970,068
1989	1,889	98,052	6,667	987,488	3,141	1,097,237
Total	15,009	1,431,662	116,622	10,967,563	239,504	12,770,360
Average	500	47,722	3,887	365,585	7,983	425,679
Percent	0.12	11.21	0.91	85.88	1.88	100.00

[a] Data source: Final IBM computer runs, 1960-1989, and processor catch reports.

Appendix A.16. Outer District salmon catch by species, 1960-1989.[a]

Year	King	Sockeye	Coho	Pink	Chum	Total
1960	4	11,614	574	381,375	67,187	460,754
1961	2	12,671	456	105,491	40,212	158,832
1962	2	8,697	1,893	1,684,023	126,767	1,821,382
1963	6	1,974	369	21,471	117,095	140,915
1964	2	1,370	431	767,473	269,514	1,038,790
1965	0	2,009	7	21,886	22,443	46,345
1966	1	3,120	357	398,751	87,620	489,849
1967	2	2,165	70	262,258	37,533	302,028
1968	1	1,550	106	191,691	20,398	213,746
1969	0	92	11	51,533	5,400	57,036
1970	5	1 037	243	434,700	137,408	573,393
1971	0	1,625	174	310,706	118,995	431,500
1972	7	26,092	17	963	43,466	70,545
1973	1	2,006	31	195,342	76,286	273,666
1974	1	206	21	1,300	11,924	13,452
1975	0	124	7	159,908	11,348	171,387
1976	7	18,886	0	93	412	19,398
1977	34	33,733	78	1,129,250	70,167	1,233,262
1978	236	10,695	45	70,080	19,224	100,280
1979	30	25,297	135	1,945,536	180,558	2,151,556
1980	10	22,514	16	154,041	32,246	208,827
1981	61	18,133	485	1,714,115	238,393	1,971,187
1982	129	66,781	92	67,523	63,075	197,600
1983	14	16,835	54	199,794	27,203	243,900
1984	3	29,276	41	89,085	3,204	121,609
1985	19	91,957	3,210	618,222	11,844	725,252
1986	6	48,472	5,052	401,755	11,701	466,986
1987	14	31,845	2,481	23,890	28,663	86,893
1988	5	9,501	2	6,094	71,202	86,804
1989	1	10,286	72	52,677	43	63,079
Total	603	510,563	16,530	11,461,026	1,951,531	13,940,253
Average	20	17,019	551	382,034	65,051	464,675
Percent	0.00	3.66	0.12	82.22	14.00	100.00

[a] Data source: Final IBM computer runs, 1960-1989, and processor catch reports.

Appendix A.17. Kamishak Bay District salmon catch by species, 1960-1989.[a]

Year	King	Sockeye	Coho	Pink	Chum	Total
1960	11	768	28	11,563	44,328	56,698
1961	0	1	14	6,019	12,465	18,499
1962	0	20	11	219	43,404	43,654
1963	2	4	97	82,314	13,892	96,309
1964	5	1,979	115	20,719	42,280	65,098
1965	0	808	122	3,452	3,175	7,557
1966	1	21	247	2,945	12,688	15,902
1967	1	182	74	17,340	24,221	41,818
1968	0	492	101	198,253	49,461	248,307
1969	2	10,723	121	80,157	53,193	144,196
1970	0	2,846	218	22,500	95,841	121,405
1971	0	3	121	32,094	26,327	58,545
1972	0	47	31	342	26,374	26,794
1973	0	1	28	12,568	35,584	48,181
1974	0	0	2,915	48	4,554	7,517
1975	0	29	3,041	9,432	4,868	17,370
1976	1	3,988	1,111	1,112	48,848	55,060
1977	1	7,425	105	6,308	65,659	79,498
1978	0	4,619	1,584	982	48,669	55,854
1979	9	1,778	1,116	58,484	29,711	91,098
1980	0	3,877	2,495	101,864	35,921	144,157
1981	1	4,972	1,845	66,097	73,501	146,416
1982	11	18,014	38,685	43,871	108,946	209,527
1983	1	11,207	7,138	1,405	142,901	162,652
1984	3	24,600	13,027	138,145	70,736	246,511
1985	6	78,250	2,024	194	8,139	88,613
1986	14	146,496	9,935	423,774	61,670	641,889
1987	7	123,654	8,079	72,684	108,412	312,836
1988	33	183,952	4,471	61,080	218,299	467,835
1989	3	46,395	4	256,669	7,809	310,880
Total	112	677,151	98,903	1,732,634	1,521,876	4,030,676
Average	4	22,572	3,297	57,754	50,729	134,356
Percent	0.00	16.80	2.45	42.99	37.76	100.00

[a] Data source: Final IBM computer runs, 1960-1989, and processor catch reports.

Appendix A.18. Eastern District salmon catch by species, 1960-1989. [a]

Year	King	Sockeye	Coho	Pink	Chum	Total
1960	0	105	853	8,720	467	10,145
1961	0	0	0	0	0	0
1962	0	0	3,728	49	10	3,787
1963	0	1	2,250	11	0	2,262
1964	0	22	9	813	12	856
1965	0	0	0	0	0	0
1966	0	0	0	0	0	0
1967	0	348	203	3,097	275	3,923
1968	2	74,484	5	41,464	872	116,827
1969	3	99,403	6	1	10	99,423
1970	11	4,895	691	50,946	1,305	57,848
1971	32	2,203	1,115	5	423	3,778
1972	12	413	903	18,232	767	20,327
1973	5	3,057	801	1,919	55	5,837
1974	0	193	524	378	7	1,102
1975	0	596	124	383	2	1,105
1976	0	5	200	35,423	45	35,673
1977	0	5,776	360	1,349	3,229	10,714
1978	0	2	582	29,738	100	30,422
1979	0	0	296	0	0	296
1980	0	122	426	155,779	720	157,047
1981	0	9,270	470	44,989	3,279	58,008
1982	0	3,092	950	143,639	7,698	155,379
1983	0	25,932	594	36,154	7,934	70,614
1984	47	54,420	536	136,797	10,535	202,335
1985	11	24,338	835	92,403	5,144	122,731
1986	0	3,055	770	40,243	3,757	47,825
1987	0	3,687	1,631	14,333	14,913	34,564
1988	1	20,253	486	1,740	24,668	47,148
1989	0	8,538	5,346	92	312	14,288
Total	124	344,210	24,694	858,697	86,539	1,314,264
Average	4	11,474	823	28,623	2,885	43,809
Percent	0.01	26.19	1.88	65.34	6.58	100.00

[a] Data source: Final IBM computer runs, 1960-1989, and processor catch reports.

Appendix A.19. King salmon catch by district for Lower Cook Inlet, 1960-1989.[a]

Year	Southern	Outer	Kamishak	Eastern	Total
1960	12	4	11	0	27
1961	39	2	0	0	41
1962	58	2	0	0	60
1963	88	6	2	0	96
1964	84	2	5	0	91
1965	10	0	0	0	10
1966	60	1	1	0	62
1967	173	2	1	0	176
1968	61	1	0	2	64
1969	59	0	2	3	64
1970	90	5	0	11	106
1971	41	0	0	32	73
1972	69	7	0	12	88
1973	139	1	0	5	145
1974	182	1	0	0	183
1975	142	0	0	0	142
1976	442	7	1	0	450
1977	182	34	1	0	217
1978	1,511	236	0	0	1,747
1979	1,199	30	9	0	1,238
1980	414	10	0	0	424
1981	1,024	61	1	0	1,086
1982	926	129	11	0	1,066
1983	858	14	1	0	873
1984	661	3	3	47	714
1985	1,007	19	6	11	1,043
1986	776	6	14	0	796
1987	1,158	14	7	0	1,179
1988	1,655	5	33	1	1,694
1989	1,889	1	3	0	1,893
Total	15,009	603	112	124	15,848
Average	500	20	4	4	528
Percent	94.71	3.80	0.71	0.78	100.00

[a] Data source: Final IBM computer runs, 1960-1989 and processor catch reports.

Appendix A.20. Sockeye salmon catch by district for Lower Cook Inlet, 1960-1989.[a]

Year	Southern	Outer	Kamishak	Eastern	Total
1960	12,239	11,614	768	105	24,726
1961	10,104	12,671	1	0	22,776
1962	16,569	8,697	20	0	25,286
1963	13,142	1,974	4	1	15,121
1964	17,283	1,370	1,979	22	20,654
1965	11,185	2,009	808	0	14,002
1966	12,192	3,120	21	0	15,333
1967	26,349	2,165	182	348	29,044
1968	18,716	1,550	492	74,484	95,242
1969	12,578	92	10,723	99,403	122,796
1970	12,120	1,037	2,846	4,895	20,898
1971	18,403	1,625	3	2,203	22,234
1972	31,345	26,092	47	413	57,897
1973	24,072	2,006	1	3,057	29,136
1974	27,029	206	0	193	27,428
1975	27,393	124	29	596	28,142
1976	35,280	18,886	3,988	5	58,159
1977	54,663	33,733	7,425	5,776	101,597
1978	141,088	10,695	4,619	2	156,404
1979	37,342	25,297	1,778	0	64,417
1980	42,929	22,514	3,877	122	69,442
1981	77,880	18,133	4,972	9,270	110,255
1982	43,433	66,781	18,014	3,092	131,320
1983	133,671	16,835	11,207	25,932	187,645
1984	160,654	29,276	24,600	54,420	268,950
1985	84,149	91,957	78,250	24,338	278,694
1986	36,838	48,472	146,496	3,055	234,861
1987	89,662	31,845	123,654	3,687	248,848
1988	105,302	9,501	183,952	20,253	319,008
1989	98,052	10,286	46,395	8,538	163,271
Total	1,431,622	510,563	677,151	344,210	2,963,586
Average	47,722	17,019	22,572	11,474	98,786
Percent	48.31	17.23	22.85	11.61	100.00

[a] Data source: Final IBM computer runs,1960-1989 and processor catch reports.

Appendix A.21. Coho salmon catch by district for Lower Cook Inlet, 1960-1989. [a]

Year	Southern	Outer	Kamishak	Eastern	Total
1960	1,237	574	28	853	2,692
1961	1,149	456	14	0	1,619
1962	2,095	1,893	11	3,728	7,727
1963	4,020	369	97	2,250	6,736
1964	8,905	431	115	9	9,460
1965	733	7	122	0	862
1966	4,807	357	247	0	5,411
1967	2,379	70	74	203	2,726
1968	4,671	106	101	5	4,883
1969	485	11	121	6	623
1970	3,544	243	218	691	4,696
1971	3,151	174	121	1,115	4,561
1972	1,283	17	31	903	2,234
1973	1,241	31	28	801	2,101
1974	3,054	21	2,915	524	6,514
1975	3,039	7	3,041	124	6,211
1976	1,905	0	1,111	200	3,216
1977	1,255	78	105	360	1,798
1978	4,318	45	1,584	582	6,529
1979	10,846	135	1,116	296	12,393
1980	11,568	16	2,495	426	14,505
1981	7,976	485	1,845	470	10,776
1982	7,165	92	38,685	950	46,892
1983	3,433	54	7,138	594	11,219
1984	3,193	41	13,027	536	16,797
1985	4,258	3,210	2,024	835	10,327
1986	3,095	5,052	9,935	770	18,852
1987	2,163	2,481	8,079	1,631	14,354
1988	2,987	2	4,471	486	7,946
1989	6,667	72	4	5,346	12,089
Total	116,622	16,530	98,903	24,694	256,749
Average	3,887	551	3,297	823	8,558
Percent	45.42	6.44	38.52	9.62	100.00

[a] Data source: Final IBM computer runs,1960-1989 and processor catch reports.

Appendix A.22. Pink salmon catch by district for Lower Cook Inlet, 1960-1989. [a]

Year	Southern	Outer	Kamishak	Eastern	Total
1960	209,989	381,375	11,563	8,720	611,647
1961	191,867	105,491	6,019	0	303,377
1962	564,050	1,684,023	219	49	2,248,341
1963	99,820	21,471	82,314	11	203,616
1964	266,412	767,743	20,719	813	1,055,417
1965	90,260	21,886	3,452	0	115,598
1966	177,544	398,751	2,945	0	579,240
1967	92,793	262,258	17,340	3,097	375,488
1968	154,033	191,691	198,253	41,464	585,441
1969	70,753	51,533	80,157	1	202,444
1970	208,066	434,700	22,500	50,946	716,212
1971	50,066	310,706	32,094	5	392,871
1972	9,126	963	342	18,232	28,663
1973	97,574	195,342	12,568	1,919	307,403
1974	48,875	1,300	48	378	50,601
1975	893,615	159,908	9,432	383	1,063,338
1976	99,817	93	1,112	35,423	136,445
1977	157,025	1,129,250	6,308	1,349	1,293,932
1978	251,761	70,080	982	29,738	352,561
1979	986,909	1,945,536	58,484	0	2,990,929
1980	478,019	154,041	101,864	155,779	889,703
1981	1,453,982	1,714,115	66,097	44,989	3,279,183
1982	296,556	67,523	43,871	143,639	551,589
1983	690,254	199,794	1,405	36,154	927,607
1984	336,595	89,085	138,145	136,797	700,622
1985	518,889	618,222	194	92,403	1,229,708
1986	542,521	401,755	423,774	40,243	1,408,293
1987	90,522	23,890	72,684	14,333	201,429
1988	852,382	6,094	61,080	1,740	921,296
1989	987,488	52,677	256,669	92	1,296,926
Total	10,967,563	11,461,026	1,732,634	858,697	25,019,920
Average	365,585	382,034	57,754	28,623	833,997
Percent	43.84	45.81	6.93	3.43	100.00

[a] Data source: Final IBM computer runs, 1960-1989 and processor catch reports.

Appendix A.23. Chum salmon catch by district for Lower Cook Inlet, 1960-1989. [a]

Year	Southern	Outer	Kamishak	Eastern	Total
1960	4,100	67,187	44,328	467	116,082
1961	2,916	40,212	12,465	0	55,593
1962	9,078	126,767	43,404	10	179,259
1963	7,523	117,095	13,892	0	138,510
1964	11,529	269,514	42,280	12	323,335
1965	2,458	22,443	3,175	0	28,076
1966	28,754	87,620	12,688	0	129,062
1967	23,416	37,533	24,221	275	85,445
1968	4,403	20,398	49,461	872	75,134
1969	2,600	5,400	53,193	10	61,203
1970	7,873	137,408	95,841	1,305	242,427
1971	2,857	118,995	26,327	423	148,602
1972	4,936	43,466	26,374	767	75,543
1973	3,588	76,286	35,584	55	115,513
1974	2,725	11,924	4,554	7	19,210
1975	5,428	11,348	4,868	2	21,646
1976	1,517	412	48,848	45	50,822
1977	6,734	70,167	65,659	3,229	145,789
1978	5,525	19,224	48,669	100	73,518
1979	8,221	180,558	29,711	0	218,490
1980	4,605	32,246	35,921	720	73,492
1981	20,920	238,393	73,501	3,279	336,093
1982	18,446	63,075	108,946	7,698	198,185
1983	14,281	27,203	142,901	7,934	192,319
1984	8,065	3,204	70,736	10,535	92,540
1985	5,513	11,844	8,139	5,144	30,640
1986	5,560	11,701	61,670	3,757	82,688
1987	5,030	28,663	108,412	14,913	157,018
1988	7,742	71,202	218,299	24,668	321,911
1989	3,141	43	7,809	312	11,305
Total	239,504	1,951,531	1,521,876	85,539	3,799,450
Average	7,983	65,051	50,729	2,885	126,648
Percent	6.30	51.36	40.06	2.28	100.00

[a] Data source: Final IBM computer runs, 1960-1989 and processor catch reports.