

1995 LOWER COOK INLET ANNUAL FINFISH MANAGEMENT REPORT



by

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ACKNOWLEDGMENTS

1995 COMMERCIAL FISHERIES MANAGEMENT & DEVELOPMENT STAFF

The finfish operations for the Commercial Fisheries Management and Development Division, Lower Cook Inlet, employed seven permanent employees and nine permanent-seasonal employees in various area management and research programs during the 1995 season. Appreciation is extended to all personnel for a successful program during 1995.

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ANNUAL MANAGEMENT REPORT
LOWER COOK INLET
1995

COMMERCIAL SALMON FISHERY

INTRODUCTION

The Lower Cook Inlet (LCI) 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 is divided into five fishing districts (Figure 1). The Barren Islands District is the only non-salmon fishing district, with the remaining districts (Southern, Outer, Eastern, and Kamishak Bay) separated into approximately 40 subdistricts and sections to facilitate management of discrete stocks of salmon and herring.

The 1995 Lower Cook Inlet salmon harvest of 3.15 million fish (Tables 1 and 4) was the third highest on record, surpassed only by the 1981 catch of 3.7 million fish and the 1979 catch of 3.3 million (Appendix Table 5). It also broke a five-year succession of economically disastrous seasons, yielding an exvessel value of approximately \$2.76 million (Table 7), double that of the 1994 season and nearly equaling the long-term average (Appendix Table 2). Additionally, the overall harvest exceeded the preseason forecast by over 40%. Fishing effort increased over recent years, with 49 seine and 23 set gillnet permit holders making deliveries (Appendix Table 1).

Once again, LCI commercial salmon harvests in 1995 relied heavily on the success of hatchery and enhanced fish production. Pink salmon production from Tutka Hatchery, now operated by Cook Inlet Aquaculture Association (CIAA), far exceeded all expectations, with combined harvests comprising nearly 80% of all species landed in the entire management area. The overall return of pinks to Tutka Hatchery, estimated at 2.61 million fish, set a new record for the

facility, exceeding the previous record of 1.73 million set in 1994. Over 80% of the sockeye salmon harvest in both numbers of fish and exvessel value was attributed to joint Alaska Department of Fish and Game (ADF&G)/CIAA lake stocking and fertilization projects at Leisure and Hazel Lakes in the Southern District, Kirschner and Bruin Lakes in the Kamishak Bay District, and Bear Lake in the Eastern District. However, as has been the case since hatchery programs were taken over by private non-profit corporations in LCI, a significant portion of the salmon harvest was utilized as hatchery cost recovery to recoup expenses incurred by the various stocking and enhancement projects throughout the management area. Nearly 40% of the total salmon harvest (Table 7) was taken by CIAA to support the lake stocking programs and Tutka Hatchery operations, equating to about one-fourth of the exvessel value of the LCI salmon fishery. Strong natural returns of pink salmon in Windy Bay of the Outer District and Bruin Bay in the Kamishak Bay District also helped boost the all-species harvest to over 3 million fish.

One notable factor affecting the amount and distribution of seine effort, and ensuing harvest of salmon, in LCI during the past two seasons was the change in policies by major processors regarding tender service. Previously processors routinely stationed a tender (or tenders) in remote districts in anticipation of salmon harvests and subsequent deliveries, even when run strengths and catches were marginal. This practice was abandoned in 1994, however, which forced seiners to devise their own means to transport fish from these remote areas to a processing plant in Homer or elsewhere. Some fishermen, due to equipment limitations and the high cost of contracting out, were unable to fish in remote areas, while others retained the flexibility to fish these traditional areas because of on-board chilling equipment.

PRESEASON FORECAST

The projected 1995 LCI all-species salmon harvest of 2.2 million fish was over 60% greater than the most recent 20-year average. The majority of the harvest was expected to come as a result of hatchery and lake stocking enhancement projects involving pink and sockeye salmon. Formal total run forecasts for natural salmon returns other than pink salmon were not prepared because

escapement and age-weight-length data are limited for those species. However, catch projections were calculated from relative estimates of parental run size, average age composition data, and recent relative productivity trends. Harvest projections and actual catches for all species in 1995 are listed in the following table:

SPECIES	PROJECTED HARVEST	ACTUAL HARVEST ^a	1975-1994 AVERAGE
Chinook	No forecast ^b	2,303	1,142
Sockeye	253,700	265,104	173,437
Coho	No forecast ^b	17,697	12,815
Pink	1,865,500	2,848,462	1,072,520
Chum	75,400	15,635	103,484
TOTAL	2,194,600	3,149,201	1,363,398

^a Preliminary data.

^b Enhanced returns intended for recreational fisheries.

Strong sockeye returns were anticipated in all areas, with the exception of Chenik Lake in the Kamishak Bay District. Enhanced runs to Leisure and Hazel Lakes in the Southern District and Kirschner Lake in the Kamishak Bay District were expected to dominate the sockeye returns. Although Chenik Lake has benefited from regular fry stocking and intermittent fertilization during recent years, as well as from recent natural spawning escapements of up to 17,000 fish, adult sockeye returns in 1995 were expected to be very poor due to an epizootic of Infectious Hematopoietic Necrosis Virus (IHNV) within the system, and the entire run was to be protected for escapement. Commercial harvests resulting from sockeye enhancement projects at Bear Lake in the Eastern District and Bruin and Ursus Lakes in the Kamishak Bay District were also anticipated.

The 1995 LCI pink salmon harvest was expected to total nearly 1.9 million fish. Generally good 1993 pink salmon escapements to major systems contributed to a harvest projection of 466,000 naturally-produced pinks throughout the entire LCI management area this season. Port Dick in the Outer District, Bruin Bay and Ursus and Rocky Coves in the Kamishak Bay District, and

Humpy Creek in the Southern District were forecasted to provide the largest harvestable surpluses. Overall natural pink returns were expected to be relatively strong in all districts.

Returns to the Tutka Bay Hatchery were expected to be the mainstay of the pink salmon fishery. A harvest of 1.4 million pinks was projected as a result of fish returning to Tutka Bay Hatchery. No fish were expected back to the Halibut Cove satellite release site since stocking was discontinued there after the 1993 season. Approximately 61 million fry were released in 1994 from Tutka Hatchery and typical ocean survival rates for odd-year runs should have produced adult returns approaching 1.5 million fish.

Significant chum salmon harvests appeared unlikely in 1995 since all major LCI systems experienced poor escapements during the 1990 and 1991 parent years. Additionally, a trend of weak returns over the past five seasons suggested that the 1995 chum return would likely be weak as well.

SUMMARY BY SPECIES

Chinook Salmon

The harvest of chinook salmon, not normally a commercially important species in LCI, was the highest on record at 2,300 fish (Table 2), surpassing the previous record of 2,200 fish harvested in 1993 and double the long-term average (Appendix Table 12). Virtually all of the catch came from the Southern District and can be primarily attributed to enhanced production at Halibut Cove Lagoon and Seldovia Bay. Set gillnetters accounted for 90% of the Southern District chinook catch, with purse seiners taking the remaining 10%.

Sockeye Salmon

The 1995 LCI sockeye salmon harvest of 265,100 fish (Figure 10, Table 3) was the fifth highest during the last twenty years (Appendix Table 13), exceeding the preseason forecast by almost 5%. Despite accounting for less than 10% of the LCI salmon harvest in numbers of fish, sockeyes provided 50% of the exvessel value of the entire salmon fishery during 1995 (Table 7). Returns to enhancement sites, which provide the bulk of the LCI sockeye catch, were considered relatively good in 1995. Harvests of enhanced runs of sockeye salmon returning to Leisure and Hazel Lakes in the Southern District, at a combined total of 145,400 fish (Figure 12, Appendix Table 15), provided over half of the LCI sockeye total and were approximately 32% greater than the preseason combined forecast of 110,000 fish to both systems. Also in the Southern District, the sockeye return to English Bay Lakes achieved the upper end of the desired escapement range for only the second time in the last 20 years while still providing a small harvestable surplus to both subsistence and commercial set gillnetters in the Port Graham Subdistrict. The strong return to this system can be attributed to the success of an ongoing rehabilitation project originally initiated by ADF&G in the late 1980's and presently being conducted by Chugach Regional Resources Commission in conjunction with the village of Nanwalek.

In the Kamishak Bay District, enhanced returns to Kirschner and Bruin Lakes produced a harvest of 33,600 fish (Table 3), nearly achieving the combined preseason harvest forecast of 36,500 fish. However, it should be noted that an additional 5,000 sockeyes from the Bruin Lake return escaped the fishery and entered Bruin Lake Creek as escapement, prevented from reaching Bruin Lake by a set of barrier falls in the creek. Despite an estimated 1,300 sockeyes returning to a relatively new stocking project at Ursus Lake, fishermen were unsuccessful at harvesting these fish, which were prevented from reaching the lake by a very steep ascent. No fishing was allowed at Chenik Lake in the Kamishak Bay District, site of another ongoing sockeye stocking/fertilization project, since the return was expected to be poor. An outbreak of a naturally occurring viral disease known as Infectious Hematopoietic Necrosis (IHN), commonly affecting juvenile salmon and trout, has caused increased mortality to young salmon over the past several years in Chenik Lake, and subsequent adult returns to the system have been weak.

At Bear Lake in Resurrection Bay of the Eastern District, a forecasted harvest of 10,000 sockeyes was far surpassed by an actual catch of nearly 45,000 fish (Table 3). The total return of 53,000 sockeyes to this system was the highest since fry stocking began through CIAA's Trail Lakes Hatchery in 1989, showing potential for even greater returns in future years.

Natural returns of sockeye salmon to LCI systems were considered good, with all systems achieving escapement goals. In the Outer District, both Delight and Desire Lake escapement goals (10,000 sockeyes each) were attained in the same year for the first time since 1987 (Appendix Table 23), with a small harvestable surplus taken by the seine fleet at Desire Lake (Table 3). Returns to Delusion (Ecstasy) Lakes, a recently formed glacial lake system in East Nuka Bay which supported no documented salmon run prior to the mid-1980's, had a peak aerial escapement estimate of 1,500 sockeye salmon in 1995. At Mikfik Lake in the Kamishak Bay District, only limited effort on the return occurred during the season and virtually the entire run entered the system as escapement, with a final cumulative index of over 10,000 fish. Despite opening Aialik Bay to fishing in early July in an attempt to gauge run strength to Aialik Lake, very little effort was directed at this stock and the majority of the run entered the system as escapement, estimated at 2,600 sockeyes (Table 3).

Coho Salmon

The commercial harvest of 17,700 coho salmon (Table 4) in 1995 represented the highest LCI total for this species since 1991 and the fourth highest over the last 20 years (Appendix Table 17). The harvest was greatest in the Kamishak Bay District, followed in order by the Southern, Eastern, and Outer Districts, but catches in the Eastern District primarily were from the Seward Silver Salmon Derby and CIAA cost recovery at Bear Lake. Coho run assessment in LCI is limited, with commercial, sport, and personal use harvests providing the best indicators of run strength; returns during 1995 were considered strong. Despite the relatively strong return, low prices and the lack of remote tender service discouraged the majority of the seine fleet from targeting on cohos late in the season. No aerial surveys were flown specifically for coho salmon

due to the heavy rainfall experienced throughout the management area in late August and early September.

Pink Salmon

Returns of pink salmon, the dominant species in numbers of commercially harvested fish in LCI, topped even the most optimistic expectations in 1995, with an overall harvest of 2.85 million fish (Figure 14, Table 5). This number is over two and one-half times the 20-year average and represents the third highest catch on record, with only the 1981 and 1979 catches of 3.28 and 2.99 million pinks, respectively, being greater (Appendix Table 18). Approximately 87% (2.475 million pinks) of the total was taken in the Southern District (Table 5, Appendix Table 18), the bulk of which came as a direct result of Tutka Hatchery production. However, half of the Southern District total (1.213 million pinks) was utilized for Tutka Hatchery cost recovery (Table 5), with an additional 166,000 fish taken for hatchery brood stock purposes. The estimated hatchery return, including escapement, brood stock, and commercially harvested fish, was 2.61 million pinks (Table 9), a new record for the facility and about 70% greater than the preseason projection of 1.525 million fish.

The Outer District produced the greatest contribution of natural pinks in LCI, with a total harvest of 192,000 fish (Table 5, Appendix Table 18). However, unlike most years when the Port Dick area provides the bulk of the harvests, the majority of the catch came from Windy Bay Subdistrict, while no effort was present in Port Dick due to returns far below projections. East Nuka, Port Chatham, and, for the first time in many seasons, Rocky River Subdistricts also added to the Outer District harvests in 1995. In the Kamishak Bay District, Bruin Bay Subdistrict experienced a strong return of pinks and produced the preponderance of the district's harvest. Pink salmon escapements in all districts of LCI were generally good as most primary systems approached or achieved escapement goals. Notable exceptions were streams in Port Dick of the Outer District, where returns were far below forecast, and Port Graham River in the Southern District.

Chum Salmon

The 1995 commercial chum salmon harvest of 15,600 fish (Table 6) was the seventh successive below-average season in Lower Cook Inlet, representing only about 15% of the 20-year average (Figure 15, Appendix Table 21). The low numbers were somewhat anticipated based on the recent years' trend of weak returns, and as a result conservative fishing schedules were implemented in an effort to secure adequate escapements and reverse the declines in chum salmon numbers. The conservative strategy was hardly necessary, however, as low prices coupled with the lack of tender service in remote districts discouraged the fleet from targeting this species. Consequently, a number of systems, particularly those in northern Kamishak Bay, achieved their minimum escapement goals. One major system, McNeil River in the Kamishak Bay District, failed to attain the lower end of its escapement goal range of 20,000 to 40,000 fish for the sixth straight year (Appendix Table 25).

EXVESSEL VALUE

The unadjusted exvessel value of the 1995 salmon harvest in LCI was approximately \$2,758,900 (Table 7, Appendix Table 2), making it the highest since 1989 and nearly equal to the 20-year average. Purse seine gear in the common property fishery, which normally accounts for the majority of the catch, comprised over \$1.8 million or two-thirds of the overall total (Table 7), while set gillnets accounted for \$223,000 (8%). An estimated \$698,300, or about 25% of the entire exvessel value of the LCI salmon fishery, was utilized for hatchery cost recovery purposes. Average prices paid to fishermen in 1995, not including any postseason adjustments, were as follows: chinook - \$1.17/pound; sockeye - \$1.11/pound; coho - \$0.47/pound; pink - \$0.15/pound; and chum - \$0.24/pound (Appendix Table 3).

DISTRICT INSEASON MANAGEMENT SUMMARIES

Southern District

Set Gillnet Fishery

An Area H set gillnet permit holder is allowed to fish in both Upper and Lower Cook Inlet, but there are only five beach areas in LCI, all located along the south shore of Kachemak Bay in the Southern District, where set gillnets may be used (Figure 2). The limited area provides only enough productive fishing sites to accommodate approximately 25 set net permits.

The 1995 LCI set gillnet harvest totaled 70,600 fish, slightly greater than the 20-year average (Appendix Table 7) and the highest catch since 1982. Catches were dominated by pinks at 59% followed by sockeyes at 27%. For comparison, typical species composition in the commercial set gillnet fishery during the past decade has been 45% sockeyes, 39% pinks, 7% cohos, 6% chums, and 3% chinooks. Catches of chinook salmon, at 2,100 fish, were the highest ever recorded and nearly triple the 20-year average. Enhancement efforts directed at recreational fisheries in Seldovia Bay and Halibut Cove Lagoon are primarily responsible for the increased commercial gillnet chinook catch during 1995.

For the first time in many seasons, both the subsistence and commercial set gillnet fisheries in the Port Graham Subdistrict, including the English Bay Section, were allowed to target on sockeyes returning to English Bay Lakes. Due to the rehabilitation and enhancement project occurring there, the midpoint of the desired escapement range of 10,000 to 20,000 fish was achieved during the first week of July, and the subdistrict was opened to commercial setnetting on the regular schedule of two 48-hour periods per week. The subsistence fishery was opened over a week earlier due to the strong return. Although relatively small at 2,600 sockeyes (Table 3), the commercial harvest represented the first significant sockeye catch in the Port Graham Subdistrict since 1988 and once again showed the potential for even greater returns in future years.

At least two factors contributed to the above average set gillnet harvests in 1995. The first was the record return of pink salmon to the Tutka Hatchery, contributing to both the increased numbers of this species in the catch as well as an increased percentage in the species composition. In addition, increased fishing effort also affected the set gillnet harvest in the Southern District. The number of set gillnet permits actively fished in LCI this season (23) was the highest since the 1989 season (Appendix Table 1).

Seine Fishery

Sockeye Salmon

Purse seiners in the common property fishery accounted for over 80% of the 164,800 sockeye salmon landed in the Southern District in 1995 (Table 1). The overall catch by all gear types was 65% greater than the recent 10-year average for the district (Appendix Table 13) and nearly double the long-term average.

As in recent years, waters of China Poot Bay and Halibut Cove Subdistricts, and a portion of the Tutka Bay Subdistrict, were opened to seining five days per week beginning Monday, June 26, in anticipation of strong returns to Leisure Lake. Within these subdistricts, however, waters of the China Poot and Hazel Lake Special Harvest Areas (SHA's; Figure 3) were only opened to authorized agents of CIAA at this time, seven days per week, for the purpose of hatchery cost recovery; they were to be kept closed to the common property commercial fishery until the revenue goal at each SHA was achieved. Additionally, and unlike previous seasons, more extensive closed waters were implemented in the China Poot Subdistrict (Figure 3) in an effort to facilitate the "buildup" of sockeyes inside the SHA's and thus expedite the cost recovery process. Designation of these new closed waters came as a result of input from fishermen during preseason meetings held to determine methods for enhancing and refining the attainment of LCI cost recovery revenue goals. These waters were to remain closed to all seine fishing until the combined revenue goal for the two SHA's was achieved.

Preseason combined harvest projections for returns to the Leisure and Hazel Lakes stocking projects were estimated at 110,000 fish. The actual harvest, including cost recovery, amounted to 145,400 fish (Appendix Table 15), comprising over 50% of the total LCI sockeye salmon harvest (Table 3). Because of the geographic proximity of these two projects, the overlapping area of harvest, and the lack of tagging, no definitive estimate of separate returns to each system can be established. However, fish returning as a result of these two projects undoubtedly contributed to seine catches in the Halibut Cove and Tutka Bay Subdistricts, as well as those in China Poot Bay Subdistrict. It was estimated that personal use dip net fishermen and sport fishermen harvested another 8,000 sockeyes at the head of China Poot Bay. The 1995 total return from both projects was estimated at 153,800 sockeyes (Appendix Table 15).

As outlined in the Crooked Creek Hatchery Annual Management Plan (AMP) prior to the season, the revenue goal necessary to meet operational expenses incurred in LCI sockeye salmon lake stocking projects was set at \$90,618, to be split amongst cost recovery harvests as follows: 70% combined from China Poot and Hazel Lake SHA's, both in the Southern District, and 30% from the Kirschner Lake SHA in the Kamishak Bay District. No cost recovery was planned at Chenik Lake since weak returns were expected. Cost recovery harvests inside the China Poot and Hazel Lake SHA's (Figure 3) were to occur at CIAA's discretion early in the runs since harvests would take place without interference or competition from the fleet at large. Projected harvests of 17,600 sockeyes from the China Poot and Hazel Lake SHA's were necessary to achieve the combined goal of \$63,400 for these two areas, assuming an average price of \$0.90 per pound and an average weight of 4.0 pounds per fish. As previously described, these SHA's were to remain closed to common property seining until the combined goal established for the two areas was achieved.

CIAA contracted the Cook Inlet Seiners Association (CISA) to undertake sockeye cost recovery in LCI Special Harvest Areas for the 1995 season. CISA enlisted volunteers from within the fleet, and the first cost recovery harvest in the China Poot SHA occurred on July 7, netting a total of 1,500 fish. Cost recovery in the Hazel Lake SHA began two days later with a catch of 2,600 sockeyes. Both totals were considered good for this relatively early date and indicated

potential for a fairly strong return. By this time, a firm contract price for sockeyes had been established at \$1.15 per pound, allowing a downward revision to 13,800 fish necessary to achieve the revenue goal.

Cost recovery fishing occurred over the next six days in both SHA's as the sockeye return continued to build. By early Thursday morning July 13, a combined total of 12,500 sockeyes had been harvested from the two areas, but the average weights were higher than expected at 4.4 pounds. The cumulative catch of 55,200 pounds produced a total revenue just exceeding the established goal, and as a result the China Poot and Hazel Lakes SHA's were closed to cost recovery harvest, and both subdistricts were opened to common property seining on a seven-day-per-week basis beginning at noon on July 13.

Common property catches were the highest of the season on the next day, July 14, with a combined harvest of 14,000 sockeyes taken by about 25 vessels in the two areas. Catches remained fairly steady at about 4,100 fish per day for the next 10 days in the China Poot Section, while catches in the Hazel Lake Section continued at an average of over 1,800 sockeyes per day for nearly two more weeks. Beginning on August 4, seiners were restricted to those waters offshore of the Homer Electric Association power lines in China Poot Bay in order to protect natural pink salmon returns to China Poot Creek. By this time the sockeye return was effectively over, with the last landing from China Poot Subdistrict coming on August 6. The final commercial catch in the two sections, including cost recovery, was 133,400 sockeyes.

Pink Salmon

Returns of pink salmon to the Tutka Bay Hatchery contributed to an overall Southern District harvest of 2.475 million fish, a new record for the district (Table 5, Appendix Table 18). Unlike recent years, no adult pinks returned to Halibut Cove Lagoon, a former satellite release site for Tutka Hatchery pink fry. Waters of Tutka Bay Subdistrict outside of Tutka Bay proper were open to commercial seining five days per week beginning June 26, while waters within the Tutka Bay SHA (Figure 4) were open to hatchery brood stock and cost recovery harvest by authorized

agents of CIAA on a continuous basis as established in the Tutka Hatchery Annual Management Plan beginning July 1. The plan called for hatchery incubators to be filled to maximum capacity if possible, and excess fish beyond brood stock and natural escapement requirements were to be harvested for cost recovery to help offset operational expenses. A minimum of 153,000 fish (83,500 females) were necessary for hatchery brood stock in order to achieve the goal of 125 million eggs, and an additional 10,000 pinks were needed to meet the natural spawning escapement goal for Tutka Creek.

Although a few pinks were harvested in the common property fishery in outside waters of Tutka Bay Subdistrict shortly after the area opened on June 26, catches began in earnest on July 3 when over 9,000 pinks were taken. These early commercial catches during the first days of July gave indications that the Tutka return could be strong. Lending credence to this outlook was the building pink salmon abundance within Tutka Lagoon during this time, with the first cost recovery harvest occurring on July 4. In fact, run strength was sufficient for cost recovery efforts to occur simultaneously both inside and outside of Tutka Lagoon, within the Tutka SHA. These efforts were undertaken primarily by two vessels, one working in Tutka Lagoon proper and the other concentrating on waters outside the lagoon. Daily cost recovery harvests averaged over 20,000 pinks during the first week, increasing to nearly 150,000 fish on July 11. Cost recovery catches continued at a steady pace throughout the month of July, with a peak daily harvest of 173,000 fish occurring on July 23.

Because of the exceptional run strength, the question of harvest capability by the small cost recovery fleet became a factor in management of the fishery. Product quality had not been a major concern during the 1995 season as tender capacity was sufficient to keep up with harvest rates, but a late surge of fish appeared to threaten the balance between adequate cost recovery harvest and a major buildup of fish in the lagoon, which in turn would likely reduce product quality due to freshwater marking. Because cost recovery harvests were nearing the revenue goal and fish abundance was not an issue, the staff and CIAA agreed that all waters of the Tutka SHA, including Tutka Lagoon, should be opened to the common property fishery, with the lagoon to remain open to the fleet for only a 24-hour period. At the end of the 24-hour period,

waters of Tutka Lagoon would close to common property seining and reopen to hatchery cost recovery and brood stock harvest. Therefore, effective on July 24, waters of Tutka SHA outside of Tutka Lagoon were closed to hatchery cost recovery fishing and simultaneously opened to common property fishing seven days per week, while waters inside the lagoon were opened from July 24 to July 25. In addition, the commercial set gillnet fishery in Tutka Bay Subdistrict was also opened seven days per week at this time.

The extended opening in Tutka Bay and Lagoon was quite effective in harvesting the fish present before product quality significantly decreased. Although cost recovery was allowed to resume inside waters of Tutka Lagoon on July 25, only one more harvest occurred (on July 29). Common property seine fishing for pinks in Tutka Bay continued until mid-August, however, with the last landing reported on August 16. The total commercial catch of pink salmon in Tutka Bay Subdistrict this season, including both seine and setnet catches but excluding hatchery cost recovery, was 1.212 million fish (Table 5). A total of 1.213 million pinks were sold by CIAA for cost recovery, with an additional 166,000 fish harvested for brood stock (Table 9). The pink salmon escapement of 15,900 fish (Table 5, Appendix Table 24) into Tutka Creek exceeded the desired goal of 10,000 fish, but was once again assumed to include a high proportion of males discarded during hatchery egg-take operations. The total return of pinks to Tutka Hatchery, estimated at over 2.6 million fish, exceeded the previous record of 1.73 million for the facility set in 1994.

Returns of wild pink salmon stocks to other systems in the Southern District were variable as indicated by ground survey escapement counts. The first significant harvest of pink salmon in Humpy Creek Subdistrict during an odd year since 1989 occurred this season, with a total commercial catch of 30,000 fish (Table 5), while escapement into the Humpy Creek exceeded the upper end of its desired range with a final estimate of 89,000 pinks (Appendix Table 24). Desired minimum escapements were achieved or exceeded at Tutka Creek and Seldovia River, while escapements fell short at China Poot Creek, Barabara Creek, and Port Graham River (Table 5, Appendix Table 24).

Other Species

Southern District chum salmon returns were poor for a seventh consecutive year. Nonetheless, the chum harvest of 4,500 fish (Table 6) represented the highest total since 1988, exceeding the recent 10-year average for the district (Appendix Table 21). Set gillnets accounted for almost 90% of the harvest, with about two-thirds of the district-wide catch landed in the Tutka Bay and Seldovia Bay Subdistricts (Table 6).

Although minor in total numbers of fish, the majority of the Southern District chinook harvest usually consists of incidental catches of adult fish returning to three separate enhancement projects. The 1995 Southern District harvest of 2,300 chinooks was the highest on record (Appendix Table 12), with 90% taken by set gillnetters. The coho salmon harvest of 5,100 fish exceeded the 20-year average (Appendix Table 17), with a 70% contribution coming from the set gillnet fishery.

Kamishak Bay District

Sockeye Salmon

The entire Kamishak Bay District, with the exception of the Paint River Subdistrict, opened to salmon seining by regulation on June 1, with two regular 48-hour weekly fishing periods established by emergency order. The earliest sockeye salmon return to the management area, at Mikfik Creek in the McNeil River Subdistrict, appeared weak during the first two aerial surveys on June 2 and 8, and fishermen were unwilling to gamble on fishing this traditionally small return considering the lack of tender service to this remote district. By June 12, however, a major surge of fish appeared in fresh water, as evidenced by an aerial estimate of nearly 8,000 sockeyes. By June 16, the estimated total had increased to over 10,000 sockeyes, the peak aerial estimate of the season. Since this estimate exceeded the escapement range established for the system, the McNeil River Subdistrict was open to seining seven days per week beginning on June 16. By the time any effort arrived on the grounds, very few new fish were entering the

system, and only a negligible number of fish were harvested. The peak seasonal estimate was used as the final escapement index at Mikfik Creek (Table 3, Appendix Table 23), exceeding the desired range of 5,000 to 7,000 fish.

With very little early effort directed toward sockeye salmon in the McNeil River Subdistrict, seiners turned their attention to the Douglas River Subdistrict during the last days of June. Normally effort would be directed towards the Chenik Lake sockeye return, however no fishing was expected to occur at Chenik Lake this year due to the effects of the IHNV outbreak in previous years and the subsequent decrease in adult returns. Sockeye catches at "Silver Beach" in the Douglas River Subdistrict proved to be disappointing as well, and no further effort on sockeyes occurred in this subdistrict during the remainder of the season.

At Chenik Lake, despite the forecasted weak return, the staff was hopeful that the run would at least approach the escapement goal of 10,000 sockeyes. Unfortunately, a second consecutive year of dismal returns manifested itself, and even with no fishing effort occurring during the entire season, the total escapement past the weir at Chenik Lake was only 1,100 sockeyes (Table 3, Appendix Table 23).

With no fishing effort at Chenik, seiners next focused on nearby Kirschner Lake in the Bruin Bay Subdistrict. Kirschner Lake is also the site of a sockeye salmon lake stocking program, but a steep falls at the tideline precludes escapement into the lake. Preseason management strategy for the Kirschner Lake Section of the Bruin Bay Subdistrict, as outlined in the Crooked Creek AMP, was to open the Kirschner SHA (Figure 6) to cost recovery fishing on a continuous basis beginning June 26 while keeping it closed to common property seining, thus allowing opportunity for CIAA to achieve the sales harvest goal of \$27,200 at the beginning of the run. As soon as the goal was met, Kirschner SHA was to be closed to cost recovery harvest and opened to commercial seining so the fleet could work the area uninhibited for the remainder of the season. Once again, the preseason average price for sockeyes was projected to be \$0.90 per pound, and at an average weight of 4.0 pounds per fish, CIAA needed to harvest approximately

7,560 sockeye salmon in order to achieve the revenue goal at Kirschner. The preseason projected return to Kirschner Lake was 30,000 sockeyes.

CIAA had made arrangements prior to the season for a CISA vessel to conduct the harvest, with the first harvest occurring on July 11. As was the case in the Southern District, the inseason price for sockeyes was greater than the preseason estimate, and average weights at Kirschner Lake were higher than expected at nearly 5.0 pounds, again allowing a reduction in the number of fish necessary to achieve the revenue goal. A second harvest of fish on June 13 brought the cumulative total to 5,350 sockeyes, generating \$29,900, slightly exceeding the revenue goal. In response, the Kirschner Lake SHA was closed to cost recovery fishing and concurrently opened to the common property fishery beginning July 13 on a seven-day-per-week basis. Additionally, those waters of Bruin Bay Subdistrict east of 154° W. longitude were also opened at the same time seven days per week in an effort to harvest an enhanced sockeye return to Bruin Lake Creek, where migrational barriers prevent passage to the lake and all fish are available for harvest.

A total of five boats fished the two areas opened to continuous fishing, targeting on sockeyes through the end of July. Based on disappointing returns during 1993 and 1994, preseason projections for sockeye salmon returns resulting from enhancement efforts at Bruin Lake, the outlet of which empties into Bruin Bay proper about five miles southwest of Kirschner Lake, ranged only to 6,500 fish. Fishermen had additionally encountered difficulty locating sizable concentrations of fish in the shallow waters near the mouth of Bruin Lake Creek during previous seasons, so it was unclear how the sockeye fishery in Bruin Bay proper would progress. A total of 17,100 sockeyes was harvested in Bruin Bay proper by the common property fleet, but a considerable portion of the fish were thought to be of Kirschner Lake origin, while an additional 11,100 sockeyes were taken in the Kirschner Lake Section. Since the two harvest areas are in relatively close proximity and no tag/recovery program is in place, no attempt was made to distinguish separate totals for these returns. Despite seiners' best attempts to block fish from entering Bruin Lake Creek, since no spawning is possible, a total of 5,000 sockeyes was estimated in the creek during an aerial survey on August 7.

A relatively new sockeye enhancement project at Ursus Lake in Ursus Cove Subdistrict was expected to produce a questionable adult return in 1995, with estimates ranging up to 6,500 fish. Since these fish are also prevented from reaching the lake to spawn by migrational barriers in the creek, a total harvest was desired. In an attempt to facilitate this harvest without jeopardizing natural returns of other species, the Ursus Cove Subdistrict, including Ursus Cove Lagoon, was opened to seining seven days per week from July 20 until July 31. However, little effort on this return occurred early in the run and by the end of July 1,300 sockeyes were estimated in fresh water during an aerial survey. Seiners were unable to effectively fish inside Ursus Lagoon due to a combination of poor weather and unsuitable tides, so no sockeyes were harvested from this enhanced return.

Pink Salmon

Preseason pink salmon projections for the Kamishak Bay District were fair, with harvestable surpluses forecasted for Bruin Bay and Rocky and Ursus Coves. An inseason aerial survey in late July indicated a strong showing of pinks in Bruin Bay. In response, all waters of Bruin Bay Subdistrict were open to seining seven days per week beginning July 26. By early August the returns to Sunday Creek in Rocky Cove Subdistrict and to Brown's Peak Creek in Ursus Cove Subdistrict were also steadily building. Waters of Ursus Cove Subdistrict already had been opened seven days per week for the last 11 days of July, reverting back to the standard two 48-hour weekly periods on August 1, while waters of Rocky Cove Subdistrict were open on the standard two 48-hour weekly periods.

Despite the strength of the returns, low pink prices and lack of remote tender service discouraged effort for pinks in Kamishak Bay all season. Harvests began in Bruin Bay Subdistrict incidentally during the seine fishery directed at sockeyes returning to Kirschner and Bruin Lakes. As those returns diminished, more effort was directed towards the Bruin Bay pink return. However, typically harsh weather created difficult fishing conditions, and final harvests totaled 169,000 pinks from the Kamishak Bay District for the season (Table 5, Appendix Table 18). The majority of these pinks came from Bruin Bay Subdistrict (62%, Table 5, Appendix Table

19). Due to the limited effort directed at pinks in Kamishak Bay, all three major systems exceeded their escapement goals (Appendix Table 24).

Chum Salmon

Cumulative chum salmon catches for the entire Kamishak Bay District totaled 10,300 fish, the highest harvest over the past three seasons but well below the most recent 20- and 10-year averages (Appendix Table 21). Very little effort was directed specifically at chums in the Kamishak Bay District due to the low prices and lack of remote tender service during 1995.

Chum salmon escapement into McNeil River began slowly, with 1,600 fish in fresh water documented in early July by aerial survey. As is common in Kamishak Bay, weather and water conditions hampered aerial enumeration for some time after this initial sighting, and escapements were not well documented over the course of the season. By the next survey on July 13, the index estimate had increased to only 2,200 chums, making it readily apparent that the McNeil chum return was weak. The following survey on July 26, as well as informal ground observations from the McNeil River bear viewing camp, reinforced this assessment. Although fish continued to trickle into the system, the peak daily escapement count for the season occurred on August 16 but, at only 6,000 fish, represented further proof that the run was poor.

Even though returns appeared weak, the McNeil River Subdistrict was allowed to remain open through the 1995 season in hopes that enough fish would be landed to obtain an adequate age-weight-length (AWL) sample. However, the staff maintained a continuous dialogue with the fleet and made it abundantly clear that any significant catch of chums without a corresponding increase in the escapement rate at McNeil River would result in immediate closure of the subdistrict. This strategy proved effective at protecting the chum return from any fishing mortality, allowing the entire run to enter the river. However, with an escapement goal of 20,000 to 40,000 chums for this system, the numbers of fish present were not sufficient to achieve the in-river goal. The final estimated escapement index at McNeil River was 14,400

chums, marking the sixth consecutive year the river's goal has not been met (Appendix Table 25).

Elsewhere in the Kamishak Bay District, most of the chum harvest came incidentally during effort directed specifically at sockeyes and pinks in Bruin Bay and Ursus and Rocky Cove Subdistricts. By early August, aerial surveys began to document fair late chum returns to northern Kamishak Bay systems in Ursus Cove, Cottonwood Bay, and Iniskin Bay Subdistricts. Chum escapements into major northern Kamishak systems continued to increase, and because the building returns were believed capable of sustaining low-level harvests without jeopardizing escapements, an extension of fishing time in the Ursus Cove, Cottonwood Bay, and Iniskin Bay Subdistricts to seven days per week became effective August 18. The continuous fishing schedule was justified by the notoriously foul weather in Kamishak Bay which often precludes fishing activity altogether; the seven-day fishing schedule allowed more opportunity for favorable weather to coincide with open fishing periods. Despite the additional fishing time, low prices and market demand once again kept most of the fleet away. Therefore, the majority of these chum returns were allowed to enter their natal streams as escapement, and all northern Kamishak Bay systems achieved or slightly exceeded their established goals (Appendix Table 25). Turbid water conditions and foggy weather in southwestern Kamishak Bay, at Big and Little Kamishak Rivers, prevented comprehensive aerial surveying for the second consecutive season, and no resultant estimates were made for these systems.

Other Species

Chinook salmon harvests in the Kamishak Bay District historically have been insignificant (Appendix Table 12). On the other hand, coho harvests within the district have at times been substantial, providing fishermen with some lucrative late season catches. Coho assessment in LCI is very limited, but early indications from other areas within LCI, as well as from adjacent management areas, suggested strong returns. As a result, the Kamishak Bay and Douglas River Subdistricts were opened to seining on a five-day-per-week basis from August 21 through September 9. Despite typically harsh weather, seiners were able to successfully fish in these

subdistricts in late August, with a resulting district-wide harvest of 6,100 fish (Appendix Table 17), representing the highest total since 1987 and exceeding the 20-year average.

Outer District

Sockeye Salmon

Outer District sockeye harvests historically have focused on natural returns to the Delight and Desire Lakes systems in East Nuka Bay Subdistrict. A lake stocking project in the Port Dick area during the late 1980's provided additional fish for harvest in the early 1990's, but stocking was discontinued after 1989 and a small harvest in 1993 was the last documented catch. Preseason projections forecasted a harvest of up to 24,200 sockeyes for the entire Outer District. Because of relatively strong returns, the actual harvest totaled 17,600 fish, the highest catch since 1987 (Table 3, Appendix Table 13).

Aerial surveys documented sockeyes at both Delight and Desire Lakes beginning in mid-June, albeit in relatively small numbers. The Desire Lake return continued to build during the next week, with a count of nearly 2,000 fish documented in fresh water on a June 22 survey and an additional 2,000 fish estimated in saltwater. Counts for Delight Lake during this time remained low. Since the Desire Lake counts were considered early indications of a potentially strong return, the subdistrict was opened to fishing for two 40-hour periods per week only between the latitude of the entrance to James Lagoon and the latitude of the regulatory markers near the Parks Service tent camp beginning June 22. In order to protect fish returning to Delight Lake, yet still provide opportunity to harvest sockeyes returning to Desire Lake, waters south of the latitude of James Lagoon were kept closed.

The early Nuka Bay opening attracted only limited effort, with the first sockeye catches reported June 26. However, an aerial survey conducted on June 27, under rather poor conditions, did not detect any increase in escapement at Desire Lake, suggesting that the previous survey's counts may have simply identified an earlier-than-normal run timing as opposed to a strong return. In

response, the open area of Nuka Bay was closed to fishing effective on July 3 in an effort to bolster escapement. With the closure in place, escapements indeed picked up, as evidenced by a count of over 6,200 sockeyes estimated in fresh water on a survey July 5, representing over 60% of the established escapement goal for the system. As a result, the same area opened previously was reopened on a five-day-per-week basis effective July 7. Additionally, because the run appeared relatively strong, regulatory closed waters markers near the mouth of Desire Lake Creek were removed and seining was allowed up to the creek mouth.

Fishing commenced on July 12, with the peak daily harvest of nearly 2,000 sockeyes occurring on that day. Modest but steady fishing effort continued until the area closed to fishing at the end of August, with daily harvests averaging over 1,000 fish for each day fished during the period July 25 through August 11. During much of the month of August, seiners were also targeting pink salmon returning to Desire Lake Creek. Final harvest for the season from East Nuka Bay totaled 17,600 sockeyes (Table 3, Appendix Table 14), the highest total since 1988 (Appendix Table 14). Even with the limited fishing effort at the end of June and during the month of July, Desire Lake escapement rose continually over the course of July. The goal of 10,000 fish was achieved by mid-July, with a July 18 survey indicating over 11,000 sockeyes in fresh water. The peak survey of the season, also used as the final index estimate of abundance, was 15,800 fish (Appendix Table 23), occurring on July 27.

Meanwhile at Delight Lake, with a historically later run timing than Desire Lake to the north, escapements lagged during the month of July, increasing to an aerial estimate of only 5,000 sockeyes by July 18, further justifying the closure in salt water near this system. A surge of fish shortly after that survey, however, pushed escapement past the 10,000 fish goal, with a final estimate identical to that of Desire Lake at 15,800 sockeyes (Appendix Table 23). For the first time since 1987, both Delight and Desire Lakes achieved their respective sockeye salmon escapement goals in the same season.

A third lake system known as Delusion (or Ecstasy or Delectable) Lakes in East Nuka Subdistrict has been monitored over the last several seasons to document the sockeye return

there. Located near the head of the East Arm of Nuka Bay, the two-lake system is relatively new, formed during the late 1970's and early 1980's by a receding glacier. This fact was substantiated by reviewing charts and maps drawn prior to the mid-1980's, as no lakes are indicated at the site of the present bodies of water. Prior to the 1980's, no salmon were known to utilize the system, but in approximately 1989, during a routine aerial survey, adult sockeye salmon were documented in the system by the staff for the first time. Each year since then, aerial surveys have revealed sockeye salmon as well as pink salmon in the system. The peak 1995 aerial count of 1,500 sockeyes was recorded during a July 27 survey. Little is known of the origins of this return, however sampling by ADF&G personnel, with help from University of Alaska students on site, was conducted in 1992, 1993, and 1994. Otoliths and length measurements indicated primarily large 3-ocean fish (six years old). Additional tissue samples were taken from post-spawning individuals in 1993 and 1994 for inclusion into the genetic baseline data set and future genetic stock identification analysis.

Pink Salmon

Harvest forecasts for pink salmon in the Outer District were fairly optimistic, with the largest proportion expected at Port Dick (164,000 fish), followed by Nuka Bay (25,000 fish). The actual harvest of 192,100 pinks (Table 5, Appendix Table 18), taken by 12 vessels, was 88% of the preseason projection and was just slightly greater than the most recent 10-year average.

For the fourth consecutive season, a management strategy was employed in the Port Dick area based on input from fishermen over the winter of 1991-92. Concerns over fish quality led to a plan whereby the outer areas of the subdistrict would be opened on a calendar date earlier than the traditional opening date (formerly openings were based on stream escapement rates and fish abundance in saltwater). It was hoped that opening areas further away from freshwater systems at an early date would allow the fleet opportunity to harvest higher quality fish before they became freshwater marked, thus increasing their market value. Weak returns to Port Dick during the previous three years left the management plan essentially untested going into the 1995 season.

As stated in the Port Dick Management Plan, the South and Outer Sections of the Port Dick Subdistrict opened to fishing for two 40-hour weekly fishing periods, from Monday 6:00 a.m. until Tuesday 10:00 p.m. and from Thursday 6:00 a.m. until Friday 10:00 p.m., beginning on Monday, July 17. At that time, chums were present in Port Dick (head end) Creek and on the nearby saltwater flats, but pinks had not yet begun to show. The North Section of Port Dick Subdistrict remained closed to protect chums returning to streams within that section, primarily Island Creek.

Pinks first appeared in Port Dick (head end) Creek near the end of July, but the low numbers suggested that the forecast may have been overly optimistic. This weak early showing of pinks at Port Dick basically foretold the eventual magnitude of the return, despite the fact that odd-numbered years produce substantially greater runs than even years. Because of the weak run strength, no effort occurred in the subdistrict during the season and subsequently no fish were harvested in any portion of the Port Dick Subdistrict (Appendix Table 19). Final estimated escapement at Port Dick (head end) Creek was a paltry 6,600 pinks (Table 5, Appendix Table 24), far short of the lower end of the desired range of 20,000 to 100,000 fish. The North Section of Port Dick Subdistrict was never opened to fishing in an effort to protect chums returning to Island Creek. This conservative move also served to protect later returning pinks at Island Creek, but the final estimated escapement of 10,600 pinks (Appendix Table 24) still failed to achieve the lower end of the desired range of 12,000 to 18,000 fish. One possible explanation for the low returns to the Port Dick area is the heavy rainfall and resultant flooding that occurred during the fall and early winter of 1993, parent year for this year's adult return. On-grounds observers at that time noted significant gravel shifting and re-deposition, thus potentially causing mortality of pink eggs in the streambeds.

At nearby Windy Bay, no such adverse effects were experienced as the pink return was somewhat greater than anticipated. Pinks had already begun entering fresh water by the first of August, with an estimated cumulative ground count of 7,000 pinks on that day, while an aerial survey the same day estimated over 30,000 additional fish in saltwater. As a result, the Windy

Bay Subdistrict was opened to seining for two 40-hour periods per week beginning August 1 in an effort to allow opportunity to harvest what appeared to be a strong and still building return.

Several vessels traveled to Windy Bay for the opening, harvesting over 16,000 pinks on the first day. Effort continued steadily during the next two weeks, producing a peak daily harvest of 31,000 pinks from seven vessels on August 3. The last landing was recorded on August 15, with a cumulative harvest of 111,200 pinks (Table 5, Appendix Table 19) taken in Windy Bay Subdistrict for the season.

Escapements into systems at Windy Bay were similarly good in spite of the commercial harvests. Escapement estimates were 31,600 and 11,400 pinks, respectively, for Windy Left Creek and Windy Right Creek (Appendix Table 24), the former falling within its range of 30,000 to 50,000 pinks and the latter just exceeding its goal of 10,000. It is hoped that pink returns to Windy Bay systems will continue to rebuild despite extensive logging that has occurred in recent years, which has led to diverse speculation regarding future effects on fishery resources there. The ground survey team again reported substantial numbers of "blowdown" trees in the stream channel this season, with very few live trees left standing in the prescribed 66-foot riparian buffer strip. High winds apparently caused many of the uncut trees in this strip to fall across the creek. The limited leave strips were obviously not wide enough in this Outer Gulf coastal area to prevent damage caused by commonly high winds (hence the local name) or preclude the subsequent "domino effect" from blowdowns.

At Nuka Island, pink salmon were first documented in salt water near the mouth of South Nuka Island Creek during an aerial survey July 18, but at only 1,400 fish run strength was difficult to judge. A week later salt water numbers had increased to only 3,600 pinks, with less than 400 fish observed in fresh water during an aerial survey. The next aerial survey on August 4, however, produced an estimate of 11,000 pinks in fresh water and 6,000 in salt water off the creek mouth, justifying an immediate and extended opening. Since pinks had been observed in salt water near all of the smaller systems along the west shore of Nuka Island during previous aerial surveys, the entire Nuka Island Subdistrict was opened to seining seven days per week.

Despite the liberal opening, little effort occurred and only 6,000 pinks were harvested for the entire season (Table 5). A subsequent ground survey conducted at South Nuka Island Creek on August 7 revealed less than 2,000 pinks in fresh water. The disappearance of the pinks observed during the August 4 aerial survey has yet to be understood.

For the first time in many seasons, the pink salmon return to Rocky River was sufficient to allow a limited commercial harvest. Significant numbers of pinks were first detected in salt water off the mouth of Rocky River on July 27. By the last day of July, fish entry into fresh water had begun in earnest, with an aerial estimate of over 17,000 pinks in Rocky River. Additional reports from fishermen in adjacent Windy Bay indicated that pinks were continuing to build in salt water near Rocky River. With an escapement goal of 50,000 pinks and the increasing numbers observed, the staff felt that a conservative fishing schedule in Rocky Bay Subdistrict would allow opportunity to harvest a portion of the returning pinks without unduly jeopardizing the escapement requirements into Rocky River. Therefore, the subdistrict was open to seining for two 40-hour periods per week beginning August 4. Fishermen already fishing Windy Bay diverted some of their efforts towards Rocky River Subdistrict over the next week, with a resulting season harvest of 27,500 pinks (Table 5), the highest harvest there since 1979 (Appendix Table 19). Final escapement into Rocky River was estimated at 56,000 pinks (Appendix Table 24), achieving the goal for this system.

Elsewhere in the Outer District, pink salmon returns to Port Chatham and Chugach Bay were considered strong enough to allow commercial openings, beginning on August 9 at the former and August 15 at the latter, with both areas open to fishing five days per week. Total harvest for the season was 17,600 pinks at Port Chatham and 8,400 pinks at Chugach Bay (Table 5). Port Chatham escapements amounted to 14,000 pinks (Appendix Table 24), within the 10,000 to 15,000 fish range for the systems there, while an estimated 7,800 pinks entered the small unnamed stream at the head of Chugach Bay. In the East Arm of Nuka Bay, pinks likely destined for Desire Lake Creek produced moderate incidental catches in August from fishing effort primarily directed at sockeyes. Harvests totaled 21,400 pinks for the season (Table 5), but no estimate of escapement was obtained for Desire Lake Creek.

Chum Salmon

Chum salmon numbers have experienced dramatic declines in the Outer District since the peak harvest years of the late 1970's and early 1980's. Large returns were once again not expected in 1995 due to a succession of poor returns over the past several seasons. No specific commercial openings targeting chum salmon occurred in 1995, and the harvest of 474 incidentally caught fish (Appendix Table 21) was the fourth lowest recorded during the last 20 years in this district.

Escapements into the three monitored chum salmon systems in the Outer District were relatively poor, with all three failing to achieve their goals. Port Dick (Head End) Creek fell short of its 4,000 chum escapement goal by 700 fish (Appendix Table 25). Island Creek chum escapement totaled 7,700 fish, 23% shy of the lower end of the escapement goal range of 10,000 to 15,000 fish, while Rocky River escapement totaled 5,100 chum salmon in the escapement, well short of the goal of 20,000 fish but still the highest number for this species since 1981.

Eastern District

Sockeye Salmon

The Eastern District had potential for harvestable surpluses of sockeye salmon in Aialik and Resurrection Bay Subdistricts during 1995, with a district-wide preseason projection of up to 30,000 fish. However, supported by a much greater than expected return of sockeyes to Bear Lake in Resurrection Bay, the actual district-wide total catch amounted to 46,600 sockeyes (Appendix Tables 13 and 14), the second highest total during the last 20 years. About 45% of this total, however, was taken as hatchery cost recovery at the Bear Lake weir (Table 1).

At Bear Lake, near Seward in the Resurrection Bay Subdistrict, sockeye enhancement activities by CIAA fostered optimism for a total return ranging from 10,000 to as high as 150,000 fish assuming optimum survival of various smolt releases. Based upon the expected long-term increase of sockeyes returning to this system, a Resurrection Bay Management Plan was drafted

during the winter of 1991-92. This plan allows the seine fleet opportunity to begin fishing on the Bear Lake sockeye run at a relatively early date in the outer reaches of Resurrection Bay in order to promote product quality. This season, in keeping with the plan, the entire Resurrection Bay Subdistrict, up to a point one mile due south of Cape Resurrection and Aialik Cape, was opened to seining by emergency order on a schedule of two 40-hour fishing periods per week, beginning on Monday, May 15. Despite presumption of an early run timing for this enhanced run (since brood stock utilized for the project had a documented run timing peaking in early June), the first three years of adult returns from 1992 through 1994 actually trickled in over the course of two months, creating concern that future returns would perform quite differently than originally intended.

When the area first opened in 1995, no effort occurred in the outer areas of the subdistrict as the fleet once again adopted the now standard "wait-and-see" attitude, hoping to locate fish nearer to the head of the bay before assessing run strength. After disappointing returns during 1992 and 1993, and a larger but still relatively insubstantial return in 1994, fishermen were reluctant to invest much time prospecting without some indication that the run would actually materialize. Fishing began on June 2, and word quickly spread that there appeared to be greater numbers of fish than in previous years. By the middle of the next week, more than a half-dozen seiners were actively plying the waters of Resurrection Bay for Bear Lake sockeyes. The peak daily catch of the season occurred on June 9 when six vessels harvested 6,500 sockeyes. By this time, the cumulative seine harvest totaled nearly 17,000 sockeyes, while escapement rates and cost recovery harvests at CIAA's Bear Creek weir were considered good. Because all indications suggested a stronger return than past years', and the minimum escapement goal of 5,000 sockeyes into Bear Lake was virtually assured based on harvest and escapement rates, fishing time was extended to five days per week beginning June 13 to allow opportunity to harvest surplus fish.

The liberalized fishing schedule and relatively high catches attracted more effort the following week, but catch rates had already peaked and harvests began to drop. Still, with steady effort throughout the month of June and into the first week of July, the final commercial seine harvest

was 23,700 sockeyes (Table 3). When combined with the hatchery cost recovery harvests of nearly 21,000 sockeyes from the Bear Creek weir, the cumulative Resurrection Bay catches of 44,600 fish represented the highest catches from these waters since 1969 (Appendix Table 14). Counts at the Bear Creek Weir facility amounted to 8,300 fish for escapement (Appendix Table 23), similar to the previous year's total. As was the case during the previous three seasons, sockeye entry into fresh water was rather protracted, beginning at the end of May and continuing into early August.

At Aialik Lake in the Aialik Subdistrict, aerial surveys were begun on June 16, but the first sockeyes were not observed until June 27 with an estimate of 200. Subsequent flights over the next two weeks revealed an increase to 1,300 fish, with an additional 1,000 fish estimated in the salt water lagoon. Since the combined total nearly equaled the minimum escapement goal of 2,500 sockeyes, waters of the subdistrict, including those of Aialik Lagoon, were opened to seining July 10 on two 48-hour periods per week in an effort to harvest surplus fish without jeopardizing the escapement goal. Despite opening waters of Aialik Lagoon, less than 2,000 fish were landed for the season (Table 3, Appendix Table 14), primarily during the month of July. The majority of these fish were taken on the first day after the subdistrict was opened, with some also incidentally taken during efforts directed at pink salmon in August. Fish continued to trickle into the system as escapement through the month of July, with a final estimate of 2,600 sockeyes (Appendix Table 23), just exceeding the goal for the system.

Pink Salmon

Despite the pattern of weak odd-year pink salmon returns in Resurrection Bay, a harvestable surplus of up to 20,000 fish was forecast in 1995, but this projection was questionable due to weak returns in some recent years. Although surveys of Resurrection Bay systems were limited to on-grounds estimates in late August, results suggested wide variations depending on individual systems. At Bear and Salmon Creeks, where the combined pink escapement goal is 15,000 fish, a total of over 38,000 pinks was estimated (Appendix Table 24). The figure for Thumb Cove, with a goal of 4,000, was estimated at nearly 9,300 pinks, while at Humpy Cove (2,000 goal)

1,800 fish were estimated. Tonsina Creek produced an estimate of only 500 pinks, far short of the 5,000 fish escapement goal. Due to the variability of returns and the limited assessment, no openings for pinks were allowed in Resurrection Bay and therefore no harvest resulted.

Aialik Subdistrict, originally opened to two 48-hour fishing periods on July 10 for sockeye salmon, was never closed after the sockeye run was effectively over. A few vessels traveled to this open district later in the season in hopes of fishing the outer areas for pink salmon as had been successfully done during the past three seasons. During those years, the fishery was allowed to continue despite knowledge that the targeted fish were probably bound for Prince William Sound. The staff elected to leave the area open again in 1995 because the relatively modest catches did not threaten either local or non-local stocks. The first significant landing of pink salmon in Aialik Bay occurred on July 31, normal timing by recent historical standards. Fishing continued throughout August, although catches steadily declined over the course of the month, with a total harvest for the season in Aialik Subdistrict of 12,000 pinks (Table 5).

Other Species

Chum salmon are the only other commercially important species in the Eastern District, but harvests during the previous six years have been dismal. This season's chum harvest amounted to 330 fish (Table 6, Appendix Table 21). However, nearly all of these fish were taken in Resurrection Bay during an open period in early July intended for the harvest of sockeye salmon returning to Bear Lake. The fish were intentionally harvested near the mouth of Tonsina Creek without regard for fish quality and before the staff had assessed chum escapements. The subdistrict was immediately closed after this harvest to protect remaining chums as well as pink salmon just starting to return, as set out in the management plan set up for sockeye salmon in Resurrection Bay. The closure did allow for an estimated escapement of over 3,000 chums into Tonsina Creek (Appendix Table 25).

Coho salmon are not normally a commercially important species in the Eastern District. However, the 5,200 cohos harvested in 1995 (Appendix Table 9) represented just slightly more

than the recent 10-year average for the district. About one-fourth of the total was taken as hatchery cost recovery at the Bear Lake weir (Tables 1 and 7), with nearly 60% of the district total coming from Seward Silver Salmon Derby entries. It should be noted that all coho salmon entered into this Seward sport fishing derby are subsequently sold by the city of Seward, organizer of the derby, to a commercial processor. Therefore, these catches are considered “commercial harvests” and are listed in the commercial catch tables to document this fact.

SALMON ENHANCEMENT AND REHABILITATION

Introduction

Fisheries enhancement has played a major role in LCI salmon production during recent years. Natural adult salmon returns to the LCI area continue to demonstrate wide fluctuations, often the result of environmental impacts such as flooding or ice scouring on spawning grounds. Since their inception in the mid-1970's, enhancement and rehabilitation projects have made significant contributions to both commercial and sport fishing harvests. These contributions have historically ranged from 24% to 90% of the entire LCI commercial salmon harvest and are expected to remain high in future years.

Projects initiated by the former FRED Division and/or CIAA provided an estimated 84% (2,648,700 salmon) of the total 1995 LCI commercial harvest of 3,149,500 fish. The Leisure/Hazel, Kirschner, Bear, Bruin, and Bear Lakes sockeye salmon enhancement projects produced approximately 84% (223,600 fish) of the total LCI sockeye harvest of 265,400 fish in 1995. Tutka Lagoon Hatchery production accounted for over 85% (2,425,700 fish) of the 1995 LCI commercial pink salmon harvest of 2,848,500 fish.

Using average weights per fish and average prices per pound in LCI, the estimated contribution of ADF&G/CIAA-produced salmon was 80% (\$2,220,700) of the \$2.759 million total value of the 1995 LCI commercial salmon harvest. About 25% (\$698,300) of the total exvessel value of

the fishery was utilized for hatchery cost recovery purposes (Table 7). A brief description of the current enhancement projects in LCI follows.

Tutka Lagoon Hatchery

The Tutka Lagoon Salmon Hatchery/Rearing Facility was constructed in 1976 with an initial production capacity of 10 million salmon eggs, but expansion over time, including recent work during the winter of 1993-94, has increased its capacity to the present level of approximately 150 million eggs. Pink salmon have been the primary species produced at the hatchery, while secondary chum enhancement has been discontinued in favor of recent efforts directed toward sockeye salmon. Presently the hatchery has a sockeye egg capacity of 1.8 million eggs, while raceways are also in place to accommodate the resulting fry.

In 1995 the adult pink salmon produced by Tutka Lagoon Hatchery totaled approximately 2,610,600 fish returning to the hatchery site (Table 9). No attempt has been made to separate the contribution resulting from natural spawning in Tutka Creek. The estimated 4.3% overall survival rate was greater than the facility's historical overall average of 2.5-3.0% but less than the average for short-term reared fry only of roughly 5.5%. The commercial harvest, including cost recovery, of 2,425,700 pink salmon from Tutka Bay and Lagoon (Table 9, Appendix Table 19), accounted for approximately 98% of the pink salmon landed in the Southern District and 85% of the entire LCI commercial pink salmon harvest. Pinks taken for hatchery cost recovery purposes from the Tutka Bay Subdistrict totaled 1,213,300 fish, worth approximately \$502,100 (Table 7) and slightly exceeding CIAA's revenue goal of \$500,000. Approximately 63.0 million short-term reared pink salmon fry were released into Tutka Bay in 1995 (Appendix Table 30).

Leisure and Hazel Lakes Sockeye Salmon Stocking

Leisure Lake, also called China Poot Lake, historically was a system barren of sockeye salmon. A study initiated in 1976 involved the stocking of hatchery-produced sockeye salmon fry to determine optimum stocking levels prior to and after lake enrichment through fertilization.

Because a barrier falls below the lake prevents upstream migration and precludes any adult spawning, it is desirable to harvest all returning adult fish in the terminal harvest area, China Poot Bay. Beginning in 1988, a similar sockeye stocking program was initiated at Hazel Lake, which empties into Neptune Bay and is located approximately three miles south of Leisure Lake. Since the initiation of these projects, over 1.1 million adult sockeyes are estimated to have returned as a result of the stocking programs (Appendix Table 15), making a significant contribution to the commercial and recreational sockeye harvests in the Southern District.

Because of the close proximity of the two terminal harvest areas, and the absence of a mark/recovery program, adult returns to Leisure and Hazel Lakes cannot be separately identified through sampling within the commercial catches and are therefore presented as a combined total. The total cumulative sockeye return to Leisure and Hazel Lakes in 1995 was estimated to be 153,800 fish (Figure 11, Appendix Table 15), nearly two and one-half times the (all-years) average since 1979 and double the recent 10-year average (which included returns to Leisure Lake only during the years 1985 through 1990). The cumulative commercial harvest of 145,400 fish comprised nearly 90% of the Southern District sockeye harvest and over half of the total LCI sockeye salmon harvest.

Approximately 1.63 million sockeye salmon fry were released into Leisure Lake in 1995 (Appendix Table 30), the first year of reduced-density stocking for this system after 10 consecutive years of high-density stocking from 1984 through 1993 (no fry were stocked in 1994 due to an IHN virus outbreak at Crooked Creek Hatchery). At Hazel Lake, 1.13 million sockeye fry were stocked in 1995.

Halibut Cove Lagoon Salmon Enhancement

Pink Salmon

Pink salmon enhancement at Halibut Cove Lagoon was initiated in 1986 as a cooperative program between CISA, CIAA, and ADF&G. Pink salmon fry were transported from Tutka

Hatchery to Halibut Cove Lagoon where they were held in floating net pens and fed for 30 days before release. The goal of this project was to disperse fry releases from the Tutka Hatchery over more underutilized rearing areas. It also served to disperse the commercial seine fleet over larger areas. Since there is no suitable spawning habitat available at Halibut Cove Lagoon, all returning adult fish were targeted for harvest in the commercial seine and set gillnet fisheries. Stocking of pink salmon fry into Halibut Cove Lagoon was discontinued after the 1993 season, so no adults returned to this site in 1995.

Chinook Salmon

The chinook salmon enhancement project at Halibut Cove Lagoon involves the release of chinook salmon smolts, with the objective of increasing sport fishing opportunities in Kachemak Bay. This is the oldest and one of the most popular sport fishing enhancement projects in LCI. An estimated 3,400 adult chinook salmon returned to Halibut Cove Lagoon in 1995.

Although adult returns from the Halibut Cove Lagoon stocking program are not intended for commercial harvest, there is incidental harvest of these chinook salmon in the commercial set gillnet and seine fisheries. In 1995 the incidental harvest by commercial fishermen was estimated at 785 fish, or about 23% of the total return, less than the estimated long-term average of about 33%. The majority of the 1995 catch was taken by set gillnetters at about 96%, while seiners harvested the remaining 4%.

Chenik Lake Sockeye Salmon Stocking

Chenik Lake, located in Kamishak Bay, historically was an excellent sockeye producer prior to the 1940's when annual runs approached 150,000 fish. Since that time, however, sockeye runs declined dramatically, forcing a complete closure of the Chenik area fishery beginning in 1952. By the mid-70's the average annual return to this system was less than 500 fish.

In 1978 the former FRED Division initiated a program to re-establish the sockeye returns and subsequently increase commercial fishing opportunities in the Kamishak Bay area. Sockeye fry from Crooked Creek Hatchery have been annually stocked in Chenik Lake since that time, and a fish pass was developed at the intertidal mouth of Chenik Creek, alleviating a partial migrational barrier. Since 1987, lake enrichment has occurred through the application of liquid fertilizer, but not on an annual basis.

Increased sockeye escapements in the early 1980's augmented subsequent production, and the Chenik area was reopened to commercial fishing. Returns have accounted for up to 50% of the total LCI commercial sockeye harvest in some recent years, approaching the historical record high runs of the 1930's.

The 1995 sockeye return to Chenik Lake was the second consecutive failure, with no commercial harvest and a documented escapement of only 1,100 adults (Figure 12, Appendix Table 16). The primary reason for the low return, which was once again expected, was the detection of Infectious Hematopoietic Necrosis Virus (IHNV), a disease commonly affecting juvenile salmon and trout. IHNV was documented in the Chenik system during the 1991, 1992, and 1993 smolt outmigrations. It is suspected of causing increased mortality to juvenile sockeyes and therefore reducing the adult returns. A thorough investigation of the relationship between the Chenik Lake sockeye stocking project and the IHNV problem was initiated during the winter of 1992-93, ultimately resulting in a staff recommendation to reduce fry stocking densities from peak levels occurring in 1989 and 1990.

The outmigration of sockeye smolts at Chenik Lake has been monitored in recent years through use of a weir and live trap. Total outmigration in 1995 was 12,300 smolts, the lowest number in any of the last five years and undoubtedly due to the fact that no supplemental stocking took place in 1994. Without such stocking, the 1995 smolt outmigration was due entirely to natural production. It is also worth noting that outmigrating smolts showed negligible signs of the IHNV virus for the second successive year, perhaps signaling a continuation of this system's recovery.

The factors relating to IHNV epizootics are very complex and currently not well understood. Although remotely possible that the stocked sockeye salmon fry were the source of the virus, a more likely cause is that Chenik Lake has become a reservoir for IHNV released from the sex products of naturally spawning adult sockeyes or their decomposing carcasses. It has been hypothesized that the tremendous population declines experienced by the sockeye stock at Chenik Lake in the late 1930's and 1940's may have resulted from IHNV epizootics caused by record high escapements of up to 53,000 adults in the 1930's.

Unfortunately, there is no known practical onsite treatment of IHNV other than perhaps decreasing fry stocking densities, which was begun in 1993 with a reduction to just over one million sockeye fry (Appendix Table 30). This experiment was inadvertently stretched to its maximum limit by default in 1994 when no hatchery-produced fish were released into the system. The fry from Crooked Creek Hatchery which were slated for stocking at Chenik Lake were destroyed due to an outbreak of the IHN virus at the hatchery facility. It should be noted that this was the first documented incidence of IHNV at the Crooked Creek facility in 22 years of operation. In 1995, approximately 1.13 million sockeye smolts were released into Chenik Lake (Appendix Table 30).

Cutting back the adult escapement should also theoretically decrease transmission of IHNV into the littoral zone of Chenik Lake. Adult escapement into Chenik Lake, once again enumerated through the use of a counting weir at the lake outlet in 1995, totaled only 1,100 fish, far short of the 10,000 fish goal (Appendix Table 23). The escapement shortfall, when combined with the reduction in supplemental stocking, equates to reduced fry production in 1995.

The Department and CIAA are currently reviewing future stocking levels and potential for further fertilization of Chenik Lake. It is anticipated that the numbers of returning adult sockeye will remain depressed in upcoming years because of the IHNV problem within the system.

English Bay Sockeye Salmon Rehabilitation

The English Bay Lake system has the only significant local run of sockeye salmon in the Southern District of LCI. Unfortunately, the English Bay sockeye returns declined to their lowest recorded levels in the last half of the 1980's decade. Sockeye escapement estimates between 1985 and 1993 ranged from 2,500 to 8,900 fish; all but one of these years (1993) was well below the 20-year average of 7,800 fish (Appendix Table 23). Whereas these aforementioned escapements were index estimates based on aerial surveys, the 1994 escapement was monitored for the first time through the use of a counting weir, operated by Chugach Regional Resources Commission. The final total numbered 13,800 sockeyes, the highest return since 1982 and the first year since 1984 in which the minimum desired goal of 10,000 fish was achieved. In 1995, escapement into English Bay Lakes, tallied once again by weir, amounted to 22,500 sockeyes, the highest total over the past 20 years. Optimum escapement for this system recently has been estimated to be less than the published maximum goal of 20,000 sockeyes (Edmundson et al. 1992). A plan to tightly control spawning escapement into the lake by harvesting those fish surplus to the maximum desired goal of 15,000 is currently being considered.

The decline of the English Bay sockeye run resulted in a very restrictive management strategy for this area. The commercial, sport, and subsistence fisheries have been closed for most of the last several seasons. Efforts to rehabilitate this depressed stock were initiated by the former FRED Division with an egg take in 1989 and the subsequent release of 350,000 sockeye salmon fry in 1990. Chugach Regional Resources Commission, in cooperation with the village of Nanwalek (formerly English Bay) and the Bureau of Indian Affairs, has since taken over this enhancement project and continued egg collections, fry stockings, and operation of a smolt/adult enumeration weir. Unfortunately during 1995, no sockeye fry (Appendix Table 30) were released into the lakes because the long-term pen rearing project experienced a loss of all fish held in the net pens to an outbreak of the IHN virus. An estimated 2.2 million sockeye eggs were collected in 1995 for incubation at Port Graham Hatchery during the winter of 1995-96.

Bear Lake Sockeye Salmon Enhancement

Bear Lake, located at the head of Resurrection Bay in the Eastern District, has been the target of sockeye salmon enhancement efforts over recent years. This system has been the centerpiece of a Division of Sport Fish coho salmon enhancement program since 1962, part of which included limiting the escapement of sockeye salmon into the lake. As a result, only a small remnant run of naturally spawning sockeye salmon remained at Bear Lake. In an effort to produce increasing numbers of adult sockeyes without adversely affecting coho salmon production, as mandated by Board of Fisheries policy, CIAA undertook a sockeye stocking program beginning in 1989 with the release of 2.2 million sockeye fingerlings. Since then, additional releases of both fingerlings and accelerated growth ("zero check") smolts have occurred, ranging from 1.6 to 2.4 million juvenile sockeye salmon each year (Appendix Table 30).

The first year of adult returns in 1992 was discouraging, with a total of less than 2,000 fish, however this return was primarily based on the survival of the "zero check" smolts. Although the 1993 return was expected to be better because of contributions from both fry and smolt plants, the entire return totaled only 6,700 sockeyes, another major disappointment. In 1994, a total of 17,600 adult sockeyes returned to Resurrection Bay as a result of Bear Lake enhancement, an improvement over the previous two years but still considered discouraging based on stocking levels. The 1995 return, however, was stronger than anticipated based on earlier years' returns, totaling nearly 53,000 sockeyes. About 45% of the total was taken in the commercial common property fishery, 40% as hatchery cost recovery, and the remaining 15% allowed to escape into the lake. Based on these 1995 returns, outlooks for future returns are optimistic. Approximately 360,000 sockeye fry were released into Bear Lake during 1995 (Appendix Table 30), while 2.04 million sockeye eggs were collected for incubation at the Trail Lakes Hatchery in Moose Pass.

Other Sockeye Salmon Lake Stocking

Several other LCI lakes were stocked in 1995 with sockeye salmon fry produced by Crooked Creek Hatchery. At Kirschner Lake in the Kamishak Bay District, site of an ongoing fry stocking project since 1987, approximately 250,000 fry were stocked. Four other lakes, evaluated through pre-stocking studies conducted between 1986 and 1989, and which have been regularly stocked during recent years, received between 250,000 and 500,000 sockeye fry in 1995. The four lakes included Bruin Lake, Ursus Lake, Upper Paint Lake, and Lower Paint Lake, all in the Kamishak Bay District (Appendix Table 30).

The sixth year of adult sockeye returns to Kirschner Lake occurred in 1995. Additional fish returned to nearby Bruin Lake, also stocked with sockeye fry. The overlapping harvest areas, and the absence of tagged fish, precludes separation of the returns for purposes of enumeration. The total combined return to Kirschner and Bruin Lakes was 38,600 sockeyes (Table 3), achieving the preseason forecast for the two systems. Of this total, approximately 5,000 sockeyes escaped the commercial fishery and were documented via aerial surveys in Bruin Lake Creek, prevented from reaching the lake by a barrier falls in the creek. The Kirschner Lake system has remained one of the steadiest producers of LCI stocked lakes since the inception of the program at that site. At Ursus Lake in the Ursus Cove Subdistrict, a peak aerial count of 1,300 adult sockeyes was observed in 1995.

Paint River Fish Pass

The Paint River system in the Kamishak Bay District contains at least 40 kilometers (25 miles) of potential salmonid spawning and rearing habitat. Currently the Paint River system is barren of salmon because of a waterfall at tide line that was impassable prior to 1993. The former FRED Division and CIAA initiated feasibility studies for a fishway in 1979. CIAA received State and Federal grant funds to build the fishway, completing construction in the fall of 1991. ADF&G Commissioner Carl Rosier declared the fish pass officially operational in January 1993.

The Paint River Lakes were first stocked with sockeye fry in 1986 and annually since 1988 to test the feasibility of developing a sockeye salmon return to the fish pass project site. Again due to the unavailability of sockeye fry from Crooked Creek Hatchery, no fry were released into the two Paint Lakes in 1994, while a total of 750,000 fry (Appendix Table 30) was released into the two lakes during 1995.

A peak of only 250 adult sockeyes was observed during aerial surveys of the Paint River mouth and Akjemguiga Cove during 1995, the fifth consecutive year of meager returns to this enhancement site. Because of the small numbers of returning fish, the fish pass was not opened to the migrating salmon and no freshwater escapement occurred.

Port Graham Hatchery

In an effort to supplement natural fish production and provide increased employment opportunities in the native village of Port Graham, the Port Graham Hatchery Corporation applied for and received a permit to operate a private non-profit (PNP) hatchery in 1992. Port Graham is located approximately 21 nautical miles southwest of Homer on the south side of Kachemak Bay (Figure 2). The hatchery had conducted experimental egg-takes and fry releases via a scientific/educational permit from 1990 through 1992, while these activities have since been permitted in the Port Graham Hatchery Basic and Annual Management Plans. Adult returns to the hatchery failed to appear in both 1992 and 1993 despite predictions of at least moderate returns. Because no fry were released in 1993, both the forecast and actual return for 1994 were zero. The 1995 pink return to Port Graham Hatchery was forecasted at 20,000 to 50,000 fish, with the actual return totaling an estimated 20,000 pinks.

Although all efforts prior to 1993 were directed towards pink salmon, sockeye salmon production is now underway at the Port Graham Hatchery. The facility has incubated sockeye salmon eggs collected from English Bay Lakes, destined for release back into that system, since 1993. Formerly eggs from this collection site were incubated at Big Lake Hatchery near Wasilla.

The PNP permit allows pink salmon brood stock collection from a natural run in the Port Graham River, at the head of Port Graham. However, the Port Graham River pink run historically has experienced significant natural fluctuations in escapements despite conservative fishing schedules, causing some concern for protection of the natural stocks. Consistent with the priority of managing for natural stocks (AS 16.05.730), a brood stock collection schedule based on the desired natural escapement into Port Graham River as well as historical escapement levels has been developed to offer maximum protection to the wild pink salmon stock during years of weak returns. In 1995, the hatchery collected over 16,000 pinks for brood stock purposes (Table 5), all of which were harvested in salt water within close proximity to the hatchery due to the relatively weak returns to Port Graham River.

Harvest of returning hatchery stocks could potentially occur in commercial purse seine and set gillnet fisheries as well as a subsistence set gillnet fishery in Port Graham. Hatchery fish will likely intermix with wild stocks bound for the Port Graham River. Management decisions must address the effects of these various fisheries so as to afford protection to the natural stocks until adequate escapement into Port Graham River is achieved. A small natural return of chum salmon to Port Graham River also occurs, and since this run has been depressed in recent years, management measures must strive to protect this species as well.

The approved Port Graham Hatchery Basic Management Plan designated a Special Harvest Area (SHA) to allow for brood stock collection and cost recovery harvest (Figure 8). The SHA was designed to provide a migration corridor on the northeast side of the bay for wild stocks traveling to Port Graham River at the head of the bay. Restricting the harvest in Port Graham to the SHA is expected to afford some limited protection to the natural spawning stocks of pink and chum salmon. Once hatchery brood stock and cost recovery requirements are met, remaining surpluses may be harvested by the common property fishery inside the SHA. However, no guarantee of brood stock and/or cost recovery can be assumed. Fishing time will be restricted until the fish become spatially segregated or until adequate escapements are achieved in the river.

1996 COMMERCIAL SALMON FISHERY OUTLOOK

Sockeye Salmon

Adult sockeye salmon returns to all LCI systems could approach 415,000 fish, 56% greater than the 265,000 fish landed in 1995 and over 80% more than the average annual catch of 229,000 fish during the last decade. If realized, this harvest would represent a new record for sockeye salmon in LCI. Approximately three-fourths of the total sockeye harvest should be a result of continuing enhancement and lake stocking projects in LCI.

Beneficial results of Leisure Lake fertilization should again be evident in the 1996 sockeye returns. Based on past emigration and survival estimates from annual releases of two million fry, approximately 65,000 sockeye salmon are projected to return to China Poot Bay in 1996. An additional 55,000 sockeyes are expected to return to Neptune Bay as a result of fry releases into Hazel Lake.

No harvest is expected to occur at Chenik Lake in 1995. Despite parent brood year escapements at or near desired levels, and annual stocking of up to 2.75 million sockeye fry, an epizootic of IHNV apparently has caused significant mortality to juvenile sockeyes and reduced the numbers of emigrating smolt from the system in recent years. The 1994 and 1995 adult returns may well have displayed the most significant effects of the IHN outbreak as only 800 and 1,100 fish, respectively, were tallied past the weir at Chenik Lake. Smolt outmigration data suggests that the 1996 return could be equally as poor.

Adult sockeye returns to Kirschner Lake have been very encouraging and consistent over the past three seasons, leading to a forecast of 30,000 fish in 1996. Bruin Lake, also in the Kamishak Bay District, has been stocked with sockeye fry since 1990, and the resulting fourth year adult return is expected to total up to 15,000 fish in 1996 based on the return rates experienced to this system over the past three seasons. The second year return of sockeyes to nearby Ursus Lake is projected to total only up to 3,000 fish. Despite stocking Paint River Lakes with 750,000

sockeye salmon fry from 1991 through 1993, no harvestable surplus of adult fish is forecast for 1996 based on poor returns from similar stocking levels at this system in recent years.

The fifth year enhanced sockeye return to Bear Lake in 1996 is expected to surpass any returns experienced by that system since the inception of the project, with a harvest forecast of 76,000 fish. The relatively strong return to Bear Lake in 1995, as well as smolt outmigration data, fostered a great deal of optimism for the 1996 return. Grouse Lake, also near Seward in Resurrection Bay, is expected to experience its first year of adult returns from enhancement, with estimates ranging as high as 84,000 sockeyes.

Natural sockeye return projections for LCI are based solely on average historical harvests and could be expected to contribute up to 87,500 fish to commercial catches in 1996. Despite not reaching expectations during recent years, runs of naturally produced sockeye have been improving slightly, with a concurrent improvement in spawning escapement to some, but not all, systems. The Southern District is expected to contribute the most to the harvest of natural stocks, while additional catches could come from the East Nuka Bay systems of Delight and Desire Lakes in the Outer District, Aialik Lake in the Eastern District, and Mikfik Lake in the Kamishak Bay District.

Pink Salmon

Harvest of pink salmon in Lower Cook Inlet during 1996 is anticipated to reach nearly 1.7 million fish, with enhanced production expected to provide almost 85% of the total. The Tutka Hatchery, in the Southern District, is expected to contribute up to 1.4 million pinks to commercial harvests.

Natural spawning escapement levels into most major LCI systems were generally below desired levels in 1994, contributing to a harvest projection of 258,000 naturally produced pinks throughout the entire LCI management area. The Port Dick and East Nuka Bay areas in the

Outer District are expected to have the greatest potential for harvests, while Resurrection Bay could also see significant harvestable surpluses.

Chum Salmon

Based solely on historical average harvests, the total LCI commercial chum salmon catch could be as high as 98,000 fish during 1996. The LCI chum harvest will consist exclusively of natural production since chum salmon enhancement is no longer conducted in LCI. Despite optimism for chum salmon during recent years, actual harvests during the past six seasons have failed to meet the preseason projections by substantial amounts, suggesting that the historical average may be overly optimistic for 1996 as well.

Chinook and Coho Salmon

No formal harvest forecast is prepared for chinook or coho salmon in LCI. However, average annual harvests since 1980 indicate that about 1,300 chinook and 15,200 coho salmon can be expected to contribute to LCI commercial harvests in 1996.

The following table summarizes the projected harvest figures by species in the Lower Cook Inlet management area during 1995:

Species	Harvests of Enhanced Returns	Harvests of Natural Returns ^a	Total Harvest
Chinook	^b	1,300	1,300
Sockeye	327,500 ^c	87,500	415,000
Coho	^b	15,200	15,200
Pink	1,415,000 ^c	258,100	1,673,100
Chum	0	98,400	98,400
TOTAL	1,742,500	460,500	2,203,000

^a Harvest forecasts for naturally produced chinook, sockeye, coho, and chum salmon are simply average commercial harvests during the years 1980 - 1995.

^b Returns of chinook and coho salmon as a result of enhancement projects in Lower Cook Inlet are intended for recreational fisheries but are expected to contribute to commercial catches.

^c Includes common property plus cost recovery harvests.

SUBSISTENCE AND PERSONAL USE SALMON NET FISHERIES

KACHEMAK BAY PERSONAL USE FISHERY

The Southern District (Kachemak Bay) fall coho salmon gillnet fishery dates back prior to statehood under varying names, being known as a "personal use" fishery during the years 1986-1990 and 1993, and as a "subsistence" fishery in 1991, 1992, and 1994. Numerous court rulings have affected the status of this fishery over the past 15 years. Board of Fisheries actions during the fall 1992 meeting, creating a personal use fishery for the 1993 season, were voided by subsequent court action after the season, resulting in a subsistence fishery for the 1994 season. Yet another court ruling after the 1994 fishery reestablished the "subsistence" and "non-subsistence" areas originally created by the Board in 1992, and because most of Kachemak Bay was included in a "non-subsistence" area, the subsistence fishery and the regulations governing it were no longer valid. The Board responded by re-adopting personal use regulations governing this fishery into permanent regulation for the 1995 season and rescinding the subsistence regulations formerly governing the fishery.

The target species in the Kachemak Bay gillnet fishery has been coho salmon, with returning fish a mixture of natural stocks primarily bound for the Fox River drainage at the head of Kachemak Bay and enhanced runs bound for the Homer Spit fishing lagoon and Fox Creek near the head of Kachemak Bay. The regulations governing the fishery are found in the Personal Use Coho Salmon Fishery Management Plan (5 AAC 77.549), which directs ADF&G to close the fishery when an estimated 2,500 to 3,500 coho salmon are harvested. This amount was determined by the Board to be appropriate after they had reviewed historical harvests in years prior to enhancement.

All regulations which had applied to the 1994 subsistence fishery remained essentially unchanged for the 1995 personal use fishery. The regulatory opening date for the fishery, August 16, was delayed by Emergency Order (E.O.) until August 17 to prevent the fishery from opening in

darkness and creating logistical difficulties for setting gear and enforcement. Legal gear was limited to a single set gillnet not exceeding 35 fathoms in length, 45 meshes in depth, and 6 inches in mesh size. Nets were not permitted more than 500 feet from the mean high water mark, and a net could not be set offshore of another net. A permit from the Homer office was required, with an Alaska resident sport fishing license necessary to obtain a permit. The seasonal limit was 25 salmon per head of household and 10 additional salmon per each dependent. There were two 48-hour scheduled fishing periods each week, from Monday 6:00 a.m. until Wednesday 6:00 a.m. and Thursday 6:00 a.m. until Saturday 6:00 a.m.

As has been the case during recent personal use fisheries in LCI, the Department requested voluntary daily reporting from each permit holder during the fishery. Based on those voluntary reports through the first 24-hours of fishing, early reports from the second fishing period, and fishery performance data from the previous five years, the staff estimated that the guideline harvest range would be achieved prior to the end of the second (48-hour) open fishing period. Therefore, E.O. No. 2-F-H-036-95 was issued closing the fishery effective at 7:00 a.m. Tuesday, August 22, for the remainder of the season. The closure time coincided with a low tide, facilitating removal of gear. Total fishing time allowed was 73 hours.

A total of 235 permits was issued for the 1995 fishery (Appendix Table 27), the lowest since 1977 and continuing a declining trend in the number of permits issued during this decade. Actual fishing effort was also down, representing only about one-third of the peak 1990 level (Appendix Table 27). A total of 232 permit holders (99%) reported their catches by phone or returned permits. Of this number, 177 permit holders (76%) actively fished, 54 (23%) did not fish at all, and the remaining three permit holders (1%) have not reported. A total of 228 permit holders (97%) have actually returned their permits as required by regulation. Based on returned permits and voluntary catch reports, the harvest was estimated to be 2,916 coho salmon (Appendix Table 27), 343 pink salmon, 108 sockeye salmon, 118 chinooks, and 7 chums. The coho total represents roughly the mid-point of the guideline harvest range of 2,500 to 3,500 fish.

The 1995 Southern District personal use fishery was the second shortest on record, longer only than the 1994 fishery, which had a total of 72 hours actual fishing time. The major factor which led to the short duration of the fishery was the strength of the return. Because coho assessment is limited in Lower Cook Inlet, sport and commercial catches are normally utilized as indicators of run strength. Unfortunately, commercial catches in Lower Cook Inlet did not accurately reflect the strength of the 1995 coho return due to a lack of directed effort. Informal observations in the local sport fisheries, however, suggested very strong returns. This information, along with catch rates from the first 24-hour fishing period as well as previous experience managing this fishery, led the staff to project that a harvest within the guideline range would be achieved prior to the end of the second (48-hour) fishing period.

The 1995 fishery once again demonstrated the extreme popularity of the east side of the Homer Spit as the most sought after fishing area, undeniably due to the coho enhancement project at the Homer Spit "fishing lagoon". Prior to enhancement, the Spit was only considered average in terms of harvest productivity. The Spit's easy road access and the enhanced coho return have combined to encourage fishermen to clamor for fishing sites on the Spit, a situation which resulted in numerous violations during previous gillnet fisheries. The staff made a concerted effort prior to this year's first opening to inform the public of the anticipated short duration of the fishery. As in recent years, this prior knowledge of the brevity of the fishery led to the usual intense competition for desirable fishing sites, especially along the east side of the Homer Spit. Unlike previous years, however, compliance with the regulations along this hotly contested fishing area was better than any recent year, with Fish & Wildlife Protection (FWP) officers reporting only one violation, which did not result in a citation because one of the parties involved voluntarily removed their net. Perhaps the convictions of several violators during the 1994 fishery, combined with pre-fishery cautionary warnings contained in summary handouts, sufficiently deterred similar violations in 1995.

Despite the absence of violations in 1995, a new twist was added to the gillnet fishery when one permit holder set a gillnet within waters of the Homer Small Boat Harbor, apparently in reaction to the large numbers of cohos observed jumping there during the first open fishing period.

Ironically, this activity was initiated by members of local law enforcement agencies, who determined that these waters were open to fishing. This determination was confirmed when the parties queried the local FWP officer. The Homer Harbormaster immediately requested that the Department close these waters, citing hazards posed to boaters by nets within waters of the harbor. The staff concurred with the Harbormaster's assessment and, with additional requests from the U.S. Coast Guard Marine Safety Detachment in Kenai, issued E.O. # 2-F-H-034-95, closing waters of the Homer Harbor to personal use gillnet fishing for the remainder of the 1995 season. Although not biological in nature, the issue of safety could not be ignored, and in this instance the staff felt compelled to act based on input from the other agencies.

Normally aerial surveys of Clearwater Creek, the major coho index stream at the head of Kachemak Bay, are conducted in early September to gauge escapements. Heavy and continuous rainfall during late August and September precluded such surveys, therefore no coho escapement information was obtained. However, the short duration of the fishery likely benefited the natural stocks by minimizing the harvest on these run segments.

Even though coho returns were strong, without the contribution of enhanced fish to the catches, the 1995 personal use fishery undoubtedly would have been more prolonged and therefore similar to historical fisheries prior to enhancement. The fishery in 1996 is expected to be very similar to the 1995 fishery. Participation is not likely to decline any further but could be affected by alternative fisheries elsewhere in Cook Inlet. Although limited as an inseason management tool, voluntary catch reports will once again be employed to help determine an appropriate closure time for the 1996 fishery. Based on experience gained during the past six years' fisheries, it should be possible to keep the coho harvest within the guideline range.

NANWALEK/PORT GRAHAM SUBSISTENCE FISHERY

The only subsistence fishery in LCI during 1995 occurred near the villages of Nanwalek (formerly English Bay) and Port Graham, located approximately 21 nautical miles southwest of

Homer on the south side of Kachemak Bay (Figure 2). Most fishing normally occurs within close proximity to the respective villages and targets sockeye salmon returning to the English Bay Lakes system. Some additional fishing also occurs in Koyuktolik ("Dogfish") Bay, located about seven nautical miles south of English Bay, targeting non-local stocks of chinook salmon as well as local stocks of chum salmon.

The sockeye salmon run to English Bay Lakes has been severely depressed for much of the last decade, with returns failing to achieve the minimum escapement goal for nine consecutive years between 1985 and 1993. Although the return fell within the desired range in 1994, the Port Graham Subdistrict, which includes both Port Graham and the English Bay Section, was closed again in 1995 to commercial, sport, and subsistence fishing beginning June 5 to protect returning sockeye adults until run strength could be assessed. As a result of a rehabilitation project initiated by ADF&G and subsequently taken over by the Chugach Regional Resources Commission (CRRC) on behalf of the village of Nanwalek, the 1995 return was stronger than those of recent years as evidenced by weir counts in English Bay River just upstream from the saltwater lagoon. By June 26, escapement counts at the weir totaled 7,000 sockeyes, representing 70% of the minimum escapement goal. Historical run timing information for the English Bay sockeye run suggested that the return had not yet peaked. Therefore, the entire Port Graham Subdistrict was reopened to subsistence gillnet fishing on a schedule of one 48-hour fishing period per week beginning June 29. The staff felt that such a conservative schedule would allow opportunity of Port Graham and Nanwalek village residents opportunity to meet their sockeye salmon subsistence needs without unduly jeopardizing escapement into the lakes.

The strategy appeared to succeed, as unsolicited reports from village representatives indicated that sufficient numbers of sockeyes were being taken for subsistence needs, while the escapement continued to build. By July 7, the cumulative escapement total had risen to 16,500 sockeyes, exceeding the mid-point of the desired range of 10,000 to 20,000 fish. Because of the strong escapement, the staff elected to expand the subsistence opening to two 48-hour fishing periods per week, and concurrently opened the commercial set gillnet fishery in the Port Graham Subdistrict on the same schedule, beginning July 10. The staff felt that the commercial opening

would allow further opportunity to harvest surplus sockeye salmon destined for English Bay Lakes without threatening either escapement or subsistence needs. The subsistence fishery remained open on a schedule of two 48-hour periods per week for the remainder of the season.

The early and extended openings of the Port Graham and English Bay areas to subsistence fishing resulted in substantially increased catches of sockeye salmon at Nanwalek compared to historical averages (Appendix Table 29), amounting to the highest total since 1984. Catches of all other species were below average, likely a result of needs being met by the sockeye harvests. At Port Graham, sockeye catches were the highest since 1990 but still below the historical average (Appendix Table 28). Chinook catches, the highest on record and nearly four times the historical average, appeared to provide a substantial percentage of that village's subsistence needs. Coho and pink catches at Port Graham were nearer the historical average, while chum harvests were above average for the fifth straight year.

COMMERCIAL HERRING FISHERY

INTRODUCTION

Similar to salmon, the LCI herring management area is divided into five separate fishing districts, with commercial herring fishing historically occurring in all but the Barren Islands District (Figure 1). Herring fishing began in the Southern District in 1914 as a gillnet fishery within Kachemak Bay. Eight saltries, six near Halibut Cove, were operating during the peak of the fishery. Fishing with purse seines began in 1923, and after three subsequent years of average annual harvests approaching 8,000 short tons (st), herring populations, along with the fishery, collapsed.

The next LCI herring fishery began in 1939 and was centered in the Resurrection Bay and Day Harbor area of the Eastern District. This was a purse seine fishery with the product used exclusively for oil and meal reduction. Peak harvests occurred from 1944 through 1946,

averaging 16,000 st each year, and stocks sharply declined thereafter, apparently due to overexploitation.

Japanese markets for a salted herring roe product resulted in development of a sac roe fishery in the 1960's. Market demand and the relatively high prices paid to fishermen caused rapid expansion of the fishing fleet and harvest. Although Department management and research efforts lagged behind the rapid growth of the fishery, conservative management strategies and guideline harvest levels were established in response to historical overexploitation of the herring fisheries statewide.

1995 SEASON SUMMARY

A total of 3,378 st of Pacific herring was landed in the Kamishak Bay District during 1995 (Tables 10 and 11). The herring sac roe harvest was about 55% greater than the 1994 harvest of 2,170 st but just slightly more than half the record high catch of 6,132 st set in 1987 (Appendix Table 31). Estimated exvessel value of the 1995 harvest was \$4.0 million (Appendix Table 32).

Of the 74 LCI herring permits issued, 60 permit holders made deliveries in 1995 (Table 10). A total of 13 processors/buyers registered to buy herring in LCI, with all but one actually taking fish this season. Roe recoveries reported on fish tickets averaged 9.8% for the sac roe harvest (Appendix Table 32).

Aerial surveys of the Kamishak Bay District in 1995 were hampered by bad weather for the fifth consecutive year. As a result, an age-structured-analysis (ASA) model was utilized to estimate herring abundance returning to Kamishak Bay District in 1995. This model incorporates a variety of data sources, including catch composition and previous year's aerial survey estimates, and minimizes the differences between expected and observed return data. The ASA model estimated the total 1995 return at 25,115 st (Appendix Table 32), nearly identical to the previous season's overall biomass. Age composition from the commercial catch

was generally similar to the preseason projection, with age-7 herring from the 1988 year class dominating the returns, while returns of older age fish (age-8 and ages-10 through 12) were slightly stronger than anticipated and returns of age-9 fish weaker.

No sac roe herring fishery occurred in the Southern District in 1995 as fish were never present in sufficient numbers to allow a harvest. The Outer and Eastern Districts also were not opened to purse seining in 1995, primarily due to the lack of interest by processors and fishermen in these areas. The historical predominance of young (age-3 and age-4) fish, roe recoveries historically below 10%, and the exploratory nature of the fishery, have discouraged effort in these two districts.

ASSESSMENT METHODS

Aerial surveys were conducted throughout the herring spawning season to determine relative abundance and distribution of herring in the Kamishak Bay and Southern Districts. Data collection methods were consistent with those used the previous five seasons. Numbers and distribution of herring schools, location and extent of milt, and visibility factors affecting survey results were recorded on index maps for each survey. Standard conversion factors of 1.52 st (water depths of 16 ft or less), 2.56 st (water depths between 16 and 26 ft), and 2.83 st (water depths greater than 26 ft) per 538 square feet were used to convert estimated herring school surface areas to biomass.

Survey conditions in the Kamishak Bay District were generally fair to poor throughout the season, meaning nearly all surveys were hampered by high winds which created substantial water turbidity and thus hindered aerial observation. An exception occurred during two surveys (April 28 and May 1) when conditions were considered excellent. A total of 11 surveys were completed in the Kamishak Bay District, most of which were conducted in late April and early May. Only two surveys were completed from May 3 through June 2 in the Kamishak Bay District. Eight

surveys were completed in the Southern District, while no comprehensive surveys of the Outer and Eastern Districts were conducted this season.

In the Kamishak Bay District, commercial landings were sampled to determine age, size, and sexual maturity of herring. In addition, test fishing by volunteer purse seine vessels was conducted to collect samples for roe recovery analysis prior to the fishery. Test fishing data was also used in postseason analysis to interpret aerial survey biomass data.

SPAWNING POPULATIONS

Kamishak Bay District

During the 1995 season aerial surveys to estimate biomass in the Kamishak Bay District were conducted from April 17 through June 2, with herring first observed April 20 in the vicinity of Chenik Head and Nordyke Island. Daily biomass estimates did not exhibit the normal trends in abundance i.e., build-up, peak, and decline. The highest daily biomass observation was made on May 1 with an estimate of 2,163 st. As was the case during the past three seasons, and unlike prior years, there was no distinct separation in age composition between those fish appearing on the grounds initially and those following later. Normally the early fish tend to be larger and older, and a steady influx of younger age fish typically occurs as the return progresses. Test fish samples in 1995 documented a relatively high percentage of age-7 fish early in the return, with the percentage remaining fairly steady from the time of initial sampling up through the commercial fishery.

As stated previously, the 1995 run was estimated at 25,100 st (Table 11, Appendix Table 32) using the ASA model because aerial surveys were hindered by inclement weather throughout the season. Postseason data analysis from test fishing and commercial harvests showed that the strong 1988 year class of herring observed in the last two fisheries dominated the 1995 run at 59% of the total biomass by weight, followed by age-8 fish (11%) and age-11 fish (9%).

Roughly 5% of the return was composed of fish younger than age 6 while about 4% was age-12 or older (Figure 15, Table 11).

Despite the low number of surveys conducted as well as individual aerial surveys recording relatively sparse tonnages, the amount of active spawning documented in 1995 was considered comparatively good. A total of nine sightings occurred during surveillance flights, cumulatively totaling over five linear miles of spawn. The heaviest spawning was seen on April 28, with 3.0 miles documented, primarily inside Amakdedulia Cove.

Southern District

Eight aerial surveys of the Southern District were flown between April 17 and May 25, primarily under favorable conditions. The 1995 run biomass, estimated as the sum of all daily biomass estimates, was 3,634 st. The majority of herring were observed in Bear Cove, Glacier Spit, and Mallard Bay, with the peak individual biomass survey (1,375 st) occurring on a May 5 survey. Peak surveys in areas where herring historically have been observed were as follows: Bear Cove, 602 st on May 12; Glacier Spit, 604 st on May 5; Mallard Bay, 640 st on May 5; and 94 st east of the Homer Spit/Mud Bay on May 2.

For the first time in many seasons, attempts to obtain Southern District herring samples for age composition were made in 1995. A vessel was chartered for one day on May 12 and was directed to fish with the aid of aerial reconnaissance in the vicinity of Mallard Bay and Bear Cove. Unfortunately, gear problems limited the numbers of fish caught at the Bear Cove site, but a total of 474 herring were sampled for AWL information from two different sets near Mallard Bay. Preliminary results indicated a wide variation in age composition, with age-5 fish representing the greatest proportion at 29%, followed by age-6 at 24% and age-7 at 14%. Approximately 90% of all fish sampled were between the ages of 3 and 8. Overall average weight was 155 - 160 grams.

Outer and Eastern Districts

No aerial surveys of the Outer and Eastern Districts were flown during the 1995 season. The size of the area and the characteristically poor weather in the Gulf of Alaska, which precludes surveys on a regular basis, makes aerial biomass estimation in these districts impractical. However, incidental observations of herring in June during the early part of the salmon season confirmed the presence of herring in these two districts again this season.

COMMERCIAL FISHERY

Kamishak Bay District

Spotter pilots and fishermen first located and fished the Kamishak Bay District herring populations in 1973, but after several years of commercial harvests in the late 1970's herring abundance severely declined and the district was completely closed beginning in 1980. Herring stocks appeared to quickly rebound in response to the closure, and the fishery was reopened in 1985. Since then, the fishery has been regulated to achieve a 10% to 20% exploitation rate mandated by the Alaska Board of Fisheries.

By 1989, fishing efficiency had evolved to a level where intensive regulatory management was required to ensure maximum value of the harvest and maintain the guideline harvest level while protecting younger age fish. Management strategy during the last six years in the Kamishak Bay District has stabilized the harvest at an average of approximately 2,500 tons, or about 40% of the record high catch of 6,132 st set in 1987 (Appendix Tables 31 and 32).

Preseason management strategy in 1995 called for a guideline harvest level of 2,970 st based on a 15% exploitation of the forecasted biomass. The harvest rate was determined by the Kamishak Bay Herring Management Plan and is based upon the projected biomass. Although management prior to 1990 allowed this fishery to open on a specific calendar date, since that time industry

technicians have been asked to evaluate test fish samples for roe recovery prior to commercial harvests to help maximize product quality and value.

Management staff traveled to Kamishak Bay aboard the state's *R/V PANDALUS* on Monday, April 17, reaching the grounds in late afternoon. An aerial survey was also conducted that day but no fish were sighted. Despite the cold water temperatures (1 degree C.) and winter-like conditions, the fleet was put on 12-hour notice effective at 6:30 p.m. Monday, April 17, to allow the Department to act quickly once fish were located. Poor weather the next two days precluded any aerial surveillance.

The next aerial survey occurred on April 20 under relatively calm but overcast conditions, and a small volume of herring was observed in Amakdedulia Cove. Aerial surveys were again hampered by adverse weather over the next few days. Finally on Sunday, April 23, weather allowed a comprehensive aerial survey of the district, as well as "prospecting" with hydroacoustic gear by volunteer test boats from the commercial fleet. No fish were observed from the air, but one test vessel made a single set, reporting that the fish caught weighed only 70 grams, estimated to be age-2. Despite indications that few fish were present on the grounds, the advance notice period was reduced to six hours effective at 12:00 noon Monday, April 24. Weather again precluded aerial surveillance that day, and another test set produced a catch of very small, young fish.

Poor weather prevented aerial surveys on April 25, but more fish were located hydroacoustically and several vessels made test sets. One of the sets revealed more juvenile herring, but the first adult fish of the season were collected as well, in the vicinity of Nordyke Island and McNeil Head. Roe recovery estimates generated by industry technicians averaged 8.7% mature roe (range 6.5% to 13.2%) and 1.4% immature roe from this first test fishing catch of adults, while the percentage of males in the catch was considered high at 58%. Average weight was 249 grams (range 238 to 263). Because adult fish were now appearing on the grounds in greater

numbers, the staff announced a further reduction in the advance notice period to two hours effective at 12:00 noon April 26.

Age analysis on the first test fish samples, completed late on April 25, showed similarity to the preseason forecast, with age-7 fish dominating the samples at 43%, followed by age-8 at 13.5%, and age-6 at 12%. Although the strong age-7 and age-8 components were forecasted, the apparent strength of the age-6 year class was unexpected.

Slowly improving weather conditions on April 26 allowed further test fishing but no department aerial survey. Samples from the both the morning and afternoon test sets at Chenik Head and south of Nordyke Island indicated improving roe recoveries over the previous day's catches, with the mature roe percentage averaging 9.65%, immature roe at 0.6% to 0.9%, and average weight around 240 grams. The male proportion was still relatively high at 56%. The improving roe quality, weather conditions, and the late calendar date all suggested that a fishery could be considered the next day. Therefore, the advance notice period was reduced to one hour effective at 9:00 a.m. Thursday, April 27.

By 9:00 a.m. on April 27, two test sets near Chenik Head and Amakdedulia Cove revealed further improvement in the sex ratio and roe maturity. Spotter pilots and additional hydroacoustic sonar assessment indicated a significant concentration of herring in the vicinity of Chenik Head, Amakdedulia Cove, and Nordyke Island. New fish were also located between Cape Douglas and Douglas Reef, and spawning was also reported near the mouth of Bruin Bay. Test samples from the morning indicated improved roe recoveries averaging 10.8% in spite of high male percentages, hovering near 55%.

Because weather conditions had greatly improved over previous days, weather was no longer a factor in any potential opening. The staff believed that continued delay of the fishery could result in reduced roe recoveries due to the possible influx of younger (immature) fish and/or an increase in the number of spawnouts. Because the management strategy attempts to minimize the harvest of younger age fish, and given the acceptable weather conditions, at 11:00 a.m. a 30-

minute fishing period was announced for Management Area 5 (Figure 9), commencing by field announcement some time between 12:25 and 12:35 p.m. April 27. The field announcement on single sideband and marine VHF radio frequencies was used to alleviate the possibility of early sets.

Approximately 30 commercial spotter aircraft were present during the opening. Weather and water conditions were favorable for aerial observation and much of the seining was done with the aid of spotter airplanes. As the opening began, the entire fleet converged into a relatively small area just outside McNeil Cove where the herring were obviously most concentrated. Of the 74 available permit holders, only 45 actually made deliveries, with a preliminary on-grounds estimate of about 1,500 st. Although just under half of the preseason guideline remained to be taken, there were no plans for any extension of the fishing period, so the fleet was advised to stand down until 9:00 a.m. the following morning, April 28, when the advance notice period would again be one hour.

The following day's weather brought clear skies and southwest winds to 25 knots. Commercial spotter pilots reported fish concentrations beginning to build near Chenik Head, inside Amakdedulia Cove, and along the Douglas Reef. Previous spawning activity was also noted in the Bruin Bay area. Based on those reports, and fishermen's assessments of hydroacoustic observations of fish concentrations, a second (60-minute) opening was announced for that afternoon commencing between 11:55 a.m. and 12:05 p.m., once again in Management Area 5 (Figure 9).

The majority of the fishing effort during the second opening was spread somewhat in and around Amakdedulia Cove and Chenik Head as well as south of Nordyke Island, with some effort also occurring near Douglas Reef. Total preliminary catch was estimated at approximately 1,400 st. Catch estimates continued to be revised, and by 4:00 p.m. a cumulative catch of over 3,100 tons was estimated from both openings, with a preliminary average roe recovery of 10.1% mature roe. Since the cumulative harvest slightly exceeded the preseason guideline harvest level, the Kamishak Bay District was closed for the remainder of the season.

Post-fishery compilation of fish ticket information showed a total harvest of 3,378 st of herring harvested by 60 different permit holders (Table 10). Age-weight-length analysis from the commercial harvest showed samples dominated by ages-7, -8, and -11 fish (59%, 11%, and 9%, respectively), followed in descending proportional order by ages-6, -9, and -5 fish (Figure 16, Table 11). The estimated exvessel value of the 1995 catch was \$4.0 million (Appendix Table 32) based on a sac roe estimated average price near \$1,200 per ton. Most companies paid an "on-grounds" base price with additional postseason settlements paid (or to be paid) after price finalization with the foreign market.

No Department of Public Safety, Division of Fish and Wildlife Protection (FWP) enforcement vessel was stationed on the grounds for the 1995 herring fishery. Two FWP officers from the Homer detachment, stationed aboard the *R/V PANDALUS*, actively monitored the fishery, with no major violations documented and only a few minor infractions, such as lack of crewmember licenses, noted. No doubt the conspicuous enforcement efforts of FWP during recent seasons in the Kamishak Bay herring fishery has discouraged blatant disregard for the regulations.

By Alaska Board of Fisheries directive, the Kamishak Bay District herring fishery is managed with the intent of harvesting 10% to 20% of the available biomass. Although the harvest slightly surpassed the preseason guideline, the overall exploitation in 1995 was 13.4% of the estimated total biomass, based on a total catch of 3,378 st and an escapement biomass of 21,737 st (Table 11, Appendix Table 32).

Southern District

Management strategy for the Southern District sac roe fishery was changed in 1989 to allow for a limited harvest of 150 to 200 st for the purposes of obtaining age, weight, length and roe recovery information. Sac roe herring had not been fished in the Southern District since 1979 when poor stock conditions forced an area-wide closure. Only one other fishery has occurred

since that time, when 171 st of herring averaging 8.9% roe recovery were harvested by 10 vessels in a single 2.5-hour opening in Mallard Bay during 1989 (Appendix Table 31).

After the completion of the Kamishak Bay herring fishery, management attention was directed toward the Southern District on May 2 when the first aerial survey was flown. Surveys continued until the end of May, but a commercial harvest of sac roe herring was not allowed in the Southern District in 1995 because abundance estimates failed to document sufficient quantities of herring to warrant an opening.

Outer and Eastern Districts

During the early years of sac roe herring fishing in LCI, seining within the Outer and Eastern Districts primarily occurred in Resurrection Bay. Following a period of suspected over-exploitation, herring stocks throughout LCI generally declined after 1973. Concern over this decline prompted the Board of Fish and Game in 1974 to establish a 4,000-ton quota for all of Lower Cook Inlet, with the Outer and Eastern Districts each allocated 1,000 st. The quotas were never utilized since stock abundance continued to decline, and the Outer and Eastern Districts were closed to fishing from 1975 through 1984.

In 1985, the sac roe fishery was allowed to resume in the Outer and Eastern Districts on a very conservative basis, even though no noticeable change in spawning biomass had been observed. Because of reduced stock abundance and extreme vulnerability to fishing, guideline harvest levels were set at 150 to 200 st for each of the four fishing areas created within these two districts. Fishing effort in 1985 was minimal and the majority of the harvest (216 st; Appendix Table 31) once again occurred in Resurrection Bay.

Only limited and sporadic harvests have occurred in these two districts since 1985, with the majority of both the herring harvest and the observed biomass during the past six years comprised of age-3 and age-4 fish. Unlike the Southern and Kamishak Bay Districts, samples from the Outer and Eastern Districts have contained up to 14% age-2 (sexually immature)

herring. Although sampling has been limited, no discernible shift to older age herring has ever been observed, suggesting the possibility that the Outer and Eastern Districts may be feeding and rearing grounds for juvenile fish of Prince William Sound origin.

Despite significant opportunity for exploratory fishing on a daily basis in the Outer and Eastern Districts during 1991 and 1992, the predominance of juvenile herring in the population and the history of marginally acceptable roe recoveries from fish caught in these areas has contributed to a lack of interest by fishermen and processors. These conditions were again prevalent during the years 1993 through 1995 and, consequently, the Outer and Eastern Districts were not opened to purse seining in any of the past three seasons.

HERRING OUTLOOK AND MANAGEMENT STRATEGY FOR 1996

Kamishak Bay District

The 1996 total biomass of herring in Kamishak Bay District is projected to be 20,925 st, approximately 17% less than the 1995 estimated return (Figure 15, Table 11). The 1996 forecast was generated from an age-structured-analysis (ASA) model similar to that used for Kamishak Bay during the last two years and also for Sitka Sound, Prince William Sound, and Togiak. The model projects a slight decrease in Kamishak herring abundance. Nearly 60% of the 1996 projected biomass (by weight) will be comprised of age-8 fish from the 1988 year class (Figure 16). This should equate to a mean weight of 223 grams.

The Kamishak Bay District Herring Management Plan (regulation 5 AAC 27.465.) dictates that a maximum 15% exploitation rate be utilized to set the 1996 guideline harvest level since the projected biomass falls between 20,000 and 30,000 short tons. However, due to concerns over the low abundance of recruit-age herring (ages 3 and 4) during 1994 and 1995, and continued declines in the estimated biomass since 1993, a more conservative exploitation rate of 12% was

chosen to set the guideline harvest level for the 1996 season. Based on the projected return of 20,925 tons, a surplus of approximately 2,500 tons would be available for harvest at the 12% exploitation rate. In addition to the spring sac roe fishery in Lower Cook Inlet, a fall food and bait fishery on Kamishak Bay herring stocks occurs in the Shelikof Strait area of the Kodiak Management Area. By regulation the Shelikof fishery is allocated 10% of the total allowable harvest for Kamishak Bay herring stocks, which equates to a maximum potential allocation of 2% of the total forecasted Kamishak Bay herring biomass. Harvest allocation in 1996, in accordance with the Kamishak Bay Herring Management Plan, will be as follows:

	<u>Tons</u>
KAMISHAK BAY SAC ROE HARVEST (10.8%)	2,250
SHELIKOF STRAIT FOOD & BAIT (1.2%)	<u>250</u>
TOTAL ALLOWABLE HARVEST (12.0%)	<u>2,500</u>

As in recent years, a very conservative approach will be taken with regard to any harvest of young, newly recruited herring since these fish will provide future spawning stock and contribute to future harvests. No fishery on young (ages 3 and 4) fish will be considered this season. Unless data becomes available indicating that significant recruitment has occurred, or that an unusually large biomass has moved into the district, the Kamishak Bay sac roe harvest will not be allowed to exceed 2,250 tons.

Other Districts

Based on recent trends in herring abundance and age structure in the Southern, Outer, and Eastern Districts of LCI, no commercial herring harvests are anticipated in these areas during 1996. Sufficient quantities of herring in the Southern District must be documented before a commercial opening is considered. Monitoring of the Southern District herring stocks will occur

as in the past through the use of aerial surveys in conjunction with possible test fishing samples. The Outer and Eastern Districts will only be allowed to open if adequate evidence becomes available suggesting commercial quantities of adult herring are present. Any potential fishery in these districts will be considered "exploratory" in nature and will be managed accordingly.

1995 ALASKA BOARD OF FISHERIES MEETING

The Alaska Board of Fisheries met between November 4 and 9 at Land's End Resort in Homer to consider changes to the regulations governing LCI subsistence, commercial, sport, and personal use finfish fisheries. A total of three proposals were submitted for commercial salmon fishing, four for commercial herring fishing, and one for subsistence salmon fishing. All aforementioned proposals were submitted by members of the general public, with no proposals submitted by Department staff. Table 12 summarizes the nature of the proposals, authors, and Board of Fisheries action on each.

The only proposal adopted by the Board, and thus the only change to existing regulations, was Proposal # 519, which sought to create a subsistence salmon gillnet fishery in the vicinity of Seldovia. Although Seldovia Bay and the city of Seldovia are located outside of the "non-subsistence" areas presently found in regulation, residents of those areas had no nearby subsistence salmon fishery in which to participate. The closest location for a subsistence net fishery is the Port Graham Subdistrict, approximately seven nautical miles southwest of Seldovia Bay. Additionally, Seldovia area residents could participate in the Kachemak Bay fall coho salmon personal use gillnet fishery during August, but coho numbers in the vicinity of Seldovia Bay historically have been small. Therefore, the author sought to establish a new fishery within Seldovia Bay which would allow opportunity to harvest chinook salmon in the spring.

The Board rather quickly established a customary and traditional use finding for all salmon species in the Seldovia area, but next had to consider the impact of a gillnet fishery to an ongoing

chinook salmon enhancement project in Seldovia. This project produces adult chinook salmon primarily to benefit the local recreational fishery. The Board concluded that these stocks were never customarily and traditionally utilized by Seldovia area residents, since the project had a short history relative to subsistence use, and therefore designed the new subsistence fishing season to minimize the potential harvest of kings returning to this enhancement site. Details of the new subsistence fishery regulations are summarized below:

- season extending from April 1 through May 20, and then again during the first two weekends in August.
- two 48-hour weekly fishing periods (Monday 6:00 a.m. until Wednesday 6:00 a.m. and Thursday 6:00 a.m. until Saturday 6:00 a.m.) during the “early” season, and 6:00 a.m. Saturday until 6:00 p.m. Sunday during the “late” season.
- areas open to fishing include the east side of Seldovia Bay and the “outside beach” between Point Naskowhak to a point approximately 1,000 feet southwest of Point Naskowhak.
- annual possession limit of 20 chinook salmon per permit holder, and a guideline harvest level of 200 chinook salmon for the entire fishery.
- coho salmon caught in the Seldovia subsistence fishery are to be included in the guideline harvest range of 2,500 to 3,500 cohos set in regulation for the Southern District personal use salmon set gillnet fishery (5 AAC 77.549).
- gear restrictions similar to the established subsistence salmon gillnet fishery for the Port Graham Subdistrict.

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Table 1. Commercial, hatchery, and derby salmon catches in numbers of fish by species, district, and gear type, Lower Cook Inlet, 1995.

District		Chinook	Sockeye	Coho	Pink	Chum	Total
	Gear Type						
Southern							
Commercial:							
	Set gillnet	2,078	19,406	3,564	41,654	3,958	70,660
	Purse seine	211	132,892	1,593	1,220,316	572	1,355,584
Hatchery:							
	Purse seine	<u>0</u>	<u>12,500</u>	<u>4</u>	<u>1,213,342</u>	<u>0</u>	<u>1,225,846</u>
	Total	2,289	164,798	5,161	2,475,312	4,530	2,652,090
Outer							
Commercial:							
	Purse seine	12	17,642	1,272	192,098	474	211,498
Eastern							
Commercial:							
	Purse seine	0	25,626	918	12,000	330	38,874
Derby ^a :							
	Hook & Line	0	0	2,960	0	0	2,960
Hatchery:							
	Weir	<u>0</u>	<u>20,930</u>	<u>1,314</u>	<u>0</u>	<u>0</u>	<u>22,244</u>
	Total	0	46,556	5,192	12,000	330	64,078
Kamishak							
Commercial:							
	Purse seine	2	31,077	6,084	169,039	10,300	216,502
Hatchery:							
	Purse seine	<u>0</u>	<u>5,350</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>5,367</u>
	Total	2	36,427	6,084	169,054	10,302	221,869
LCI Total		2,303	265,423	17,709	2,848,464	15,636	3,149,535
Percent		0.07	8.43	0.56	90.44	0.50	100.00
1975-94 Average		1,142	173,438	12,815	1,072,521	103,484	1,363,399

^a Derby catches are fish entered into the Seward Silver Salmon Derby which are eventually sold to a commercial processor, therefore these catches are considered part of the LCI "commercial harvest".

Table 2. Commercial chinook salmon catches and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 1995.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Halibut Cove	784		784
China Poot Bay	127		127
Neptune Bay	44		44
Tutka/Kasitsna Bays	375		375
Barabara Creek	185		185
Seldovia Bay	770		770
English Bay	<u>4</u>		<u>4</u>
SOUTHERN DISTRICT TOTAL	2,289		2,289
OUTER DISTRICT			
Windy Bay	1		1
Rocky Bay	1		1
East Arm Nuka Bay	<u>10</u>		<u>10</u>
OUTER DISTRICT TOTAL	12		12
EASTERN DISTRICT TOTAL	0		0
KAMISHAK BAY DISTRICT			
McNeil River	<u>2</u>		<u>2</u>
KAMISHAK BAY DISTRICT TOTAL	2		2
TOTAL LOWER COOK INLET	2,303		2,303

^a Chinook escapement in Lower Cook Inlet is very limited; no escapement surveys are conducted.

Table 3. Commercial sockeye salmon catches (including hatchery cost recovery) and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 1995.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Humpy Creek	139		139
Halibut Cove	8,986		8,986
China Poot Bay			
Common Property Fishery	85,819		
Hatchery Cost Recovery	6,434		
China Poot Creek		450 ^b	
Total Run			92,703
Neptune Bay			
Common Property Fishery	35,126		
Hatchery Cost Recovery	6,063		
Total Run			41,189
Tutka/Kasitsna Bays	12,326 ^c		12,326
Barabara Creek	3,080		3,080
Seldovia Bay	4,245		4,245
English Bay	<u>2,580</u>	<u>22,467^d</u>	<u>25,047</u>
SOUTHERN DISTRICT TOTAL	164,798	22,917	187,715
OUTER DISTRICT			
Port Chatham	5		5
Chugach Bay	2		2
Windy Bay	8		8
Rocky Bay	1		1
East Arm Nuka Bay (McCarty Fiord)	17,626		
Delight Lake		15,780	
Desire Lake		15,800	
Delusion Lake		1,520	
Total Run			<u>50,726</u>
OUTER DISTRICT TOTAL	17,642	33,100	50,742
EASTERN DISTRICT			
Aialik Bay	1,971	2,620	4,591
Resurrection Bay North			
Common Property Fishery	23,655		
Hatchery Cost Recovery	20,930		
Bear Lake		8,328 ^d	
Total Run			<u>52,913</u>
EASTERN DISTRICT TOTAL	46,556	10,948	57,504

-continued-

Table 3. (page 2 of 2)

Subdistrict/System	Catch	Escapement ^a	Total Run
KAMISHAK BAY DISTRICT			
Iniskin Bay/North Head Creek		200	200
Ursus Cove Lagoon Creek	5	1,300	1,305
Rocky Cove	7		7
Kirschner Lake			
Common Property Fishery	11,110		
Hatchery Cost Recovery	5,350		
Total Run			16,460
Bruin Bay	17,146		
Bruin Lake Creek		5,000 ^b	
Bruin River		300	
Total Run			22,446
Chenik Lake			
Amakdedori Creek		2,390	
Chenik Creek/Lake		1,086 ^d	
Total Run			3,476
Paint River		250 ^c	250
McNeil Cove (Mikfik Creek/Lake)	136	10,050	10,186
Kamishak/Douglas Reef	2	^f	2
Douglas River/Silver Beach	<u>2,671</u>		<u>2,671</u>
KAMISHAK BAY DISTRICT TOTAL	36,427	20,576	57,003
TOTAL LOWER COOK INLET	265,423	87,541	352,964

^a Escapement estimates derived from limited aerial surveys. Numbers represent unexpanded aerial live counts.

^b No freshwater escapement, prevented by barrier falls.

^c Figure includes 3 sockeyes taken during hatchery pink salmon cost recovery.

^d Weir counts.

^e No freshwater escapement, ladder not opened during 1995.

^f Insufficient survey data to generate escapement information.

Table 4. Commercial coho salmon catches (including hatchery cost recovery and sport derby sold to commercial processors) and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 1995.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Humpy Creek	27		27
Halibut Cove	392		392
China Poot Bay	923		923
Neptune Bay	243 ^b		243
Tutka/Kasitsna Bays	1,257		1,257
Barabara Creek	443		443
Seldovia Bay	53		53
English Bay	<u>1,823</u>		<u>1,823</u>
SOUTHERN DISTRICT TOTAL	5,161		5,161
OUTER DISTRICT			
Port Chatham	1		1
Chugach Bay	2		2
Windy Bay	34		34
Rocky Bay	3		3
East Arm Nuka Bay (McCarty Fiord)	<u>1,232</u>		<u>1,232</u>
OUTER DISTRICT TOTAL	1,272		1,272
EASTERN DISTRICT			
Aialik Bay	917		917
Resurrection Bay North			
Common Property Fishery	1		
Hatchery Cost Recovery	1,314		
Sport Derby	2,960 ^c		
Bear Lake (weir counts)		444	
Hatchery Brood Stock		1,537	
Total Run			<u>6,256</u>
EASTERN DISTRICT TOTAL	5,192	1,981	7,173
KAMISHAK BAY DISTRICT			
Ursus Cove	2		2
Rocky Cove	56		56
Kirschner Lake	3		3
Bruin Bay	2		2
Kamishak River/Douglas Reef	2,788		2,788
Douglas River/Silver Beach	<u>3,233</u>		<u>3,233</u>
KAMISHAK BAY DISTRICT TOTAL	6,084		6,084
TOTAL LOWER COOK INLET	17,709	1,981	19,690

^a Coho escapement in Lower Cook Inlet is very limited; no escapement surveys were conducted during 1995.

^b Includes 4 cohos taken during hatchery sockeye salmon cost recovery.

^c Seward Silver Salmon Derby catches, sold to a commercial processor and considered "commercial harvest".

Table 5. Commercial pink salmon catches (including hatchery cost recovery) and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 1995.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Humpy Creek	13,693	89,293	102,986
Halibut Cove	1,854		1,854
China Poot Bay/Creek	7,812 ^b	1,953	9,765
Neptune Bay	5,101 ^b		5,101
Tutka/Kasitsna Bays			
Common Property Fishery	1,212,342		
Hatchery Cost Recovery	1,213,322		
Hatchery Brood Stock		166,052	
Tutka Lagoon Creek		15,899	
Jakalof Creek		669	
Total Run			2,608,284
Barabara Creek	2,806	10,831	13,637
Seldovia Bay & River	8,214	48,519	56,733
Port Graham			
Hatchery Brood Stock		16,224 ^c	
Port Graham River		10,030	
Port Graham Left		1,300	
Total Run			27,554
English Bay	<u>10,168</u>		<u>10,168</u>
SOUTHERN DISTRICT TOTAL	2,475,312	360,770	2,836,082
OUTER DISTRICT			
Dogfish Bay		13,286	13,286
Port Chatham	17,618	13,950	31,568
Chugach Bay	8,408	7,811	16,219
Windy Bay			
Windy Right Creek		11,415	
Windy Left Creek		31,594	
Total Run			154,228
Rocky Bay			
Scurvy Creek	27,456	1,086	
Rocky River		56,266	
Total Run			84,808
Port Dick			
Port Dick (head end) Creek	0	6,644	
Slide Creek		444	
Island Creek		10,563	
Total Run			17,651

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Table 5. (page 2 of 3)

Subdistrict/System	Catch	Escapement ^a	Total Run
OUTER DISTRICT (cont'd)			
Nuka Island	5,993		
South Nuka Island Creek		6,160	
Berger Bay		434	
Mike's Bay		3,234	
Home Cove		651	
Total Run			16,472
East Arm Nuka Bay (McCarty Fiord)	21,404		
Delight Lake		2,550	
James Lagoon		579	
Total Run			<u>24,233</u>
OUTER DISTRICT TOTAL	192,098	166,667	358,765
EASTERN DISTRICT			
Aialik Bay	11,999	1,140	13,139
Resurrection Bay North	1		
Bear/Salmon Creeks		38,649	
Clear Creek		1,903	
Grouse Creek		2,584	
Lost Creek		1,236	
Sawmill Creek		60	
Spring Creek		1,073	
Tonsina Creek		435	
Tonsina Left Creek		22	
Humpy Cove		1,766	
Thumb Cove		9,326	
Total Run			<u>57,055</u>
EASTERN DISTRICT TOTAL	12,000	58,194	70,194
KAMISHAK BAY DISTRICT			
Inisksin Bay			
North Head Creek		26,009	
Sugarloaf Creek		111	
Total Run			26,120
Ursus Cove/Brown's Peak Creek	8,327	96,652	104,979
Rocky Cove/Sunday Creek	49,683	95,906	145,589
Kirschner Lake	19,095 ^d		19,095
Bruin Bay & River	85,705	307,309	393,014
Chenik Lake/Amakdedori Creek		4,500	4,500

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Table 5. (page 3 of 3)

Subdistrict/System	Catch	Escapement ^a	Total Run
KAMISHAK BAY DISTRICT (cont'd)			
Kamishak/Douglas Reef	1,944		1,944
Douglas River/Silver Beach	<u>4,300</u>		<u>4,300</u>
KAMISHAK BAY DISTRICT TOTAL	169,054	530,487	699,541
TOTAL LOWER COOK INLET	2,848,464	1,115,449	3,963,914

^a Escapement estimates are derived from periodic ground or aerial surveys with stream life factors applied.

^b China Poot/Neptune catches include 4/16 pinks (respectively) caught during hatchery sockeye salmon cost recovery.

^c Brood stock figure for Port Graham Hatchery includes 948 pinks that died due to suffocation during capture.

^d Kirschner catches include 14 pinks caught during hatchery sockeye salmon cost recovery.

Table 6. Commercial chum salmon catches and escapements in numbers of fish by subdistrict, Lower Cook Inlet, 1995.

Subdistrict/System	Catch	Escapement ^a	Total Run
SOUTHERN DISTRICT			
Humpy Creek	1	103	104
Halibut Cove	33		33
China Poot Bay	90		90
Neptune Bay	10		10
Tutka Bay	1,620		
Tutka Lagoon Creek		18	
Jakalof Creek		189	
Total Run			1,827
Barabara Creek	679		679
Seldovia Bay & River	1,389	1,805	3,194
Port Graham & River		3,837	3,837
English Bay	<u>708</u>		<u>708</u>
SOUTHERN DISTRICT TOTAL	4,530	5,952	10,482
OUTER DISTRICT			
Dogfish Bay		4,189	4,189
Port Chatham	33	547	580
Chugach Bay	2		2
Windy Bay	298		
Windy Right Creek		948	
Windy Left Creek		465	
Total Run			1,711
Rocky Bay & River	65	5,132	5,197
Port Dick	0		
Port Dick (head end) Creek		3,306	
Slide Creek		1,072	
Middle Creek		354	
Island Creek		7,667	
Total Run			12,399
Nuka Island/Petrof River	0	950	950
East Arm Nuka Bay/James Lagoon	<u>76</u>	<u>129</u>	<u>205</u>
OUTER DISTRICT TOTAL	474	24,759	25,233

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Table 6. (page 2 of 2)

Subdistrict/System	Catch	Escapement ^a	Total Run
EASTERN DISTRICT			
Aialik Bay	58		58
Resurrection Bay North	272		
Mayor Creek		2	
Sawmill Creek		85	
Spring Creek		193	
Tonsina Creek		3,224	
Tonsina Left Creek		4	
Thumb Cove		52	
Total Run			<u>3,832</u>
EASTERN DISTRICT TOTAL	330	3,560	3,890
KAMISHAK BAY DISTRICT			
Inisksin Bay	0		
Iniskin River		22,667	
Sugarloaf Creek		2,045	
North Head Creek		523	
Total Run			25,235
Cottonwood Bay & Creek	2,376	12,020	14,396
Ursus Cove	254		
Brown's Peak Creek		500	
Ursus Lagoon Right Creek		3,614	
Ursus Cove Lagoon Creek		7,439	
Total Run			11,807
Rocky Cove/Sunday Creek	1,939	2,831	4,770
Kirschner Lake	769 ^b		769
Bruin Bay & River	4,138	6,600	10,738
McNeil River	3	14,411	14,414
Kamishak/Douglas Reef	78	^c	78
Douglas River/Douglas Beach Creek	<u>745</u>	^c	<u>745</u>
KAMISHAK BAY DISTRICT TOTAL	10,302	72,650	82,952
TOTAL LOWER COOK INLET	15,636	106,921	122,557

^a Escapement estimates are derived from periodic ground or aerial surveys with stream life factors applied.

^b Kirschner Lake catches include 2 chums taken during hatchery sockeye salmon cost recovery.

^c Insufficient survey data to generate escapement estimates for Little and Big Kamishak Rivers, Strike Creek, and Douglas Beach Creek.

Table 7. Exvessel value^a of the commercial salmon catch in numbers of dollars by species, gear type, and harvest type, Lower Cook Inlet, 1995.

	Chinook	Sockeye	Coho	Pink	Chum	Total
COMMON PROPERTY - PURSE SEINE						
No. of Fish	225	207,237	9,867	1,593,453	11,676	1,822,458
Pounds	2,543	952,892	68,913	4,781,123	70,255	5,875,726
Price/lb.	\$0.85	\$1.11	\$0.47	\$0.15	\$0.23	
Value	\$2,162	\$1,057,710	\$32,389	\$717,168	\$16,159	\$1,825,588
COMMON PROPERTY - SET GILLNET						
No. of Fish	2,078	19,406	3,564	41,654	3,958	70,660
Pounds	38,475	106,657	29,712	158,703	29,333	362,880
Price/lb.	\$1.19	\$1.20	\$0.53	\$0.16	\$0.26	
Value	\$45,785	\$127,988	\$15,747	\$25,392	\$7,627	\$222,539
HATCHERY - PURSE SEINE & WEIR						
No. of Fish		38,780	1,318	1,213,357	2	1,253,457
Pounds		182,114	11,754	3,347,306	11	3,541,185
Price/lb.		\$1.07	\$0.08	\$0.15	\$0.27	
Value		\$195,303	\$947	\$502,096	\$3	\$698,349
SPORT FISHING DERBY^b - HOOK & LINE						
No. of Fish			2,960			2,960
Pounds			20,725			20,725
Price/lb.			\$0.60			\$0.60
Value			\$12,435			\$12,435
TOTAL ALL GEARS						
No. of Fish	2,303	265,423	17,709	2,848,464	15,636	3,149,535
Pounds	41,018	1,241,663	131,104	8,287,132	99,599	9,800,516
Price/lb.	\$1.17	\$1.11	\$0.47	\$0.15	\$0.24	
Value	\$47,947	\$1,381,001	\$61,518	\$1,244,656	\$23,789	\$2,758,911

^a Exvessel value is calculated from average prices, which are determined only by fish ticket information and may not reflect retroactive or postseason adjustments.

^b Fish entered into the Seward Silver Salmon Derby are subsequently sold to a commercial processor and are therefore considered "commercial harvest".

Table 8. Emergency orders issued for the commercial, personal use, and subsistence salmon and herring fisheries in Lower Cook Inlet, 1995.

Number/ Issue Date	DESCRIPTION
2-F-H-001-95 April 27	Opens Management Area 5 in the Kamishak Bay District to commercial herring sac roe seining for approximately one-half hour commencing by an ADF&G field announcement some time between 12:25 p.m. and 12:35 p.m., Thursday, April 27, 1995. The fishery will close at 1:00 p.m. Management Area 5 includes those waters south of 59° 16.68' N. latitude and west of 153° 37.0' W. longitude.
2-F-H-002-95 April 28	Opens Management Area 5 in the Kamishak Bay District to commercial herring sac roe seining for approximately one hour commencing by an ADF&G field announcement some time between 11:55 a.m. and 12:05 p.m., Friday, April 28, 1995. The fishery will close at 1:00 p.m. Management Area 5 includes those waters south of 59° 16.68' N. latitude and west of 153° 37.0' W. longitude.
2-F-H-003-95 May 5	Opens those waters of Resurrection Bay in the Eastern District enclosed by a line from Aialik Cape south to a point one mile due south of Aialik Cape, then northeast to a point one mile due south of Cape Resurrection, then north to Cape Resurrection, to commercial salmon seining on a schedule of two forty-hour weekly fishing periods, from Monday 6:00 a.m. until Tuesday 10:00 p.m. and from Thursday 6:00 a.m. until Friday 10:00 p.m., effective Monday, May 15, 1995, until further notice.
2-F-H-004-95 May 31	Establishes two 48-hour weekly fishing periods in the Kamishak Bay District commercial salmon seine fishery, which opens by regulation on June 1, 1995. These periods shall be from Monday 6:00 a.m. until Wednesday 6:00 a.m. and from Thursday 6:00 a.m. until Saturday 6:00 a.m.
	This emergency order also closes the Chenik and Paint River Subdistricts within the Kamishak Bay District to commercial salmon seining until further notice.
2-F-H-005-95 May 31	Closes the Port Graham Subdistrict, including the English Bay Section, to commercial set gillnet fishing prior to the regulatory opening date of June 5, 1995, until further notice.
2-F-H-006-95 May 31	Closes the Port Graham Subdistrict, including the English Bay Section, to subsistence set gillnet fishing effective 6:00 a.m. Monday, June 5, 1995, until further notice.
2-F-H-007-95 June 12	Extends fishing time in those waters of Resurrection Bay in the Eastern District enclosed by a line from Aialik Cape south to a point one mile due

-continued-

Table 8. (page 2 of 8)

Number/ Issue Date	DESCRIPTION
	<p>south of Aialik Cape, then northeast to a point one mile due south of Cape Resurrection, then north to Cape Resurrection, to commercial salmon seining on a weekly schedule of five days per week, from Monday 6:00 a.m. until Friday 10:00 p.m., effective Tuesday, June 13, 1995, until further notice. This emergency order also expands waters open to commercial salmon seining in Resurrection Bay by repealing the 500-yard regulatory closed waters restriction at the mouth of the Resurrection River, also effective at 10:00 p.m. Tuesday, June 13, 1995, until further notice.</p> <p>This emergency order also clarifies a reference point for closed waters at the head of Resurrection Bay.</p>
2-F-H-008-95 June 16	<p>Extends weekly commercial salmon seine fishing time in the McNeil River Subdistrict of the Kamishak Bay District to seven days per week, effective at 4:00 p.m. Friday, June 16, 1995, until further notice.</p>
2-F-H-009-95 June 19	<p>Designates and establishes Special Harvest Areas (SHA's) for the Cook Inlet Aquaculture Association (CIAA) in the Chenik, Paint River, Bruin Bay, and China Poot Subdistricts of the Lower Cook Inlet management area. This emergency order also closes the Kirschner Lake SHA to the common property salmon seine fishery while concurrently opening waters of the Kirschner Lake and Paint River SHA's in the Kamishak Bay District, and the China Poot and Hazel Lake SHA's in the Southern District, to the harvest of salmon seven days per week by authorized agents of CIAA effective at 6:00 a.m. Monday, June 26, 1995, until further notice.</p> <p>This emergency order also opens portions of the China Poot, Tutka Bay, and Halibut Cove Subdistricts, all within the Southern District, to commercial salmon seining five days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective 6:00 a.m. Monday, June 26, 1995, until further notice. In the China Poot Subdistrict, commercial seining shall be allowed five days per week only in those waters outside (offshore) of a line beginning at the southwest end of the Hazel Lake SHA boundary line, then to Lancashire Rock, then to the navigational light on Gull Island, then to Moosehead Point, effective June 26. In the Halibut Cove Subdistrict, seining shall be allowed only in waters outside of Halibut Cove Lagoon beginning June 26 on a five days per week basis. In the Tutka Bay Subdistrict, commercial seining is restricted to those waters seaward of a line extending from the "rock quarry" on the north side of the bay at approximately 59° 30' 14" N. latitude, 151° 28' 14" W. longitude to the Tutka Bay Lodge on the south side of the bay at approximately 9° 28' 31" N. latitude, 151° 28' 55" W. longitude, five days per week effective 6:00 a.m. Monday, June 26, 1995. Also repeals the regulatory</p>

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Table 8. (page 3 of 8)

Number/ Issue Date	DESCRIPTION
	closed waters markers in China Poot Bay, and establishes temporary closed waters at the head of China Poot Bay to provide a Dungeness crab sanctuary.
2-F-H-010-95 June 22	Opens waters of East Nuka Subdistrict between the latitude of the entrance to James Lagoon at approximately 59° 33' 30" N. latitude, and the regulatory markers near the Parks Service tent camp at approximately 59° 37' 30" N. latitude, to commercial salmon seining for two 40-hour periods per week, from Monday 6:00 a.m. until Tuesday 10:00 p.m., effective at 6:00 a.m. Monday, July 26, until further notice. Waters south of the entrance to James Lagoon, as well as waters north of the regulatory markers by the Parks Service camp, remain closed to fishing. The closed waters markers at the mouth of Desire Lake Creek WILL BE in effect for this opening.
2-F-H-012-95 June 28	Opens the Port Graham Subdistrict to subsistence gillnet fishing on a schedule of one 48-hour fishing period per week, from 6:00 a.m. Thursday until 6:00 a.m. Saturday, effective at 6:00 a.m. Thursday, June 29, 1995, until further notice.
2-F-H-011-95 June 27	Returns commercial salmon seine fishing time in the McNeil River Subdistrict of the Kamishak Bay District to the standard two 48-hour periods per week, from 6:00 a.m. Monday until 6:00 a.m. Wednesday and from 6:00 a.m. Thursday until 6:00 a.m. Saturday, effective at 6:00 a.m. Saturday, July 1, 1995, until further notice.
2-F-H-013-95 June 28	Designates and establishes a Special Harvest Area for the Cook Inlet Aquaculture Association (CIAA) in the Tutka Bay Subdistrict within the Southern District of Lower Cook Inlet. The Tutka Bay Special Harvest Area (SHA) consists of all marine waters of the Tutka Bay Subdistrict southeast of the Homer Electric Association power line crossing, including waters of Tutka Lagoon. Opens the Tutka Bay Special Harvest area to the harvest and sale of salmon seven days per week by authorized agents of CIAA, effective at 6:00 a.m. Saturday, July 1, 1995, until further notice.
	This emergency order also designates and establishes a Special Harvest Area for the Port Graham Hatchery Corporation (PGHC) in the Port Graham Subdistrict within the Southern District of Lower Cook Inlet.
2-F-H-014-95 June 30	Closes waters of East Nuka Subdistrict to commercial salmon seining effective at 6:00 a.m. Monday, July 3, until further notice.

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Table 8. (page 4 of 8)

Number/ Issue Date	DESCRIPTION
2-F-H-015-95 June 30	<p>Extends fishing time for commercial set gillnets in Halibut Cove Subdistrict of the Southern District to five days per week, from 6:00 a.m. Monday until 6:00 a.m. Saturday, effective 6:00 a.m. Wednesday, July 5, 1995, until further notice.</p>
2-F-H-016-95 July 7	<p>Opens those waters of East Nuka Subdistrict in the Outer District between the latitude of the entrance to James Lagoon at approximately 59° 33' 30" N. latitude, and the regulatory markers near the Parks Service tent camp at approximately 59° 37' 30" N. latitude, to commercial salmon seining five days per week, from Monday 6:00 a.m. until Friday 10:00 p.m., effective at 6:00 a.m. Monday, July 10, until further notice. Waters south of the entrance to James Lagoon, as well as waters north of the regulatory markers by the Parks Service camp, remain closed to fishing. Also the closed waters markers at the mouth of Desire Lake Creek <u>WILL NOT BE</u> in effect for this opening, and fishing will be allowed up to the creek mouth.</p> <p>In addition, this emergency order opens waters of Aialik Subdistrict, including Aialik Lagoon, in the Eastern District to commercial salmon seining on a schedule of two 48-hour periods per week, from Monday 6:00 a.m. until Wednesday 6:00 a.m. and from Thursday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Monday, July 10, until further notice.</p>
2-F-H-017-95 July 7	<p>Extends subsistence salmon gillnet fishing in Port Graham Subdistrict of the Southern District to a schedule of two 48-hour fishing periods per week, from Monday 6:00 a.m. until Wednesday 6:00 a.m. and from Thursday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Monday, July 10, 1995, until further notice.</p>
2-F-H-018-95 July 7	<p>Opens the Port Graham Subdistrict of the Southern District, including both the Port Graham and English Bay Sections, to commercial salmon set gillnet fishing on a schedule of two 48-hour fishing periods per week, from Monday 6:00 a.m. until Wednesday 6:00 a.m. and from Thursday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Monday, July 10, 1995, until further notice.</p>
2-F-H-019-95 July 12	<p>Closes commercial salmon seining in waters of Resurrection Bay effective at 12:00 noon Thursday, July 13, 1995, until further notice.</p> <p>In addition, this emergency order opens those waters of the Port Dick Subdistrict in the Outer District east of a line from a department marker on the south short of Port Dick near Phillipino Cove, to a department marker on the southwest shore of Taylor Bay, to commercial salmon seining for two 40-hour</p>

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Table 8. (page 5 of 8)

Number/ Issue Date	DESCRIPTION
2-F-H-020-95 July 13	<p>periods per week, from Monday 6:00 a.m. until Tuesday 10:00 p.m. and from Thursday 6:00 a.m. until Friday 10:00 p.m., effective at 6:00 a.m. Monday, July 17, 1995, until further notice. Waters open to fishing include statistical reporting areas 232-06 and 232-08. Waters of the North Section (232-09) and the south shore of the South Section (232-07) of the Port Dick Subdistrict remain closed to fishing.</p> <p>Closes waters of the China Poot and Hazel Lakes Special Harvest Areas (see LCI E.O. #2-F-H-009-95) in the Southern District to salmon hatchery cost recovery harvest by Cook Inlet Aquaculture Association effective at 12:00 noon Thursday, July 13, 1995. In addition, this emergency order opens waters of China Poot Subdistrict, including both the China Poot and Hazel Lake Sections, to commercial salmon seining west (or offshore) of the regulatory markers located near the HEA power lines in China Poot Bay on a seven-day-per-week basis, effective at 6:00 a.m. Friday, July 14, until further notice. Waters of China Poot Bay east (or inshore) of these markers will open to commercial seining five days per week from Monday 6:00 a.m. until Saturday 6:00 a.m., also effective at 6:00 a.m. Friday, July 14, until further notice. The regulatory markers designating the Dungeness crab sanctuary in the north arm of China Poot Bay are still in effect for these openings. At China Poot Creek, the regulatory markers near the creek mouth will be in effect during the Monday through Saturday opening. At Neptune Bay, no markers will be in effect and fishing is allowed up to the Wosnesenski River mouth.</p>
2-F-H-021-95 July 13	<p>Closes waters of the Kirschner Lake Special Harvest Area (see LCI E.O. #2-F-H-009-95) in the Kamishak Bay District to salmon hatchery cost recovery harvest by Cook Inlet Aquaculture Association effective at 7:00 p.m. Thursday, July 13, 1995. In addition, this emergency order opens waters of Bruin Bay Subdistrict east of 154° W. longitude on a seven-day-per-week basis, effective at 1:00 p.m. Friday, July 14, until further notice. At Bruin Lake Creek, no markers will be in effect and fishing is allowed up to the creek mouth.</p>
2-F-H-022-95 July 20	<p>Opens those waters of Ursus Cove Subdistrict in the Kamishak Bay District of Lower Cook Inlet to commercial salmon seining seven days per week, effective at 6:00 a.m. Friday, July 21, through July 31. In addition, the regulatory closed waters markers at Ursus Cove Lagoon will not be in effect for this opening and seining is allowed up to the stream mouth at the Ursus Lagoon (head end) Creek. After July 31, the regulatory markers at the mouth of Ursus Lagoon will again become effective and the fishing schedule in</p>

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Table 8. (page 6 of 8)

Number/ Issue Date	DESCRIPTION
	waters of Ursus Cove Subdistrict will revert to the standard two 48-hour weekly fishing periods.
2-F-H-023-95 July 24	<p>Closes waters of the Tutka Bay Special Harvest Area (see LCI E.O. #2-F-H-013-95) in the Southern District to salmon hatchery cost recovery harvest by Cook Inlet Aquaculture Association effective at 6:00 a.m. Tuesday, July 25, 1995. Concurrently, all waters of Tutka Bay Subdistrict, including Tutka Lagoon, will open to commercial salmon seining. Waters of Tutka Lagoon will be open for a 24-hour period only, from 6:00 a.m. Tuesday, July 25, until 6:00 a.m. Wednesday, July 26, while the remaining waters of Tutka Bay Subdistrict will be open on a seven-day-per-week basis until further notice.</p> <p>In addition, this emergency order opens commercial salmon set gillnetting in waters of Tutka Bay Subdistrict <i>only</i> seven days per week, effective at 6:00 a.m. Tuesday, July 25, until further notice.</p>
2-F-H-024-95 July 26	<p>Opens all waters of Bruin Bay Subdistrict in the Kamishak Bay District of Lower Cook Inlet to commercial salmon seining seven days per week, effective at 1:00 p.m. Wednesday, July 26, until further notice. The markers at the mouth of Bruin Lake Creek are not in effect at this time (see LCI E.O. #2-F-H-021-95) and fishing is still allowed up to the creek mouth at the system.</p>
2-F-H-025-95 July 31	<p>Opens all waters of Windy Bay Subdistrict in the Outer District of Lower Cook Inlet to commercial salmon seining on a schedule of two 40-hour periods per week, from Monday 6:00 a.m. until Tuesday 10:00 p.m. , and from Thursday 6:00 a.m. until Friday 10:00 p.m., effective at 12:00 noon Tuesday, August 1, until further notice.</p>
2-F-H-026-95 August 3	<p>Opens waters of Humpy Creek Subdistrict in the Southern District to commercial salmon seining seven days per week, effective at 12:00 noon Friday, August 4, 1995, until further notice. Commercial salmon set gillnetting will also be allowed seven days per week in the Southern District waters of Halibut Cove Subdistrict, effective at 12:00 noon Friday, August 4, 1995, until further notice.</p> <p>Also opens waters of Rocky Bay Subdistrict in the Outer District to commercial salmon seining for two 40-hour periods per week, from Monday 6:00 a.m. until Tuesday 10:00 p.m. and from Thursday 6:00 a.m. until Friday 10:00 p.m., effective at 12:00 noon Friday, August 4, 1995, until further notice.</p>

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Table 8. (page 7 of 8)

Number/ Issue Date	DESCRIPTION
	In addition, this emergency order reestablishes the traditional closed waters markers near the Homer Electric Association (HEA) power lines in China Poot Subdistrict, also effective at 12:00 noon Friday, August 4, 1995, until further notice.
2-F-H-027-95 August 4	Opens waters of Nuka Island Subdistrict in the Outer District seven days per week, effective at 12:00 noon Saturday, August 5, 1995, until further notice.
2-F-H-028-95 August 7	Closes waters of Tutka Lagoon in the Tutka Bay Special Harvest Area (see LCI E.O. #2-F-H-013-95) of the Southern District to salmon hatchery cost recovery harvest by Cook Inlet Aquaculture Association effective at 12:00 noon Tuesday, August 8, 1995, for the remainder of the season. Concurrently, waters of Tutka Lagoon will open to commercial salmon seining seven days per week until further notice. Also opens waters of Rocky Cove Subdistrict in the Kamishak Bay District to commercial salmon seining seven days per week, effective at 12:00 noon Tuesday, August 8, 1995, until further notice. At Sunday Creek in Rocky Cove, no closed waters markers will be in effect and fishing is allowed up to the stream mouth.
2-F-H-029-95 August 8	Opens the Port Graham Special Harvest Area (see LCI E.O. #2-F-H-0-13-95) to the harvest of pink salmon seven days per week by authorized agents of Port Graham Hatchery Corporation (PGHC), effective at 6:00 a.m. Wednesday, August 9, 1995, until further notice. Fish obtained through such harvest will be utilized for hatchery brood stock purposes.
2-F-H-030-95 August 8	Opens waters of Port Chatham Subdistrict in the Outer District to commercial salmon seining five days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective at 12:00 noon Wednesday, August 9, 1995, until further notice.
2-F-H-031-95 August 14	Opens waters of Chugach Bay in the Outer District west of a line from a point on the north shore at approximately 59° 11' 50" N. latitude, 151° 29' 38" W. longitude, to a point on the south shore at approximately 59° 10' 36" N. latitude, 151° 34' 17" W. longitude, to commercial salmon seining five days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective at 6:00 a.m. Tuesday, August 15, 1995, until further notice.
2-F-H-032-95 August 15	Delays the opening of the Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon until 6:00 a.m. Thursday, August 17, 1995.

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Table 8. (page 8 of 8)

Number/ Issue Date	DESCRIPTION
2-F-H-033-95 August 17	Opens waters of Ursus Cove, Cottonwood Bay, and Iniskin Bay Subdistricts in the Kamishak Bay District to commercial salmon seining seven days per week, effective at 6:00 a.m. Friday, August 18, 1995, until further notice. In addition, this emergency order removes regulatory closed waters markers near Brown's Peak Creek in Ursus Cove Subdistrict, and seining is allowed up to the stream mouth.
2-F-H-034-95 August 18	Closes those waters of the Homer Small Boat Harbor, including those waters of Kachemak Bay near the harbor entrance, to personal use set gillnet fishing, effective immediately, for the duration of the 1995 season.
2-F-H-035-95 August 18	Opens waters of Douglas River and Kamishak River Subdistricts in the Kamishak District to commercial salmon seining five days per week, from Monday 6:00 a.m. until Saturday 6:00 a.m., effective from 6:00 a.m. Monday, August 21, 1995, until 6:00 a.m. Saturday, September 9, 1995.
2-F-H-036-95 August 21	Closes the Southern District (Kachemak Bay) personal use set gillnet fishery for coho salmon, effective at 7:00 a.m. Tuesday, August 22, 1995.

Table 9. Total return of adult pink salmon to the Tutka Bay Hatchery in the Southern District of Lower Cook Inlet, 1995.

COMMERCIAL HARVEST

Tutka Bay/Lagoon:	
Purse Seine	1,192,287
Set Gillnet	20,055 ^a
Hatchery Cost Recovery	1,213,322
TUTKA COMMERCIAL HARVEST	2,425,664

SPORT HARVEST

TOTAL SPORT HARVEST (Tutka Bay and Lagoon)	3,000
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ESCAPEMENT

Tutka Creek and Channel	15,899
Tutka Hatchery Brood Stock	166,052
TOTAL ESCAPEMENT	181,951

TOTAL RETURN	2,610,615
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^a Based primarily on run timing, all of the set gillnet pink salmon catch in the Tutka Bay Subdistrict was apportioned to the Tutka Hatchery return.

Table 10. Commercial purse seine catch of sac roe herring in short tons and average roe recovery in percent, by statistical area and date, Kamishak Bay District, Lower Cook Inlet, 1995.

Date	Statistical Area	Location	No. of Permits	No. of Landings	Short Tons	Roe %
4/27	249-40	Silver Beach/Douglas Reef	a	a	6	11.16
	249-45	Kamishak/Douglas Reefs	a	a	234	9.32
	249-50	McNeil Cove	27	32	1,020	9.70
	249-52	Akjemguiga Cove/Nordyke Island	12	12	341	10.37
	249-55	Chenik Head	a	a	86	8.60
4/28	249-45	Kamishak/Douglas Reefs	a	a	596	9.49
	249-50	McNeil Cove	10	10	127	10.10
	249-52	Akjemguiga Cove/Nordyke Island	16	16	397	10.03
	249-55	Chenik Head	16	16	571	9.86
TOTALS			60	98	3,378	9.76

^a To comply with AS 16.05.815 CONFIDENTIAL NATURE OF CERTAIN REPORTS AND RECORDS, effort data has been masked where fewer than four vessels fished in a given area.

Table 11. Total biomass estimates and commercial catch of Pacific herring in short tons by age class, Kamishak Bay District, Lower Cook Inlet, 1995, and 1996 forecast.

Age	1995 Estimated Biomass	1995 Commercial Harvest	Percent by Weight	1996 Forecast Biomass	Percent by Weight
1					
2					
3	26.1	4.1	0.12	1,144.6	5.47
4	158.7	24.7	0.73	67.0	0.32
5	821.7	127.7	3.78	278.3	1.33
6	1,228.1	190.8	5.65	1,153.0	5.51
7	12,750.9	1,981.2	58.66	1,347.6	6.44
8	2,434.5	378.3	11.20	12,326.8	58.91
9	832.5	129.4	3.83	1,891.6	9.04
10	660.8	102.7	3.04	537.8	2.57
11	2,034.6	316.1	9.36	364.1	1.74
12	730.4	113.5	3.36	1,295.2	6.19
13+	58.7	9.1	0.27	518.9	2.48
TOTALS	21,737.0	3,377.5	99.99	20,924.8	100.00

Table 12. Proposed regulatory changes for the Lower Cook Inlet commercial, personal use, and subsistence salmon and herring fisheries, and resultant actions taken, at the Alaska Board of Fisheries meeting held in Homer, November, 1995^a.

PROPOSAL NUMBER	PROPOSED BY	DESCRIPTION	BOARD ACTION	BOARD VOTE
519	Fred Elvsaas/ Seldovia Village Tribe	5 AAC 01.566. Allow for a subsistence salmon fishery in the Seldovia area.	Adopted	7 - 0
66	Tim Cabana	5 AAC 27.410. Reduce the commercial herring guideline harvest levels in the Outer and Eastern Districts, lengthen the season by 31 days, and allow for the harvest of bait and/or sac roe.	Opposed	0 - 7
67	Central Peninsula Advisory Committee	5 AAC 27.410. Increase the commercial herring guideline harvest level in either one of two districts (Outer or Eastern), lengthen the season by 15 days, and allow for the harvest of younger fish that would ultimately be used for bait.	No action (due to action taken on #66)	
68	Tim Cabana	5 AAC 27.432. Reduce the legal length of purse seines in the commercial herring purse seine fisheries of Lower Cook Inlet from the present 150 fathoms to 100 fathoms.	Opposed	0 - 7
69	Philip Brudie	5 AAC 21.310. Allow commercial salmon purse seining in "outside waters" of the Eastern, Outer, and Barren Islands Districts beyond the current subdistrict boundaries, and open the season in these areas on regular weekly fishing periods for the duration of the season (unless closed for biological reasons).	Opposed	0 - 7
70	Dave Bisegger	5 AAC 21.310. Amend the present salmon seine management strategy in the Southern District to allow two "test fishing" periods per week between June 25 and July 5; from July 6 through July 15, direct management at pinks and chums only; and after July 15, conduct management as at present.	Opposed	0 - 7
198	Bari Cabana	5 AAC 39.120. Repeal the area vessel registration requirement for Lower Cook Inlet such that a purse seine vessel may fish in more than one management area during any given year.	Opposed	0 - 7

^a Proposals adopted by the Alaska Board of Fisheries become effective in regulation in April, 1996, upon approval of language by the Alaska Dept. of Law and subsequent signing by the Lt. Governor.

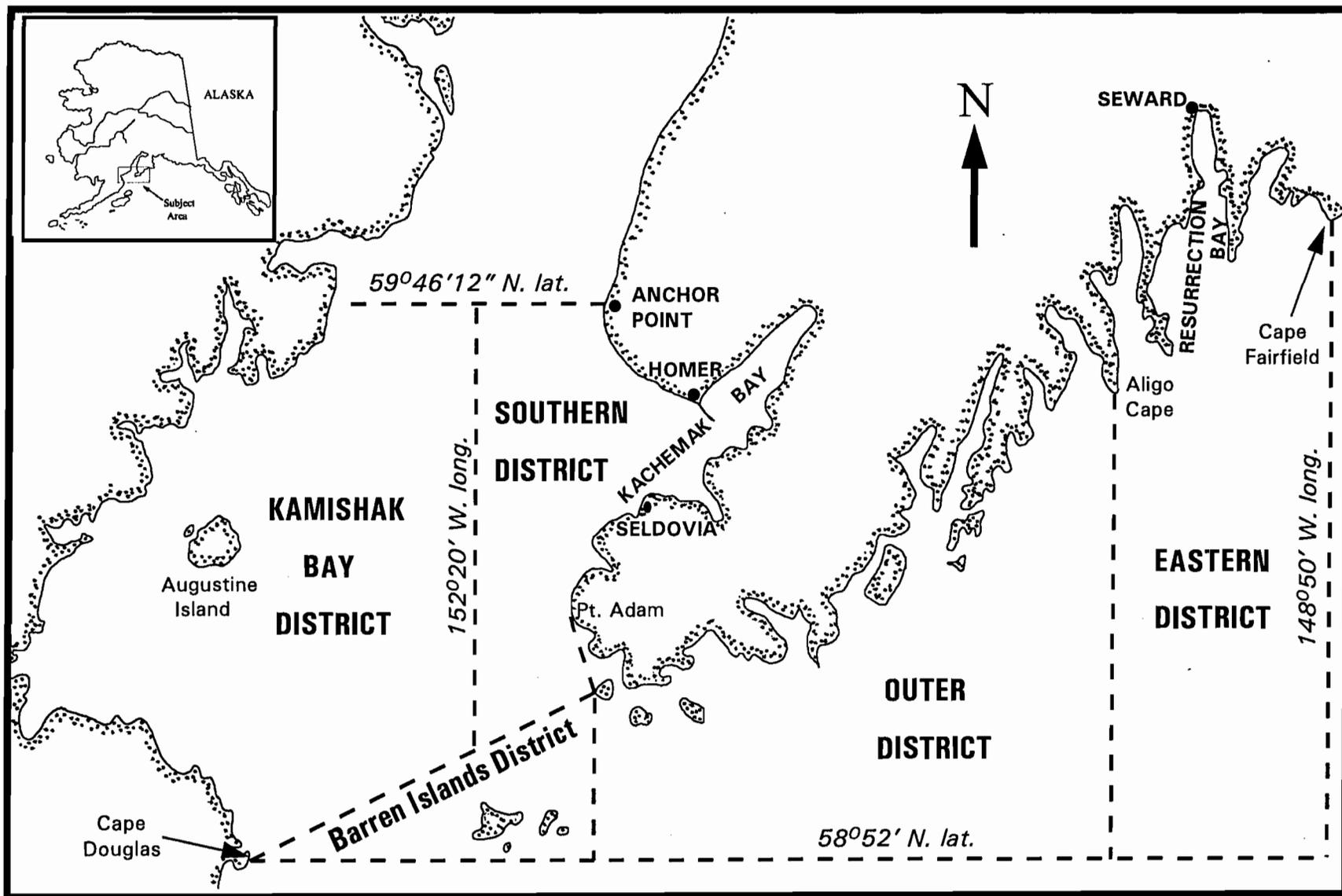


Figure 1. Lower Cook Inlet salmon and herring management area (not drawn to scale).

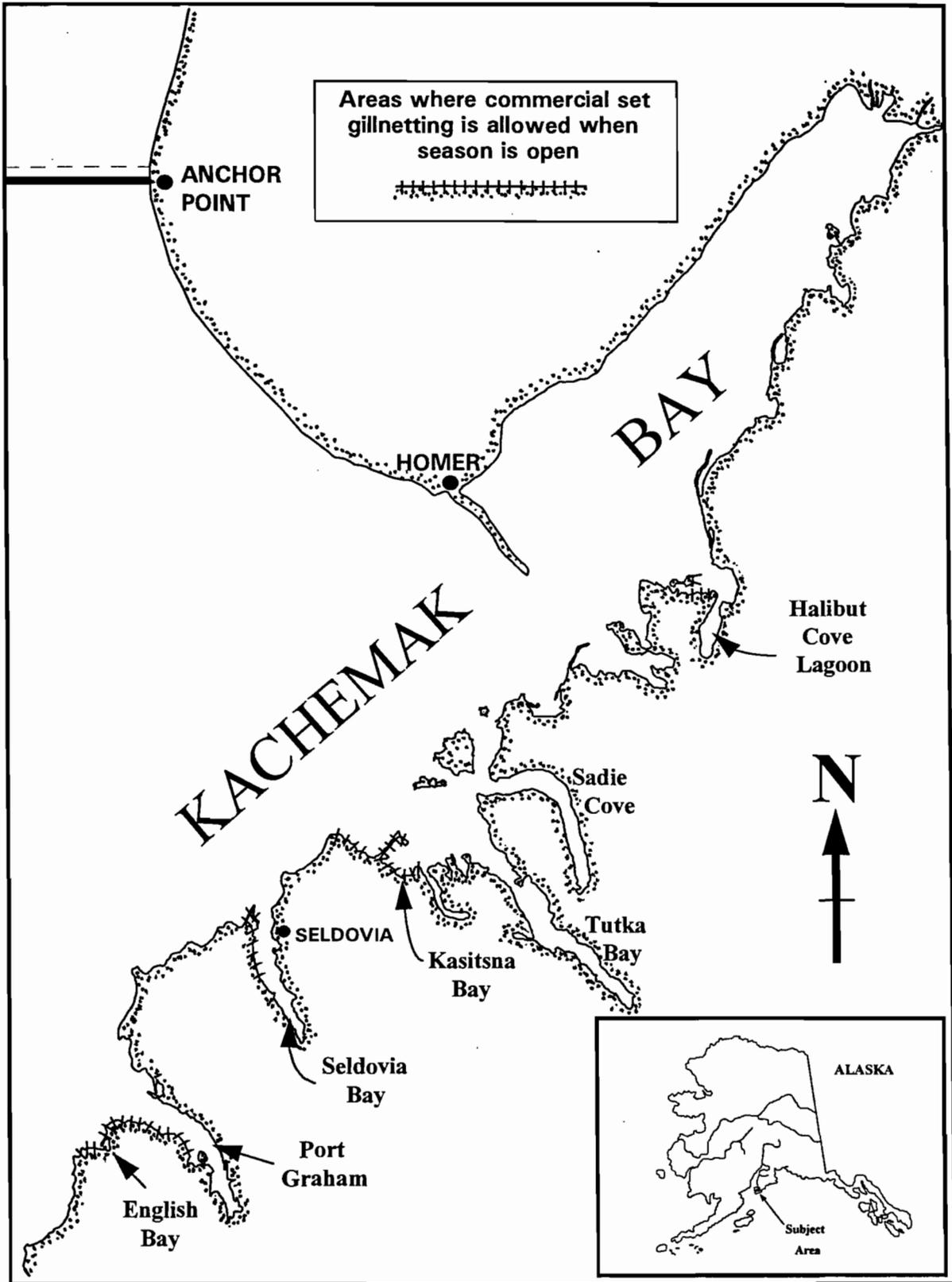


Figure 2. Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

SOUTHERN DISTRICT SPECIAL HARVEST AREAS

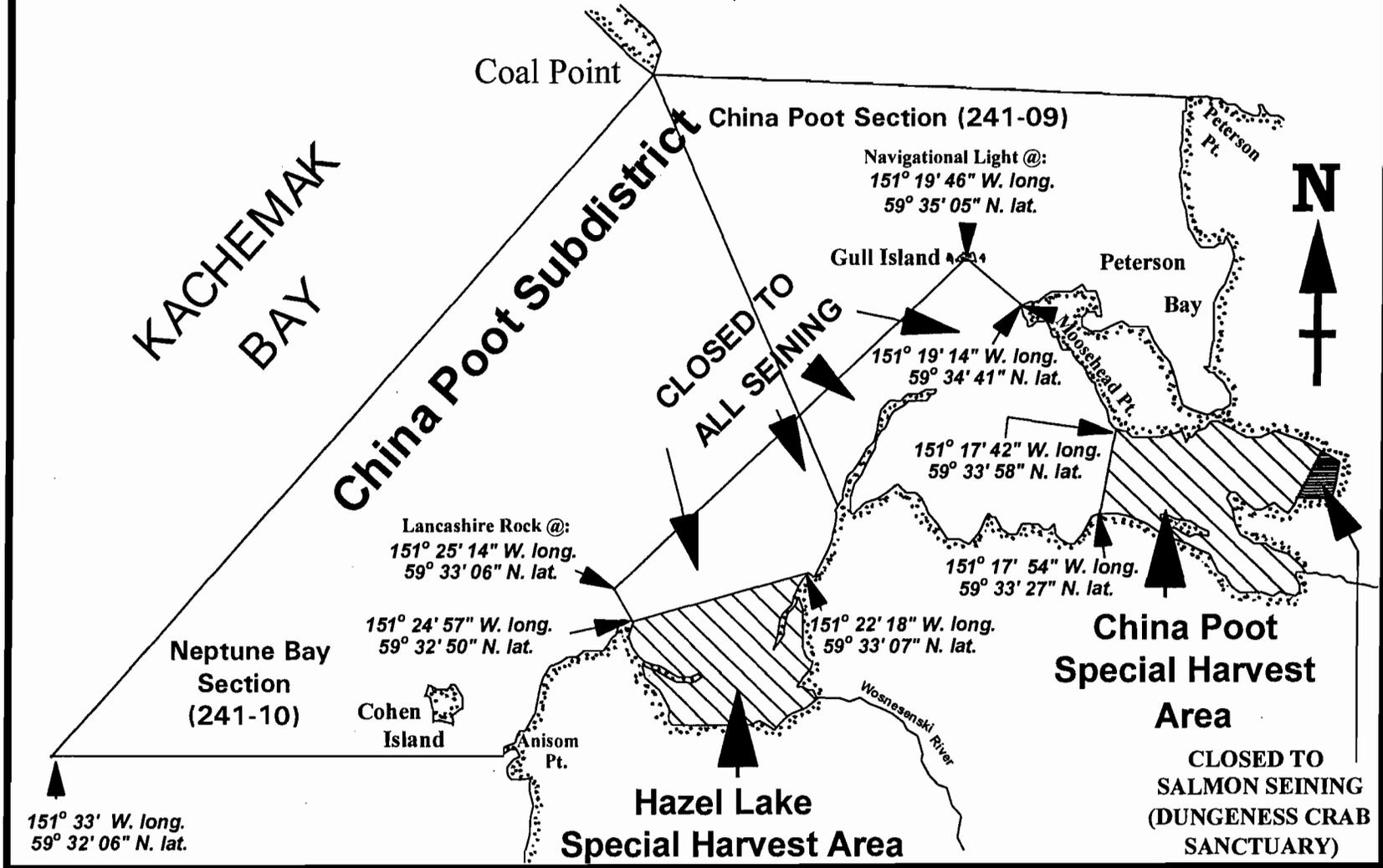


Figure 3. China Poot and Hazel Lake Special Harvest Areas for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

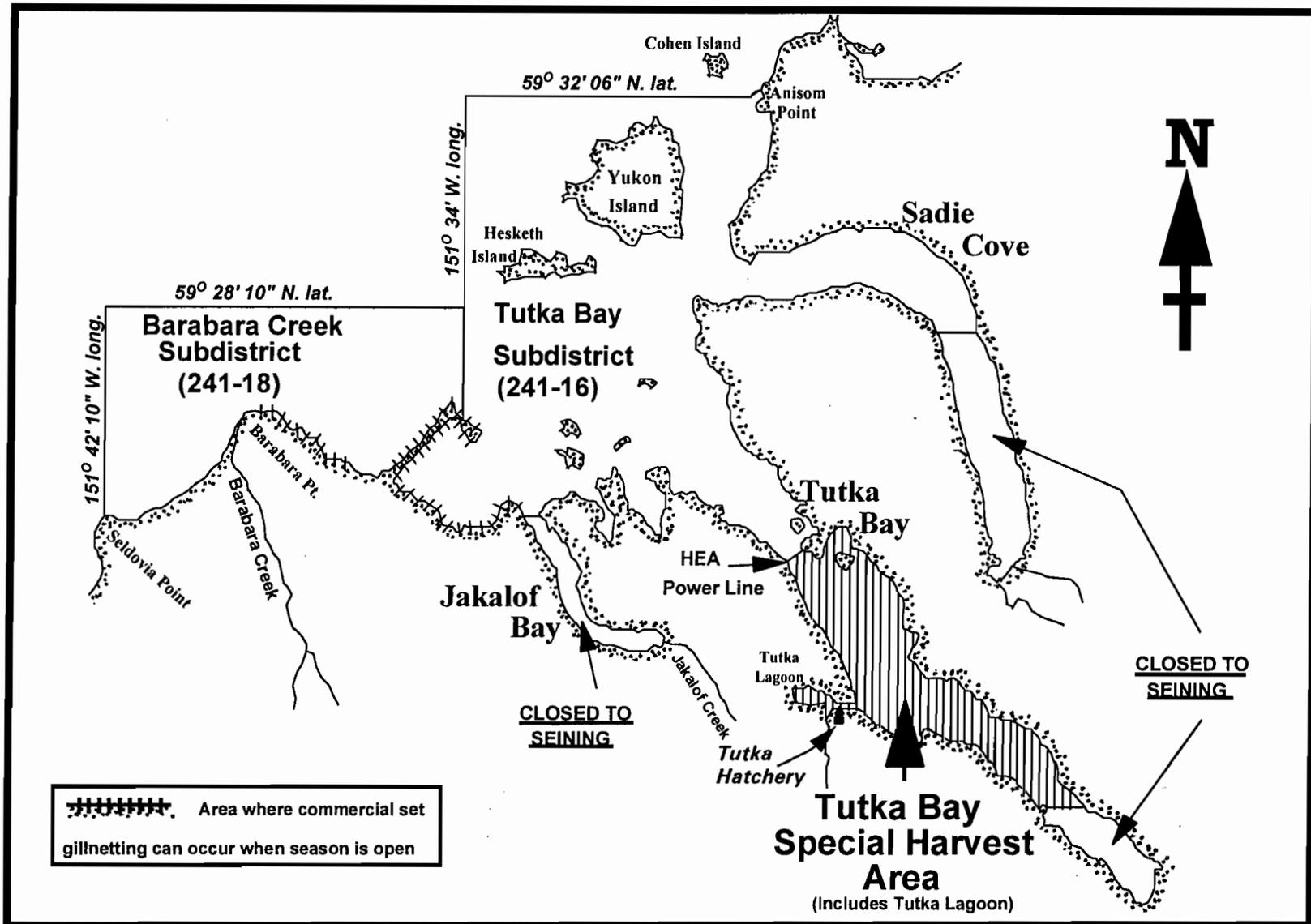


Figure 4. Tutka Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

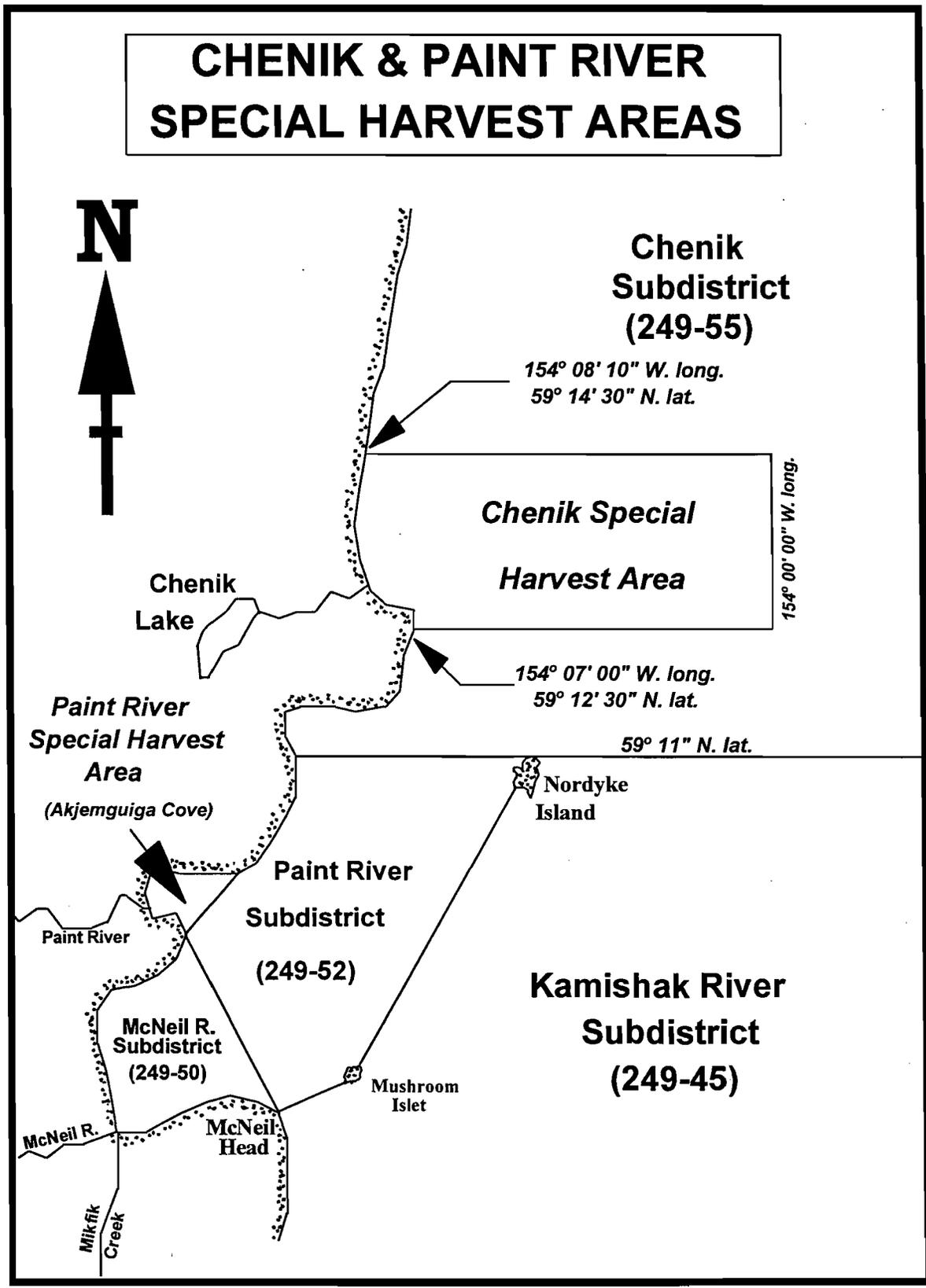


Figure 5. Chenik and Paint River Special Harvest Areas for salmon hatchery cost recovery in the Kamishak Bay District of Lower Cook Inlet.

KIRSCHNER & BRUIN LAKES SPECIAL HARVEST AREAS



Note: Regulations prohibit salmon net fishing in federal waters beyond territorial seas (3 nautical miles).

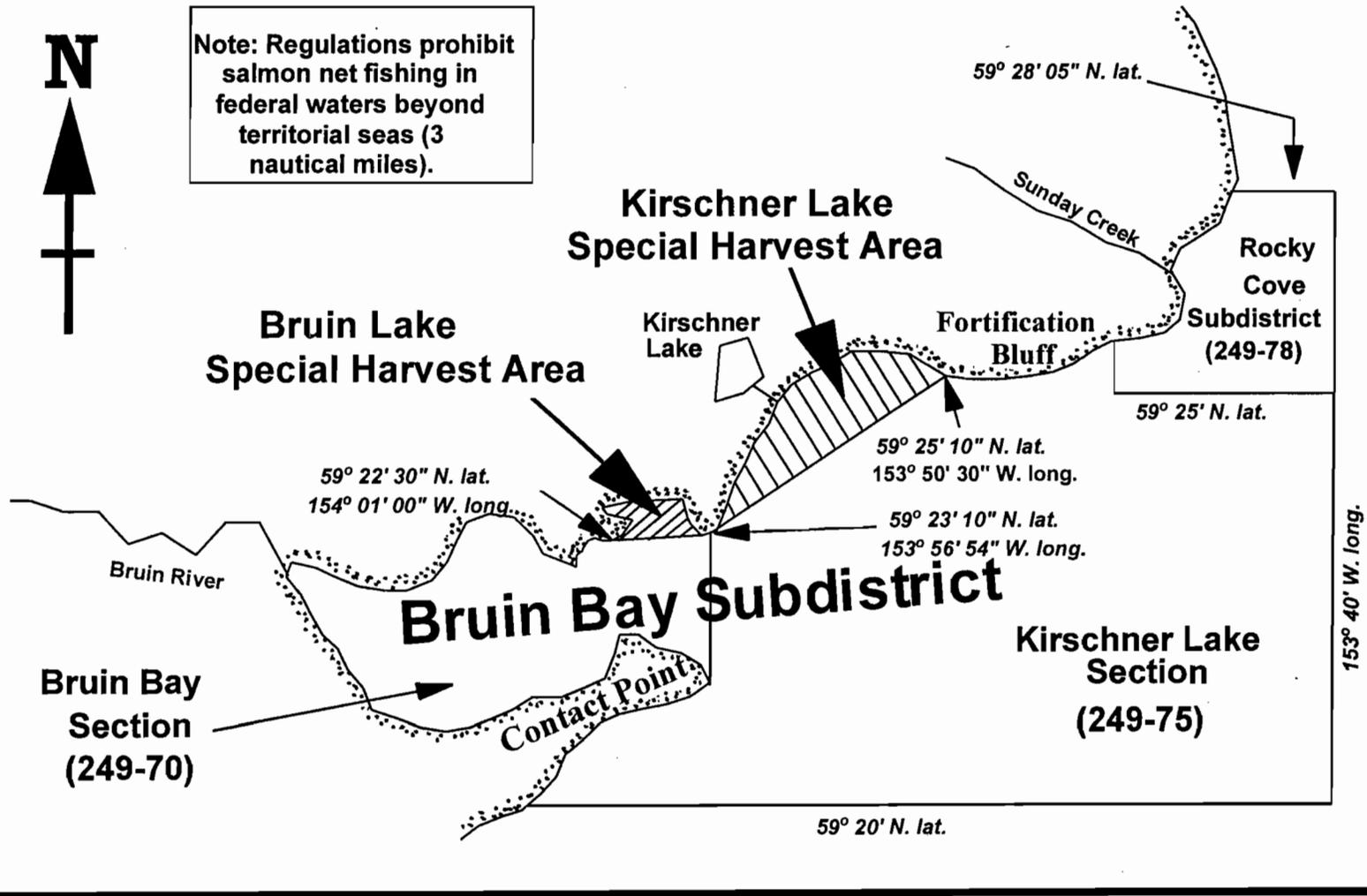


Figure 6. Kirschner and Bruin Lakes Special Harvest Areas for salmon hatchery cost recovery in the Kamishak Bay District of Lower Cook Inlet.

PORT GRAHAM HATCHERY SPECIAL HARVEST AREA

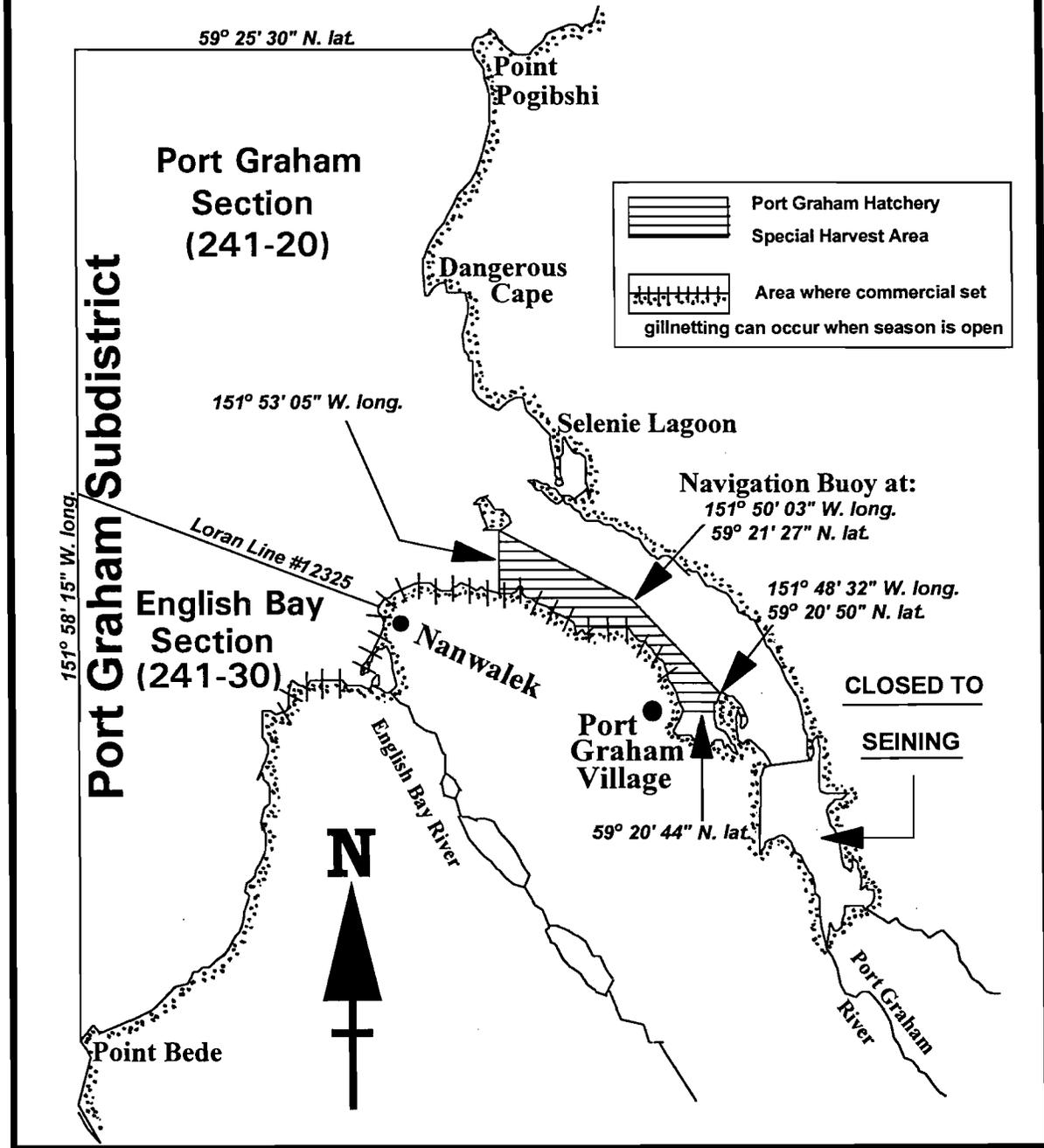


Figure 7. Port Graham Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

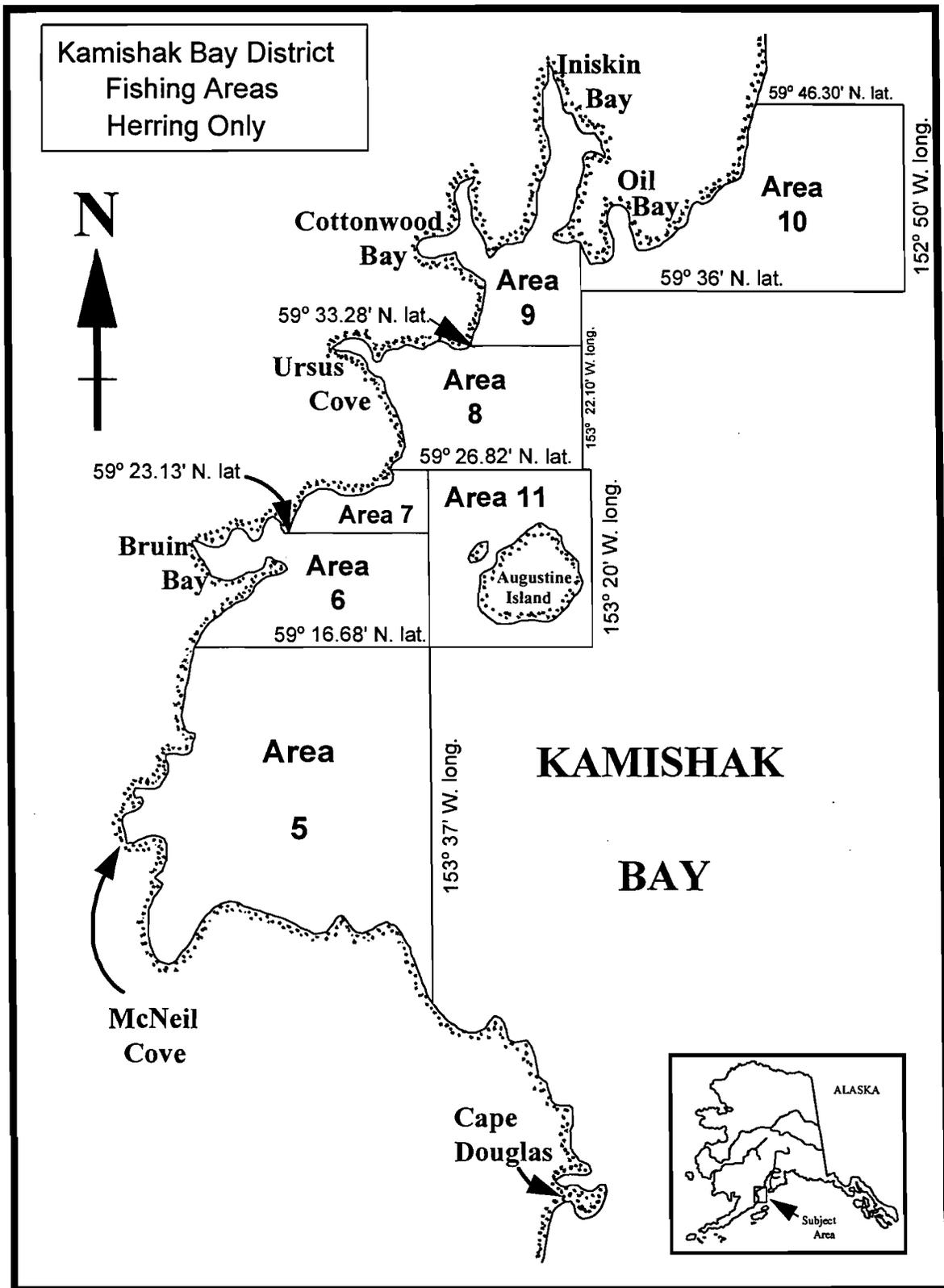


Figure 8. Commercial herring fishing areas in the Kamishak Bay District of Lower Cook Inlet.

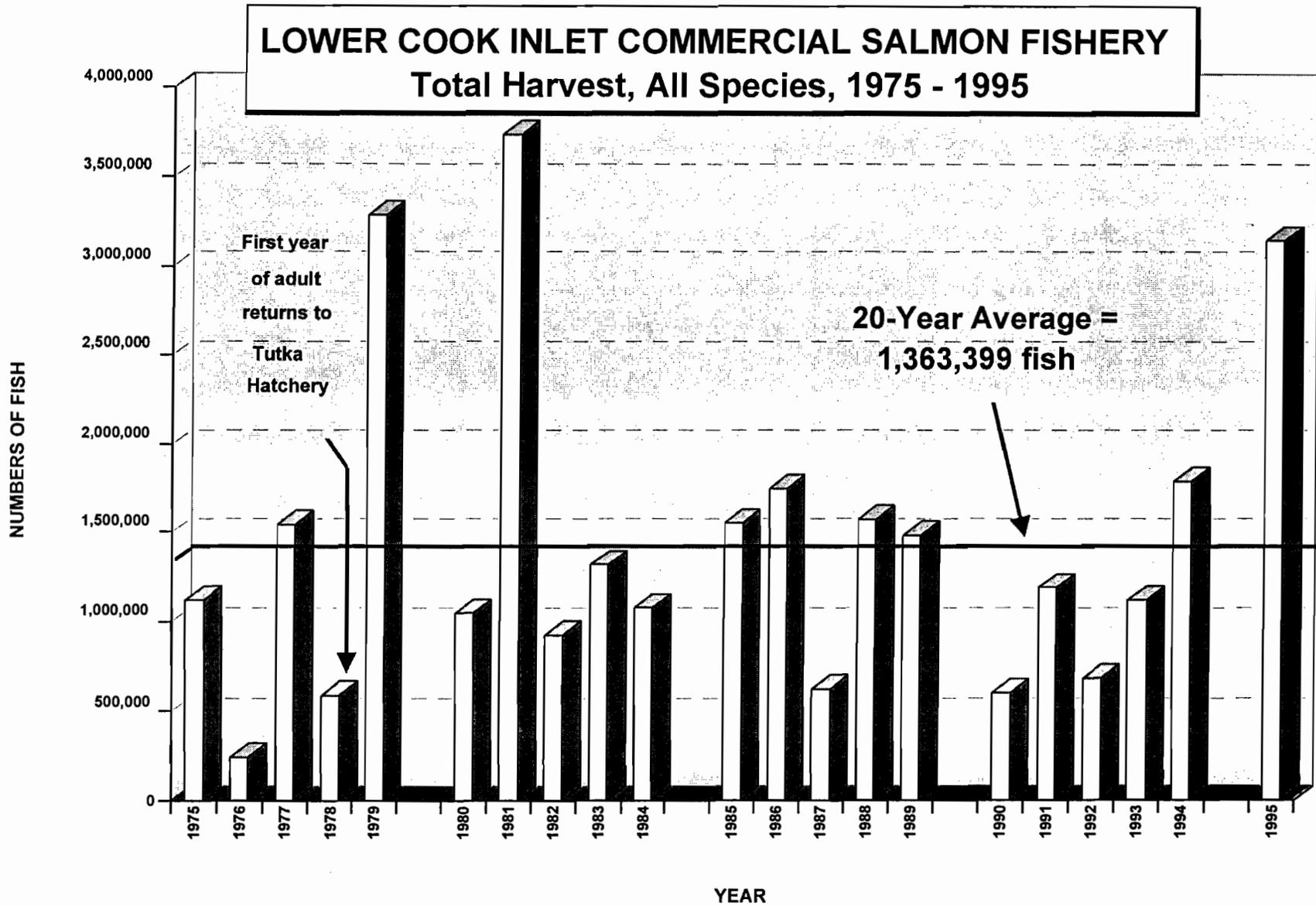


Figure 9. Total commercial salmon catch, Lower Cook Inlet, 1975 - 1995.

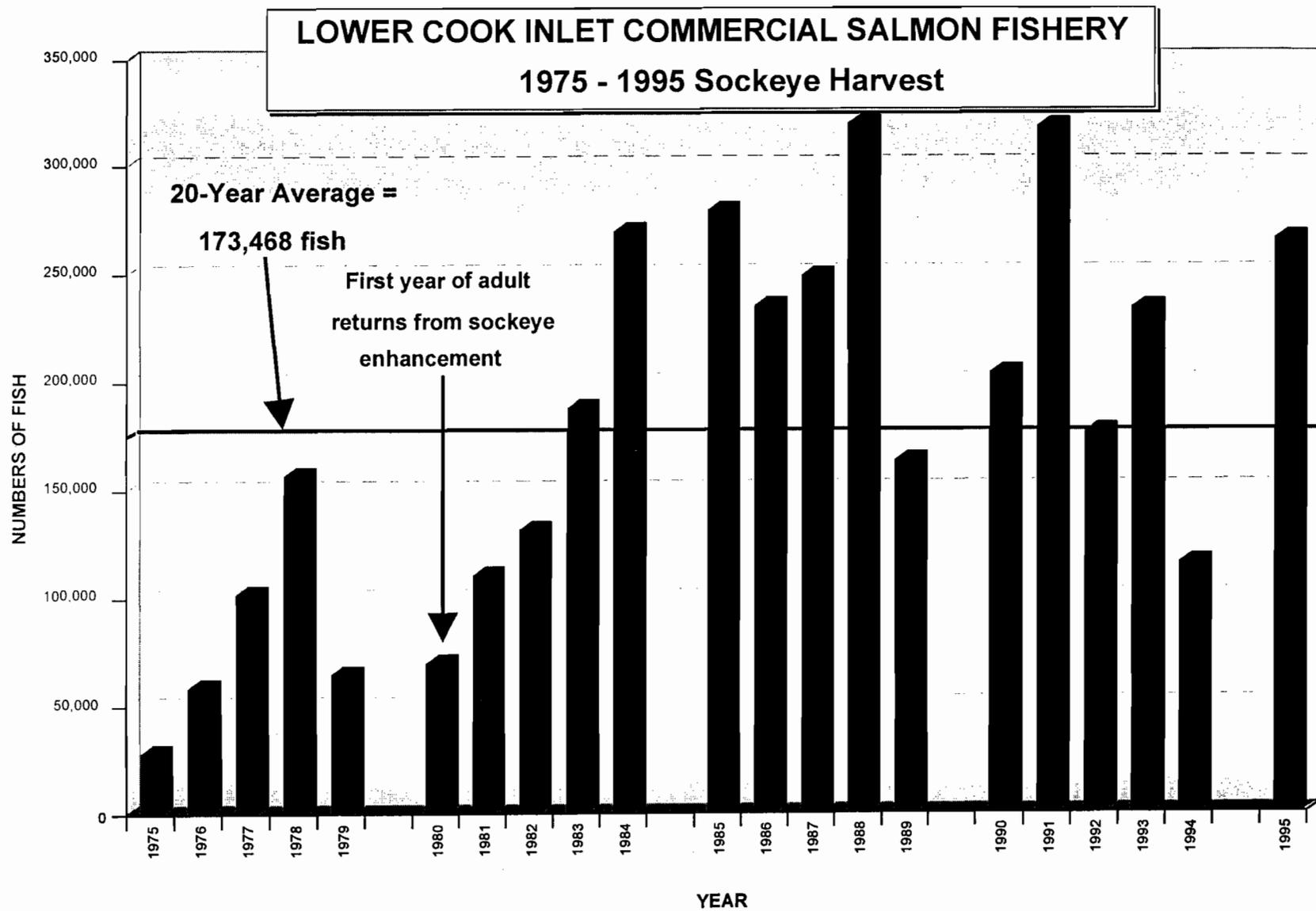


Figure 10. Commercial sockeye salmon catch, Lower Cook Inlet, 1975 - 1995.

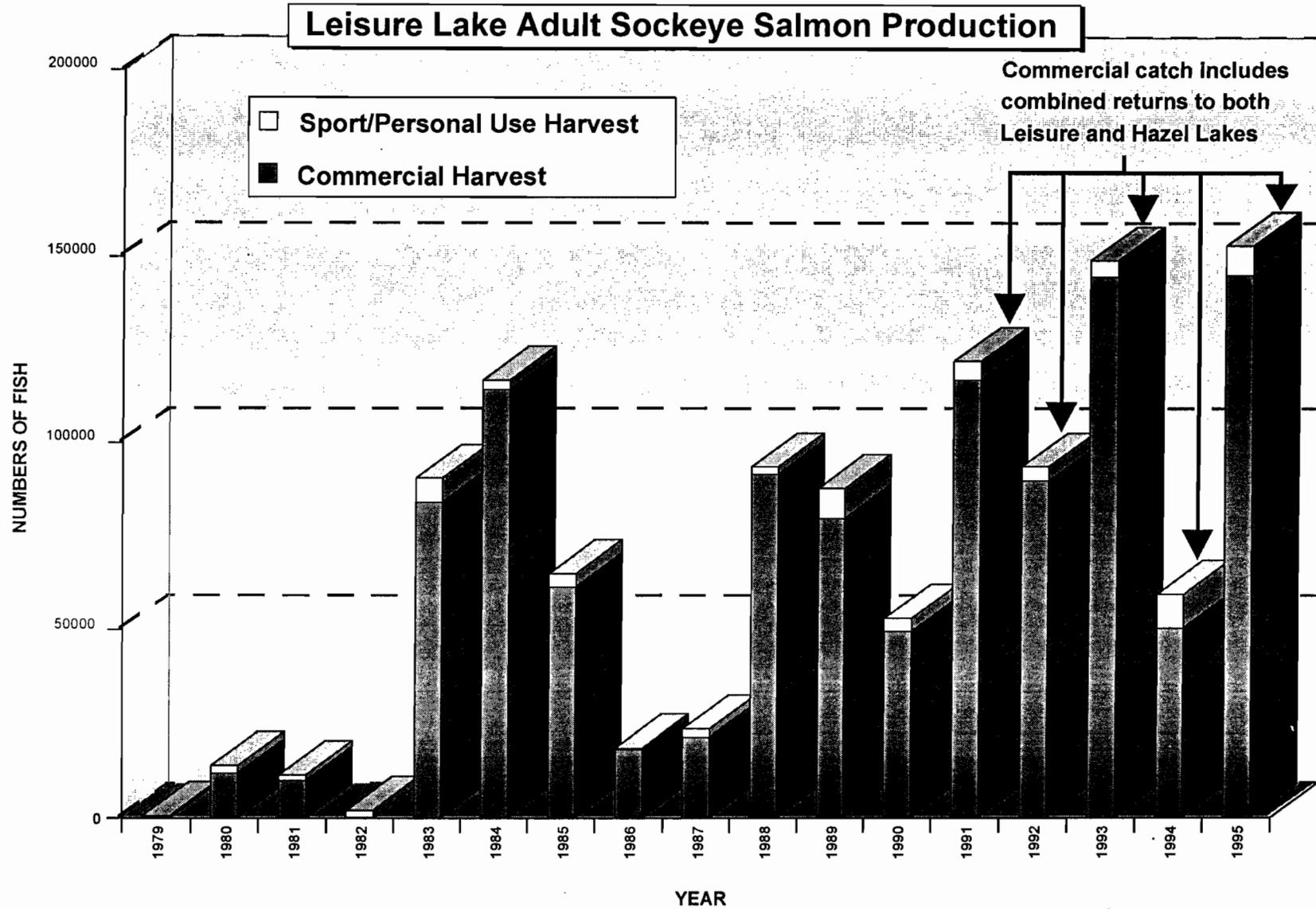


Figure 11. Sockeye salmon returns to Leisure and Hazel Lakes in the Southern District of Lower Cook Inlet, 1980 - 1995.

Chenik Lake Sockeye Salmon Returns

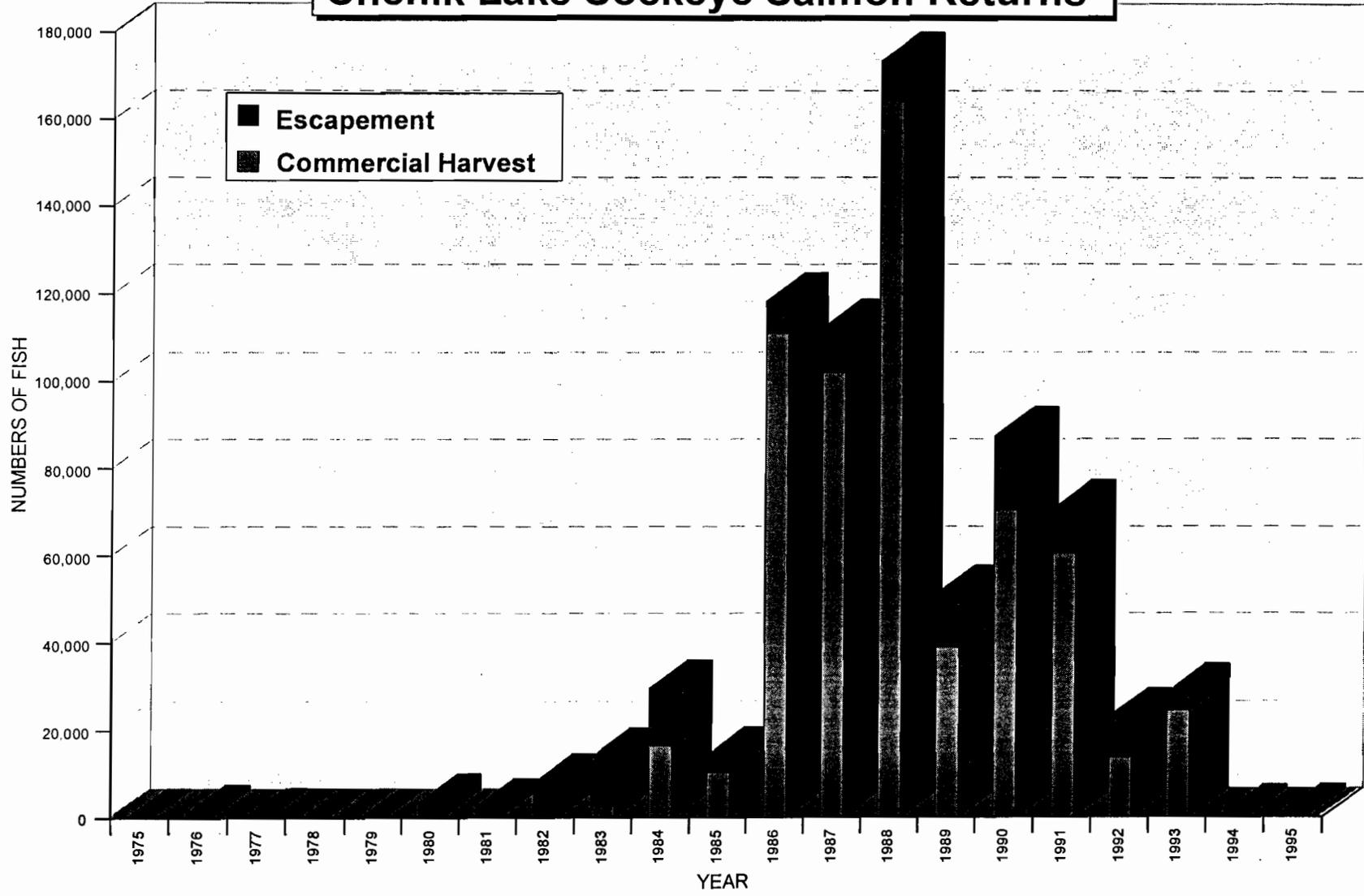


Figure 12. Sockeye salmon returns to Chenik Lake in the Kamishak Bay District of Lower Cook Inlet.

LOWER COOK INLET COMMERCIAL SALMON FISHERY

1975 - 1995 Pink Harvest

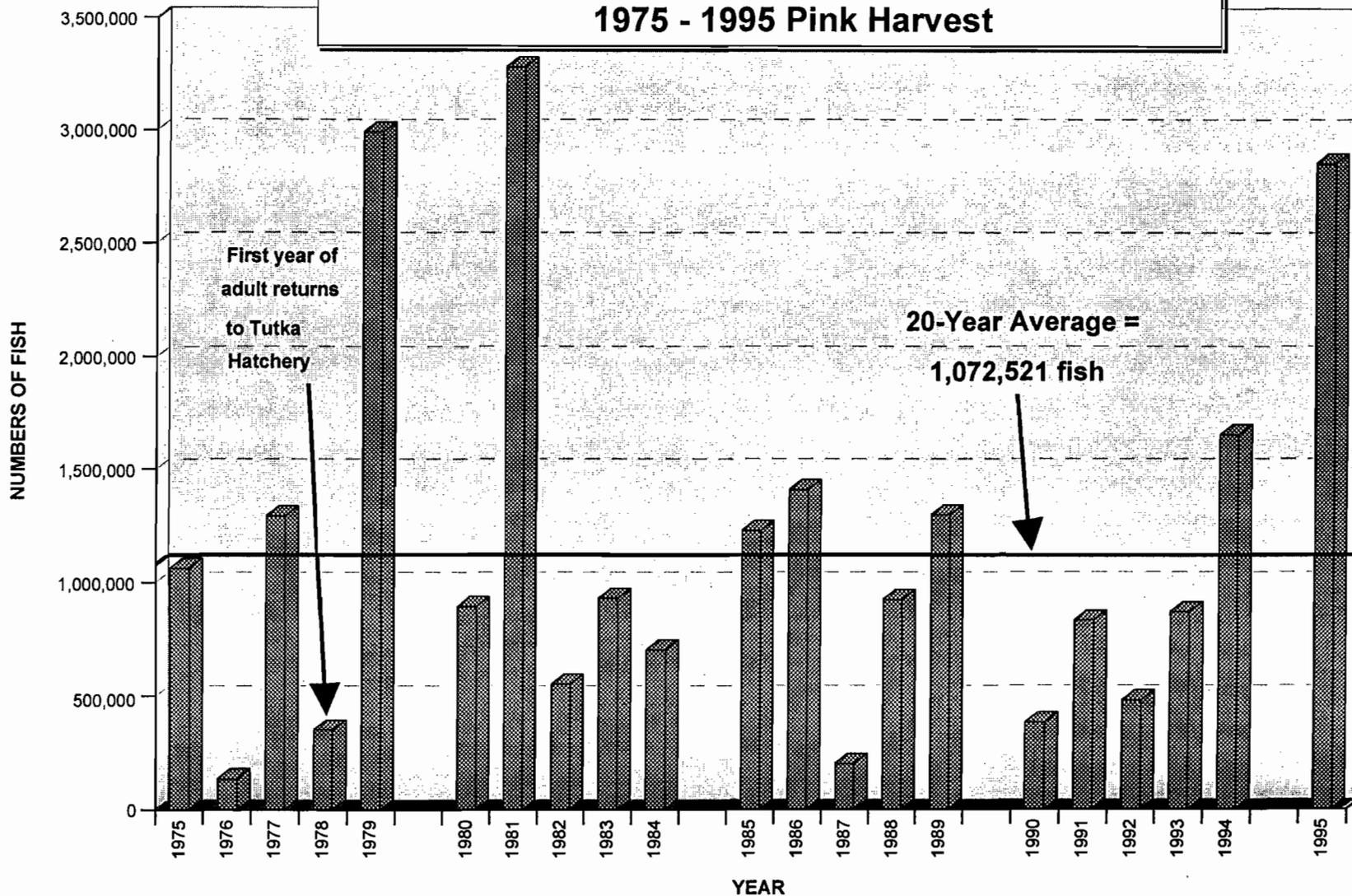


Figure 13. Commercial pink salmon catch, Lower Cook Inlet, 1975 - 1995.

LOWER COOK INLET COMMERCIAL SALMON FISHERY 1975 - 1995 Chum Harvest

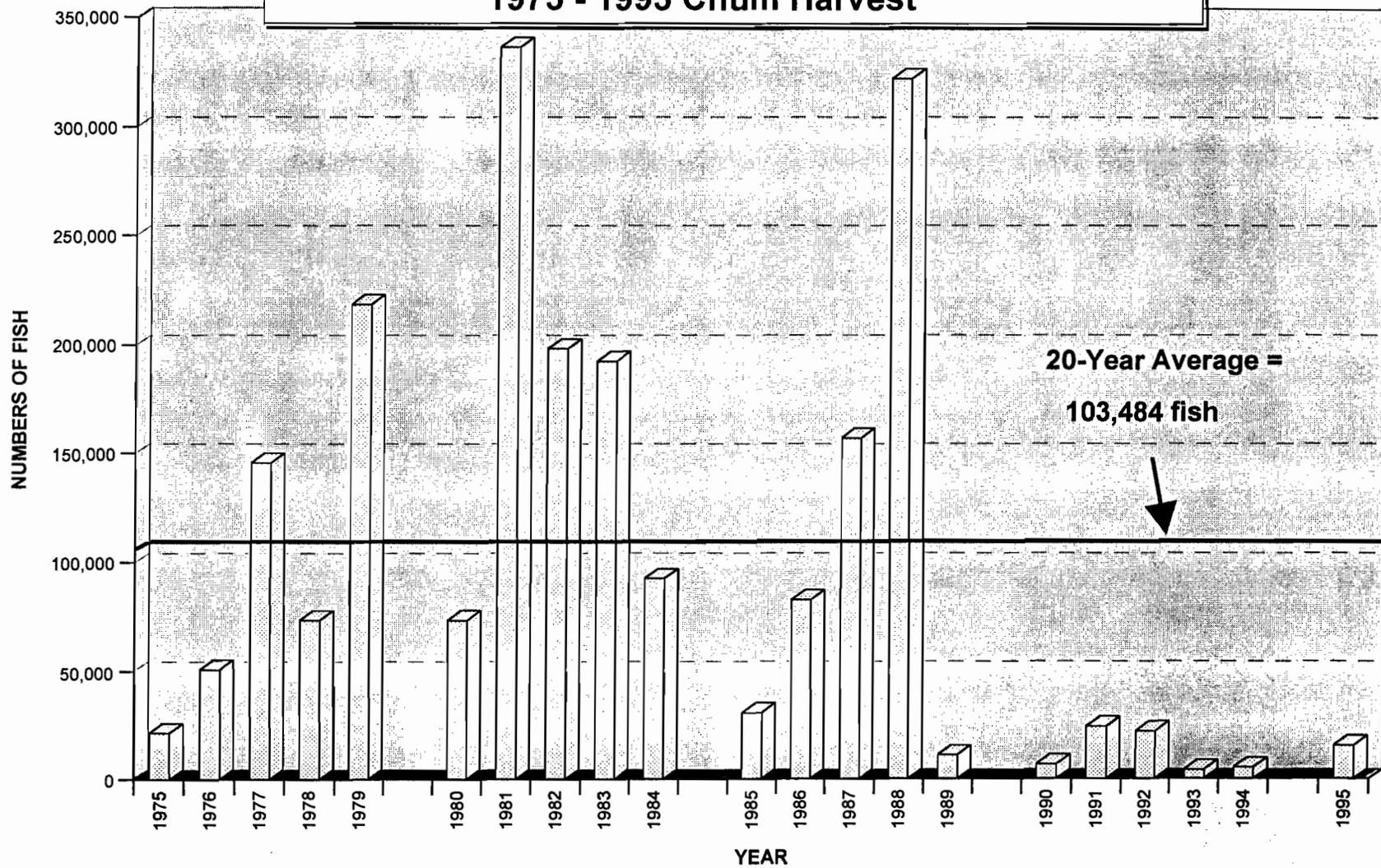


Figure 14. Commercial chum salmon catch, Lower Cook Inlet, 1975 - 1995.

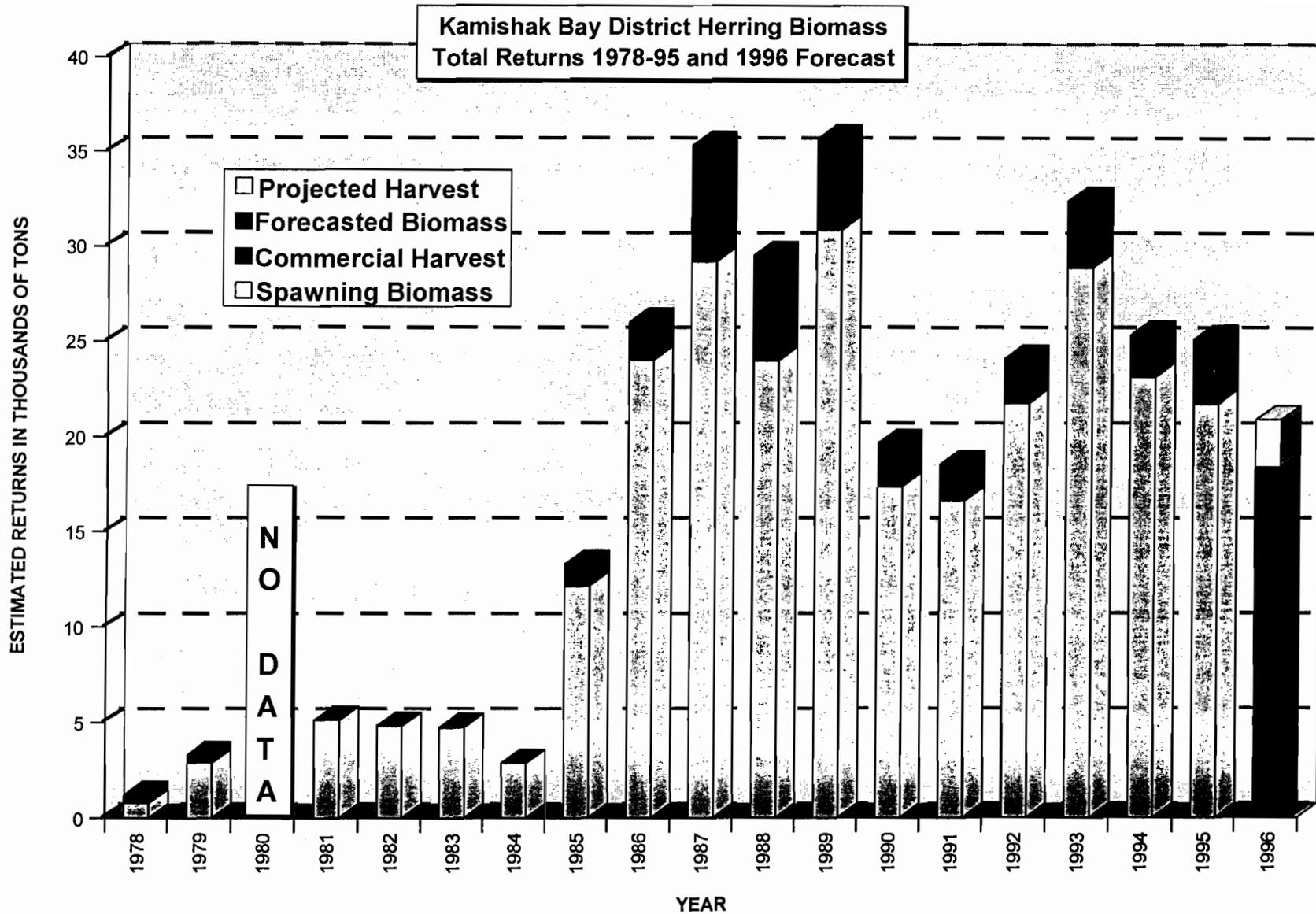


Figure 15. Biomass estimates and commercial harvests of Pacific herring in the sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1978 - 1995, and 1996 projection.

**KAMISHAK BAY DISTRICT HERRING AGE CLASS
1995 Observed and 1996 Predicted**

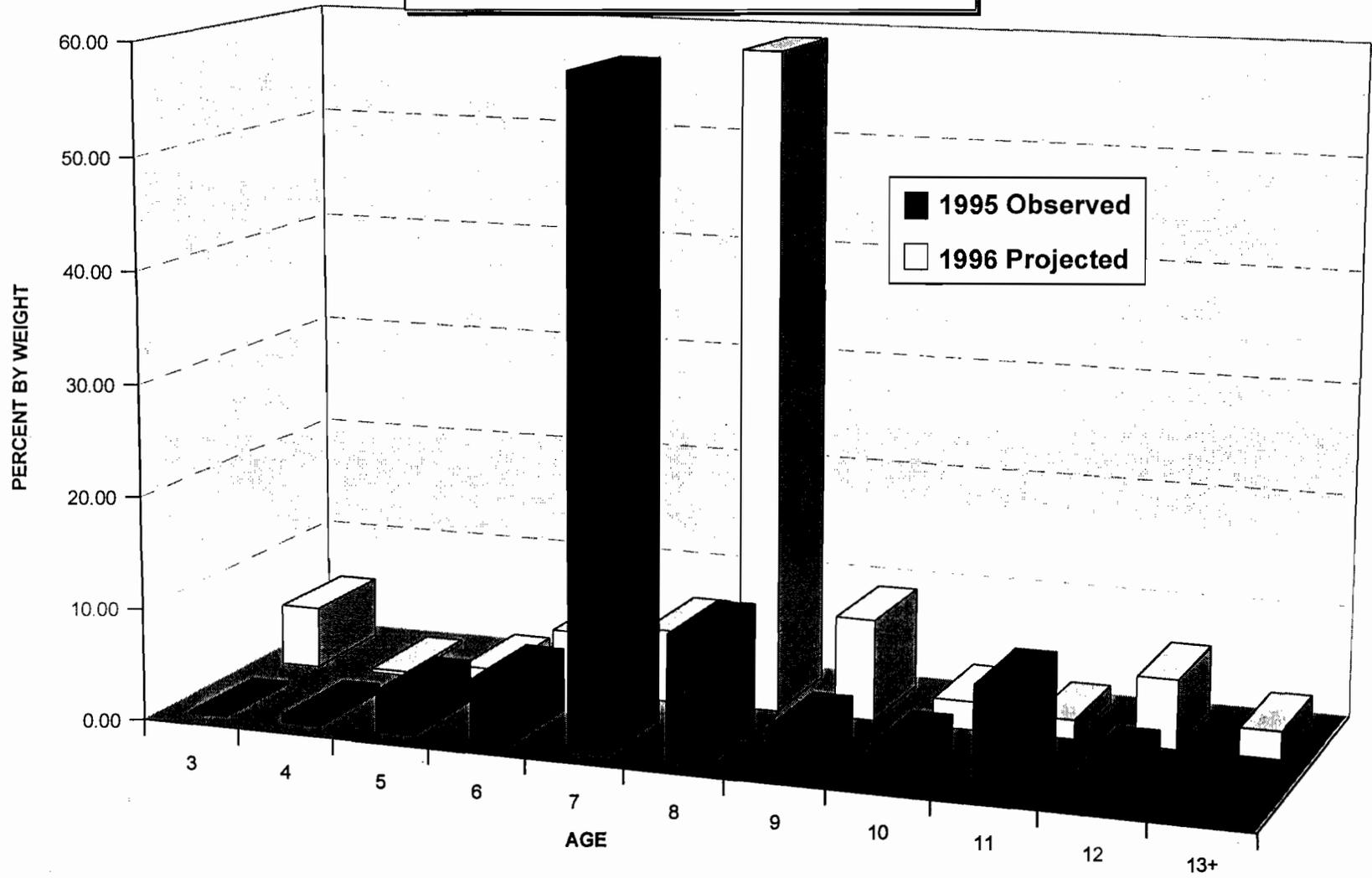


Figure 16. Herring age composition from samples obtained in the commercial sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1995, and 1996 forecast.

Appendix Table 1. Salmon fishing permits issued and fished, by gear type, Lower Cook Inlet, 1975 - 1995^a.

Year	Seines				Set Net Permits fished
	Permanent Permits	Interim Permits	Total Issued	Actively fished	
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
1990	82	1	83	71	20
1991	82	1	83	68	20
1992	82	1	83	63	21
1993	82	1	83	51	17
1994	82	1	83	32	16
1995	83	1	84	49	23
1975-94 Avg.	76	7	83	65	29
1985-94 Avg.	81	1	82	60	24

^a Data source: Commercial Fisheries Entry Commission and ADF&G fish ticket database.

Appendix Table 2. Exvessel value of the commercial salmon harvest in thousands of dollars by species, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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	3,004
1990	29	1,287	28	306	31	1,681
1991 ^b	19	1,115	36	275	48	1,493
1992 ^b	30	1,152	19	212	53	1,466
1993 ^b	27	802	41	287	7	1,164
1994 ^b	18	496	93	745	9	1,361
1995 ^b	48	1,381	62	1,245	24	2,760
1975-94 Avg.	24	1,101	79	1,238	458	2,901
1995 % of Total	1.74%	50.04%	2.25%	45.11%	0.87%	100.00%

^a Values obtained by using the formula: (average price per lb.) x (average weight per fish) x (catch) = Exvessel value; average prices are determined only from fish ticket information and may not reflect retroactive or postseason adjustments.

^b Includes hatchery cost recovery.

Appendix Table 3. Average salmon price in dollars per pound by species, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum
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
1990	1.35	1.55	0.60	0.30	0.50
1991	1.12	0.83	0.29	0.13	0.27
1992	1.29	1.47	0.43	0.14	0.27
1993	1.02	0.80	0.51	0.12	0.28
1994	0.95	1.06	0.62	0.15	0.25
1995	1.17	1.11	0.47	0.15	0.24
20-Year Avg.	1.19	1.20	0.75	0.32	0.42
1975-84 Avg.	1.15	0.99	0.74	0.34	0.45
1985-94 Avg.	1.23	1.41	0.77	0.29	0.39

^a Average prices are determined only from fish ticket information and may not reflect retroactive or postseason adjustments.

Appendix Table 4. Salmon average weight in pounds per fish by species in the commercial fishery, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum
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
1990	13.8	4.1	7.1	2.8	8.9
1991	12.3	4.2	6.6	2.6	7.5
1992	12.3	4.4	7.7	3.2	8.8
1993	12.0	4.4	6.0	2.7	6.2
1994	15.0	4.1	10.2	3.0	6.4
1995	17.8	4.7	7.4	2.9	6.4
20-Year Avg.	19.9	5.3	7.7	3.3	8.3
1975-84 Avg.	23.7	6.1	7.5	3.5	8.6
1985-94 Avg.	16.2	4.4	8.0	3.1	8.0

^a Values obtained from ADF&G fish ticket database.

Appendix Table 5. Commercial salmon catch in numbers of fish by species, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1990	1,560	203,895	9,297	383,670	6,951	605,373
1991	1,419	317,947	19,047	828,709	24,232	1,191,354
1992	1,891	176,644	5,902	479,768	22,203	686,408
1993	2,168	233,834	13,477	866,774	4,367	1,120,620
1994	1,231	115,418	14,673	1,647,929	5,469	1,784,720
1995	2,303	265,423	17,709	2,848,464	15,636	3,149,535
20-Year Avg.	1,142	173,438	12,815	1,072,521	103,484	1,363,399
1975-84 Avg.	796	117,633	13,034	1,218,591	140,289	1,490,343
1985-94 Avg.	1,487	229,242	12,596	926,450	66,678	1,236,454
1995 % of Total	0.07%	8.43%	0.56%	90.44%	0.50%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 6. Commercial salmon catch in numbers of fish by species in the Southern District, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1990	1,546	82,412	1,552	178,087	2,433	266,030
1991	1,399	170,224	9,415	253,962	1,962	436,962
1992	1,852	106,793	1,277	417,021	1,885	528,828
1993	2,162	159,747	4,431	692,794	2,788	861,922
1994	1,230	64,531	1,373	1,589,709	2,631	1,659,474
1995	2,289	164,798	5,161	2,475,312	4,530	2,652,090
20-Year Avg.	1,102	87,602	4,596	588,395	6,622	688,317
1975-84 Avg.	736	75,433	5,470	564,453	9,376	655,469
1985-94 Avg.	1,467	99,771	3,722	612,338	3,869	721,166
1995 % of Total	0.09%	6.21%	0.19%	93.34%	0.17%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 7. Commercial set gillnet catch of salmon in numbers of fish by species in the Southern District, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1990	1,361	15,863	1,046	12,646	1,938	32,854
1991	842	20,525	5,011	3,954	1,577	31,909
1992	1,288	17,002	848	15,958	1,687	36,783
1993	1,089	14,791	3,088	12,008	2,591	33,567
1994	1,103	14,004	1,073	23,621	2,419	42,220
1995	2,078	19,406	3,564	41,654	3,958	70,660
20-Year Avg.	762	31,454	3,380	24,577	3,535	63,708
1975-84 Avg.	478	44,496	4,017	33,150	4,512	86,653
1985-94 Avg.	1,047	18,412	2,744	16,003	2,558	40,763
1995 % of Total	2.94%	27.46%	5.04%	58.95%	5.60%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 8. Commercial salmon catch in numbers of fish by species in the Outer District, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1990	2	17,404	74	191,320	614	209,414
1991	2	6,408	12	359,664	14,337	380,423
1992	0	572	1	146	181	900
1993	2	4,613	119	159,159	970	164,863
1994	0	5,930	993	13,200	32	20,155
1995	12	17,642	1,272	192,098	474	211,498
20-Year Avg.	29	23,463	648	367,778	39,271	431,189
1975-84 Avg.	52	24,227	95	552,943	64,583	641,901
1985-94 Avg.	5	22,699	1,202	182,613	13,959	220,477
1995 % of Total	0.01%	8.34%	0.60%	90.83%	0.22%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 9. Commercial salmon catch in numbers of fish by species in the Eastern District, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1990	0	7,682	7,645	11,815	307	27,449
1991	1	4,703	7,283	167,250	80	179,317
1992	0	432	3,136	60,007	86	63,661
1993	0	1,824	8,924	10,616	9	21,373
1994	1	9,661	10,410	44,987	2,792	67,851
1995	0	46,556	5,192	12,000	330	64,078
20-Year Avg.	3	9,169	2,550	51,387	4,281	67,390
1975-84 Avg.	5	9,922	454	58,425	3,354	72,159
1985-94 Avg.	1	8,417	4,647	44,349	5,207	62,621
1995 % of Total	0.00%	72.66%	8.10%	18.73%	0.51%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 10. Commercial salmon catch in numbers of fish by species in the Kamishak Bay District, Lower Cook Inlet, 1975 - 1995^a.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
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
1990	12	96,397	26	2,448	3,597	102,480
1991	17	136,612	2,337	47,833	7,853	194,652
1992	39	68,847	1,488	2,594	20,051	93,019
1993	4	67,650	3	4,205	600	72,462
1994	0	35,296	1,897	33	14	37,240
1995	2	36,427	6,084	169,054	10,302	221,869
20-Year Avg.	8	53,203	5,021	64,961	53,310	176,502
1975-84 Avg.	3	8,051	7,015	42,770	62,976	120,814
1985-94 Avg.	14	98,355	3,026	87,151	43,644	232,191
1995 % of Total	0.00%	16.42%	2.74%	76.20%	4.64%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 11. Total commercial salmon catch in numbers of fish by district, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1990	266,030	209,414	102,480	27,449	605,373
1991	436,962	380,423	194,652	179,317	1,191,354
1992	528,828	900	93,019	63,661	686,408
1993	861,922	164,863	72,462	21,373	1,120,620
1994	1,659,474	20,155	37,240	67,851	1,784,720
1995	2,652,090	211,498	221,869	64,078	3,149,535
20-Year Avg.	688,317	431,189	176,502	67,390	1,363,399
1975-84 Avg.	655,469	641,901	120,814	72,159	1,490,343
1985-94 Avg.	721,166	220,477	232,191	62,621	1,236,454
1995 % of Total	84.21%	6.72%	7.04%	2.03%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 12. Commercial chinook salmon catch in numbers of fish by district, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1990	1,546	2	12	0	1,560
1991	1,399	2	17	1	1,419
1992	1,852	0	39	0	1,891
1993	2,162	2	4	0	2,168
1994	1,230	0	0	1	1,231
1995	2,289	12	2	0	2,303
20-Year Avg.	1,102	29	8	3	1,142
1975-84 Avg.	736	52	3	5	796
1985-94 Avg.	1,467	5	14	1	1,487
1995 % of Total	99.39%	0.52%	0.09%	0.00%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 13. Commercial sockeye salmon catch in numbers of fish by district, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1990	82,412	17,404	96,397	7,682	203,895
1991	170,224	6,408	136,612	4,703	317,947
1992	106,793	572	68,847	432	176,644
1993	159,747	4,613	67,650	1,824	233,834
1994	64,531	5,930	35,296	9,661	115,418
1995	164,798	17,642	36,427	46,556	265,423
20-Year Avg.	87,602	23,463	53,203	9,169	173,438
1975-84 Avg.	75,433	24,227	8,051	9,922	117,633
1985-94 Avg.	99,771	22,699	98,355	8,417	229,242
1995 % of Total	62.09%	6.65%	13.72%	17.54%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 14. Commercial sockeye salmon catch in thousands of fish by subdistrict, Lower Cook Inlet, 1959 - 1995^a.

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Resurrection Bay	0	0.1	0	0	0	0	0	0	0	74.5	99.4	1.8	2.2
Aialik Bay	1.3	0.2	4.3	2.6	0.5	0	0	0	0	0	0	3.1	0
Nuka Bay	8.3	6.7	8.2	5.1	0.5	0	2.0	0	2.2	1.5	0	1.0	1.6
Port Dick	0	0	0	0	0	0	0	0	0	0	0	0	0
Halibut Cove & Lagoon	1.3	1.4	0.8	2.0	1.1	0.7	1.4	1.5	1.9	2.7	1.7	1.3	1.3
Tutka/Barabara	1.1	1.7	3.0	5.2	2.9	9.0	5.2	6.0	11.8	6.3	5.6	6.0	10.0
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	1.5
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	5.6
Kamishak/Douglas	0	0	0	0	0	0	0	0	0	0	0	0	0
McNeil (Mikfik)	0	0.7	0	0	0	1.9	0.2	0	0	0	8.9	2.8	0
Paint River	0	0	0	0	0	0	0	0	0	0	0	0	0
Chenik Lake	0	0	0	0	0	0	0	0	0.2	0	1.9	0	0
Bruin (Kirschner)	0	0	0	0	0	0	0	0	0	0	0	0	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	0
Totals	21.6	24.7	22.8	25.3	15.1	20.7	14.0	15.3	29.0	95.2	122.8	20.9	22.2

Location	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Resurrection Bay	0.1	0	0	0	0	0	0	0	0	0.6	0	0	3.4
Aialik Bay	0.3	3.1	0.2	0.6	0	5.8	0	0	0.1	8.7	3.0	25.9	50.8
Nuka Bay	26.1	1.1	0.1	0	18.9	31.1	10.6	24.4	21.5	17.2	66.3	16.8	29.2
Port Dick	0	0	0	0	0	0	0	0	0	0	0	0	0
Halibut Cove & Lagoon	3.7	2.1	3.0	3.4	5.1	3.6	12.9	5.3	11.5	11.2	1.2	77.7	116.6
Tutka/Barabara	14.8	8.1	10.8	12.6	14.2	21.3	92.1	15.6	13.2	41.0	15.8	35.9	26.7
Seldovia Bay	2.3	2.2	2.3	2.1	2.1	3.0	5.6	2.6	1.6	5.3	5.0	6.7	4.9
Port Graham Bay	10.5	11.7	10.9	9.2	13.6	16.6	30.5	12.9	16.5	20.3	21.5	13.4	12.5
Kamishak/Douglas	0	0	0	0	0.2	5.3	4.6	0.5	0	4.9	0	2.8	0
McNeil (Mikfik)	0	0	0	0	3.8	2.1	0	1.2	3.9	0	17.8	5.8	10.7
Paint River	0	0	0	0	0	0	0	0	0	0	0	0	0
Chenik Lake	0	0	0	0	0	0	0	0	0	0	0.3	2.7	13.9
Bruin (Kirschner)	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0.1	0.8	0.1	0.2	0.3	2.8	0.1	1.9	1.1	1.1	0.4	0	0.3
Totals	57.9	29.1	27.4	28.1	58.2	101.6	156.4	64.4	69.4	110.3	131.3	187.6	269.0

Location	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Resurrection Bay	0.3	0	0.2	0	0	0	0	0	1.7	9.0	44.6		
Aialik Bay	24.1	3.0	3.5	20.2	8.5	7.7	4.7	0.4	0.2	0.6	2.0		
Nuka Bay	91.8	48.4	31.8	9.5	10.3	5.7	1.8	0	3.5	5.9	17.6		
Port Dick	0	0	0	0	0	11.7	4.6	0.6	1.0	0	0		
Halibut Cove & Lagoon	63.2	15.2	69.1	24.9	46.6	20.3	36.0	14.7	19.0	12.2	9.0		
China Poot ^b				63.6	35.8	49.9	116.7	76.0	127.6	38.7	133.4		
Tutka/Barabara	14.9	16.3	14.7	12.9	13.4	7.9	13.4	12.9	8.4	11.0	15.4		
Seldovia Bay	2.6	3.2	3.5	2.5	1.8	4.3	4.0	3.3	4.4	2.7	4.2		
Port Graham Bay	3.5	2.0	2.4	1.4	0	0	0	0	0	0	2.6		
Kamishak/Douglas	0.7	7.6	2.3	5	0	0.1	7.0	9.9	1.3	3.4	2.7		
McNeil (Mikfik)	67.0	27.5	21.4	14.6	7.0	9.1	12.9	4.0	0.9	0	0.1		
Paint River	0	0	0	0	0	0	0.4	0	0	0	0		
Chenik Lake	10.6	111.3	98.5	164.2	38.9	70.3	60.4	14.4	24.6	0	0		
Bruin/Kirschner	0	0	0	0	0.2	14.5	55.9	40.5	39.7	31.9	33.6		
Miscellaneous	0	0.4	1.6	0.2	0.8	2.4	0.1	0	1.5	0	0.2		
Totals	278.7	234.9	248.8	319.0	163.3	203.9	317.9	176.6	233.8	115.4	265.4		

^a Data source: ADF&G fish ticket database.

^b China Poot Subdistrict, which includes China Poot, Peterson, and Neptune Bays, was part of Halibut Cove Subdistrict prior to 1988.

Appendix Table 15. Harvest of sockeye salmon returns to China Poot Bay in the Southern District of Lower Cook Inlet, by user group, 1979 - 1995^a.

Return Year	Sport Harvest	Personal Use Harvest	Commercial Harvest	Non-harvested fish	Total Return
1979	650	0	^b	0	650
1980	1,000	1,000	12,000	0	14,000
1981	1,500	0	10,000	0	11,500
1982	450	1,320	200	1,430	3,400
1983	480	5,910	84,020	10	90,420
1984	500	2,000	114,360	500	117,360
1985	500	3,000	61,500	920	65,920
1986	100	150	18,350	200	18,800
1987	200	2,000	21,500	0	23,700
1988	500	1,500	91,469	470	93,939
1989	1,000	7,000	79,714	0	87,714
1990	500	3,000	49,587	0	53,087
1991	1,000	4,000	117,000 ^c	0	122,000
1992	300	3,500	89,791 ^c	0	93,591
1993	400	4,000	144,677 ^c	0	149,077
1994	500	8,500	50,527 ^c	0	59,527
1995	1,000	7,000	145,392 ^c	450	153,842
1979-94 Average	599	2,930	62,980	221	66,729

^a Through 1990, "Commercial Harvest" and "Total Return" includes returns only to Leisure Lake in China Poot Bay; after 1990, these figures include combined returns to both Leisure Lake in China Poot Bay and Hazel Lake in Neptune Bay.

^b No data.

^c Portions of the commercial sockeye harvest in China Poot, Halibut Cove, and Tutka Bay Subdistricts were attributed to the Leisure and/or Hazel Lake returns.

Appendix Table 16. Commercial catch and escapement of sockeye salmon at Chenik Lake in the Kamishak Bay District of Lower Cook Inlet, 1975 - 1995.

Return Year	Commercial Harvest	Escapement ^a	Total Return
1975	b	100	100
1976	b	900	900
1977	b	200	200
1978	b	100	100
1979	b	c	b
1980	b	3,500	3,500
1981	b	2,500	2,500
1982	b	8,000	8,000
1983	2,800	11,000	13,800
1984	16,500	13,000	29,500
1985	10,500	3,500	14,000
1986	111,000	7,000	118,000
1987	102,000	10,000	112,000
1988	164,200	9,000	173,200
1989	38,905	12,000	50,905
1990	70,347	17,000	87,347
1991	60,397	10,189	70,586
1992	13,793	9,269	23,062
1993	24,567	4,000	28,567
1994	0 ^d	808	808
1995	0 ^d	1,086	1,086
Average Since 1985	66,190	8,277	74,466

^a Estimated from aerial surveys from 1975-1990, weir counts from 1991-1995.

^b Closed to fishing.

^c No data.

^d Due to low returns, the Chenik Special Harvest Area was closed to fishing for the entire season.

Appendix Table 17. Commercial coho salmon catch in numbers of fish by district, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1990	1,552	74	26	7,645 ^b	9,297
1991	9,415	12	2,337	7,283 ^b	19,047
1992	1,277	1	1,488	3,136 ^b	5,902
1993	4,431	119	3	8,924 ^b	13,477
1994	1,373	993	1,897	10,410 ^b	14,673
1995	5,161	1,272	6,084	5,192 ^b	17,709
20-Year Avg.	4,596	648	5,021	2,550	12,815
1975-84 Avg.	5,470	95	7,015	454	13,034
1985-94 Avg.	3,722	1,202	3,026	4,647	12,596
1995 % of Total	29.14%	7.18%	34.36%	29.32%	100.00%

^a Data source: ADF&G fish ticket database.

^b Includes commercial seine catches, Seward Silver Salmon Derby entries (which are sold to a commercial processor), and fish taken for hatchery cost recovery purposes.

Appendix Table 18. Commercial pink salmon catch in numbers of fish by district, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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
1990	178,087	191,320	2,448	11,815	383,670
1991	253,962	359,664	47,833	167,250	828,709
1992	417,021	146	2,594	60,007	479,768
1993	692,794	159,159	4,205	10,616	866,774
1994	1,589,709	13,200	33	44,987	1,647,929
1995	2,475,312	192,098	169,054	12,000	2,848,464
20-Year Avg.	588,395	367,778	64,961	51,387	1,072,521
1975-84 Avg.	564,453	552,943	42,770	58,425	1,218,591
1985-94 Avg.	612,338	182,613	87,151	44,349	926,450
1995 % of Total	86.90%	6.74%	5.93%	0.42%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 19. Commercial pink salmon catch in thousands of fish by subdistrict during odd-numbered years, Lower Cook Inlet, 1959 - 1995^a.

Location	1959	1961	1963	1965	1967	1969	1971	1973	1975	1977
Humpy Creek	13.2	34.5	20.6	6.7	6.9	0.6	0	37.3	242.1	26.4
Halibut Cove and Lagoon		33.4	36.9	7.1	33.4	0	11.4	7.2	97.2	16.3
Tutka/Barabara	14.4	106.8	37.7	44.6	31.6	32.9	3.9	20.0	89.2	21.9
Seldovia Bay	4.9	15.1	1.6	19.2	11.7	28.8	27.4	19.4	429.6	47.6
Port Graham Bay	5.3	1.0	2.7	12.4	5.1	2.0	1.0	13.9	18.3	44.8
Dogfish Bay	1.6	0	0	0.1	2.3	0	10.4	0.3	0	5.0
Port Chatham	1.2	0	0.8	0	0	0	26.3	20.6	16.0	1.4
Windy Bay	3.1	2.2	0	5.4	0	0	57.3	68.5	18.1	173.2
Rocky Bay	2.3	0	1.4	0.1	0	0	0.1	0.2	0	11.6
Port Dick Bay	28.2	92.9	19.0	15.3	259.9	51.5	94.6	96.6	90.3	881.7
Nuka Bay	33.3	2.0	0.3	0	0.1	0	119.7	8.1	35.4	56.3
Resurrection Bay	8.4	0	0	0	1.2	0	0	0	0	0
Bruin Bay	0	0	12.3	0.9	2.1	0	11.7	0	0	6.2
Rocky/Ursus Coves	3.7	2.7	44.2	0	13.0	52.8	16.4	7.9	0	0
Iniskin/Cottonwood Bays	1.5	3.3	21.8	0	0.1	26.0	0	4.7	0	0.1
Miscellaneous	3.6	9.5	4.3	3.8	8.1	7.8	12.7	2.7	27.1	1.4
Total	124.7	303.4	203.6	115.6	375.5	202.4	392.9	307.4	1,063.3	1,293.9

Location	1979	1981	1983	1985	1987	1989	1991	1993	1995	1997
Humpy Creek	277.0	239.9	8.1	5.6	0	91.4	0	0.2	13.7	
Halibut Cove and Lagoon	27.1	11.1	18.8	5.9	30.5	254.4	91.1	100.2	1.9	
China Poot ^b						8.5	135.7	50.6	12.9	
Tutka/Barabara	416.8	1,026.6	616.0	491.2	56.5	632.1	117.6	539.4	2,428.5	
Seldovia Bay	140.8	126.4	43.3	3.8	1.2	1.1	0.3	2.4	8.2	
Port Graham Bay	124.7	45.9	4.1	12.5	2.3	0	0	0	10.2	
Dogfish Bay	7.4	22.9	0.2	0	0	0	0	0	0	
Port Chatham	174.4	55.8	3.3	7.0	0	9.7	7.5	14.7	17.6	
Windy Bay	552.7	2.9	0	4.8	0	0	49.1	43.4	111.2	
Rocky Bay	122.2	16.5	1.3	0	0	0	0	0	27.5	
Port Dick Bay	964.8	1,140.9	140.0	455.6	3.0	0	289.7	26.6	0	
Nuka Bay	121.7	395.1	55.0	150.8	20.9	43.0	10.6	13.8	21.4	
Resurrection Bay	0	32.6	27.1	74.6	11.8	0	0	0.7	0	
Bruin Bay	40.3	51.9	0.3	0	1.2	202.8	45.1	0.1	104.8	
Rocky/Ursus Coves	14.4	14.1	0	0	69.4	53.8	0	0	58.0	
Iniskin/Cottonwood Bays	0.2	0	0.3	0	0.2	0	0	0	0	
Miscellaneous	6.4	16.6	9.8	17.9	4.4	0.1	82.0	74.7	32.6	
Total	2,990.9	3,199.2	927.6	1,229.7	201.4	1,296.9	828.7	866.8	2,848.5	

^a Data source: ADF&G fish ticket database.

^b China Poot Subdistrict, including Neptune Bay, was part of Halibut Cove Subdistrict prior to 1988.

Appendix Table 20. Commercial pink salmon catch in thousands of fish by subdistrict during even-numbered years, Lower Cook Inlet, 1960 - 1994^{a,b}.

Location	1960	1962	1964	1966	1968	1970	1972	1974	1976	1978
Humpy Creek	51.0	73.9	53.5	24.6	2.6	85.2	1.7	33.3	3.3	16.3
Halibut Cove and Lagoon	20.7	35.5	28.9	16.0	41.3	28.9	0.4	2.2	69.8	27.8
Tutka/Barabara	87.6	279.5	100.9	53.5	26.9	43.9	5.2	5.5	18.0	167.9
Seldovia Bay	42.6	142.8	37.4	44.1	23.6	19.0	0.2	3.5	3.0	35.8
Port Graham Bay	7.1	18.1	38.4	5.1	23.0	19.6	1.1	4.5	3.9	4.0
Dogfish Bay	1.8	1.4	0.1	7.1	0	9.8	0.3	0	0	0.3
Port Chatham	15.7	102.2	67.1	6.7	10.0	1.9	0	0	0	0
Windy Bay	29.2	85.5	68.6	20.1	3.4	0.8	0	0	0	0
Rocky Bay	17.0	225.9	53.2	0	10.8	36.8	0	0	0	0
Port Dick Bay	257.4	1,118.3	526.3	296.8	55.0	336.5	0	0.6	0	63.6
Nuka Bay	26.6	129.8	23.8	0	90.2	48.4	0.3	0.7	0.1	6.3
Resurrection Bay	5.8	0.1	0.3	0	37.4	40.2	18.2	0	35.4	29.7
Bruin Bay	2.6	0	0	0	126.2	10.2	0	0	0	0
Rocky/Ursus Coves	6.6	3.2	13.5	2.9	18.0	7.5	0	0	0	0.1
Iniskin/Cottonwood Bays	2.1	3.2	4.3	0	9.9	3.5	0	0	0.1	0.1
Miscellaneous	37.8	28.9	39.1	102.3	107.1	14.0	1.3	0.3	2.8	0.7
Total	611.6	2,248.3	1,055.4	579.2	585.4	716.2	28.7	50.6	136.4	352.6

Location	1980	1982	1984	1986	1988	1990	1992	1994	1996	1998
Humpy Creek	48.6	4.9	53.5	116.7	0	0	0	0		
Halibut Cove and Lagoon	4.7	1.0	10.9	14.0	106.8	91.0	58.4	105.6		
China Poof ^c					5.4	46.1	35.7	24.2		
Tutka/Barabara	312.5	184.9	262.0	400.2	723.9	37.4	320.9	1,454.5		
Seldovia Bay	81.7	70.3	2.2	2.8	5.5	3.6	1.9	5.4		
Port Graham Bay	30.5	35.4	8.0	8.8	10.7	0	0	0		
Dogfish Bay	4.7	1.7	0.1	0	0	0	0	0		
Port Chatham	1.8	12.6	0	0	0	22.1	0	0		
Windy Bay	0	0	0	0	0	0	0	0		
Rocky Bay	1.4	0	0	0	0	0	0	0		
Port Dick Bay	133.3	44.0	84.6	304.0	5.9	169.1	0.1	1.6		
Nuka Bay	12.8	8.7	4.4	97.8	0.2	0.2	0	11.6		
Resurrection Bay	155.8	137.4	122.3	36.5	0.5	0	0	T		
Bruin Bay	100.6	13.3	125.2	349.7	5.0	0.4	1.9	T		
Rocky/Ursus Coves	0	20.2	8.5	71.1	49.9	0	0.3	0		
Iniskin/Cottonwood Bays	0.1	0.4	0.4	0.2	1.3	0	T	0		
Miscellaneous	0.2	16.8	18.5	6.5	6.2	60.6	60.6	45.0		
Total	889.7	551.6	700.6	1,408.3	921.3	383.7	479.8	1,647.9		

^a Data source: ADF&G fish ticket database.

^b "T" denotes trace, less than 50 fish harvested.

^c China Poof Subdistrict, including Neptune Bay, was part of Halibut Cove Subdistrict prior to 1988.

Appendix Table 21. Commercial chum salmon catch in numbers of fish by district, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern	Outer	Kamishak	Eastern	Total
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	18,466	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
1990	2,433	614	3,597	307	6,951
1991	1,962	14,337	7,853	80	24,232
1992	1,885	181	20,051	86	22,203
1993	2,788	970	600	9	4,367
1994	2,631	32	14	2,792	5,469
1995	4,530	474	10,302	330	15,636
20-Year Avg.	6,622	39,271	53,310	4,281	103,484
1975-84 Avg.	9,376	64,583	62,976	3,354	140,289
1985-94 Avg.	3,869	13,959	43,644	5,207	66,678
1995 % of Total	28.97%	3.03%	65.89%	2.11%	100.00%

^a Data source: ADF&G fish ticket database.

Appendix Table 22. Commercial chum salmon catch in thousands of fish by subdistrict, Lower Cook Inlet, 1975 - 1995^{a,b}.

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Tutka Bay	0.1	2.4	1.8	2.9	2.4	5.6	1.1	3.9	4.0	1.3	0.7	1.6	0.5
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	2.0
Dogfish Bay	4.9	0.4	0.1	0	0.2	0	0	7.0	15.3	0.1	0	50.9	114.5
Port Chatham	1.0	2.5	0	2.8	4.3	5.2	0	17.8	0	1.0	0	0.1	2.4
Rocky/Windy Bays	14.9	6.4	2.2	8.5	0.3	33.8	8.1	1.7	0	0.5	0	39.4	1.4
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	0.7
Nuka Bay	1.7	8.4	1.7	0.5	1.5	0	0	0	1.5	6.9	0	5.9	0.1
Resurrection Bay	0.1	0.5	0	0	0	0	0	0	0.1	0.7	0	0.6	0.4
Douglas River	0.2	0	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	0
McNeil River	0	0.4	0	0	0	2.7	0.90	0	0.4	8.3	4.4	1.9	0
Bruin Bay	0	0.3	0.5	0	0.1	0	0.4	0	1.0	7.5	0	12.8	1.6
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	10.3
Cottonwood/Iniskin	12.1	33.4	10.2	41.7	10.9	10.9	0	0	19.0	25.5	44.4	71.9	14.5
Miscellaneous	22.6	0	0	5.8	1.4	1.4	2.5	28.5	2.2	5.4	1.0	2.4	0.2
Totals	110.8	116.1	55.6	179.3	138.5	323.3	28.1	129.1	85.4	75.1	61.2	242.4	148.6

Location	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Tutka Bay	1.3	0.8	1.4	2.0	0.9	0.8	2.6	2.7	1.8	7.9	8.3	9.9	3.4
Port Graham	3.2	2.6	1.0	2.2	0.5	5.0	2.4	4.3	2.5	11.2	7.4	1.7	3.6
Dogfish Bay	41.1	0.4	0	0	0	9.4	0	8.5	2.1	71.8	15.6	2.8	1.1
Port Chatham	0	0.4	0	0.6	0	0.1	0	1.7	1.3	59.6	16.2	2.1	0
Rocky/Windy Bays	0	0.9	0	0.3	0	17.7	0	76.7	2.1	7.4	0	3.2	0
Port Dick	0	33.4	8.1	6.8	0	25.6	10.3	79.0	19.0	85.8	30.3	18.0	1.9
Nuka Bay	2.3	40.8	3.9	3.6	0.4	17.4	0.4	14.7	7.8	3.8	0.9	0.8	0.2
Resurrection Bay	0.7	0	0	0	0	0	0.1	0	0.7	2.4	7.7	6.9	3.0
Douglas River	0	0	0	0.1	7.1	4.0	2.9	0.7	10.1	46.7	37.1	27.2	9.2
Kamishak River	2.4	0	1.8	0	10.5	0	23.9	17.8	2.8	8.6	9.2	23.9	16.2
McNeil River	2.3	0	2.0	0	16.9	38.5	4.9	6.5	6.3	11.6	32.6	67.9	12.0
Bruin Bay	1.8	0	0.7	0	0	0	0	4.0	11.0	1.7	1.3	2.6	5.9
Ursus/Rocky Coves	0.2	5.7	0	2.0	2.8	7.8	1.9	0.5	0.3	1.5	13.5	0	3.7
Cottonwood/Iniskin	19.7	29.9	0	2.8	11.5	15.3	14.9	0.2	5.4	3.5	21.6	21.4	23.0
Miscellaneous	0.5	0.6	0.3	1.2	0.2	4.2	9.2	1.2	0.4	2.6	3.5	3.9	9.3
Totals	75.5	115.5	19.2	21.6	50.8	145.8	73.5	218.5	73.5	336.1	198.0	192.3	92.5

Location	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Tutka Bay	3.2	3.9	3.9	4.7	2.5	1.5	0.8	0.6	0.9	0.8	1.6		
Port Graham	1.3	0.8	0.4	1.2	0	0	0	0	0	0	0.7		
Dogfish Bay	0	0	0	0	0	0	0	0	0	0	0		
Port Chatham	1.3	0	0	0	0	0.1	0.1	0	0.1	0	T		
Rocky/Windy Bays	0	0	0	0	0	0	0.5	0	0.1	0	0.4		
Port Dick	9.6	10.4	27.1	64.4	0	0.5	13.7	0.2	0.7	T	0		
Nuka Bay	0.8	1.3	1.6	6.8	0	T	T	0	T	T	0.1		
Resurrection Bay	3.0	3.5	13.9	23.9	0	0	0	0	0	2.5	0.3		
Douglas River	8.0	11.6	23.7	24.8	0	0.1	3.0	12.5	T	T	0.7		
Kamishak River	0.1	0.1	24.6	26.7	0	T	0.7	1.5	0	0	0.1		
McNeil River	0	13.7	32.9	104.0	0.1	0.1	0.1	2.0	0.4	0	0		
Bruin Bay	0	5.4	0.1	2.8	4.4	0.1	2.6	0.8	T	0	4.9		
Ursus/Rocky Coves	0	22.1	17.2	20.7	3.4	0	0	2.7	0	0	2.2		
Cottonwood/Iniskin	0	8.8	9.7	39.2	0	0	1.0	0.2	0	0	2.3		
Miscellaneous	3.3	1.1	1.9	2.7	0.9	4.7	1.7	1.6	2.1	2.1	2.3		
Totals	30.6	82.7	157.0	321.9	11.3	7.0	24.2	22.2	4.4	5.5	15.6		

^a Data source: ADF&G fish ticket database.

^b "T" denotes trace, less than 50 fish harvested.

Appendix Table 23. Estimated sockeye salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1975 - 1995^a.

Year	English Bay	Delight Lake	Desire Lake	Bear Lake ^{b,c}	Aialik Lake	Mikfik Lake	Chenik Lake	Amakd. Creek	Kamish. River	Douglas River	Total
1975	2.5	2.0	6.5	0.0	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	44.4
1977	12.5	5.2	10.7	0.0	5.0	9.8	0.2	2.6	—	2.6	49.0
1978	13.5	8.0	10.0	0.0	3.0	12.0	0.1	2.6	—		49.9
1979	4.4	8.0	12.0	0.0	5.0	6.0	0.0	1.0			36.7
1980	12.0	10.0	17.0	1.5	6.6	6.5	3.5	2.6	—	0.4	60.9
1981	10.5	7.3	12.0	0.7	1.8	5.3	2.5	1.9	—	0.2	42.5
1982	20.0	25.0	18.0	0.5	22.4	35.0	8.0	3.2	1.0	4.2	139.5
1983	12.0	7.0	12.0	0.7	20.0	7.0	11.0	1.2	0.4	0.5	72.7
1984	11.1	10.5	15.0	0.5	22.0	6.0	13.0	1.4	0.1	0.0	80.9
1985	5.0	26.0	18.0	1.1	8.0	20.0	3.5	0.9	0.8	0.0	83.4
1986	2.8	13.0	10.0	0.8	7.6	7.8	7.0	1.9	5.0	0.2	57.2
1987	7.0	10.5	13.4	0.3	9.2	9.0	10.0	1.1	—	0.1	60.8
1988	2.5	1.2	9.0	0.1	13.0	10.1	9.0	0.4	0.5	0.0	46.2
1989	4.5	7.7	9.0	0.1	6.5	11.5	12.0 ^c	1.2	0.5	0.6	53.8
1990	3.3	5.2	9.5	0.1	5.7	8.8	17.0	1.8	0.2	0.6	52.2
1991	7.0	4.1	8.2	0.7	3.7	9.7	10.2 ^c	1.9	0.7		46.3
1992	6.4	5.9	11.9	1.9	2.5	7.8	9.3 ^c	1.9	4.9	0.2	52.7
1993	8.9	5.6	11.0	5.0	3.0	6.4	4.0 ^c	2.0	4.1	—	50.0
1994	13.8 ^c	5.6	10.5	8.6	7.3	9.5	0.8 ^c	0.8	^d	—	56.9
1995	22.5 ^c	15.8	15.8	8.3	2.6	10.1	1.1 ^c	2.4	^d	—	78.6
<hr/>											
20-Year											
Average	8.3	8.7	11.7	1.2	8.4	10.2	6.1	1.6	1.7	0.7	59.4
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1975-84											
Average	10.5	8.9	12.4	0.5	10.2	10.4	3.9	1.9	0.5	1.2	61.3
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1985-94											
Average	6.1	8.5	11.1	1.9	6.7	10.1	8.3	1.4	2.1	0.2	56.7
<hr/>											
Esc.											
Goal	10-20	10	10	1	2.5-5	5-7	10	1	*	*	51-66

^a Unless otherwise noted, estimated escapements are either peak aerial survey counts or adjusted aerial survey counts based on survey conditions and time of surveys.

^b Limited by Bear Lake Management Plan since 1971.

^c Weir counts.

^d Insufficient survey data to generate escapement information.

Appendix Table 24. Estimated pink salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1960 - 1995^a.

Location	Y E A R										
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Humpy Creek	10.0	22.6	56.0	34.7	18.5	28.0	30.0	25.0	24.7	5.4	55.2
China Poot Creek	9.0	2.0	26.0	—	—	—	—	2.5	6.0	0.2	1.5
Tutka Lagoon Creek	15.0	15.0	30.0	10.0	20.0	20.0	12.0	7.0	7.9	6.5	6.5
Barabara Creek	2.0	0.1	1.5	0.1	—	—	5.0	—	2.0	0.9	0.4
Seldovia River	25.0	25.0	50.0	13.0	60.0	30.0	86.0	55.0	53.2	60.0	23.0
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
Dogfish Lagoon	2.0	—	3.0	—	—	—	—	—	—	—	—
Port Chatham Creeks	4.0	7.0	7.0	—	—	—	10.0	—	—	—	3.0
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
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
Rocky River	130.0	2.0	200.0	12.0	80.0	0.3	44.0	1.0	43.1	1.0	32.0
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
Island Creek	23.2	2.0	15.0	3.6	30.0	0.5	7.0	0.5	4.3	0.1	5.5
South Nuka Island Creek	20.0	2.0	22.0	0.1	10.0	—	10.0	—	10.0	3.0	11.0
Desire Lake Creek	—	—	18.0	—	1.3	—	—	—	—	—	—
James Lagoon	—	—	—	—	—	—	—	—	—	—	—
Aialik Lagoon	—	—	25.0	0.3	—	—	2.0	—	—	—	—
Bear Creek	1.4	—	3.1	—	6.4	—	—	—	3.1	—	—
Salmon Creek	—	—	—	—	—	—	—	—	—	—	—
Thumb Cove	—	—	—	—	—	—	—	—	—	—	—
Humpy Cove	—	—	—	—	—	—	—	—	—	—	—
Tonsina Creek	—	—	—	—	—	—	—	—	2.9	0.1	—
Big Kamishak River	—	—	100.0	75.0	75.0	—	13.0	—	—	—	—
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
Sunday Creek	1.5	—	5.0	2.0	—	—	20.0	—	—	1.0	2.0
Brown's Peak Creek	—	—	25.0	10.0	20.0	10.0	11.0	—	—	2.0	—
Totals	387.1	111.7	1,181.6	237.2	392.6	152.3	379.0	129.0	220.3	128.9	261.3

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Appendix Table 24. (page 2 of 4)

Location	Y E A R										
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Humpy Creek	45.0	13.8	36.9	17.4	64.0	27.2	86.0	46.1	200.0	64.4	115.0
China Poot Creek	2.1	1.0	6.0	5.2	21.6	2.0	3.9	11.2	20.6	12.3	5.0
Tutka Lagoon Creek	16.7	1.5	6.5	2.6	17.6	11.5	14.0	15.0	10.6	17.3	21.1
Barabara Creek	4.0	0.6	—	0.2	22.7	0.2	5.7	1.4	10.0	5.8	16.8
Seldovia River	31.1	5.8	14.5	13.7	36.2	25.6	35.7	24.6	43.7	65.5	62.7
Port Graham River	13.2	2.4	7.0	2.8	27.3	6.5	20.6	6.7	32.7	40.2	18.4
Dogfish Lagoon	0.3	—	1.0	—	2.3	—	8.1	0.6	7.3	0.3	2.6
Port Chatham Creeks	15.5	1.0	5.0	0.2	7.7	—	14.2	0.3	20.8	7.7	11.2
Windy Right Creek	13.0	0.1	4.6	0.1	18.7	0.2	11.1	0.3	10.4	3.3	4.7
Windy Left Creek	35.4	0.4	12.9	0.1	9.7	0.2	47.3	1.1	74.8	10.9	31.3
Rocky River	1.6	8.2	2.0	1.5	4.4	2.7	36.7	8.2	85.0	6.4	25.0
Port Dick Creek	97.8	10.0	26.4	1.5	62.8	12.7	109.3	44.9	116.0	56.1	106.0
Island Creek	0.1	1.7	0.5	0.5	0.1	—	0.6	0.4	0.6	2.2	25.0
South Nuka Island Creek	14.0	0.3	16.0	—	28.0	—	12.0	—	15.0	0.3	16.0
Desire Lake Creek	30.0	0.3	3.0	—	0.4	0.6	0.8	1.0	3.0	16.0	5.0
James Lagoon	—	—	—	—	—	—	—	—	—	4.6	14.0
Aialik Lagoon	—	—	—	0.1	—	0.4	—	—	—	—	—
Bear Creek	—	0.5	—	4.9	—	10.0	—	7.8	—	13.3	0.4
Salmon Creek	—	—	—	—	—	16.9	—	11.0	—	15.5	0.1
Thumb Cove	—	—	—	1.1	—	2.0	—	2.0	—	1.2	1.0
Humpy Cove	—	—	—	0.6	—	1.4	—	0.9	—	5.7	0.4
Tonsina Creek	—	—	—	1.4	—	5.7	—	1.5	—	0.7	0.2
Big Kamishak River	—	—	15.0	1.0	—	8.0	—	12.0	10.0	2.0	—
Little Kamishak River	—	—	13.0	—	—	6.0	—	0.4	3.5	0.6	—
Amakdedori Creek	—	0.2	3.0	1.0	5.0	—	—	0.9	6.0	3.8	1.5
Bruin Bay River	22.0	2.5	2.0	0.6	20.0	13.5	60.0	33.0	200.0	400.0	95.0
Sunday Creek	43.0	2.0	5.0	0.1	20.0	0.3	9.0	0.2	12.0	5.2	14.2
Brown's Peak Creek	8.0	1.2	3.2	0.1	10.0	1.2	13.0	0.9	15.0	2.3	17.7
Totals	392.8	53.5	183.5	56.7	378.5	154.8	488.0	232.4	897.0	763.6	610.3

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Appendix Table 24. (page 3 of 4)

Location	Y E A R										
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Humpy Creek	31.9	104.0	84.2	117.0	49.7	26.6	21.4	93.0	27.0	17.4	14.9
China Poot Creek	3.1	14.1	8.4	1.9	11.5	3.1	3.9	8.5	4.2	2.6	4.1
Tutka Lagoon Creek	18.5	12.9	10.5	14.0	13.4	4.8	11.2	11.9	38.5	16.8	26.7
Barabara Creek	2.1	14.8	1.0	1.6	1.8	0.3	0.7	4.5	3.9	10.9	2.2
Seldovia River	38.4	27.9	14.2	22.8	28.2	7.6	16.9	26.2	27.8	30.0	14.7
Port Graham River	28.9	4.6	10.9	26.3	17.5	3.8	7.9	19.1	20.1	29.0	5.4
Dogfish Lagoon	2.6	1.0	0.6	0.2	0.4	1.2	0.3	0.2	7.1	9.3	^c
Port Chatham Creeks	2.0	3.5	7.8	8.9	11.5	10.2	21.0	31.7	27.8	23.8	4.3
Windy Right Creek	4.7	4.3	3.4	5.4	2.5	2.0	1.3	6.6	7.1	20.7	3.9
Windy Left Creek	4.4	11.9	2.5	8.9	2.2	5.6	3.4	25.2	7.5	34.5	8.2
Rocky River	6.6	16.6	9.0	12.1	12.0	4.5	5.4	10.3	18.0	26.1	25.4
Port Dick Creek	19.9	64.1	44.6	65.3	41.6	4.5	12.0	55.4	41.7	54.2	6.9
Island Creek	15.0	15.3	35.0	27.9	16.6	0.1	7.2	6.7	25.0	24.4	12.5
South Nuka Island Creek	0.4	22.2	0.6	3.6	7.0	2.8	1.2	7.3	13.3	16.4	6.1
Desire Lake Creek	12.0	8.5	23.0	62.5	32.0	11.0	2.5	47.0	1.0	1.3	0.4
James Lagoon	6.0	5.1	4.0	9.0	6.6	1.1	1.7	4.9	3.8	4.4	0.4
Aialik Lagoon	5.0	3.0	4.0	9.4	6.0	1.5	0.7	0.8	—	—	^c
Bear Creek	7.9	0.8	7.7	4.1	14.0	3.5	0.2	1.7	4.4	15.4 ^b	2.3
Salmon Creek	21.0	0.5	10.2	2.1	8.3	1.7	0.1	1.6	—	^b	5.3
Thumb Cove	7.9	4.9	4.2	14.5	4.0	2.7	0.3	4.2	—	3.4	0.4
Humpy Cove	4.0	2.0	2.5	5.0	0.9	0.3	0.4	1.0	3.8	—	^c
Tonsina Creek	7.5	5.4	6.0	48.2	11.2	3.4	0.1	0.5	1.2	0.3	^c
Big Kamishak River	5.0	—	—	—	5.0	—	1.0	—	—	—	^c
Little Kamishak River	2.2	—	0.1	1.6	2.0	—	0.5	—	—	0.9	^c
Amakdedori Creek	6.3	0.2	—	1.0	6.0	0.4	1.0	2.0	0.1	0.7	3.2
Bruin Bay River	75.0	4.0	110.0	3.5	1,200.0	24.0	29.0	350.0	19.0	74.9	3.2
Sunday Creek	12.0	4.7	12.0	11.4	109.0	29.7	18.0	103.0	2.8	20.9	2.9
Brown's Peak Creak	3.5	1.7	6.8	7.0	28.0	40.2	17.0	120.0	1.0	16.7	5.0
Totals	353.8	358.0	423.2	495.2	1,648.9	196.6	186.3	943.3	306.1	455.0	158.4

-continued-

Appendix Table 24. (page 4 of 4)

Location	Y E A R								1960-94 Average	Escapement Goal
	1993	1994	1995	1996	1997	1998	1999	2000		
Humpy Creek	36.0	14.1	89.3						47.5	25-50
China Poot Creek	1.6	5.7	2.0						6.8	5
Tutka Lagoon Creek	27.4	14.5	15.9						14.4	6-10
Barabara Creek	11.9	4.5	10.8						4.5	18-24
Seldovia River	43.4	24.4	48.5						33.2	25-35
Port Graham River	12.8	7.6	10.0						15.2	20-40
Dogfish Lagoon	0.3	1.3	13.3						2.4	-
Port Chatham Creeks	22.2	3.3	14.0						10.5	10-15
Windy Right Creek	13.6	2.2	11.4						6.0	10
Windy Left Creek	25.9	3.0	31.6						13.5	30-50
Rocky River	70.0	17.1	56.3						27.4	50
Port Dick Creek	37.0	18.1	6.6						40.7	20-100
Island Creek	12.1	28.3	10.6						10.3	12-18
South Nuka Island Creek	34.3	1.4	6.2						10.2	10
Desire Lake Creek	19.3	—	—						12.5	10-20
James Lagoon	3.3	0.8	0.6						4.6	5-10
Aialik Lagoon	—	—	1.1						4.5	5
Bear Creek	6.6 ^b	34.8 ^b	38.6 ^b						6.7	5
Salmon Creek	^c	^c	^c						7.3	10
Thumb Cove	5.5	10.8	9.3						4.1	4
Humpy Cove	0.9	2.2	1.8						2.0	2
Tonsina Creek	3.2	7.0	0.5						5.6	5
Big Kamishak River	—	—	—						24.8	20
Little Kamishak River	—	—	—						11.1	20
Amakdedori Creek	1.7	0.7	4.5						8.3	5
Bruin Bay River	86.4	5.9	307.3						104.6	25-50
Sunday Creek	57.8	3.1	95.9						17.7	10
Brown's Peak Creek	41.6	1.3	96.7						14.7	10
Totals	574.8	212.1	882.8						403.0	377-593

^a Escapement estimates are derived from periodic ground surveys with stream life factors applied, or from periodic aerial surveys. Aerial survey estimates after 1990 incorporate stream life factors; prior to 1990, aerial estimates are peak aerial survey counts adjusted for survey conditions and time of surveys.

^b Escapement figure for Bear Creek represents the combined escapement for Bear and Salmon Creeks.

^c Insufficient data for escapement estimates.

Appendix Table 25. Estimated chum salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1975 - 1995^a.

Year	Port Graham	Dogfish Lagoon	Rocky River	Pt. Dick Head	Island Creek	Big Kamishak	Little Kamishak	McNeil River	Bruin Bay	Ursus Cove	Cotton- wood	Iniskin Bay	Total
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	3.0	8.6	0.3	9.0	7.8	15.0	13.0	49.0	7.0	9.4	16.0	9.5	147.6
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
1990	2.6	1.0	0.8	1.1	2.3	2.5	7.9	8.0	4.0	3.8	4.3	8.4	46.7
1991	1.1	3.1		7.4	17.3	8.7	8.4	10.0	6.0	1.3	7.7	8.3	79.3
1992	1.4	0.8	1.7	5.4	6.7	4.5	7.1	19.2	8.5	1.7	6.1	3.4	66.5
1993	2.5	5.4	0.1	2.5	3.6	9.1	6.3	17.4	6.0	7.7	12.0	8.0	78.8
1994	5.2	11.3	1.9	3.5	8.8	—	9.0	15.0	6.1	6.2	10.2	18.9	96.1
1995	3.8	4.2	5.1	3.3	7.7	^b	^b	14.4	6.6	11.1	12.0	22.7	90.9
20-Year Avg.	2.4	5.6	7.6	4.1	11.7	14.7	12.9	21.3	7.5	6.9	8.4	8.8	111.8
1975-94 Avg.	2.8	7.0	13.5	4.1	15.2	17.0	15.8	21.7	9.1	7.7	7.3	9.3	130.3
1985-94 Avg.	2.0	4.1	1.2	4.1	8.2	12.4	10.3	21.0	6.0	6.0	9.5	8.2	93.0
Esc. goal	4-8	5-10	20	4	10-15	20	20	20-40	5-10	5-10	10	10	133-177

^a Escapement estimates are derived from periodic ground surveys with stream life factors applied, or from periodic aerial surveys. Aerial survey estimates after 1990 incorporate stream life factors; prior to 1990, aerial estimates are peak aerial survey counts adjusted for survey conditions and time of surveys.

^b Insufficient data to generate escapement estimates.

Appendix Table 26. Personal use/subsistence set gillnet salmon catch in numbers of fish by species and effort, Southern District, Lower Cook Inlet, 1969 - 1995^a.

Year	Permits Issued	Permits Returned		Permits		Total			Catch			Total
		Number	%	Did Fish	Not Fished	Chinook	Sockeye	Coho	Pink	Churn	Other	
1969	47	44	93.6	35	9	0	9	752	38	0	17	816
1970	78	73	93.6	55	18	0	12	1,179	143	13	39	1,386
1971	112	95	84.8	53	42	2	16	1,549	44	7	20	1,638
1972	135	105	77.8	64	41	1	11	975	48	69	19	1,123
1973	143	128	89.5	82	46	0	18	1,304	84	40	9	1,455
1974	148	118	79.7	52	66	0	16	376	43	77	27	539
1975	292	276	94.5	221	55	4	47	1,960	632	61	95	2,799
1976	242	221	91.3	138	83	16	46	1,962	1,513	56	75	3,668
1977	197	179	90.9	137	42	12	46	2,216	639	119	84	3,116
1978	311	264	84.9	151	113	4	35	2,482	595	34	89	3,239
1979	437	401	91.8	238	163	6	37	2,118	2,251	41	130	4,583
1980	533	494	92.7	299	195	43	32	3,491	1,021	25	153 ^b	4,765
1981	384	374	97.4	274	100	25	64	4,314	732	89	100	5,324
1982	395	378	95.7	307	71	39	46	7,303	955	123	8	8,474
1983	360	328	91.1	210	118	4	21	2,525	330	40	2	2,922
1984	390	346	88.7	219	127	4	25	3,666	821	87	25	4,628
1985	316	302	95.6	205	97	5	43	3,372	166	35	3	3,624
1986	338	310	91.7	247	63	7	68	3,831	3,132	56	0	7,094
1987	361	338	93.6	249	89	5	50	3,977	279	61	0	4,372
1988	438	404	92.2	287	117	14	60	4,877	1,422	75	0	6,448
1989	466	452	97.0	332	120	41	156	7,215	882	53	49	8,396
1990	578	543	93.9	420	123	12	200	8,323	1,846	69	0	10,450
1991	472	459	97.2	295	164	8	47	4,931	366	23	0	5,375
1992	365	350	95.9	239	111	5	63	2,277	643	21	0	3,009
1993	326	317	97.2	215	102	6	44	1,992	463	18	0	2,523
1994	286	284	99.3	224	60	66	80	4,097	1,178	18	0	5,439
1995	235	232	98.7	178	54	118	108	2,916	343	7	0	3,492
69-94												
Avg.	313	292	93.0	202	90	13	50	3,195	779	50	36	4,123

^a Figures after 1991 include information from both returned permits and inseason oral reports.

^b Steelhead trout (*Onchorhynchus mykiss*).

Appendix Table 27. Summary of personal use/subsistence salmon gillnet fishermen in the Southern District of Lower Cook Inlet (excluding the Port Graham/Nanwalek subsistence fishery) by area of residence, 1975 - 1995.

Year	Homer/ Fritz Cr.		Anchorage Area ^a		Halibut Cove		Anchor Pt. Ninilchik		Seldovia		Pt. Graham/ Nanwalek		Kenai/ Soldotna		Other		Total Permits Issued
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
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	3.5	0	0.0	2	1.0	3	1.5	198
1978	214	68.8	40	12.9	5	1.6	30	9.6	12	3.9	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	0.0	11	2.5	20	4.5	440
1980	310	57.9	81	15.1	0	0.0	80	15.0	7	1.3	0	0.0	42	7.9	13	2.4	535
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	0.0	7	1.8	21	5.3	395
1983	267	77.8	24	7.0	3	0.9	33	9.6	8	2.3	0	0.0	0	0.0	8	2.3	343
1984	266	72.1	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	4.7	6	1.9	33	10.4	6	1.9	0	0.0	2	0.6	3	0.9	316
1986	280	82.8	18	5.3	4	1.2	29	8.6	1	0.3	0	0.0	1	0.3	5	1.5	338
1987	284	78.7	25	6.9	3	0.8	37	10.2	7	1.9	0	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	0.0	10	2.3	0	0.0	438
1989	348	74.7	36	7.7	5	1.1	51	10.9	8	1.7	0	0.0	6	1.3	12	2.6	466
1990	441	76.3	36	6.2	5	0.9	65	11.2	12	2.1	0	0.0	6	1.0	13	2.2	578
1991	384	81.4	27	5.7	8	1.7	41	8.7	6	1.3	0	0.0	4	0.8	2	0.4	472
1992	302	82.7	21	5.8	5	1.4	32	8.8	3	0.8	0	0.0	1	0.3	1	0.3	365
1993	242	74.2	25	7.7	5	1.5	44	13.5	3	0.9	0	0.0	5	1.5	2	0.6	326
1994	235	82.2	20	7.0	4	1.4	21	7.3	1	0.3	0	0.0	1	0.3	4	1.4	286
1995	191	81.3	15	6.4	7	3.0	20	8.5	1	0.4	0	0.0	0	0.0	1	0.4	235
20-Year Avg.	273	74.4	30	8.2	5	1.4	40	10.8	5	1.5	1	0.1	7	1.8	6	1.7	367
1975-84 Avg.	236	69.5	34	10.0	6	1.7	40	11.7	6	1.6	1	0.3	10	2.8	8	2.4	339
1985-94 Avg.	311	78.7	26	6.6	5	1.3	40	10.0	5	1.3	0	0.0	4	1.0	5	1.1	395

^a After 1989, "Anchorage Area" includes Mat-Su Valley, Eagle River, Chugiak, and or Fort Richardson.

Appendix Table 28. Subsistence salmon catch in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1981 - 1995^a.

Year	SALMON HARVEST					Total	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum		
1981 ^b	116	1,694	625	298	150	2,883	47
1982 ^b	98	798	508	851	193	2,448	38
1983 ^c	57	1,066	440	169	65	1,797	31
1984 ^c	21	2,095	166	215	6	2,503	34
1985 ^c	156	469	190	42	22	879	^d
1986 ^b	118	279	179	234	13	823	36
1987 ^e	21	186	574	264	69	1,114	31
1988 ^f	90	380	447	577	88	1,582	31
1989	48	94	555	524	46	1,267	32
1990	180	472	811	1,107	68	2,638	31
1991	178	61	355	1,454	173	2,221	32
1992 ^b	127	100	449	707	167	1,550	37
1993 ^b	248	153	396	978	130	1,905	27
1994 ^b	267	246	872	858	452	2,695	43
1995 ^b	442	421	329	683	360	2,235	49 ^g
1981-94 Average	123	578	428	591	117	1,837	35

^a Data source: ADF&G, Subsistence Division, data files.

^b Data include both subsistence set gillnet and rod/reel harvest.

^c Data include only subsistence set gillnet harvest.

^d No data.

^e 46% set gillnet harvest, 54% rod/reel harvest.

^f 51% set gillnet harvest, 49% rod/reel harvest.

^g Salmon totals and households include 3 reports from non-residents of Port Graham village.

Appendix Table 29. Subsistence salmon catch in numbers of fish by species for the village of Nanwalek (formerly English Bay), Lower Cook Inlet, 1981 - 1995^a.

Year	SALMON HARVEST					Total	Households Reporting
	Chinook	Sockeye	Coho	Pink	Chum		
1981 ^b	24	1,075	314	621	19	2,053	29
1982 ^b	13	1,584	1,305	1,850	36	4,778	31
1983 ^c	0	1,784	367	363	10	2,524	28
1984 ^c	18	1,225	385	404	0	2,032	26
1985 ^c	5	696	530	313	2	1,546	^d
1986 ^b	4	378	296	825	2	1,505	21
1987 ^e	2	626	322	476	45	1,471	21
1988 ^f	8	609	385	1,185	35	2,222	26
1989	0	60	651	868	0	1,579	29
1990	46	636	616	1,968	49	3,305	30
1991	4	574	1,508	3,087	46	5,219	35
1992 ^b	72	430	570	519	59	1,650	40
1993 ^b	24	1,018	570	1,703	115	3,430	21
1994 ^b	29	642	512	1,127	49	2,359	25
1995 ^b	77	1,126	150	431	0	1,784	29
<hr/>							
1981-94							
Average	18	810	595	1,094	33	2,550	28

^a Data source: ADF&G, Subsistence Division, data files.

^b Data include both subsistence set gillnet and rod/reel harvest.

^c Data include only subsistence set gillnet harvest.

^d No data.

^e 63% set gillnet harvest, 37% rod/reel harvest.

^f 37% set gillnet harvest, 63% rod/reel harvest.

Appendix Table 30. ADF&G and/or CIAA salmon stocking projects and releases of salmon fry, fingerling, and smolt, in millions of fish, Lower Cook Inlet, 1984 - 1995.

Lake, River, or Bay	Species	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Leisure Lake	Sockeye	2.110	2.018	2.350	2.022	2.100	2.000	1.750	2.000	2.000	2.000	0	1.632
Chenik Lake	Sockeye		—	0.839	1.000	2.600	3.500	3.250	2.200	2.750	1.400	0	1.129
Paint River Lakes:													
Upper	Sockeye			0.500	—	1.100	1.000	1.000	0.500	0.500	0.500	0	0.337
Lower	Sockeye			0.320	—	0.552	0.500	0.500	0.250	0.250	0.250	0	0.251
Elusivak	Sockeye					0.521	0.500	0.500	0	0	0	0	0
Kirschner Lake	Sockeye				0.867	0.521	0.250	0.250	0.250	0.250	0.250	0.300	0.251
Bruin Lake	Sockeye							0.500	0.250	0.250	0.250	0	0.251
Ursus Lake	Sockeye									0.250	0.250	0	0.252
Port Dick Lake	Sockeye				0.705	0.222	0.430	0	0	0	0	0	0
Hazel Lake	Sockeye					0.783	1.000	1.250	1.300	1.000	1.000	0	1.061
English Bay Lakes	Sockeye							0.350	0.241	0.290	0.581	0.800	0 ^a
Bear Lake	Sockeye						2.200	2.400 ^b	1.619 ^b	2.370	1.813	0.170	0.360
Total Sockeye		2.110	2.018	4.009	4.594	8.399	11.380	11.750	8.610	10.060	8.294	1.270	5.524
Tutka Bay Hatchery:													
	Pink	14.730	19.560	22.500	19.570	12.000	30.100	23.600	23.600	23.600	43.000	61.000	63.000
	Chum	0.026	0.018	0.449	4.050	3.180	2.103	1.500	0	0	0	0	0
Caribou Lake	Coho		0.139	0.138	0.150	0.150	0.182	0.180	0.180	0.150	0.150	0.064	0
Seldovia Lake	Coho		0.083	0.072	0.045	0.045	0.080	0.050	0.050	0	0	0	0
Seldovia Bay	Chinook				0.084	0.084	0.108	0.099	0.091	0.113	0.107	0.106	0.113
Halibut Cove Lagoon:	Chinook		0.098	0.101	0.094	0.094	0.115	0.112	0.092	0.117	0.100	0.107	0.036
	Pink			2.000	3.000	3.000	6.000	6.000	6.000	6.000	6.000	0	0
Homer Spit:	Chinook												
	early		0.152	0.104	0.104	0.104	0.104	0.212	0.191	0.226	0.212	0.192	0.228
	late									0.126	0.100	0.157	0.124
	Pink				0.295	0.300	0.332	0.303	0.303	0.300	0	0	0
	Coho					0.060	0.143	0.123	0.100	0.100	0.116	0.156	0.110

^a 85,000 fry intended for release into English Bay Lakes in 1995 were destroyed due to IHN viral infection.

^b Includes both fingerlings and "zero check" smolts.

Appendix Table 31. Catch of Pacific herring in short tons and effort in number of permits by district in the commercial sac roe seine fishery, Lower Cook Inlet, 1975 - 1995^a.

Year	Southern		Kamishak		Eastern		Outer		Total	
	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits
1975	24	5	4,119	40	—	—	—	—	4,143	41
1976	0		4,842	66	—	—	—	—	4,842	66
1977	291	13	2,908	57	—	—	—	—	3,199	58
1978	17	7	402	44	—	—	—	—	419	44
1979	13	3	415	35	—	—	—	—	428	36
1980	—		—		—		—		—	
1981	—		—		—		—		—	
1982	—		—		—		—		—	
1983	—		—		—		—		—	
1984	—		—		—		—		—	
1985	—		1,132	23	204	7	12	2	1,348	29
1986	—		1,959	54	167	4	28	3	2,154	57
1987	—		6,132	63	584	4	202	9	6,918	69
1988	—		5,548	75	0	0	0	0	5,548	75
1989	170	6	4,801	75	0	0	0	0	4,971	75
1990	—		2,264	75	—		—		2,264	75
1991	—		1,992	58	0	0	0	0	1,992	58
1992	—		2,282	56	0	0	0	0	2,282	56
1993	—		3,570	60	—		—		3,570	60
1994	—		2,167	61	—		—		2,167	61
1995	—		3,378	60	—		—		3,378	60
20-Year										
Average	86	8	2,969	56	136	2	35	2	3,083	57
1975-84										
Average	69	8	2,537	48	—	—	—	—	2,606	49
1985-94										
Average	170	6	3,185	60	136	2	35	2	3,321	62

^a Data source: ADF&G fish ticket database.

Appendix Table 32. Estimated herring biomass and commercial purse seine catch of Pacific herring in short tons, exploitation rates, average roe recovery, number of permits fished, and exvessel value in millions of dollars, Kamishak Bay District, Lower Cook Inlet, 1978 - 1995.

Year	Spawning Biomass ^a	Commercial Catch	Total Biomass	Percent Exploitation	Average Roe %	No. of Permits	Exvessel Value ^b
1978	800	402	1,202	33.4	---	44	^c
1979	2,900	415	3,315	12.5	---	36	^c
1980	---	CLOSED	---	---	---	---	---
1981	5,130	CLOSED	5,130	---	---	---	---
1982	4,835	CLOSED	4,835	---	---	---	---
1983	4,750	CLOSED	4,750	---	---	---	---
1984	2,885 ^d	CLOSED	2,885	---	---	---	---
1985	12,188	1,132	13,320	8.5	11.3	23	1.0
1986	24,042	1,959	26,001	7.5	10.4	54	2.2
1987	29,200	6,132	35,332	17.4	11.3	63	8.4
1988	24,000	5,548	29,548	18.8	11.1	75	9.3
1989	30,900	4,801	35,701	13.4	9.5	75	3.5 ^e
1990	17,400	2,264	19,664	11.5	10.8	75	1.8
1991	16,171 ^f	1,992	18,163	11.0	11.3	58	1.3
1992	21,795	2,282	24,077	9.5	9.7	56	1.4
1993	28,869	3,570	32,439	11.0	10.2	60	2.2
1994	23,177 ^f	2,167	25,344	8.6	10.6	61	1.5
1995	21,737	3,378	25,115	13.4	9.8	60	4.0
<hr/>							
1978-94							
Average ^g	15,565	2,722	17,607	13.6	10.6	57	3.3

^a Spawning biomass estimates are minimal estimates based on aerial surveys.

^b Exvessel values exclude any postseason retroactive adjustments.

^c Data not available.

^d Spawning had already begun on first survey. Total spawning biomass estimate was higher than peak survey estimate of 2,885 tons.

^e Includes retroactive adjustment.

^f Due to poor aerial survey conditions, spawning biomass was calculated from the preseason estimate of abundance, adjusted to match observed age composition samples in the catch.

^g Average excludes 1980 when no data available.

Appendix Table 33. Summary of herring sac roe seine fishery openings and commercial harvests in the Kamishak Bay District of Lower Cook Inlet, 1969 - 1995.

Year	Dates of Openings	Total Hrs. Open	Harvest (short tons)	Catch Rate (short tons/hour open)	Number of Permits Fished
1969-73	No closed periods				
1974	1/1 - 5/20		2,114		26
1975	1/1 - 6/6	(Closed Iniskin Bay 5/17)	4,119		40
1976	1/1 - 5/21	(Closed Iniskin Bay 5/17; reopened Kamishak 6/2)	4,824		66
1977	1/1 - 5/31	(Closed Kamishak Dist. 5/12; reopened 5/14 - 5/17; reopened 5/29 - 5/31)	2,908		57
1978 ^a	4/16 - 5/31	96	402	4.2	44
1979	5/12 - 5/15	72	415	5.8	36
1980	CLOSED	0	0		
1981	CLOSED	0	0		
1982	CLOSED	0	0		
1983	CLOSED	0	0		
1984	CLOSED	0	0		
1985	4/20 - 6/15	1,350 (56.2 days)	1,132	0.8	23
1986	4/20 - 6/13	1,303 (54.3 days)	1,959	1.5	54
1987	4/21 - 4/23	65	6,132	94.3	63
1988	4/22 - 4/29	42	5,548	132.1	75
1989	4/17 - 4/30	24.5	4,801	196.0	75
1990	4/22 - 4/23	8	2,264	283	75
1991	4/26	1	1,922	1,922.0	58
1992	4/24	0.5	2,282	4,564.0	56
1993	4/21	0.75	3,570	4,760	60
1994	4/25	0.5	778	1,556.0	35
	4/29	1.0	1,338	1,338.0	53
1995	4/27	0.5	1,685	3,370.0	45
	4/28	1.0	1,693	1,693.0	44

^a Management by emergency order began.

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